

TECHNOLOGIES OF POWER: RITUAL ECONOMY AND CERAMIC PRODUCTION IN  
THE TERMINAL PRECLASSIC PERIOD HOLMUL REGION, GUATEMALA

By

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*Now I am quietly waiting for  
the catastrophe of my personality  
to seem beautiful again,  
and interesting, and modern.*

*The country is grey and  
brown and white in trees,  
snows and skies of laughter  
always diminishing, less funny  
not just darker, not just grey.*

*It may be the coldest day of  
the year, what does he think of  
that? I mean, what do I? And if I do,  
perhaps I am myself again.*

Frank O'Hara,  
from "Mayakovsky"  
*Meditations in an Emergency*, 1957

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# CHAPTER I

## INTRODUCTION

### **Statement of the Problem**

How individuals and groups utilize ritual and performance to craft identity, assert their position in the social structure, maintain authority, and contest the identity and authority of others has a profound impact on the shape of material culture, technology, and innovation (DeMarrais et. al. 1996; Inomata 2006; Joyce and Winter 1996). Because identity formation never ceases, individual and group ritual strategies are perpetually changing and so is the material culture they influence. The present research investigates changing ritual strategies of ancient Maya elites in the Holmul Region, Guatemala during the second half of the Terminal Preclassic period (AD 150 – 250). Using ceramic analysis, I study how Holmul Region elites negotiated identity and maintained authority within the social context of exclusionary feasting through the creation of a new ceramic ritual economy characterized by orange slipped pottery during a time of political unrest in the Terminal Preclassic period.

Because of its unique physical characteristics, Terminal Preclassic period orange gloss ware has long been the subject of intense investigation (see Pring 2000). Orange gloss ware of the Terminal Preclassic period was first discovered in 1911 at the site of Holmul, Guatemala by Raymond Merwin (Merwin and Vaillant 1932) (Figure 1.1). Terminal Preclassic orange gloss ware exhibits a combination of Preclassic and Classic period ceramic traits along with its own unique characteristics (Smith 1955:22) (Figure 1.2). Classic period characteristics include glossy surface finish, red-and-black-on-orange polychrome painting, and some aspects of vessel forms.

Preclassic characteristics include thick vessel walls and the presence of four supports or “tetrapods”. Traits unique to orange gloss ware include fashioning the tetrapod supports into “mammiform” shapes, and vessel forms such as the tetrapod cylinder vase or plate with swollen cylindrical supports.

Maya archaeologists have tested many models aimed at understanding the function and meaning of Terminal Preclassic orange gloss ware. Because vessels appeared to be evolutionary links between Preclassic and Classic period ceramic styles, archaeologists first believed they represented a transitional cultural phase between the Preclassic and Classic periods (Willey, Culbert, and Adams 1967). However, after years of excavations at other Maya sites yielded relatively few examples of Terminal Preclassic orange gloss ware (see Pring 2000), it became clear that the vessels could not have represented a general phase of cultural evolution. Because the majority of Terminal Preclassic orange gloss ware and orange matte ware (similar in form but lacking glossy surface finish) was found in the eastern portion of the Maya lowlands, and because of their similarity to vessels found at sites in El Salvador dating to the same time period (Sharer 1978), scholars next hypothesized that this type of pottery was brought to the Maya lowlands by invaders or refugees from the southeastern periphery (Sharer and Gifford 1970). Volcanism and climatic activity were thought to be the cause for migration of southeastern populations into the lowlands (Sheets 1979a, 1979b). However, further comparison between the ceramic material found at sites in El Salvador and the eastern lowlands area revealed that seemingly similar Terminal Preclassic pottery in the eastern lowlands was made locally and only certain style modes traveled from El Salvador into the Maya heartland (Hammond 1974a, 1984; 1977; Pring 1977a). Further excavation and tighter ceramic and radio-carbon chronologies at sites in El Salvador also revealed that the potential cause of population movements out of El

Salvador, the eruption of volcano Ilopango, occurred much later than the introduction of orange gloss ware to the Maya lowlands (Dull et. al. 2000; Sharer and Traxler 2006: 281). After rejection of the “invasion hypothesis”, no single model has been exclusively proposed and tested until very recently.

Scholars are currently applying models derivative of more traditional political economy approaches to understand the introduction of orange gloss ware during the Terminal Preclassic period. In these models, orange gloss pottery constituted part of a new political economy and served as a form of social currency that materialized political or trade relations (Brady et. al. 1998:33; Fields and Reents-Budet 2005:214-217; Pring 2000:42; Reese-Taylor and Walker 2002:104-105; Walker et. al. 2006:665). In this type of model orange slipped pottery would have been considered a type of prestige good with its production and/or distribution controlled by groups of elites seeking to gain or maintain social status and political authority.

It was my original intention to test the hypothesis that orange slipped pottery was a type of prestige good and functioned as a kind of social currency. Taking into account the limitations of my current sample from the Holmul Region, correlates for prestige good production and exchange would have been 1) the identification of restricted technologies used in the production of orange slipped pottery, 2) a restricted number of producers manufacturing orange slipped pottery, 3) restricted distribution of orange slipped pottery to elite contexts both within the Holmul Region and elsewhere in the Maya lowlands, and 4) evidence of production and exchange reaching outside the Holmul Region.

However, prior to my analysis and especially after it was completed, I became aware of a number of significant problems with this approach. These problems range from the archaeological to the theoretical and will be discussed in more detail in the next chapter, but

briefly include 1) complicated distribution patterns that point to ritual not political or socio-economic status as a determining factor in use and final deposition, 2) variation in type and quality of orange slipped pottery leading to the assumption that many production units with different levels of skill were involved in production, 3) a lack of restricted technologies used to produce orange slipped ceramics, 4) great variation in paste recipes leading to the assumption that not only were paste recipes unrestricted, but again that many units were involved in the production process, 5) signs of continuity in production patterns between red and orange slipped material, 6) a lack of evidence for major interregional or external trade and exchange, and finally 7) inherent theoretical biases and faults of the prestige goods model that fail to account for patterns produced by the study.

Therefore, in this research I study the creation and use of orange slipped vessels in the Terminal Preclassic period using the theoretical lens of ritual economy (Wells 2006; Wells and Salazar 2007). Ritual economy combines aspects of political economy and agency based theories to focus on how groups and individuals reproduce or alter social structure through their utilization of economic resources for the purpose of ritual and performance. As I will demonstrate in the next chapter, this theoretical framework focuses attention away from hierarchy and Weberian (1947) concepts of power onto social structure and how material objects can mediate social relations. Ritual economy does not separate or isolate the value of material objects. Instead, the social context in which objects were used played an integral role in determining both their value and even physical composition. In this research certain types of orange slipped ceramics are considered social valuables (Helms 1993; Speilmann 2002), not prestige goods, which were produced for and used in ritual feasting events where elites were able

to reaffirm their identity and position relative to others in the existing social structure during the Terminal Preclassic period.

### **A Genealogy of the Terminal Preclassic Period**

The chronological placement, culture-material correlates, and economic and socio-political changes that took place during the Terminal Preclassic period have long been the subject of intense debate in Maya archaeology (Adams 1971; Brady et. al. 1998; Hammond 1974a, 1977, 1984; Pring 1977a, 1977b, 2000; Sharer and Gifford 1970; Sharer and Traxler 2006; Sheets 1979a, 1979b; Willey, Culbert, and Adams 1967; Willey and Gifford 1961). This debate is deserving of clarification and discussion before I continue with the thesis of the present research. What is referred to above as the Terminal Preclassic period was previously referred to as the Protoclassic period. The Protoclassic period was first conceived of in the 1930s with the publication of the first synthesis of ceramic datasets in the Maya lowlands (Anderson and Cook 1944; Lothrop 1927; Merwin and Vaillant 1932; Thompson 1931). The period was considered to be a short phase of cultural evolution positioned at the close of Vaillant's (1927:378-380) "Neo-Archaic" period (roughly equivalent to the Late Preclassic period 300 BC – 300AD) and before his "Old Empire" period (ibid:380-385) (roughly equivalent to the Early Classic period AD 300 – 600). The cultural phase was identified at sites exclusively by the presence of pottery with specific ceramic attributes: namely, hollow bulbous (often mammiform supports), groove-hook rims, and incipient polychrome decoration. This group of ceramic traits was often referred to as the "Q Complex" in older literature (Merwin and Vaillant 1932:64). While these ceramics were not associated with stratigraphic excavations of great integrity (the largest collections came from unsealed or disturbed contexts such as chultunes or re-entered tombs), two factors

contributed to archaeologists' assumptions that these ceramics bore great significance on the rise of Classic Maya civilization: namely, 1) their *relative* position in archaeological contexts above Neo-Archaic deposits and below Old Empire deposits and 2) their mixture of Neo-Archaic and Old Empire attributes, specifically incipient use of polychrome painting which heralded the painted ceramic masterpieces of Classic civilization. The case for the existence of the Protoclassic period was strengthened in the 1960s with the first large-scale stratigraphic excavations of sites in the Barton Ramie area of Belize by Harvard University. Here, archaeologists discovered ceramic material with Q Complex traits in well stratified deposits (among them burials 30 and 31) post-dating the Preclassic period and predating the Early Classic period (Willey and Gifford 1961). Gifford dated these ceramics to his Floral Park complex (~ AD 0 – 300). Excavations at the site of Altar de Sacrificios in the Pasion River Region of Guatemala were yielding similar results (Adams 1971). There, Adams placed these kinds of ceramics in his Salinas complex (~ AD 150 – 450). Based on this seeming abundance of information from controlled excavations of large-scale projects, Willey, Culbert, and Adams (1967) saw enough of a pattern emerging to propose the existence of a Floral Park ceramic sphere (defined as, “when two or more complexes share a majority of their most common types”[Willey, Culbert, and Adams 1967:306]) and horizon within the Maya lowlands (a horizon is best defined as a brief period of time when certain ceramic modes appear to spread across a wide region of geographical territory[see Gifford 1976:14]). Modal markers specific to the Floral Park horizon included those previously grouped as Q Complex traits: for example, incipient polychrome painting, black-on-orange painting, groove-hook rims, and mammiform supports. Typological markers consisted of Aguacate Orange, Ixcanrio Orange Polychrome, Gavilan Black-on-Orange, and even Guacamallo Red-on-Orange types.

Because archaeologists and ceramicists found these traits to be significantly different from those displayed on Preclassic period ceramics, they hypothesized an external origin for either their actual production or the technology related to their production (Willey and Gifford 1961:165, 167; Willey, Culbert, and Adams 1967:309). Previous scholars based their assumption mostly upon differences in gross surface and form characteristics between the Protoclassic and Preclassic ceramic material: in general, Protoclassic material displayed mammiform supports, orange slip, and polychrome painting, while Preclassic material displayed monochrome red, black, or cream slip on flat based forms. Subsequent excavations at the site of Chalchuapa, El Salvador provided a potential origin for the types and modes of the Floral Park ceramic sphere in the Maya lowlands (Sharer and Gifford 1970). Here, archaeologists believed form and surface characteristics of the base orange type, Aguacate Orange, were “virtually indistinguishable” (ibid:454-455) from Aguacate Orange found in the Barton Ramie area. Reasons for movement of this kind of pottery and/or pottery technology into the lowlands were thought to have occurred from either invasion or refugee migration into the lowlands from the southeastern Maya area. This position was further supported by the work of Sheets (1979a, 1979b) who studied the archaeological datasets in relation to volcanic activity in the southeastern Maya area, specifically the timing and potential social impact of the eruption of volcano Ilopango in El Salvador. In the aftermath of this eruption, which is subsequently evident in the archaeological record as a deep layer of ash in much of the stratigraphy of sites in El Salvador, archaeologists believed that soils became impossible to farm and large groups of people were forced to move out of the area and into the adjacent northeastern lowlands (e.g., Belize and eventually the central Peten) (Sharer and Gifford 1970; Sheets 1979a, 1979b).

However, problems with the potential migration model developed quickly and were associated with revisions in chronology and ceramic analysis. Hammond (1974a, 1977, 1984), Pring (1977a, 1977b), and later Case (1982) looked closer at the ceramics between sites in the northeastern lowlands and the southeastern area. They recognized that form and surface modes were not as similar between the regions as once thought and could be the result of localized innovation as opposed to outside influence. Specifically, there was a great deal of variation in assumed Protoclassic attributes such as mammiform support modes, as well as the type of surface finish (e.g., orange matte versus glossy orange) between and even within sites containing Protoclassic material. Brady's (1989) discovery and publication of large Protoclassic deposits in the cave site of Naj Tunich, Guatemala provided the best context of Protoclassic ceramic markers to date and further supported the conclusions of Hammond (1974a, 1977, 1984), Pring (1977a, 1977b), and Case (1982). Brady's analysis revealed two types of ceramic wares produced at the same time during the Protoclassic period – the dull matte finished Holmul Orange Ware and a glossy finished ware he subsumed under Peten Gloss Ware. Because of the excellent preservation of the collection, Brady was able to correlate differences in form, surface finish, and decoration between the two wares. He found smaller mammiform support modes, less complex painting, and dull surface finish to be associated with Holmul Orange Ware (e.g., Aguacate Orange, Gavilan Black-on-Orange, and Guacamallo Red-on-Orange types) whereas large bulbous mammiform supports, complex or well executed painting, and glossy surface treatment were associated with ceramics of the Peten Gloss Ware (namely the types Aguila Orange: La Compuerta Variety, Sabaneta Black-on-Orange, and Ixcanrio Orange Polychrome which he placed in Peten gloss ware).

Finally, problems with the chronological patterns in support of the migration model arose when scholars began finding evidence of large-scale complex societies at previously existing and more recently discovered sites in the Maya lowlands such as Tikal (Laporte and Fialko 1995), Cerros (Freidel 1978), and sites in the Mirador Basin (Graham 1967; Hansen 1998) that greatly predated the existence of the Protoclassic period. These dates were supported with more recent revision of the dating of the eruption of Ilopango to AD 421, much later than the introduction of Protoclassic horizon markers into the Maya lowlands (Dull et. al. 2001).

In the most recent syntheses of the archaeology of the Protoclassic period (Brady et. al. 1998; Pring 2000) scholars 1) further refine the chronology of the period, 2) emphasize focusing on differences between Protoclassic ceramic material using methods aimed at studying ceramic technology, 3) emphasize the importance of recognizing the types of archaeological contexts in which Protoclassic ceramic material are found, and 4) urge future researchers to limit use of the term Protoclassic. Brady and colleagues (1998) divide the Protoclassic of the Maya lowlands into two phases: an early phase (75 BC – AD 150) and a late phase (AD 150 – 400) both based upon significant changes in ceramic modes. In brief, the first phase witnessed the introduction of matte or waxy finish orange-brown wares (e.g., Iberia Orange and Ixobel Orange) as well as production and exchange of pottery displaying the Usulután mode of drip-like decoration (through application of true-resist technology or positive painting). The second phase saw the introduction of orange ware and polychrome painting (e.g., ceramics of the Holmul Orange Ware and Peten Gloss Ware discussed above).

Brady and colleagues (1998) and Pring (2000) refine the Protoclassic ceramic dataset, and therefore potential markers of the horizon and sphere, by focusing on the study of ceramic modes on sherds and vessels within their respective sites in association with changes in ceramic

technology. This has led to the redefinition, and decrease, of previously existing Protoclassic ceramic assemblages. Surface treatment and decoration have long been important criteria for classifying Protoclassic ceramic material – specifically the presence of orange slip and dull finish – both characteristics of the Aguacate Orange Group material of Holmul Orange Ware.

However, based upon these recent re-analyses (Brady et. al. 1998; Pring 2000) and even previous analyses (Brady 1989; Case 1982; Meskill 1992; Pring 1977b), scholars have found that archaeologists have been consistently misidentifying orange gloss ceramics of the Early Classic period as orange matte ceramics of the Protoclassic period, thus inflating Protoclassic assemblages.

This misclassification is not necessarily due to negligence or ineptitude on behalf of Maya archaeologists. One problem with basing classification solely on surface treatment and color is that these variables are often very subjective measurements. What one archaeologist may classify as “waxy” or “greasy” another may classify as “glossy”. These terms are difficult to quantify. Similarly, while the Munsell soil color chart is useful for quantifying color surfaces and pastes in general, archaeologists often classify colors under different laboratory conditions: for example, some work outdoors with direct sunlight while others work indoors under florescent lighting – both of which can have an impact on Munsell color classifications. Adding to this problem is the extremely wet sub-tropical climate and basic limestone rich soils of the Maya lowlands – both of which result in the high erosion rate of vessels and sherd surfaces. Further contributing to the problem is that Gifford was not able to complete his description of Holmul Orange Ware ceramics before his unfortunate and untimely death. Therefore, archaeologists have little concrete descriptive information to use when trying to classify ceramics potentially belonging to the Protoclassic period.

In order to remedy this problem, the scholars above urge ceramicists and archaeologists to focus on technological differences, other than surface characteristics, within and between Late Preclassic, Protoclassic, and Early Classic material. One suggestion as put forth by Brady and colleagues (1998), and explained in more detail later, is classification of glossy orange Protoclassic types by the identification of a cream underslip using either a simple stereo microscope or petrographic microscope. This is one of the aspects of technology that I use in the present study along with an intensive paste analysis described briefly below and in more detail in chapter 5.

As a result of these re-analyses that focused on ceramic technology and production, the sample of Protoclassic material in the Maya lowlands has decreased significantly. Whole vessels of this type of material appear to be found in greatest quantity at sites in the northeastern lowlands and restricted to ritual contexts within the sites in which it is found: for example, chultunes at Tzimin Kax (Thompson 1931:284-288), a tomb at Cahal Cunil (Thompson 1931:291), a burial mound at Nohmul (Anderson and Cook 1944:84; Gann and Gann 1939), burials at Barton Ramie (Pring 2000:106; Willey and Gifford 1961), a chultun at El Mirador (Forsyth 1989:10; Pring 2000:117), “ritual contexts” (Lopez Varela 1996:302) at K’axob, contexts of an “elite element of society” (Pring 2000:122) at Kichpanha (Meskill 1992), a tomb and cave at La Lagunita (Ichon and Arnauld 1985), a cave at Naj Tunich (Brady 1989), and tombs or caches at Tikal (Culbert 1993; n.d.). Sherds of Terminal Preclassic orange gloss pottery have also been found in construction fill of the potential “port mound” at Nohmul, Belize (Pring and Hammond 1985), in construction fill of a large mound in the epicenter of El Pozito (Case 1982), in a large midden deposit at Salinas de los Nueve Cerros, Guatemala (Dillon 1977),

in construction fill of Building B, Group II at Holmul, and in construction fill of Structure 1 at La Sufricaya also in the Holmul Region.

Because of the new smaller sample size and restricted ritual contexts of Protoclassic material Brady and colleagues (1998) believe that what has long been considered Protoclassic ceramic horizon and sphere markers comprise a sub-complex of special purpose serving ware at the majority of the few lowland Maya sites in which it is found. Therefore, they argue that scholars abandon the use of the term “Protoclassic” as an established time period and phase of Maya cultural evolution and urge archaeologists only to use the term when discussing ceramics with specific modes (discussed above and related to the first and second phases of the Protoclassic) and found in contexts dating within the years BC 75 – AD 400. When the term is used, Brady and colleagues (1998) urge archaeologists to spell it “protoclassic” with a lower case “p” to avoid any confusion with previous uses and definitions.

In the present research I abandon the use of the term Protoclassic in all its manifestations, even those related to ceramic assemblages. I replace the term with Terminal Preclassic. Unlike Brady and colleagues (1998), I suggest the Terminal Preclassic can be considered a distinct period of Maya culture-history. I agree with Brady et. al. (1998) that the dates which are based upon specific ceramic markers correlate to important socio-political and material-culture changes taking place at many lowland Maya sites during the years 75 BC – AD 250. Additionally, like Brady and colleagues (1998) and Pring (2000), the data suggest to me that the Terminal Preclassic ceramics described earlier most often appear as special purpose sub-complexes at the sites in which they are found and more than often do not form part of a site-wide ceramic complex. Current data from the Holmul Region certainly fit this pattern. Ixcario Orange Polychrome and what I have designated as Aguila Orange: Variety Unspecified (potentially

Brady's [1989] La Compuerta Variety) are severely restricted in distribution and number to ritual contexts in site epicenters (discussed later in Chapters 4, 6, and 7). These new types may appear in conjunction with changes in form modes of well established types of serving and utilitarian ware during the Terminal Preclassic period in the Holmul Region (as they do at Tikal in the Cimi complex [Culbert n.d., 1993]), but only future analysis can determine this. Furthermore, much of this pottery is restricted to certain sites in the lowlands during the Terminal Preclassic period – namely the northeastern and central Peten, with minute quantities in the northern Peten (Forsyth 1989), Pasion Region (Adams 1971), and northern Highlands of Guatemala (Ichon and Arnauld 1985) (for an excellent interregional synthesis see Pring 2000) (Figure 1.1). Therefore, ceramic markers are not and cannot be the only material correlates for the Terminal Preclassic period in the Maya lowlands.

I argue that the Terminal Preclassic period is marked by an amalgam of material correlates that indicate larger changes in the socio-political history of the ancient Maya. While I will generally describe these correlates here, it is up to archaeologists to identify and define the Terminal Preclassic locally within their own regions by utilizing these and other correlates they may recognize in their study of this difficult to define period. The first and most often used correlate is the presence of orange slipped ceramics of either the first or second phase. These include ceramics with the Usulután painting mode and waxy orange-brown ceramics for the first half of the Terminal Preclassic period, and the presence of true orange slipped, glossy or matte finished, polychrome ceramics for the second half of the Terminal Preclassic period. However, because these vessels belong to a serving ware sub-complex within each phase, I urge archaeologists to identify changes in the paste, form, firing, and surface modes of other well established Preclassic serving and utilitarian ware such as Sierra Red and Achiotes or Paila

Unslipped. The lack of ceramic markers at a site only means that it did not participate in the political economy associated with the Terminal Preclassic period ceramic sub-complex. It does not necessarily mean the period did not exist and cannot be defined.

A second correlate is evidence of increased warfare and possible abandonment of well established Late Preclassic centers. Specific correlates come in the form of defensive fortifications encircling epicenters at the sites of Becan (Webster 1976), El Mirador (Hansen 1990), El Tintal (Hansen et. al. 2006), and Cival (Estrada-Belli 2006b) – as well as temporary or permanent abandonment at the same sites. Dating of initial construction of the wall at Muralla de Leon could be problematic, but I concur with Rice and Rice (1981) that it was also built during this period. While the majority of wall excavations at the site produced no evidence of cultural material, two excavations of sub-operation B located at the base of the wall into what the Rices interpret as a collapse-talus produced a majority of sherds dating to the Terminal Preclassic period, but also five sherds characteristic of the Postclassic period (Rice and Rice 1981:280-281). The Rices present three possible conclusions based upon this evidence: the first is that the wall was built in the Postclassic period by people using Terminal Preclassic midden deposits excavated from somewhere else in the site, the second is that the wall was built in the Terminal Preclassic period and later added to in the Postclassic period, and the third possibility is that the wall was constructed in the Terminal Preclassic period and included no sherd material, but was later added to in the Postclassic period by people who mined Terminal Preclassic fill deposits for the addition. The Rices present this last possibility as the most likely conclusion, citing the presence of Late Preclassic and Terminal Preclassic ceramics in the majority of structures located within the wall structure at the site (Rice and Rice 1981:281). I tend to accept this interpretation and believe initial construction of the wall dates to the Terminal Preclassic period.

Similar problems exist with dating of the earthworks at Tikal. While Puleston and Calendar (1967) originally dated the earthworks at Tikal to the Late Preclassic period, Webster and colleagues (2004) have subsequently determined they were more than likely initially conceived of in the mid sixth century AD and amplified greatly over the course of the Late Classic period. Furthermore, Webster and colleagues believe the earthworks may not have been defensive fortifications, but some kind of political boundary marker. Despite this new evidence from Tikal, Preclassic epicenters at many sites mentioned above, as well as Cerros (Friedel 1978), Nohmul (Hammond 1985), and Seibal (Sabloff 1975), suffered a crippling population decline, and never fully recovered after the Terminal Preclassic period.

Another correlate of the Terminal Preclassic period is a change in burial practices associated with the internment of elite individuals. During the Terminal Preclassic period, elites began to have themselves buried near (and sometimes in) previously public monumental architecture. This practice is seen in the discovery of potential tombs of the first local kings at the sites of Tikal (Coe 1990; Laporte and Fialko 1995), Caracol (Chase and Chase 1999), Nohmul (Hammond 1984), Holmul (Merwin and Vaillant 1932), and an elite individual buried in a plaza tomb at Chan Chich (Houk 1998, 1999).

Finally, the Terminal Preclassic period also witnessed a change in iconography and potentially ideology as evidenced in monumental art and architecture. Frequently cited examples include a shift away from stucco masks molded into the shape of supernatural beings on the facades of public architecture and toward an emphasis on individual rulers and royal dynasties, also in the medium of stucco masks, as seen at Cerros, Belize (Freidel 1986b). While not all sites display the continuity of Cerros, there still remains a relatively widespread shift away from the large stucco masks of the Preclassic period toward other media, such as mural painting and

stone carving (although these mediums also existed, albeit in less quantity, during the Preclassic periods).

For the purpose of the present research, Terminal Preclassic refers to what Brady and colleagues (1998) distinguish as the second half of their Protoclassic time span, but slightly shorter than their original phase (AD 150 – 250). These dates are based upon ceramic evidence from the Holmul Region, Guatemala. In the Holmul region, the time span begins with the radiocarbon date associated with vessel SF# HOL.T.41.10.02.01 found in Burial 10 of Building B, Group II at Holmul. It returned a calibrated date of AD 120 – 230 (1 $\sigma$ ), AD 80-260 (2 $\sigma$ ) (see Estrada-Belli 2006c). The (1 $\sigma$ ) date range places the interment of the vessel somewhere around AD 150 – at the beginning of the second half of the Terminal Preclassic period. While there is no radiocarbon date for the end of the phase, I suggest the phase ends around AD 250 based on the presence of clear early facet Early Classic (Tzakol 1 Sphere) ceramic markers (e.g., Actuncan Orange Polychrome and Boleto Black-on-Orange types) associated in stratigraphically superior contexts to Terminal Preclassic material in Building B, Group II, Room 8 at Holmul, and also discovered in burial contexts at Hamontun and fill contexts at La Sufricaya and K'o. These markers date to approximately AD 250 within complexes at neighboring lowland Maya sites with firmly established ceramic sequences (Smith 1955).

In summary, the Terminal Preclassic period is as complex to identify and describe archaeologically as it was culture-historically. It is not nearly as materially consistent as the Preclassic and Classic periods because it is a time of localized political, economic, religious, and social change. These changes did not occur all at once or at every single site. Instead they occurred slowly and rather locally. Despite the lack of material cohesion, I believe it is useful to create a larger time-frame in which to discuss these localized changes, therefore I recognize the

Terminal Preclassic as a legitimate chronological marker in the Maya lowlands that demarcates these social, political, and economic changes. Specifically, in the context of this thesis, when I refer to the Terminal Preclassic period from this point forward I am referring to the second half of the ceramic period defined by Brady and colleagues (1998) as it pertains to the Holmul Region. Now that I have established a chronological definition of the Terminal Preclassic period, I can continue discussion of the potential function and meaning of orange slipped ceramics produced and used during the second half of that period, and how they relate to or reflect larger changes in socio-political organization leading up to the Classic period.

### **Cause for the Emergence of a New Terminal Preclassic Ceramic Economy**

Archaeological evidence shows that the Terminal Preclassic period was a time of great political turmoil. Correlates of political unrest include signs of warfare such as earthworks, moats, or palisade walls encircling ceremonial site cores at the sites of Becan (Webster 1976), El Mirador (Hansen 1990), El Tintal (Hansen et. al. 2006), Muralla de Leon (Rice and Rice 1981), and Cival (Estrada-Belli 2006b, 2004) all dating from AD 150 – 250. The geo-political landscape was also becoming increasingly regionalized during the close of the Terminal Preclassic period as evidenced in potential tombs of the first local kings at the sites of Tikal (Coe 1990; Laporte and Fialko 1995), Caracol (Chase and Chase 1999), Nohmul (Hammond 1984) and Holmul (Merwin and Vaillant 1932). The last and most significant evidence of potential political unrest was the collapse and complete abandonment of Late Preclassic period centers such as the massive ceremonial and administrative capitals of the Mirador Basin (Hansen 2001; Hansen et. al. 2006) such as El Mirador, Wakna, El Tintal, Nakbe, and La Florida, and the

northeastern lowlands such as Cival (Estrada-Belli 2006b, 2004), Cerros (Freidel 1978), Nohmul (Hammond 1985), and Seibal (Sabloff 1975).

The decline of multiple established Late Preclassic polities and their respective groups of political elites may have been hastened by the competition and increased communication between political elites in what Mann (1986) calls “interstitial spaces”, or those areas and inhabitants on the physical and figurative fringe of existing polities and political networks. This increased competition and communication between less established elites can be seen in the potential increase in inter-elite feasting events as evidenced in the increased number and types of feasting vessels, especially pitchers (e.g., “chocolate spouts”), found in burials and caches dating to the Terminal Preclassic period (Berry et. al. 2004; Houk 1998, 1999; Powis et. al. 2002; Pring 2000). While this form of vessel and chocolate consumption has roots spanning back to the Middle Preclassic period in Mesoamerica (Henderson and Joyce 2006; Joyce and Henderson 2007), it is found in greatest quantity at sites in the northeastern lowlands during the Terminal Preclassic period (Powis et. al. 2002). Archaeological (Joyce and Henderson 2007; LeCount 2001; Reents-Budet 1994, 2000, 2006; Rosenswig 2006), ethnohistoric (Tozzer 1941), and ethnographic (Bunzel 1952; McNeil 2006; Redfield and Rojas 1934; Vogt 1993; Wisdom 1940) evidence have shown how important feasting events are to the maintenance of group and individual identity and authority of the Classic, Postclassic, and modern Maya. As it was for the Classic period, Postclassic period and contemporary Maya, feasting would have been a means for groups and individuals to perform, reaffirm, or perhaps even redefine identities among the Preclassic Maya as well. Among elites, it may have served as a means both to communicate and compete using special foods and vessels created for this specific purpose.

In the present research, I argue that these are the roots, or the reason, for the creation of orange slipped pottery during the Terminal Preclassic period. These vessels served as containers for special purpose foods used in elite identity and authority confirming feasts. The value in these vessels was inextricably linked to their association with these feasting events, the food they contained, the messages they conveyed on their surfaces and through their form, and perhaps even the specific groups or individuals who created and owned them, ultimately transforming these pots into inalienable possessions (Weiner 1985, 1992) that were taken out of circulation and permanently stored in burials or caches. The key here is that these vessels were valuable within a certain context (i.e., ritual feasting) because they were used to hold sacred foods (chocolate and corn products). They were painted polychrome to both show this value and convey messages related to individual or group identities. In essence, these vessels were not valuable because they were slipped orange and painted in polychrome; they were slipped orange and painted in polychrome because they were valuable. Of course, this value may have eventually transcended the specific social context of feasting allowing these vessels to become somewhat fetishized, and in some cases mimicking restricted distribution patterns resembling that of prestige goods. However, in this research the value of these vessels is based upon the social context in which they were potentially intended and used most frequently – the consuming of sacred food at important ritual occasions.

### **Research Domain: The Holmul Region, Guatemala**

The Holmul Region is located in the northeastern Department of Peten near the present day Belizean border (Figure 1.1). The actual site of Holmul was initially investigated in 1911 by Raymond Merwin of Harvard University (Merwin and Vaillant 1932) (Figure 1.4). In 2000

Francisco Estrada-Belli, then of Boston University and later of Vanderbilt University, returned to the site and began a long-term regional scale research project of the Holmul area (Estrada-Belli 2002). In a 7 km radius from the site of Holmul are approximately seven major archaeological sites: two large ceremonial and administrative centers, Holmul and Cival (Figure 1.6), separated by approximately seven kilometers and six minor centers (T'ot, K'o [Figure 1.7], Hahakab, Hamontun, La Sufricaya [Figure 1.5], and La Riverona) varying in size by number of temples and plaza groups (Figure 1.3).

Due to the limited number of monuments in the Holmul Region, few historical data are available. The earliest inscribed monument in the Holmul Region, Stela 2, comes from the site of Cival and has been dated stylistically to the Preclassic period (Estrada-Belli 2006b; Estrada-Belli, Grube, Wolf, Gardella, and Guerra-Librero 2003). At La Sufricaya several inscribed monuments and painted murals were found (all from Structure 1) to date to the Early Classic period (Estrada-Belli 2002; Estrada-Belli and Foley 2004; Grube 2003; Tokovinine 2006; Tomasic and Estrada-Belli 2003). In separate instances these texts link the site of La Sufricaya with the nearby site of Tikal as well as the "Teotihuacan Entrada" (Stuart 2000) associated with the AD 378 date at Tikal which spawned use of Teotihuacan-style iconography at several Peten sites. Tokovinine (2006) was also able to piece together fragments of the Late and Terminal Classic political history of the Holmul Region from portable artifacts discovered in Merwin and Vaillant's 1911 excavations, Holmul Project excavations sponsored by Boston University in 2000 and Vanderbilt University in 2001-2005, and various museum and private collections. The record is extremely scarce, but Tokovinine (2006) identifies potential links between the site of Naranjo and Holmul in the Late and Terminal Classic periods. He also identifies the presence of

a local title, *Chak-Tok-Wayab*, extending back to the Early Classic period at Holmul and forward through time to the Terminal Classic.

At the time I began my research current data suggested to me that the Holmul Region was an excellent area to study the emergence of the Terminal Preclassic orange ceramic economy because of 1) the potentially large quantity of Terminal Preclassic ceramic material available for analysis, 2) the potential quality of Terminal Preclassic contexts, and 3) archaeological evidence of regional political unrest during the Terminal Preclassic period. Previous (Merwin and Vaillant 1932) and recent (Estrada-Belli 2002, 2004) excavations at sites in the area have shown evidence of a potential abundance of Terminal Preclassic period ceramic material. Furthermore, the archaeological contexts where Terminal Preclassic ceramics have been discovered were well-stratified and usually sealed. Contexts include burial vaults in Building B, Group II at Holmul (Merwin and Vaillant 1932), burial vaults at Hamontun (Estrada-Belli 2000), and potentially redeposited sealed midden deposits in construction fill of monumental architecture at the site of Holmul (Estrada-Belli 2003, 2006c). Finally, there is evidence of political unrest in the Holmul Region dating to the Terminal Preclassic period. The Preclassic period capital of Cival contains a hastily built wall encircling the ceremonial site core which has been dated to the Terminal Preclassic period (Estrada-Belli 2004). The epicenter of Cival is abandoned shortly after the construction of the wall and monumental construction ceases. Only a small number of residential buildings show signs of occupation post-dating the Terminal Preclassic period. Meanwhile, it is during this time that orange gloss ware is placed in Burial Vault 9 of Building B, Group II at Holmul. The site of Holmul continued to grow after the Terminal Preclassic period and shows signs of an apogee during the Late Classic period.

In 2005 and 2006 I performed a pilot study essential for the success of the current research on the ceramics of the Holmul Region (Callaghan 2006). I refined the regional chronology which was originally established by Raymond Merwin and George Vaillant in the early nineteenth hundreds and later revised by Laura Kosakowsky (2001). As concerns the present study, one of my goals was to identify sealed contexts that specifically dated to the Terminal Preclassic period. I would then isolate chronologically sensitive ceramic types and vessel forms, other than orange gloss ware, to identify accurately archaeological contexts of the Terminal Preclassic period in other areas of the region. This approach has been used on Preclassic material by Culbert at Tikal (n.d.), Demarest at El Mirador (1984), Kosakowsky at Cuello (1987), and Angelini at K'axob (1998). Unfortunately, my preliminary analysis did not produce the results I expected. Despite the sealed contexts dating to the Terminal Preclassic period discovered by Merwin in 1911 (Merwin and Vaillant 1932) and an additional Terminal Preclassic period burial discovered by Neivens (2004) in Building B, Group II at Holmul, no other sealed contexts definitively dating to the Terminal Preclassic period were identified in the existing ceramic sample. Furthermore, the orange slipped pottery of the Terminal Preclassic period was found to be extremely rare both in the current regional sample and, surprisingly, the new site sample from Holmul.

As I explain later in the theoretical and methodological chapters, the limitations of the present sample prohibited me from performing a traditional study of ceramic craft specialization for the Terminal Preclassic period in the Holmul Region. Instead, I chose to focus on identifying and quantifying production technologies of chronologically isolated type-forms of monochrome red, monochrome orange, and painted orange traditions of the Late Preclassic, Terminal Preclassic, and early facet Early Classic periods. Using these data, I tested the hypothesis that

the first orange slipped vessels were produced using restricted technologies and circulated in a prestige goods system.

### **Outline of Methodology**

The units of study are whole vessels and diagnostic rim sherds from Sierra Red, Aguila Orange, Ixcanrio Orange Polychrome, Boleto Black-on-Orange, and Actuncan Orange Polychrome ceramics. Recently, this method has been used with great success at the sites of Copan Honduras (Bill 1997), the Petexbatun Region, Guatemala (Foias 1996), Piedras Negras, Guatemala (Muñoz 2006) and Xunantunich, Belize (LeCount 1996). The sample consists of rim sherds from the medium sized (25-30cm rim diameter) flaring bowl shape-class of Sierra Red and Aguila Orange types, and medium sized (25 – 30cm rim diameter) composite bowl shape-class of Sierra Red, Aguila Orange, Ixcanrio Orange Polychrome, Boleto Black-on-Orange, and Actuncan Orange Polychrome ceramics.

Rim sherds of Sierra, Aguila, Ixcanrio, Boleto, and Actuncan ceramics were selected from five types of contexts at the sites of Holmul, Cival, La Sufricaya, K'o, and Hamontun dating to the Late Preclassic through early facet Early Classic periods. The five types of contexts include: 1) burials, 2) caches, 3) primary deposition middens, 4) redeposited middens in construction fill and 5) mixed construction fill.

In accordance with my hypothesis stated above, in order for orange slipped pottery to have been produced and circulated within a prestige goods system, it must have been produced by a small group of artisans who possessed knowledge of restricted ceramic technologies (e.g., paste recipes, firing technology, and surface finish), and possibly controlled by elites. In contrast, pre-existing, contemporaneous, and seemingly unlimited in distribution, red ceramics of

the Sierra Red group would have been produced by a potentially larger group of production units using unrestricted technologies. Beginning with aspects of type-variety classification and continuing with modal analysis, diversity studies, and petrography I examined the difference between paste, firing, forming, and surface finish between the red and orange slipped ceramics. My study identified four variables statistically related to paste, firing, and surface finish technologies associated with the production of Aguila, Ixcanrio, Boleto, and Actuncan flaring and composite bowl type-forms. However, these technologies were not restricted to orange ceramics alone. My analysis also revealed signs of continuity in production techniques between red and orange ceramics. Furthermore, diversity studies revealed greater amounts of variation in paste modes of polychrome material than any other type-form in the study, including Sierra Red ceramics. Therefore, it appears that the production and distribution of orange slipped ceramics in the Holmul Region during the Terminal Preclassic period does not fit the traditional patterns of a prestige goods system and may be better understood within the contexts of ritual economy.

### **Outline of the Current Work**

The following chapter contextualizes the current study of production technologies within the theoretical framework of ritual economy and also provides a discussion of feasting and its importance in the maintenance of ancient Maya identity formation and political power. Chapter three discusses my methodology including the definition, operationalization, and potential critiques of methods used in the current study. In chapter four I present a revised ceramic sequence for the Holmul Region as well as a reinterpretation of Merwin and Vaillant's original classification of vessels found in tombs from Building B, Group II; Building F, Group I; and Ruin X at the site of Holmul. In chapter five, I present the results of a type-variety classification

of pottery excavated in the 2000 Boston University sponsored field season and the 2001-2005 seasons of the Vanderbilt Holmul Archaeological Project, both projects under the direction of Dr. Francisco Estrada-Belli. Chapter six provides the results of modal and diversity analyses of monochrome red, monochrome orange, and painted orange ceramics. In chapter seven I discuss the results of petrographic analysis of these same samples of ceramics. Chapter eight discusses the results of Instrumental Neutron Activation Analysis performed by researchers at the Archaeometry Lab at the University of Missouri. Finally, chapter nine provides a general summary and conclusions of the present research.

### **Significance of the Current Work**

The results of this research cause us to rethink how we conceive of the integration of ancient Maya ceramic economy and political organization. Orange slip ceramics of the Terminal Preclassic period are here considered the strategic materialization of changes in ritual performance related to the crafting of identity and transmission of ideologies used by elites in exclusive feasting events during a turbulent political period. The research shows that production and distribution patterns defy traditional patterns of prestige goods systems and require us to apply a different theoretical framework to understand them. Ritual economy with its emphasis on how ritual influences the economy and its greater focus on the reproduction of social structure as opposed to individual or group gain helps us understand these patterns better. It is through this framework that orange slipped ceramics never become divorced from their social context – isolated simply as “prestige goods” – but are studied in reference to their use in sacred and secular elite feasting events. These vessels were not merely social currency used by elites to maintain a historically specific mode of political organization. They are better framed as

material objects with individual biographies that result from unique combinations of economic, political, religious, and social choices and/or constraints deployed by actors within specific contexts, ultimately aimed at reaffirming identity, and only subsequently garnering prestige.

One of the other objectives of this study was to make a preliminary contribution to the culture-history of the region by identifying characteristics of the Late Preclassic, Terminal Preclassic, and early facet Early Classic ceramic economies of the Holmul Region. In order to undertake this study it was necessary to revise the ceramic chronology for the Holmul Region and accompanying type-variety classification. Consequently, this analysis is responsible for the creation of the first monograph length piece of work focusing on the definition and description of the ceramic inventory of the previously little known Holmul Region, Guatemala as well as a preliminary characterization of the organization of ceramic production from a largely populated Terminal Preclassic period region.

Finally, and as I will explain in chapter 3, this study makes a methodological contribution by proposing a valuable three-tiered analysis of paste composition. Through the use of stereo microscope analysis, petrographic analysis, and Instrumental Neutron Activation Analysis I have designed a supplemental approach to the study of paste composition aimed at gaining a better understanding of the material and potentially social aspects of ceramic paste preparation and the larger ceramic production process.



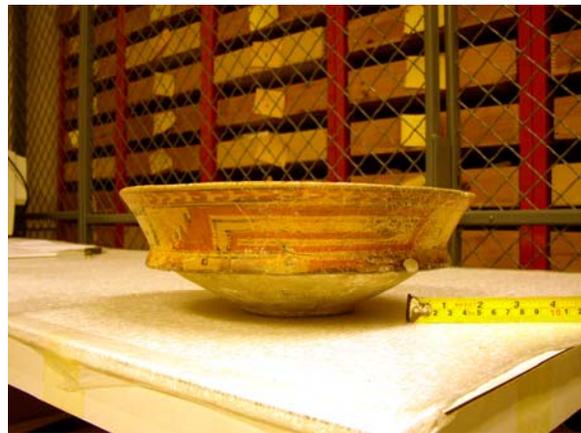
Figure 1.1 Map of Mesoamerica showing location of Holmul and other sites referenced in this work



a



b



c

Figure 1.2 Comparison of Late Preclassic, Terminal Preclassic, and Early Classic serving ware (a, Late Preclassic period Sierra Red: Sierra Variety bowl; b, Terminal Preclassic period Ixcantio Orange Polychrome bowl; c, Early Classic period Caldero Buff Polychrome bowl) (photos by author)

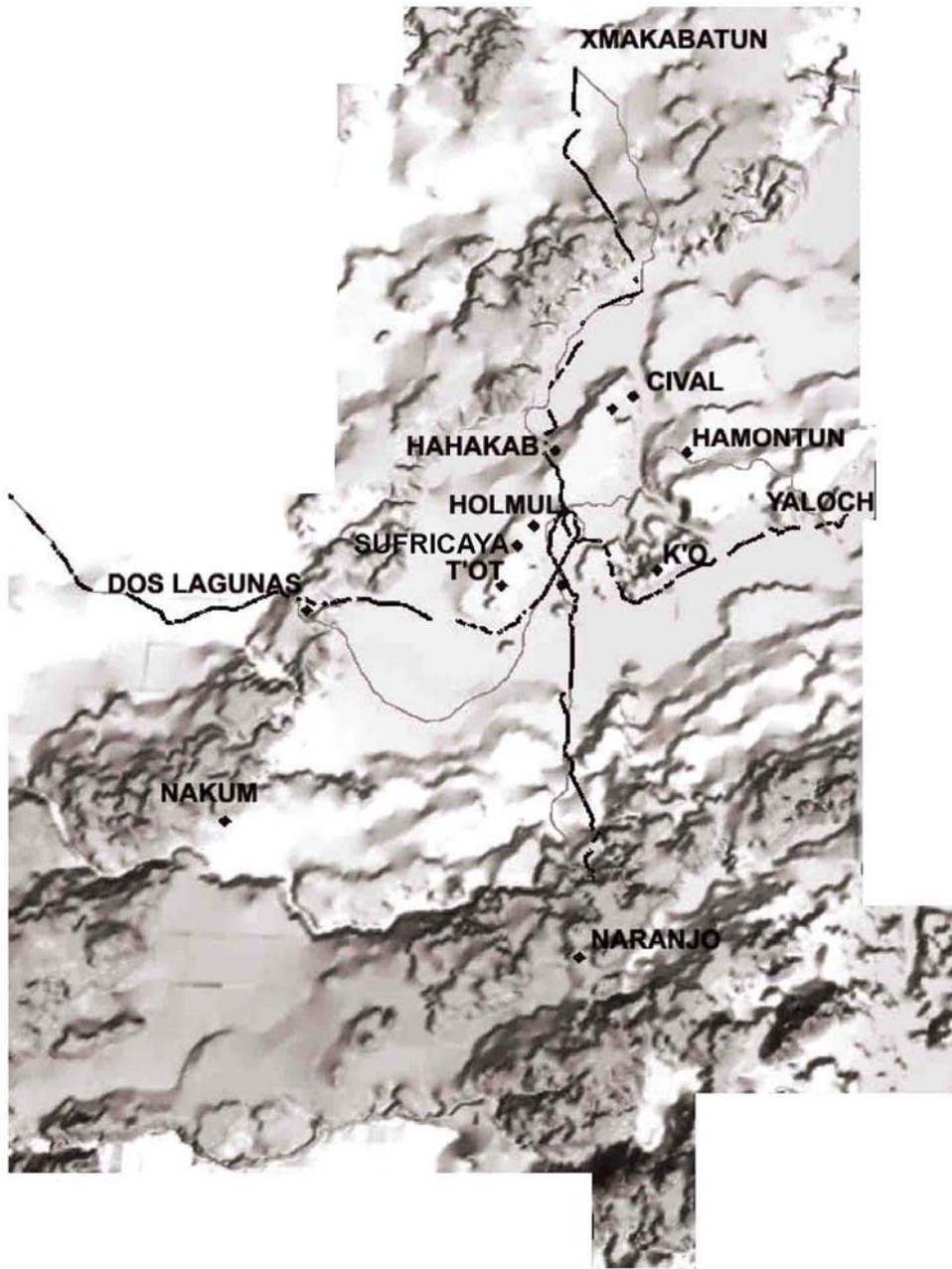


Figure 1.3 Map of the Holmul Region showing major archaeological sites (map by Francisco Estrada-Belli)

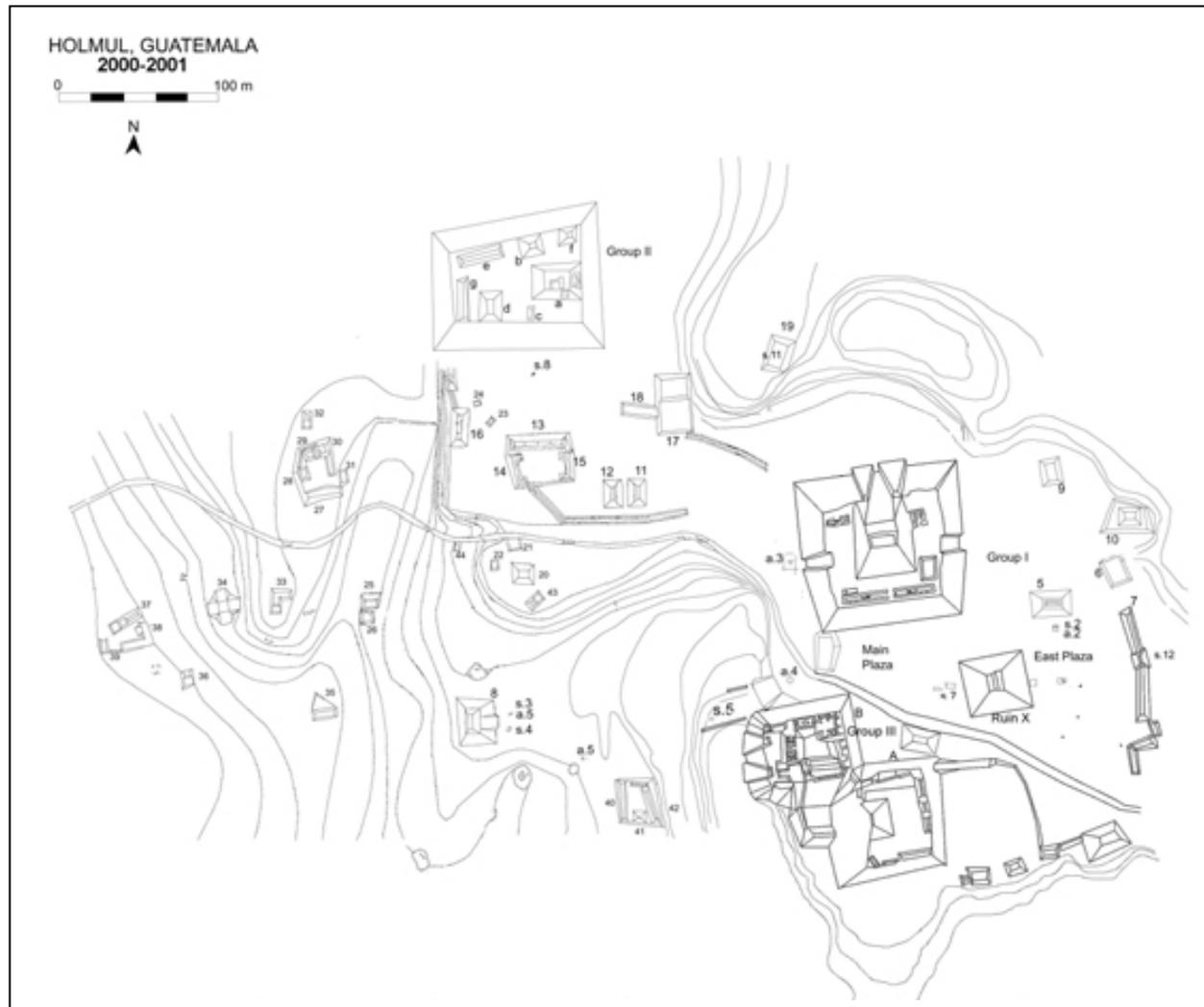


Figure 1.4 Map of Holmul epicenter (map by Francisco Estrada-Belli, Marc Wolf, and Jason Gonzalez)

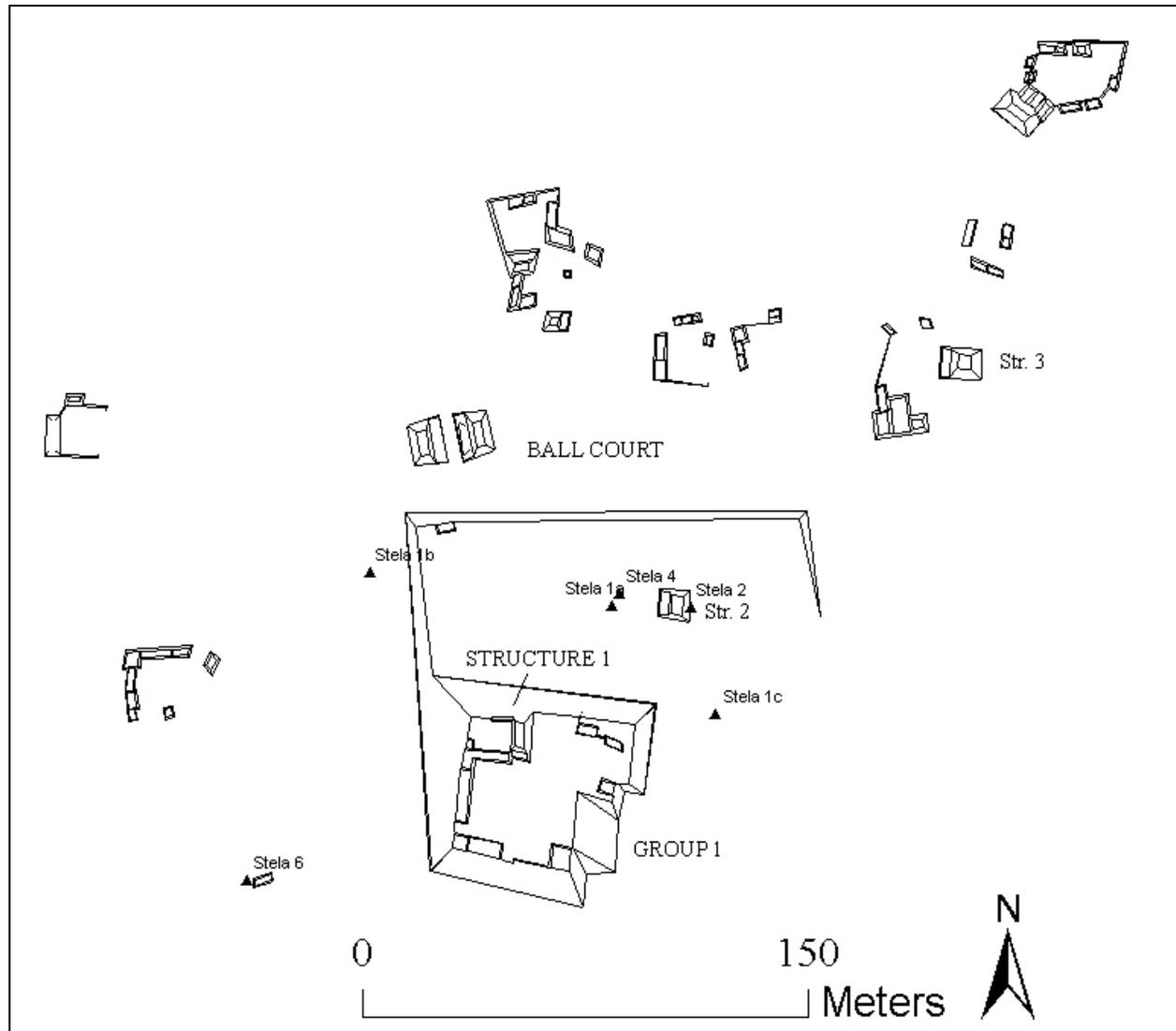


Figure 1.5 Map of La Sufricaya epicenter (map by Francisco Estrada-Belli)

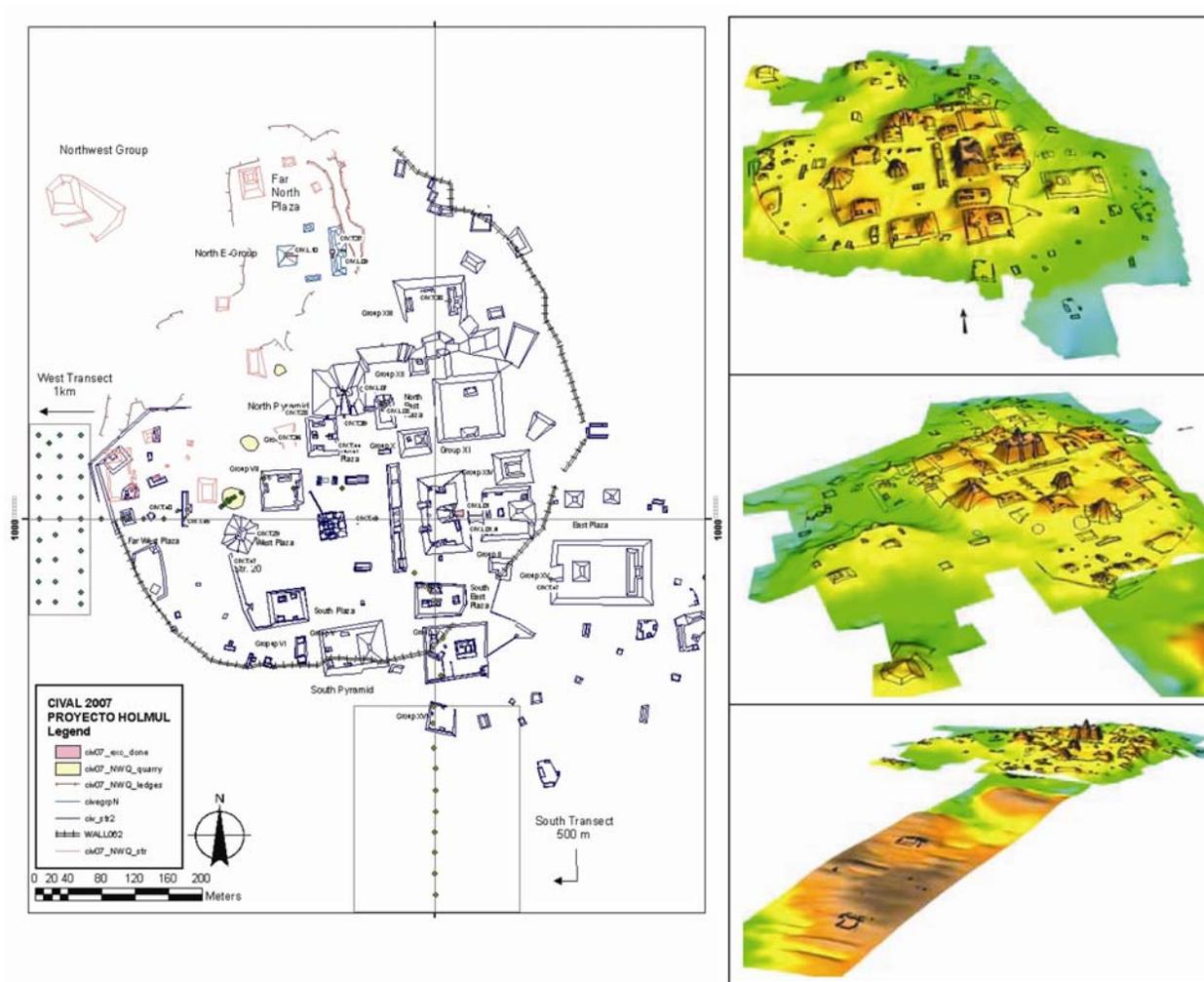


Figure 1.6 Map of Cival epigraphic center (map by Francisco Estrada-Belli, from Estrada-Belli 2007:Figure 20)

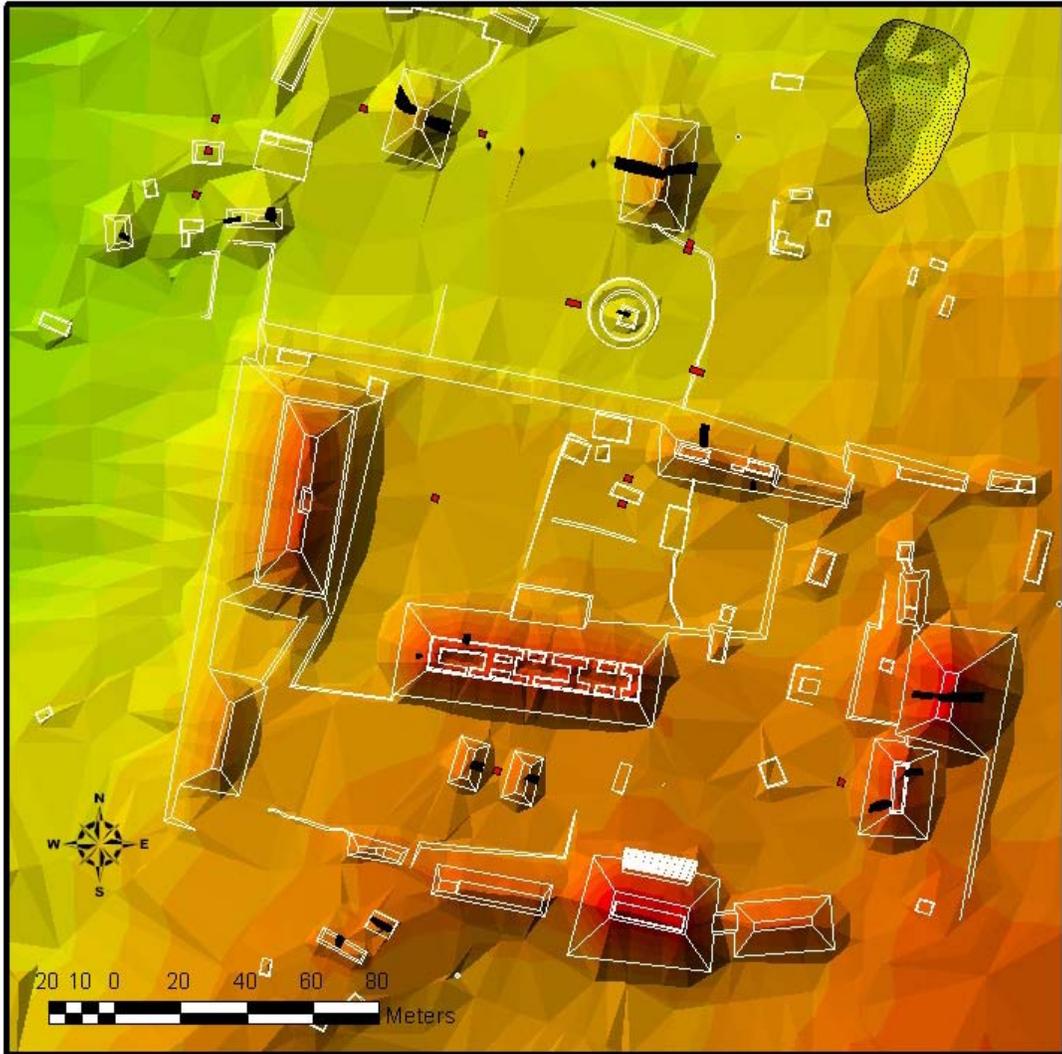


Figure 1.7 Map of K'o epicenter (map by John Tomasic)

## CHAPTER II

### THEORETICAL AND CULTURE-HISTORICAL PERSPECTIVES

#### Introduction

The purpose of this dissertation was to test the hypothesis that Terminal Preclassic period orange slipped pottery was produced and circulated in a prestige goods system. The concept of prestige goods production and exchange is encompassed under the larger theoretical framework of archaeological political economy. However, after completion of the analysis the data failed to strongly support the hypothesis. Furthermore, the theoretical framework of political economy failed to fully explain the complicated production patterns defined by the study. The failure of the prestige goods concept and political economy in the present research exposed these models to further scrutiny, leading me in the direction that other scholars have recently taken, away from political economy toward more socially centered approaches such as the framework of ritual economy. In this chapter I will define the concept of political economy and prestige goods systems as well as provide some examples of how these models have been applied to the archaeological record in the past. I will then critique political economy and prestige goods theory based on their theoretical shortcomings, saving the particular data oriented problems that arose when I tried to apply these concepts to the current study for chapters 6-9. The remainder of the chapter will focus on the definition of ritual economy and how I apply it to the study of orange slipped ceramics of the Terminal Preclassic period.

## **A Review of Political Economy and Prestige Goods Theory**

Archaeological approaches to political economy are broad and each study employs somewhat of a unique, albeit relatively consistent, definition of the theoretical framework. A number of recent reviews of the application of political economy to the archaeological record are helpful in tracing the common threads between the myriad different approaches used by archaeologists today (Cobb 1993; Preucel and Hodder 1996; Wells 2006), and I will employ some definitions and heuristic devices from those syntheses in the present discussion. Wells (2006:3) perhaps provides the best definition for recent applications of political economy in archaeology stating, “political economy is a broad theoretical framework that attempts to account for the processes by which surplus goods and labor are channeled through social systems to create material wealth and finance political institutions”. Furthermore, within Mesoamerican archaeology, “political economy is often invoked to explain the role of elites in expropriating resources (material and nonmaterial) from the broader population through manipulation of the social and demographic environments” (Wells 2006:3). It is fairly obvious from these definitions of political economy, and the case studies discussed below, that this theoretical framework rests on what O’Donovan (2002) defines as an “individualist” perspective of power. Social power here is conceived of almost as an entity to be possessed in a zero-sum game. Individuals and institutions can have “more” or “less” power than other individuals or institutions, and those with more have the ability to alter social situations and the lives of others for their own betterment. This definition of power rests upon Weber’s (1947:152) original assertion that, “power is the probability that one actor within a social relationship will be in the position to carry out his own will despite resistance, regardless of the basis on which this probability rests”. The concept of agency is represented within political economy, but as Wells

(2006:14) points out, “the agents in political economy approaches are intrinsically competitive and strive toward efficiency: ‘since more is better (more resources = more power), the political economy is inherently growth oriented’ [Earle, 2002, p. 9]. Thus, political economy approaches...allow for the concept of agency, but only to the point of examining how people manipulate economic processes for personal gain”.

Preucel and Hodder (1996:99) suggest that approaches to understanding the archaeological record using the theoretical framework of political economy have traditionally been divided into three areas of study: namely, 1) approaches focusing on pre-capitalist modes of production and their historical dimensions, 2) approaches focusing on the maintenance of political power and how prehistoric regimes were financed, and 3) approaches studying commodity production and the notion of value. While I agree with Preucel and Hodder (1996) on the first two areas, I believe the third area of study is more recently influenced by agency centered theory where value is ultimately tied to social context and how the object may be used in specific instances to recapitulate social structure with less of an emphasis on personal gain or optimization.

Preucel and Hodder (1996:99) describe three approaches to the study of pre-capitalist modes of production. The first group of studies, and most salient to this research, involves the control of a prestige goods system by elites. Archaeological prestige goods models (Frankenstein and Rowlands 1978; Freidman and Rowlands 1977) were founded on the core-periphery dynamics of Immanuel Wallerstein’s (1974) World Systems Theory, and the research of late twentieth century anthropologists focusing on how individuals or groups gain status through the manipulation of external exchange (Dupre 1972; Dupre and Rey 1968; Ekholm 1972; Meillasoux 1960; Sahlins 1972; Strathern 1971). The main tenets of the theory hold that

local leaders and their descent groups compete among one another for social influence by reaching outside of their locality to secure exchange relations with other groups. The goods exchanged in these relations are not items that can be secured or produced locally – rather, they are rare items that become forms of wealth which play important roles in life-affirming rituals and social obligations. Control and manipulation of the exchange of these important, socially charged goods, brings leaders and their descent groups higher status and greater influence among competing descent groups. Increased competition between groups brings about an increase in the quantity of circulating prestige items and in some cases standardization. Peripheral areas are forced into alliances with core territories as they too become culturally reliant on socially charged prestige items. Societies in which social power relies on the control of prestige goods networks are inherently unstable, as monopolies on external trade relations are difficult to secure and subject to rapid and unexpected change. Subsequent applications of the prestige goods model have allowed archaeologists to gain insights into social evolution and political economy in Mesoamerica and South America (see for example Blanton et. al. 1996; Clark and Blake 1994; Earle 1987).

Another group of studies invokes the tenets of Peer Polity Interaction (Renfrew 1986). In these models, competition, “symbolic entrainment” (the elite co-opting of symbols and customs from neighboring areas), and trade among elites in closely bound areas causes increased and continuous political and economic intensification. Renfrew shows how this process works in early Greek city-states. Using warfare as an example of peer-polity interaction, Freidel (1986a) applied the model to Classic period Maya polities. However, a decade earlier Price and colleagues (1977) presented a similar application in their “cluster-interaction” model for the rise of the state in Mesoamerica. The most important contribution of these models when they first

appeared was that they used archaeological data to show that there is hardly ever evidence for unidirectional diffusion among neighboring polities and many sites are constantly communicating with each other through varied cycles and means of cultural interaction (e.g., warfare, symbol emulation, or even prestige goods systems).

World systems theory with its focus on core-periphery dynamics is another approach to the study of prehistoric modes of production. This model is based upon the perceived post-war impact of capitalism on “third world” nations as set forth by Wallerstein (1974). In this model a politically, economically, and culturally sophisticated core extracts and distributes resources to less sophisticated and resource deficient neighboring peripheries. The relationship makes these peripheral areas dependent on the core for economic and cultural products, ultimately placing peripheral areas in inferior political and socio-economic positions to core areas. The most influential application of this concept in Mesoamerica was conducted by Rathje (1971, 1972, 1973; Rathje and Gregory 1978) where he hypothesized political elites in core areas of the Classic period rose to power through the control of distribution of utilitarian items such as groundstone, obsidian, and salt, to resource poor peripheral zones. While Rathje’s original application has long since been refuted by archaeological evidence (Hammond 1974b:329; Nations and Nigh 1980; Price et. al. 1977; Puleston 1976; Sanders 1973), scholars continue to apply modified world systems models (e.g., recognizing the existence of multiple cores and peripheries as well as diminishing the role of peripheral dependency) to the archaeology of Mesoamerica producing some valuable insights (see for example Smith and Berdan 2003; Urban and Schortman 1999).

Finally, another area of studies focusing on characterizing the prehistoric mode of production involves what Wells (2006:8) classifies as debt models. In these models individual

aggrandizers or groups utilize prestige goods systems and competitive displays of giving to create debt among followers. Wells (2006:8) explains, “often, the target of elite interests is prestige goods, which, as Mauss (1990 [1925]) demonstrated, have social meaning such that their exchange materializes social relations. These items are displayed and distributed in the context of elaborate feasts and other public rituals that provide ostentatious showcases for pomp and pageantry, demonstrating one’s social status and prestige (see Gosden, 1989).” One of the most influential debt models recently applied to the archaeology of Mesoamerica was conceptualized by Clark and Blake (1994) at the site of Paso de la Amada, Mexico. Here, they believe archaeological evidence supports the theory for elite aggrandizement through feasting which created social bonds of obligation and debt among Barra phase inhabitants of the site. Noted above, while this model and its specific application has been modified to take into account the agency of individuals and groups, as well as the specific social context in which the material objects being studied were previously used and gained their value, what makes this more of a political economy approach is the emphasis on personal gain or optimization and how social power rests in the hands of a few aggrandizing elites.

The second general trend in the application of political economy to the archaeological record is the study of how political elites finance their respective regimes. One of the most influential studies of state finance through political economy was conducted by D’Altroy (D’Altroy and Earle 1985) and Earle (1987). D’Altroy and Earle (1985) define the terms of staple and wealth finance in their study of Inka political economy. Staple finance occurs when the state receives agricultural goods through taxation and/or tribute and later redistributes them to the populace. Wealth finance occurs when staple products are no longer given as payment, but some kind of good imbued with social value is used instead. These items may have social

value and prestige only, or retain some kind of exchange value and are able to be traded for staple products in a market (Brumfiel 1980). Wealth economies are often more efficient forms of payment for political elites in that small symbolically imbued goods are often easier to transport over large distances. Additionally, their production can be controlled within state run facilities. Earle (1987) applies the theory to contact-period Hawaiian chiefdoms and the Inka. In Hawaii, prestigious meticulously constructed cloaks of rare materials were used as wealth in payment to individuals for services to the state, whereas textiles, special ceramics, and metal supplied the need for wealth in the Inka Empire.

In summary, what the preceding approaches share is the idea that political elites will harness economic and cultural resources in an effort to gain or maintain social control and authority. One of the advantages of this approach is its attention to the big picture, or its ability to trace macro-scale patterns in the economies of ancient cultures. Another advantage is how it allows for multi-directional interaction among and between groups of elites.

However, many archaeologists have begun to deconstruct political economy, and more specifically, prestige goods models, questioning their underlying assumptions and how well they really apply to specific datasets (Cobb 1993; Kohl 1987; Mills 2004; Robb 1999; Saitta 1999). Recent critiques direct us toward the following problems. Prestige goods models often over-emphasize World Systems or dependency theory, which stress core-periphery dynamics. They similarly inflate the role of elites in prestige goods production, exchange, and consumption. They assume that external relations are sought for primarily conflictive rather than integrationist purposes. They create what some have called a tautology in that, “prestige is what is gained through use of prestigious goods, and prestigious goods are those whose use gives one prestige” (Robb 1999:6; see also Wells 2006:21; Cobb 1993:64–65; Peregrine, 1992:69–70). Prestige

goods models can also lack a focus on the creation and notions of changing value of the prestige goods themselves. And finally, they may lack emphasis on the context of exchange for prestige goods or the social situations in which these goods are used.

As I will demonstrate in chapters 6-8, the data reflect a number of these problems: namely, 1) inflation or false assumptions about the role of elites in potential orange slipped pottery production, 2) the assumption that external relations are sought only for conflictive purposes, 3) a lack of acknowledgement for the changing value of the vessels throughout their use-life, and finally 4) a lack of emphasis or placement of importance on the social context in which these vessels were exchanged. These theoretical and archaeological shortcomings led me toward a more socially informed model of production and exchange, ritual economy.

### **Theoretical Framework of Ritual Economy**

Ritual economy builds upon political economy as well as agency-centered theories to create a theoretical framework in which ritual drives the economic system. Like political economy, ritual economy does not encompass a fixed set of definitions or methodology. Wells (2006:20) states that ritual economy is best viewed, “as a burgeoning theoretical and explanatory framework for generating research questions and corresponding test implications for archaeological study”. At its heart is a theory of social power which combines aspects of the individualist and situational perspectives (O’Donovan 2002) giving somewhat equal emphasis to the will of actors and groups, as well as the restrictions/opportunities afforded them by social structure. Wells (2006:22) explains that in ritual economy social power is seen,

not as a property or attribute of a person that allows one to impose one’s will on others but more broadly as the management of meanings and the shaping of interpretations...Individuals and groups, differently positioned in social relations and processes of domination, use economic resources available to them to try to

fix their interpretations of meanings, to prevent others' interpretations from being heard, and to garner the material outcome of these efforts.

The principal means and medium by which actors engage in the materialization and legitimization of specific meanings is through ritual action. Within ritual economy, "ritual" does not singly refer to religious ritual, but as Rappaport (1999:24) states, "the performance of more or less invariant sequences of formal acts and utterances not entirely encoded by the performers". Ritualized action here is similar to practice, in that it encompasses actions within the sacred and secular realms of society that ultimately serve to reproduce or alter existing interpretations of symbols. However, the term "ritual" is devoid of the baggage of "prestige" or "capital acquisition" that follows closely with Bourdieuan concepts of practice. Here also performance, whether on a large or small scale, becomes a key component in the creation, transmission, and competition of symbolic interpretation. It is both the source for formation of cultural meaning and the site where those meanings, encoded in material symbols, is deployed and often contested.

Within ritual economy, orange slipped pottery of the Terminal Preclassic period is considered a "social valuable" (Helms 1993). As Wells (2006:21) discusses, this distinction shifts, "the emphasis from hierarchical relations of prestige structures to consideration of the diverse ways in which goods condense and encode social principles, cultural or economic values, and sacred tenets". Monochrome orange and painted orange vessels of the Terminal Preclassic period did more than enhance the prestige of their owners. They played myriad different roles in the culture of the time from the most simple and tangible function as food service containers at important events, to serving as symbols of identity and authority, to representing the physical embodiment of actual individuals or groups eventually becoming inalienable possessions themselves. All of these functions and different levels of meaning and value would eventually

contribute to the prestigious status of these types of ceramics and their owners. Furthermore, these functions and values were predicated closely upon the specific social context for which these vessels were produced, namely elite “diacritical” (Dietler 2001; LeCount 2001) feasting events.

To summarize, motivation of actors in ritual economy is not based on economic maximization as it is in political economy, nor is it based upon a desire for “cultural” optimization as in the Bourdieuan (1984) notion of cultural, social, and symbolic capital. Instead, motivation is existential. Within the framework of ritual economy individuals are driven to act out of a desire to know – to know where one stands in society, and to know where others stand in relation to oneself. Material objects and economic resources are deployed by actors with this motivation in mind, not only to serve basic physical needs, but as carriers of symbols or as symbols themselves used to mediate relations with those around them, thereby reproducing or revising the existing structure. But it is not the type or quantity of symbols that aid actors in determining who they are and where they stand in society, but how these symbols are interpreted. Therefore, it is ultimately through the act of ritual and performance that actors or groups of actors are able to establish, promote, or restrict interpretation of the symbols they and others have made. In relation to this idea Wells (2006:22) states, “individuals can derive a significant degree of power and authority by organizing and managing ritual situations or “social dramas” in which symbols critical to legitimizing authority (and their material correlates) are manipulated in public settings. Thus, creating and expressing social power through ceremonialism in the context of controlling sacred knowledge, as well as the organization of rituals that materialize it, characterizes one pathway to power for cultural agents.” As Wells notes above, actors not only serve to legitimate their position or authority through controlling

and conducting ritual, but they can actually derive authority or social standing from it. The basis of ancient Maya political authority is best understood in these terms, as is the ways in which ancient Maya political actors utilized aspects of their prehistoric economy.

### **The Ancient Maya Ritual Economy**

Recent studies have shown how important ritual and performance were to the ancient Maya for maintaining political authority as well as establishing, reaffirming, or contesting group and individual identity for elites and non-elites alike (Demarest 1992; Fox and Cook 1996; Freidel 1992; Hammond 1999; Harrison-Buck 2004; Hill and Clark 2001; Inomata 2001, 2006; Joyce 1996; Lesure and Blake 2002; Masson 1999; McAnany 1995; Pohl 2003; Sharer and Golden 2003; Stuart 1998; Taube 1998). If ritual and performance played such a significant role in establishing and defeating political structures and identities, it also stands to reason that it played a significant role in the structure of ancient Maya economy. What is important to keep in mind when addressing ritual and performance as a means to materialize meanings and influence interpretations, is that there was no one dominant interpretation, group of meanings, or ideology held and materialized by all Maya elites or non-elites. Lohse (2007) warns us to be wary of approaching the study of ancient Maya ideology and ritual through the lens of one “Dominant Ideology Thesis”. Instead, we must study ancient Maya ritual and performance as the materialization of many competing ideologies, meanings, and interpretations with some common threads shared between them. Those being frequent practices of ancestor worship and reference to mythological stories contained in the *Popul Vuh* (McAnany 1995; Tedlock 1996). How, why, and who utilized these common threads was in no way standardized and varied from site to site. For example, while it was common for divine kingship or polity-custodianship to pass from

father to son (Martin and Grube 2000), in extenuating circumstances women took hold of positions of power, such as the Late Classic period figure of Lady Six Sky from Naranjo (ibid). Similarly, in the absence of a divine male predecessor, men might trace divine lineage from their mother, as in the famous example of Lord Pacal at Palenque (ibid). Rulers could invoke a number of symbols to legitimate kingly authority varying from local to foreign, as in the case of Tikal and Copan at the opening of the Early Classic period (ibid, Stuart 2000). Finally, the system of divine kingship may have been altered altogether and supplemented by a council of lineage heads such as that found in the *multepal* government of Late to Terminal Classic period Copan (Fash 1991; Martin and Grube 2000) and Chichen Itza (Lincoln 1986; Sharer and Traxler 2006:581).

This variation in materialization of ideologies, making of meanings, or shaping of interpretations is reflected in how the ancient Maya utilized their economic resources on a site to site basis and often according to economic resources. There was no one model of ancient Maya production, distribution, and exchange of material resources. Similarly, it is not helpful to discuss the structure of ancient Maya economy, much less political structure, using bipolar definitions of “centralized”, “decentralized” (see Chase and Chase 1996; Fox and Cook 1996), “controlled” or “uncontrolled”. The past thirty years of economic studies suggests myriad ways in which elites and non-elites exploited and employed their natural resources varying by site and material. Researchers have argued that some resources such as water or agricultural land may have been relatively tightly managed by elites at certain sites (Adams 1975, 1981; Chase and Chase 1987; Harrison 1990; Harrison and Turner 1978; Matheny 1987; Matheny et al. 1985; Scarborough 1993; Turner 1974) while others see management of agricultural land, specifically through terracing, as practiced on a much smaller scale (Turner 1983) and also not necessarily

dependent on elite control (Davis-Salazar 2003). Utilitarian commodities such as high quality chert may have been accessible by all levels of the population at some sites (Kovacevich 2006), while at others they were so rare as to become symbolic fetishized objects deserving of ritual caching (Hruby 2007). A similar case occurs in the importation, production, and distribution of obsidian. While scholars see evidence for the control of production and distribution at some sites such as Copan, Honduras (Aoyama 1996, 2007), others see relatively no control such as at the site of Cancuen, Guatemala (Kovacevich 2006, 2007). Similarly, degree of control of obsidian may have changed over time at certain sites (Rice 1987a), suggesting changing demands, consumption patterns, or even uses for this material through time.

Ceramic production and exchange during the Late Classic period was equally as complicated as the economic industries listed above. Some scholars argue for a two tiered (Foias 1996, 2004, 2007) or even three tiered (Ball 1993) model of ceramic production. The lowest tier is comprised of utilitarian pottery such as unslipped or monochrome cooking and storage jars. Ceramic data from major lowland Late Classic period sites such as Palenque (Rands 1967; Rands and Bishop 1980), Tikal (Fry 1979), Lubaantun (Hammond 1975) and the Petexbatun Region (Foias 1996; Foias and Bishop 1997) suggest this type of pottery was produced by independent producers at the household level outside of major centers, but possibly exchanged through complicated market distribution or simple direct exchange within site centers. The second and third tiers of the ceramic economy consisted of prestige or luxury ceramics – in the case of the Late Classic period, these were polychrome vessels. These polychromes have been found to differ in quality and style from site to site, causing some scholars to believe they were produced for consumers of varying socio-economic statuses (Reents-Budet 1994). The lower quality polychromes may have been produced by artisans located outside of site centers on the

household level, community level (Ball 1993), or even in potentially elite controlled workshops within sites centers (Reents-Budet et. al. 2000; Foias 2001). The highest tier of ceramic economy involved the production of what some scholars have named “palace-school” polychromes that were potentially produced and consumed only within the most elite sector of society. Palace-school polychromes were exquisite one-of-a-kind vessels that showed signs of restricted technologies such as fine-line and calligraphic painting, pyrotechnic skills, writing, and knowledge of elite iconography. These vessels materialized elite ideologies through hieroglyphic inscriptions and visually stimulating scenes in which kings sat in court, received tribute, and impersonated gods. Palace-school polychromes were used in elite gift-giving and redistribution networks. Ball (1993:263) notes that painting style on palace-school pottery can be linked to specific site centers and that by tracing distribution of palace-school ceramics archaeologists can identify networks of political dependence and alliance. Ball identifies three such palace-school style-groups and their networks of dependence and alliance during the Late Classic period centered in Altun Ha, Belize; Naranjo, Guatemala; and Campeche and Yucatan, Mexico (1993:260-261). Building on Ball’s concept, Dorie Reents-Budet and colleagues (Reents-Budet et. al. 1994) use palace-school style and chemical paste composition to pinpoint seven centers of palace-school pottery manufacture and political power during the Late Classic period: these centers include Motul de San Jose, Tikal, Naranjo, Holmul, Altun Ha, Nakbe, and unidentified sites in the Chama region, Guatemala. I will revisit the concept of palace-school ceramic production and how it relates to orange slipped pottery of the Terminal Preclassic pottery in my concluding chapter.

What these studies show is that the key to understanding the degree of management over production and exchange of an artifact class, as well as its constitution of value, may depend

more closely on its intended use in social contexts at each individual site, specifically those contexts related to ritual. Returning to the focus of the present research, I believe the initial function and value of Terminal Preclassic period orange slipped pottery of the Holmul Region arose out of its use in exclusionary elite feasting events – more specifically, its association with symbolically charged ritual food. The data suggests to me that during the Terminal Preclassic period elite actors realized they had the ability to inscribe these vessels with their own messages and subsequently materialize new ideologies. The new technologies (e.g., orange slip, black-on-orange painting, and polychrome painting) developed to inscribe these messages upon the vessels may have eventually served to further increase their value.

It is important to remember that while these vessels may have eventually been used as a means to compete for prestige in elite feasting events, they were first and foremost created to hold and serve symbolically charged food associated with ritual feasting. Second, they were fabricated and exchanged to materialize and spread a certain set of meanings, interpretations, or ideologies. The key is that their intended use in ritual was responsible for their conceptualization, initial creation, and function. Orange slip, polychrome painting, and black-on-orange painting were simply a new means, or technologies, with which to materialize meanings. Also important is that these technologies were not created in a vacuum. They were the product of potters experimenting with existing technologies and employed for use in existing ritual ceremonies. Therefore, they were the product of prehistoric potters using both the constraints and opportunities afforded them by the existing norms/values/structure of their society. The specific context in which these new technologies or strategies of materialization arose was ritualized elite feasting events.

## **Ancient Maya Feasting**

The study of feasting and how it may have been utilized by prehistoric actors to maintain political authority and reaffirm individual or group identity has recently become the focus of many scholars working in Mesoamerica and beyond (Blitz 1993; Bray 2003; Clark and Blake 1994; Dietler 1990, 1996, 2001; Dietler and Hayden 2001; Hayden 1990, 1995, 2001; LeCount 2001; Reent-Budet 1994, 2000, 2006; Rosenswig 2006; Spielmann 2002; Turkon 2004; Wright 2004). Feasts need not encompass large groups of participants who gather only on communal occasions, but as Hayden (2001:38) states feasts can, “vary enormously in size from a minimum of a two person (dyadic) solicitation or friendship (solidarity) dinner to an inter-community event involving hundreds or thousands of people.” The types of feasts that I will be addressing fall within the smaller end of the spectrum and were potentially attended exclusively by elites.

The term “elites” is not meant to define a monolithic category of individuals in ancient Maya society, all sharing the same rank, social customs, and specific ideology. I recognize the great deal of variation that may have existed in the sub-set of the elite population during the Late Preclassic, Terminal Preclassic, and Early Classic periods. Unfortunately, the archaeological record in the Holmul Region does not afford me an opportunity to distinguish the different ranks or groups, much less the specific identities of elite individuals that may have circulated in ancient Maya society during this time. Therefore, I am forced to speak about elites and elite habits/customs in a more general manner. Here, elites are simply defined as those individuals or groups that 1) had greater access to surplus goods and labor than the majority of the population, 2) were able to organize large-scale events such as labor projects and ritual performance, and 3) possessed a knowledge and ability to understand and transmit shared ideologies that individuals outside of their circles could not. Correlates of these criteria may include residential and

ceremonial complexes requiring the organization of large groups of laborers, burials within these structures equating deceased individuals with the ability to amass labor or organize public performance/ritual, and evidence for the knowledge of restricted symbol sets or ideologies through the presence of “tagged” artifacts in burials, caches, and middens associated with the architecture that required organized labor to construct it.

Dietler (1996, pp. 92–99, 2001, pp. 75–88) creates a useful typology of feasts based upon the socio-economic status of the individuals who may have had attended them, and to what purpose these feasts may have served their hosts and participants. The underlying theory of this typology is derived from political economy, specifically the premise that all actors are motivated to optimize economic, social, and cultural capital in an effort to increase or maintain overall symbolic capital or “prestige”. Despite this underlying framework and its over-emphasis on aggrandizing behavior, the typology can be a useful heuristic device to identify the socio-economic status of those who attended feasts, the relative number of participants (reflecting inclusiveness or exclusiveness), and the types of food and objects that may be employed at different feasting occasions.

Empowering feasts (previously “entrepreneurial” feasts) are held by individuals or groups in an effort to gain prestige or social standing. These types of feasts are usually inclusive (open to groups of varying socio-economic status) and conducted on a great scale. Large quantities of commonly used food are consumed during these feasts. Reciprocal feasts are often expected by other members of society and most participants have the ability to host a feast and gain prestige in return. While these feasts are definitely competitive affairs, Dietler (2001:75-82) does acknowledge that although gaining prestige is the motivating factor, this does not preclude the feast from taking on many other meanings or functions to its participants. The key here is that

these types of feasts are inclusive occasions where great quantities of commonly consumed food are served to all participants with an expectation that the favor will eventually be returned. These types of feasts may occur on days of family celebration such as marriages and births as well as days of mourning such as deaths.

Patron-role feasts are different from empowering feasts in that they invoke, “the formalized use of commensal hospitality to symbolically reiterate and legitimize institutionalized relations of asymmetrical social power” (Dietler 2001:82-83). Like empowering feasts, patron-role feasts are also inclusive affairs where large amounts of commonly consumed food are supplied. The difference here is that there is no expectation, or even possibility, of reciprocation on the part of any participant. These feasts are essentially meant to maintain the status-quo, to legitimate the existing social structure where groups have unequal access to material resources and cultural knowledge. The idea is similar to the debt mode of prehistoric economy discussed above within the section on political economy. Redistribution of staple or wealth resources is a key component to these types of feasts, as is the materialization of ideologies that legitimate the perpetuation of debt and unequal social standing. What is important to remember is that each party – the one holding the feast and the one attending the feast – acknowledge and accept its role in a relationship of unequal access to social, cultural, and economic resources. Therefore, elite patrons are obligated to hold feasting events of redistribution and non-elite clients are required to attend, thereby accepting their lower position in society as well as the debt they incur by the feast. A debt which can never be paid off in full, only worked off partially through allegiance and labor to the host of the feast.

Diacritical feasts differ from empowering and patron-role feasts in that they are primarily exclusive to elites. Furthermore, the function of these feasts is not to legitimate social

inequalities between host and participant, but essentially to legitimate social inequalities between exclusive elite participants and those non-elites (and even other elites) that are not in attendance. It is not the quantity of commonly consumed food that is important in these feasts, but the quality of the food and the performance or ritual surrounding its serving. Preparing, ceremoniously serving, and appreciating rare foods of exceptional quality serves as a marker of cultural “distinction” and simultaneously demonstrates and boosts one’s level of cultural capital (Bourdieu 1984). Diacritical feasts are certainly competitive affairs. Not only between members of the same elevated social class, but those of the lower classes as well. Dietler (2001:86) notes that diacritical feasting fosters emulation by groups desiring to gain social standing through acquiring tastes appreciated by the elite. Emulation can be accomplished through use of the same foods, preparation styles, or even performance. The only way for elites to stop emulation is through the application of sumptuary laws which either prohibit specified groups from consuming certain foods or are applied in conjunction with actual restrictions in the distribution of certain foods. In the absence of sumptuary laws, elite tastes or performance surrounding diacritical feasting is required to change in an effort to counteract the process of imitation by non-elites who can eventually gain access to distinctive foods and emulate performances related to their serving.

LeCount (2001) and others (Reents-Budet 1994, 2000, 2006; Foias 2007) have used ceramic remains and ethnohistoric documents to suggest that Classic period Maya elites practiced exclusive, potentially diacritical, feasting rituals. The following excerpt from Landa’s sixteenth century *Relación* is often used to show evidence of two types of feasting events of the contact-period Yucatec Maya, the first of which may have been an elite diacritical feast and the second what Dietler considers an “empowering” feast:

The first, which is that of the nobles and of the principal people, obliges each one of the invited guests to give another similar feast. And to each guest they give a roasted fowl, bread and drink of cacao in abundance; and at the end of the repast, they were accustomed to give a manta to each to wear, and a little stand and vessel, as beautiful as possible. And if one of the guests should die, his household or his relations are obliged to repay the invitation. The second way of giving feasts was used among kinsfolk when they marry their children or celebrate the memory of the deeds of their ancestors, and this does not oblige the guests to give a feast in return, except if a hundred persons have invited an Indian to a feast, he also invites them all when he gives a banquet or marries his children. They have strong friendship and they remember for a long time these invitations, although they are far apart from one another (Tozzer 1941:92)

Painted scenes on Late Classic polychrome vases support Landa's observations and allow us to project the practice of diacritical feasting back into the Classic period. Pictorial scenes often portray a king sitting on a throne eating or speaking as he receives visitors (sometimes carrying tribute), and is attended by servants or ritual persons such as dwarves or hunchbacks (Reents-Budet 1994, 2000, 2006). These scenes are often considered snap-shots of palace life, sometimes of actual historical occasions (ibid).

Inscriptions on these vases also support Landa's observations and further allow us to decipher vessel contents and even the owner's identity. One of the most fruitful forms of evidence for understanding aspects of ancient Maya feasting is the Primary Standard Sequence (PSS), a group of glyphs encircling the rim of many polychrome vessels of the Late Classic period. The PSS was discovered by Michael Coe (1973, 1978) during his study of polychrome pottery of Tikal and the central Peten. Coe realized that a band of painted glyphs often wrapped around the top of vessel exteriors (or interiors on plates) and contained similar elements from vessel to vessel. Houston and others (Houston and Taube 1987; Houston et. al. 1989; Reents-Budet 1994) later discovered that this band of glyphs could be broken into five segments that invariably related to 1) the presentation or divine creation of the vessel, 2) the inscribing of the

vessel by the painter, 3) the form of the vessel, 4) the contents of the vessel, and 5) the owner of the vessel. In conjunction with the PSS, scholars have used archaeological evidence to show that the polychrome vases themselves may have been commissioned by hosts for use during feasts and later given to the attendees as gifts. Returning to the example of palace-school polychromes that I discussed above, these region-specific polychromes have been found in elite burials at sites far from their native lands. One example is the discovery of a Holmul style palace-school polychrome vase named “The Buenavista Vase”. The PSS on this vessel says it was the chocolate pot for an eighth century Naranjo King, *Kak Tiliw Chan Chak*. However, it was found in the tomb of a young ruler at the smaller site of Buenavista del Cayo, Belize (Reents-Budet 1994). Similarly, the “Quetzal Vase”, a Petkanche Orange polychrome from the northern Maya lowlands, was discovered in the Late Classic tomb of a ruler at Copan, Honduras (ibid). Finally, the discovery of the Ik style vessel from the Peten Lakes area and fashioned by the “Master of the Pink Glyphs” portraying the image of the ruler known as the “Fat Cacique” was found in the tomb of Chan Balam at Tamarandito in the Petexbatun Region, Guatemala (ibid). It is more than likely that these vessels were gifted from one elite to another and that their discovery at distant sites represents long-distance interaction through ritual feasting.

Scholars have used the PSS and painted images on the vessels themselves to determine what kinds of foods were consumed at these exclusive feasts and how they were served. Houston and colleagues (Houston et. al. 1989) deciphered a folk classification of vessel forms and the substances they contained based upon the PSS. They discovered that bowls and cylinder vases held liquid substances and were often paired with the glyphs for chocolate (*kakaw*) or maize gruel (*sakha* or *ul*). Flat plates or platters would have contained solid foods, as these forms often displayed pictograms of *tamales* (what Landa has referred to as “corn bread”) or

symbols such as the head of the maize god. Painted scenes of palace life also support these conclusions. The pictorial element representative of *tamales* (Taube 1989) is often seen contained in platters positioned near the throne of the king just within arms reach. Similarly, liquid chocolate is often seen pouring or frothing over the rim of cylinder vessels or depicted being prepared by individuals associated within palace scenes.

Ethnographic (Bunzel 1952; Redfield and Rojas 1934; Vogt 1993; Wisdom 1940), ethno-historic (Tozzer 1941), and archaeological (Taube 1989; LeCount 2001) evidence has consistently shown that tamales and chocolate were two of the most preferred foods used by the Maya in rituals spanning the Classic period all the way up to the present day. The symbolic significance of these two types of foods stems from their reference in the Maya creation myth of the *Popul Vuh* (Tedlock 1996). The *Popul Vuh* is essentially divided into three parts: a section focusing on the events associated with the two previous creations of human-like beings by the gods, a section detailing the adventures of the mythical “hero twins” and how they were responsible for the creation of humans in the current time, and the final section discussing the origin myths and dynastic sequence of the highland K’iche Maya through the time of the sixteenth century. The stories in the *Popol Vuh* were most likely an oral history with roots that stretch back as far as the Late Preclassic period. This is supported by the recently discovered painted murals at the site of San Bartolo, Guatemala (Saturno et. al. 2006) depicting the birth of the corn god, as well as a multitude of references to the hero-twins and their mythical exploits depicted on architecture (Fash 1991) and painted ceramics (Reents-Budet 1994) found at many other sites. Corn is significant in that it was the sacrifice of one of the hero twins, and his subsequent resurrection as the corn god, that the current cycle of creation and the birth of humans came to pass. After his resurrection, the gods created humans from chocolate and corn

found in the Mountain of Sustenance (Tedlock 1996:145-146). Corn holds both ritual and material significance as it was both an agricultural staple for the Classic Maya and also a powerful symbol of life and rebirth. Corn tamales, maize gruel, and even maize alcohol were often used in Classic Maya rituals and still play a prominent role in rituals of the Maya in the present day (Faust and Lopez 2006; McNeil 2006; Vogt 1993). Liquid chocolate also played an important role in the feasts of the ancient and modern Maya. However, LeCount (2001) and McAnany and Murata (2006) note that due to the difficulties in growing, harvesting, and preparing cacao beans, chocolate may not have been as widely available to all socio-economic groups as it is today. Chocolate may have been more scarce than corn, making it more easily controlled and distributed by elites with the ability to organize labor networks. The symbolic and material value of cacao seeds is often cited in reference to their inclusion in ceramic funerary offerings as “food for the gods” (Martin 2006; Prufer et. al. 1999) and as tribute to rulers (Houston 1997; McAnany et. al. 2002; Miller 1997).

The evidence I cite above suggests that Classic period Maya elites practiced some kind of exclusive feasting rituals which involved the use of special-purpose, decorated, highly-valued vessels which held corn and chocolate products. These vessels served a number of material and social functions. The first of which was to hold and serve symbolically charged food during the feasting ritual. The second was to transmit elite-specific ideologies meant to legitimate and celebrate the present position of the hosts and participants at the feasts. In many cases these vessels may have been given to participants to take back to their respective realms. The vessels might have served not only as a memento of the feasting occasion, but also as a reminder to the participant to pay some social, political, economic, or military obligation owed to the host. These vessels may have been a form of inalienable possession, which were literally imbued with

the life of the host who had commissioned them. The participant who received the vessel, then the custodian of a piece of the host's being, may have used the vessel as a means to increase his own symbolic capital or prestige within his realm through using the vessel in subsequent feasting events and eventually carrying it to the grave. Likewise, the host who commissioned the vessel, and even the potters who produced and painted it, may have experienced an increase in the level of their own prestige because of their association with the vessel and its new custodians.

These polychrome vessels gained value for a number of different reasons. First, they gained value through being associated with symbolically charged foods (e.g., corn and chocolate). Second, they gained value through their use on a historic occasion which may be painted onto their actual surfaces. Third, they gained value because they were encoded with esoteric cultural knowledge that only a restricted part of the population could create and decipher. Fourth, they gained value for being commissioned by an individual in a high position of social standing. Finally, they may have gained value for being produced by a well-known skilled artisan who happened to sign his name on the vessel. The most important aspect to remember is that the value of these serving vessels was inextricably linked to the functions they performed within the specific social context of exclusive elite feasting. Because of this, I argue that orange slipped pottery of the Terminal Preclassic period may have been used in a similar manner to that of the Late Classic period polychrome platters, bowls, and vases. That is, they were employed within the social context of diacritical elite feasting events to serve symbolically charged food, transmit polity-specific ideologies, and often ended up as inalienable possessions symbolizing important bonds between polity leaders.

Before turning to orange slipped pottery of the Terminal Preclassic period, I have to address a potential problem with the diacritical feasting model of ancient Maya elites. LeCount

(2001) used ceramics from elite and non-elite households at the site of Xunantunich, Belize to test the model for diacritical feasting among the Late and Terminal Classic period Maya. She conducted a study aimed at identifying consumption patterns of elites and non-elites by analyzing the distribution of vessel forms throughout the site. Using the lines of evidence for identifying ancient Maya ritual food discussed above, she wanted to compare quantity and quality of food consumption patterns between elites and non-elites. Her analysis suggests that the Late and Terminal Classic Maya of Xunantunich *did not* practice an advanced form of diacritical feasting. She found that vessel forms associated with the serving of liquid chocolate (vases) and tamales (platters and dishes) were found distributed across every socio-economic group at the site. However, vases did appear in much greater quantity in restricted parts of civic-ceremonial centers suggesting that chocolate drinking was practiced on a larger scale and possibly more often by political elites. LeCount also uses ethno-historic and ethnographic data to suggest that “festival fare” has changed little from the Classic period to the present day. Among many modern Maya, chocolate drink and tamales are still the primary components of a ritual meal. This does not suggest a highly specialized, elaborate menu of haute cuisine typical of diacritical feasts in other cultures (Dietler 1996, 2001). I suggest that these findings may be linked to the symbolic nature of this type of food – that is, they may be necessary components of any sacred or secular feast because of their importance in the Maya creation myths and cannot be substituted or even altered in any great way. This is an excellent example of how structure can confine social action.

However, while this pattern may hold for the Late and Terminal Classic periods, it was not the same for the Terminal Preclassic period. Orange slipped pottery was not only different from preceding pottery because of its surface decoration and its ability to carry symbolic

messages through polychrome and black-on-orange painting, but it was also different in terms of vessel form. New or more frequently occurring additions to serving ware forms included the high platter (e.g., plate with mammiform or swollen cylindrical supports) (Figure 2.1), the high bowl (e.g., bowl with pedestal base) (Figure 2.2), and the vase (also “high” with swollen supports) (Figure 2.3). These new forms may have been used in conjunction with a time-honored Late Preclassic form also found in Terminal Preclassic feasting assemblages, the spouted pitcher (Figure 2.4). What I argue is that while the festival fare of elite feasts may have remained the same, performance surrounding the serving of these foods may have been altered. Political elites and craftspeople may have found a way to circumscribe the structure of the feast through changing aspects of serving, as opposed to changing aspects of the fare. Therefore, Terminal Preclassic period orange slipped pottery may have represented a change in feasting that more closely resembled a diacritical feast from that of the Late Preclassic period.

### **Orange Slipped Pottery and the Diacritical Feast**

Increased diacritical feasting may have arisen out of response, and subsequently contributed, to the tumultuous political climate of the Terminal Preclassic period. Archaeological evidence shows that the Terminal Preclassic period was a time of great political turmoil. Correlates of political unrest include signs of warfare such as earthworks, moats, or palisade walls encircling ceremonial site cores at the sites of Becan (Webster 1976), Tikal (Puleston and Callender 1967), El Mirador (Hansen 1990), El Tintal (Hansen et. al. 2006), Muralla de Leon (Rice and Rice 1981), and Cival (Estrada-Belli 2006b, 2004) all dating from AD 0-250. The geo-political landscape was also becoming increasingly regionalized during the close of the Terminal Preclassic period as evidenced in potential tombs of the first local kings at

the sites of Tikal (Coe 1990; Laporte and Fialko 1995), Caracol (Chase and Chase 1999), Nohmul (Hammond 1984) and Holmul (Merwin and Vaillant 1932). The last and most significant correlate of potential political unrest was the collapse and abandonment of Late Preclassic period centers such as the massive ceremonial and administrative capitals of El Mirador (Hansen 2001) and Cival (Estrada-Belli 2006b, 2004), and the smaller trade city of Cerros (Freidel 1978) (see Figure 1.1 for location of these sites). Diacritical feasting may have become an exclusive means for rising elites at sites positioned along traditional routes of trade and communication, to come together and re-constitute their position in the social structure, form new networks of alliance, and thereby survive the events that caused many sites to collapse at the close of the Late Preclassic period.

Evidence for feasting comes in the form of offertory assemblages from burials and caches at sites with occupations dating from AD150 – 250. This is the time period that Brady and colleagues (1998) consider the second half of the Terminal Preclassic period and is the focus of the present analysis. It was in this second half of the Terminal Preclassic period that orange slipped pottery was adopted by some elites in the lowlands. While I cannot account for pottery at many other sites, pottery from Terminal Preclassic contexts within the Holmul Region show signs of use-wear and were probably used before they were cached in the ground. This pattern is identical to the majority of offertory vessels found within ritual deposits of the Late Classic period (see Reents-Budet 1994) and I believe it is safe to assume the vessels found in offertory contexts of the Terminal Preclassic period were *used* – possibly on many occasions – before they were cached. Furthermore, assemblages usually contain varying quantities of different forms of vessels: namely, small bowls, vases, and platters. Discussed above in the section on vessel form and function, each of these vessel forms would be used to hold a different type of food and

possibly represented a type of “table-setting” (see Marcus and Flannery 1996:214; Redfield and Villa Rojas 1934: n. 14) interred with the dead, but used in life.

A review of sites with large quantities of Terminal Preclassic ceramics dating to this time period reveals that many of these vessels come from unreliable contexts (e.g., mixed contexts like chultunes, re-entered burials, or tombs with collapsed walls and roofs) (see Pring 2000 for an excellent summary of sites and contexts). However, by studying the contexts that contain whole vessel with greater integrity (e.g., Holmul Room 9 Building B, Group II [Merwin and Vaillant 1932]; Tikal PD87 [Culbert 1993]; Chan Chich Tomb 2 [Houk 1998]; La Lagunita C-48 [Ichon and Arnauld 1985]; Barton Ramie burials 30, 31, 19 [Gifford 1976]) in conjunction with those containing whole vessels with less integrity (for example, Nohmul [Hammond 1984; Pring 2000; Thompson 1931] and Mountain Cow [Pring 2000; Thompson 1931]), a pattern emerges in reference to vessel form. Three forms are frequently found in association with these assemblages: namely, the elevated platter (e.g., mammiform plate or plate with swollen cylindrical legs), the elevated bowl (e.g., bowl with pedestal base or bowl on pot-stand), and the vase (also usually elevated with swollen supports). These general forms are not new to the ceramic inventory of the Late Preclassic period (Brady et. al. 1998), but they do become more frequent and stylistically unique in these Terminal Preclassic assemblages.

Based on this difference in forms from Late Preclassic material, as well as the obvious difference in surface finishing and decoration (e.g., orange slip and painting), I argue that these vessels indicate changes in the performance surrounding the serving of ritual food in elite feasting events of the Terminal Preclassic period. The vessel forms are generally similar to Late Classic forms: namely, the platter with three hollow supports and cylinder vase. The platter may have been used to serve tamales or other solid foods and the vase for drinking, and possibly

frothing, chocolate. The emphasis appears to be on height – that is, food would be elevated if served in these types of vessels. This could be a function of elites more frequently hosting feasts while seated on thrones, as seen so often in Late Classic period painted ceramics. Or it could be a function of performance we cannot see from the archaeological record. Whatever the reason, it is a shift from the Late Preclassic period where ceramic serving vessels are generally low with flat bases.

Another potentially significant shift in performance may have concerned the preparation and serving of chocolate during the Terminal Preclassic period. Using archaeological and ethno-historic evidence, scholars argue that an integral part of the preparation process for chocolate drink is the frothing of the liquid to create rich foam on the surface (Dakin and Wichmann 2000; Henderson and Joyce 2006; Joyce and Henderson 2007; Reents-Budet 2006). Over the course of Maya civilization, the method of preparing liquid chocolate has changed. Henderson and Joyce (2006; Joyce and Henderson 2007) use archaeological, chemical, and ethnographic data to argue that the restricted-neck jar form found in many Early and Middle Preclassic contexts indicates that the Maya of these periods prepared an alcoholic form of chocolate drink. Frothing was not performed on this type of liquid. However, recipes and performance changed during the Middle Preclassic period. Henderson and Joyce (*ibid*) believe that chocolate drink moved from an alcoholic substance to a non-alcoholic one. It was subsequently served in pitchers with wider orifices to allow for frothing, possibly with some kind of whisk or beating stick. An alternative method is suggested by McAnany and colleagues (1999) in which the Maya would blow air into the vessel via the spout producing froth and foam this way, and possibly serving the liquid through the wide top orifice. Whichever the method, the use of pitchers (possibly in association with serving chocolate) persisted until the Terminal Preclassic period when the presence of

pitchers in ritual assemblages spiked and then dropped-off dramatically (Powis et al 2002). Simultaneously, vases began to appear in Terminal Preclassic assemblages. I believe this is because elites began serving chocolate, and performing the frothing ritual, in a manner more similar to the Classic period. That is, by pouring the mixture back and forth between vases or whipping the surface of the chocolate into foam within the vase using a whisk-like tool (Dakin and Wichmann 2000).

Finally, the shift in surface decoration of these elevated vessels is radical when comparing them to Late Preclassic vessels. Orange slip and painting may have been used to inscribe polity-specific, or even larger elite-specific, ideologies. An excellent example comes in the form of Holmul vessel SF# HOL.T.41.10.02.01 found in the recently discovered Burial 10 of Building B, Group II at Holmul (Neivens 2004) (Figure 2.1). The vessel is an elevated dish with mammiform supports. It is slipped orange with a painted design in the form of a mat or weave pattern called the “pop”. In the Classic period, this symbol is frequently paired with other symbols associated with rulership or kingship. The inscribing of this symbol on this vessel found at Holmul was a means by which elite individuals or groups materialized the ideology of rulership and transmitted it through the diacritical feast. This is not to say that Late Preclassic elites did not materialize ideology using ceramic vessels, it simply suggests that the manner in which they did so may have been different. Reents-Budet (2006) suggests that symbolic information may have been transmitted through the *form* of Preclassic vessels and not their surface decoration. This is certainly an interesting hypothesis, as form was an incredibly variable aspect of Late Preclassic pottery. Meanwhile, surface decoration remained amazingly consistent and could usually be classified within the red, black, or cream categories. It is

possible that surface decoration of these vessels was left relatively unaltered in order for individuals to focus their attention on vessel form.

## **Conclusions**

I employ the theoretical framework of ritual economy to understand the production, exchange, and social functions of orange slipped pottery of the Terminal Preclassic period from sites within the Holmul Region, Guatemala. Within ritual economy, actors mobilize and seek to acquire economic resources in an effort to materialize cultural meanings to affirm their position in society and their relationship to others. The primary means through which materialization takes place and interpretations are transmitted is ritual and performance – on both large and small scales and within the sacred and secular domains. Within this framework, orange slipped pottery is considered a social valuable – an example of the materialized ideologies of elites during the Terminal Preclassic period – and not primarily a prestige good. Qualifying this type of pottery simply as a prestige good would be to neglect how this pottery gained its value as well as the varying functions it served inside and outside of the rituals for which it was created.

The orange slipped tradition of pottery gained its value from being associated with elite diacritical feasting events of the Terminal Preclassic period. These events, and the paraphernalia associated with them, were created in response to the great political, economic, religious, and social turmoil of the Terminal Preclassic period. Elite actors may have felt a need to re-affirm, or in some cases, re-create their own political identities, thereby altering ancient Maya political structure, maintaining or changing their own position within the social spectrum, and *subsequently* enhancing their level of prestige. An integral component of the potential diacritical feasts of the Terminal Preclassic period was to change the way feasts had been conducted in the

past. However, it was also necessary to maintain certain traditions associated with the widely held basis of political and religious authority – namely, myths of Maya creation contained in the *Popl Vuh*. Therefore, what changed in feasts of the Terminal Preclassic period were not necessarily the sacred food that was consumed, but the way in which it was prepared and the performance surrounding its serving. This is evidenced in the elaborate forms of Terminal Preclassic orange pottery as well its new surface finish and decoration. These vessels primarily gained value from being associated with symbolically charged foods (ritual fare based upon maize and chocolate), and subsequently gained value from their physical properties which potentially transmitted new messages associated with elite authority and legitimacy.

The goal of this research was to test the hypothesis that the technologies used in the production of Terminal Preclassic orange pottery represented an amalgam of restricted or prestige technologies (Hayden 1998). In the chapters that follow I will demonstrate that while craftspeople making orange slipped pottery preferred certain paste recipes, forming standards, firing, and finishing techniques, these technologies cannot be considered truly restricted. Furthermore, signs of continuity exist in paste preparation, forming, firing, and surface finishing procedures between red and orange slipped pottery. It appears the only truly restricted part of the production process, and therefore “prestige technology”, would have been the polychrome painting of vessel surfaces. But even this aspect of production varied in type and quality of design.



Figure 2.1 Terminal Preclassic period mammiform bowl form (SF# HOL.T.41.10.02.01) (photo by author)



Figure 2.2 Annular base bowl form (Vessel 1, Room 1, Building B, Group II, Holmul, Ixcancario Orange Polychrome: Turnbull Variety) (photo by author)



Figure 2.3 Vase with swollen supports (Vessel 6, Room 9, Building B, Group II, Holmul) (photo by author)

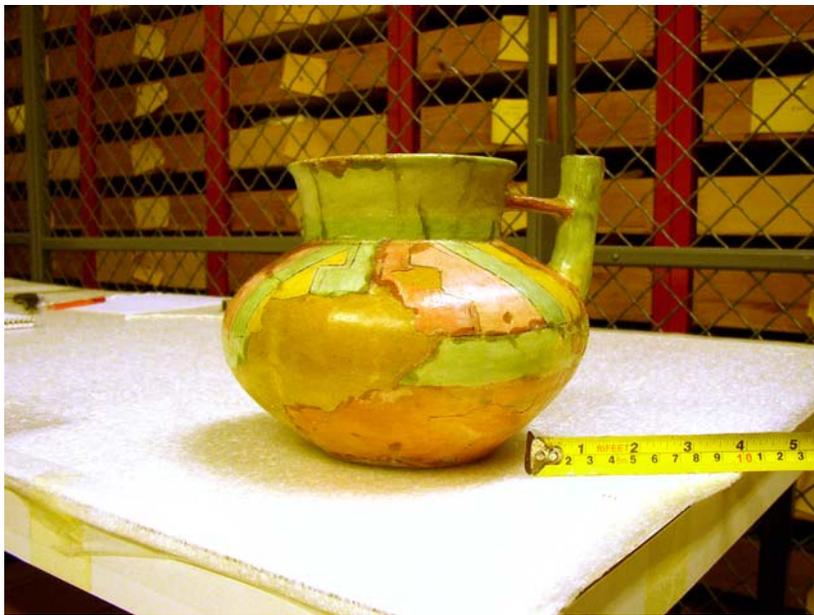


Figure 2.4 Spouted pitcher (Vessel 9, Room 8 Vault, Building B, Group II, Holmul) (photo by author)

## CHAPTER III

### METHODOLOGY

#### Introduction and Objectives

The objective of this research was to test the hypothesis that Terminal Preclassic and early facet Early Classic orange slipped pottery of the Holmul Region was produced and circulated in a prestige goods system. Correlates of prestige goods production would include the use of “prestige technologies” (Hayden 1998) or restricted technologies in the manufacture of orange slipped ceramics. Correlates of these techniques would include restricted, quantifiably different, technologies of ceramic production (e.g., restricted attributes or modes of the five components of the pottery production process: paste composition, form, firing, surface, and decoration) found in pottery displaying orange gloss surface treatment vs. that of the traditional Late Preclassic red monochrome material.

In order to test this hypothesis ceramic material of specific type-forms from three separate “ceramic traditions” (discussed below, also see Gifford 1976:14-15) dating to the Late Preclassic, Terminal Preclassic, and Early Classic periods in the Holmul Region were subject to specially designed production studies. The traditions include 1) the Late Preclassic monochrome red tradition or Sierra Red type ceramics, 2) the early facet Early Classic monochrome orange tradition or Aguila Orange type, and 3) the Terminal Preclassic and early facet Early Classic orange painted traditions or Ixcario Orange Polychrome, Actuncan Orange Polychrome, and Boleto Black-on-Orange types respectively. Differences in production technologies for each type-form within these three traditions were quantified and

compared in order to identify potential technologies associated only with orange gloss material.

Corollary objectives arose out of the study of these three traditions and stem from the primary objective of this research. These questions include:

- What is the degree of restriction of these technologies within the three traditions? In other words, do they occur only in orange gloss ceramics, or can they occur in isolation in monochrome red ceramics?
- Where might these technologies have originated from? That is, do they have origins as experimental techniques in earlier monochrome red ceramics in the Holmul Region or did they appear abruptly, or from seemingly outside the Holmul Region, during the Terminal Preclassic period and only in orange gloss ceramics?
- Finally, although the sample is small and potentially not fully representative of each site within the region, can some attempt be made to quantify differences in overall production systems (e.g., mode of production and level of specialization) between the three traditions, and if so, what are those differences and what might they infer about the nature of ceramic production in the Late Preclassic vs. Early Classic periods?

In this chapter I will explicitly describe the ceramic sample that was used for the current study as well as its limitations. I will then discuss and operationalize the methods that I utilized to extract data from the sample to address the primary and corollary objectives of this study. These methods include type-variety analysis, modal or attribute analysis, petrographic analysis, metric and non-metric measurements of diversity, and Instrumental Neutron Activation Analysis (INAA) conducted by researchers at the Missouri University Research Reactor (MURR).

## **Description of the Sample**

Ancient Maya ceramic production areas are notoriously difficult to identify in the archaeological record, leaving archaeologists little unequivocal evidence of production technology (Fry 2003; Masson 2002; Nichols et. al. 2001; Stark 1992). Therefore, in order to identify restricted technologies, I used indirect indicators measurable on the ceramic products themselves. The units of study were diagnostic rim sherds and whole vessels of the three traditions mentioned below. This is a well-established methodology and has been applied to the study of ceramic production in many culture areas including Mesoamerica and the Maya area (Bill 1997; Foias 1996; LeCount 1996; see also Rice 1987b). Only well-preserved, unequivocally classifiable, diagnostic rim sherds from vessels within each tradition were selected for analysis. While this may have decreased sample size, it allowed for more accurate conclusions to be drawn from the analysis.

Rim sherds and whole vessels from two shape classes of monochrome red, monochrome orange, and orange painted ceramic traditions dating to the Late Preclassic, Terminal Preclassic, and Early Classic periods were used in the study: namely, the medium-sized flaring bowl form (diameter ~20cm) and the medium sized composite bowl form (diameter 25-30cm). The term “ceramic tradition” or “pottery tradition” or “pottery mode-tradition” was first developed by Willey for use within the type-variety classification system (1945:53). Willey explains, “A pottery tradition comprises a line, or a number of lines, of pottery development through time within the confines of a certain technique or decorative constant.” The “certain technique or decorative constant” is classified as a “mode” or,

a ceramic attribute (or collectively a small group of inseparable attributes) that possess[es] a singular extra-type importance and meaning beyond that of any purely descriptive feature...a mode appears in several or a number of varieties (or different types) remaining all the while unaltered in its own essential character and attribute content. A mode...is a selected attribute or cluster of attributes that displays significance of its own. (Gifford 1976:11)

In this case the three modes that determined the three traditions of pottery under study were based upon surface decoration and included monochrome red, monochrome orange, and orange painted surfaces.

Type-forms within ceramic traditions may more accurately represent the classificatory scheme of prehistoric potters and come closer to representing how production was actually organized (see Arnold 1978, Ball 1993, and Reina and Hill 1978). This would allow me to address the primary and corollary questions in my analysis namely, characterizing production techniques and identifying any restricted technologies. The type-variety system of classification is primarily an etic attempt to classify pottery with an emphasis on chronology and spatial relations, not more emic concerns for aspects of the organization of production. Because of this, studying ceramic material within the confines of types alone may not reveal accurate relationships between technologies and production units, number of production units, and the nature or *context* (Costin 1991, 2001) of ceramic production within each type of pottery. Grouping the ceramics within type-forms of larger traditions based upon decorative modes that crosscut types may classify the pottery within more accurate production-oriented categories. This may remove another level of classificatory bias from the study allowing me to research production behavior more accurately.

Medium sized flaring bowl and composite bowl forms were chosen because each tradition includes, at least in part, these forms indicating that they potentially served, at least

on some occasions, the same material and even social functions. Research on grave goods at the sites of K'axob, Belize (Berry et al. 2004) and Cuello, Belize (Robins 1989) has also shown that Sierra Red medium to large orifice bowls were used in a similar manner as orange gloss ware in burial assemblages of the Late and Terminal Preclassic periods to cover the heads of individuals in elite and non-elite burials. In essence, orange gloss bowls could be considered a replacement of red monochrome bowls in ritual contexts during the Terminal Preclassic period. This replacement of red monochrome bowls with orange gloss bowls may suggest the elite use of certain kinds of pottery to differentiate status during the Terminal Preclassic period, a pattern clearly in evidence in the ceramic grave goods associated with the royal tombs of the later Early Classic period (Reents-Budet 1994). Furthermore, as I argue for orange slipped ceramics, these monochrome bowls found in burials may have been used in feasting events that preceded their placement in burials. Finally, by using only two shape-classes I am able to study production technologies within two constant forms, allowing me potentially to differentiate technologies used to make similar forms within three different traditions. Type-forms of each tradition are briefly described below, for a more complete description of type characteristics see specific type descriptions in chapter 3.

Ceramics of the red monochrome tradition are comprised of Sierra Red: Sierra Variety pottery in different bowl forms: namely, 1) bowl with outflaring wall (Figure 3.1), 2) bowl with flaring wall and incurving rim (Figure 3.2), and 3) bowl with flaring wall and lateral angle (composite form) (Figure 3.3). The most distinguishing characteristic of Sierra group vessels is their thick “waxy” monochrome red slip. Sierra Red material is the most ubiquitous group of ceramic material found in Late Preclassic and Terminal Preclassic contexts and appears to be socially unrestricted in distribution. Because of this unlimited

distribution, the technologies associated with the production of Sierra Red material are not considered to be representative of technologies restricted to orange pottery.

The outflaring form was selected because it is almost identical to Aguila monochrome orange outflaring bowls in terms of metric and non-metric morphological characteristics. For this reason, I thought it would be an excellent shape-class to compare production technologies between the monochrome red and orange traditions. However, after completion of modal analysis it appeared that the outflaring bowl shape-class of Sierra Red displayed a great deal of variation within itself. That is, metric attributes (e.g., rim diameter, lip thickness, wall thickness at the rim, and wall angle) and non-metric attributes (e.g., rim form and lip form) showed great variation within the shape-class leading me to conclude that the outflaring bowl shape-class may not have been considered a true shape-class by prehistoric potters manufacturing Sierra Red bowls. This would result in the analysis of a non-representative or irrelevant sample of Sierra Red pottery – it would not allow for the accurate analysis of production units, technologies, or the organization of production for material of the Late Preclassic tradition. For this reason, I supplemented the analysis of outflaring bowls with outflaring bowls with incurving rims. While this shape-class is not found in Terminal Preclassic or Early Classic orange gloss traditions, modal analysis revealed a smaller range of variation in metric and non-metric attributes than was present in outflaring bowls, leading me to believe this shape-class came closer to representing a true prehistoric shape-class category. Lateral angle composite bowls were also studied because I believed they may have been the predecessors to orange monochrome and black-on-orange z-angle, rounded z-angle, and basal flange bowls of the early facet Early Classic period. Through studying monochrome

red lateral angle bowls I was searching for continuities in production from red to orange ceramic traditions.

Ceramics of the orange monochrome tradition are comprised of Aguila Orange: Variety Unspecified ceramics of the early facet Early Classic period in two different bowl forms: namely, 1) bowl with outflaring wall (Figure 3.4), and 2) bowl with rounded z-angle (composite form) (Figure 3.5). Aguila Orange: Variety Unspecified material displays a true orange slip (within the 5YR5/8, 5YR6/8, 2.5YR5/8 color range of the Munsell Soil Color Chart), a glossy yet seemingly waxy surface finish, and noticeable polishing or heavy burnishing marks. This material is distinguished from later Aguila Orange: Aguila Variety material in that pastes are not primarily tempered with volcanic inclusions.

Ceramics of the orange painted tradition are comprised of Ixcanrio Orange Polychrome of the Terminal Preclassic period, Actuncan Orange Polychrome of the early facet Early Classic period, and Boletto Black-on-Orange also of the early facet Early Classic period. Ixcanrio material consists of 1) bowls with outcurving rim, basal angle, and mammiform supports (composite form) and 2) bowls with flaring walls and potential lateral or z-angles (composite form) (Figure 3.6). Ixcanrio polychromes display the same surface finish characteristics of other orange gloss material with the addition of red and black on orange painting in relatively simple design schemes such as bands, reverse angles, and other abstract shapes. Actuncan polychromes are found in one exclusive form, bowls with composite walls, basal flange, and ring base (Figure 3.7). Surface finish and color (5YR5/8, 2.5YR5/8) are similar to other orange gloss material with occasional addition of a cream underslip. Designs are similar to those found on Ixcanrio polychromes still emphasizing abstract elements in red and black paint. Boletto Black-on-Orange: Variety Unspecified

ceramics were comprised of bowls with composite wall and basal flange (Figure 3.8). Black-on-Orange material is an orange gloss ware with the addition of black paint to vessel surfaces. Principal identifying attributes of Aguila Orange: Unspecified Variety apply to Boleto Black-on-Orange: Unspecified Variety with the addition of black paint applied in circumferential horizontal bands on lip and vessel exteriors. Black painted geometric shapes can also decorate vessel exteriors. Like Aguila Orange: Variety Unspecified material, Black-on-Orange material displays a true orange slip (within the 5YR5/8, 5YR6/8, 2.5YR5/8 color range of the Munsell Soil Color Chart), a glossy yet seemingly waxy surface finish, and noticeable polishing or even heavy burnishing marks. Boleto type material is found contexts dating to the early half of the Early Classic period in the Holmul Region.

Rim sherds of monochrome red, monochrome orange, and painted orange material were selected from five types of Late Preclassic, Terminal Preclassic, and early facet Early Classic contexts at the sites of Holmul, Cival, La Sufricaya, K'o, and Hamontun. The five types of contexts included: 1) burials, 2) caches, 3) primary deposition middens, and 4) mixed construction fill. All contexts are associated with monumental architecture in site epicenters (e.g., masonry buildings and plazas). Appendix E lists the specific contexts used in this study.

### **Overcoming Limitations of the Sample**

Limitations of the current sample can be separated into four general areas: namely, logistical, chronological, spatial, and social. Beginning with the logistical problem, the present research is essentially a laboratory based analysis with no separate archaeological sampling program, and initiated well after archaeological research had begun in the Holmul

Region. All rim sherds and most vessels used in the analysis were excavated during the Boston University sponsored 2000 season of the Holmul Archaeological Project and the 2001-2005 seasons of the Vanderbilt Holmul Project before the present research project (with its emphasis on understanding ceramic economy during the Terminal Preclassic period) was even conceptualized. The research design of the 2000-2005 excavation seasons emphasized sampling in site epicenters including monumental architecture and plazas in order to construct a regional ceramic and architectural chronology, clean and stabilize looters' trenches, and document and conserve previously exposed monuments, stucco art, and painted murals that were in imminent danger of being destroyed (Estrada-Belli 2000, 2002, 2003, 2004, 2006c, 2008). Unfortunately, few primary deposition contexts such as burials, caches, and middens useful in the reconstruction of ceramic economy during a specific period of ancient Maya civilization were discovered during these field seasons. The majority of ceramic contexts excavated consisted of sealed and unsealed construction fill or wall debris.

These logistical problems led to chronological, spatial, and social limitations. Because of the lack of primary deposition contexts (such as single phase middens, burials, and caches), previous ceramicists and I were forced to create a regional chronology and subsequently date ceramic contexts using stylistic cross-dating, or comparison of Holmul Region ceramics to firmly dated material from other sites in the Maya lowlands. While this approach is useful and helped us in creating a general outline for the chronology of the Holmul Region based upon changing frequencies in type-varieties, we were unable to distinguish or tease-out sub-phases of these larger periods based upon *modal* frequencies which may crosscut types. The Terminal Preclassic period is one such sub-phase that, to this date, has not been clearly identified in the archaeological record of the Holmul Region other

than in Building B, Group II, Rooms 8 and 9, and to a lesser extent in its construction fill. Even there modal characteristics of pottery are difficult to isolate as Terminal Preclassic material shares modes of the Late Preclassic and Early Classic periods respectively – making it an amalgam of ceramic modes. Some sites such as Tikal have excellent sealed and stratified single phase deposits allowing analysts to distinguish a true Terminal Preclassic ceramic complex (Culbert n.d., 1993). Others, such as Barton Ramie (Gifford 1976), El Pozito (Case 1982), and even La Lagunita (Ichon and Arnauld 1985) have larger occupation histories at this time with many primary and even secondary deposits to define a Terminal Preclassic ceramic complex using modal analysis. To date, this is not the case in the Holmul Region.

Due to this lack of reliable chronological markers in the present sample, I did not focus my analysis on reconstructing production systems of specific chronological periods in the history of the Holmul Region. Instead I tailored my analysis to study only *production technologies* within firmly established ceramic traditions and type-forms of the Late Preclassic, Terminal Preclassic, and early facet Early Classic periods. Therefore, regardless of the context in which these ceramics are found, we know they are chronologically isolated to general periods in the ceramic sequences of many well-studied sites in the Maya lowlands and therefore the Holmul Region: namely, Sierra material is isolated to the Late Preclassic, Ixcanrio material is isolated to the Terminal Preclassic, and Aguila, Boleto, and Actuncan are isolated to the early facet Early Classic. The only area of potential chronological overlap comes in the form of Sierra Red material which has been seen to persist well into the close of the early facet Early Classic period in other regions (Laporte et. al. 1993; Lincoln 1985). However, based upon the analysis of Holmul mixed construction fill contexts to date

(Callaghan 2006), Sierra material is not found in great quantities in association with Early Classic material. Furthermore, when it is found in Early Classic contexts, it is markedly more eroded, potentially testifying to its being significantly *older* than Early Classic material. All of this leads me to believe that Sierra production ceases prior to or during the larger production of monochrome orange or Aguila material.

Another limitation of the dataset concerns the potential lack of a representative sample of material from each tradition at each site in the region. At the present time, with the exception of K'o and Hamontun, each site seems to have higher sample counts during one particular time period: for example, Cival dominates in Late Preclassic monochrome red material, Holmul dominates in Terminal Preclassic polychrome material, and La Sufricaya dominates in Early Classic monochrome orange material. While this could be a sampling bias, it could also be the result of actual prehistoric occupation histories. Ceramic frequencies and architectural data (Callaghan 2006; Estrada-Belli 2002, 2003, 2004, 2006c) from each site in the region support this latter explanation.

Yet another spatial limitation of the sample concerns the frequent use of rim sherds from construction fill contexts at site epicenters. Construction fill contexts are notoriously unreliable for use in reconstructing chronological and spatial relationships within and between sites, because the material could have come from midden deposits within a large radius of the site under study. However, previous research by Lincoln (1985) and more recent work by Culbert (n.d.), both focusing on frequencies of types, vessel forms, and other non-ceramic debris within monumental construction fill, suggest that the fill found in monumental architecture in site epicenters was more than likely primary refuse used in ritual or even elite political events within the immediate epicenter. Therefore, while sealed midden

deposits may not be the best contexts with which to study ceramic economy, in the absence of sealed deposits they are really all we have and, subsequently, may be more reliable than previously assumed.

The final limitation of the study is a social one. All sampled sherds and vessels come from ceramic contexts within monumental architecture at site epicenters. These contexts more than likely do not represent ceramic material consumed by non-elites within each site. They similarly do not preclude non-elites from producing these types of ceramics. Therefore, it is difficult for the results of this analysis to support the hypothesis that orange gloss ceramic material was produced using restricted prestige technologies only available to elites. Similarly, the word “restricted” cannot directly be used to infer social restriction of technologies. However, it can be used to infer restriction of technologies within traditions. Then using distribution data of these traditions within potential elite contexts at Holmul Region epicenters, in conjunction with general distributions of these same traditions from non-elite contexts at other sites in the lowlands, I may be able to at least, in part, assume some kind of social restriction from the data. In other words, Sierra Red material appears to be unrestricted socially during the Late Preclassic period in the Maya lowlands, while painted orange material (and even monochrome orange material at certain sites) seems to be restricted to elite contexts in the early facet Early Classic period at other sites in the Maya lowlands. If we project this pattern on the Holmul Region data, we may be able to infer restriction of technologies at least until we obtain a better archaeological sample – one that takes into account areas outside of site epicenters. Furthermore, production technology can still be compared between traditions of ceramics at the elite level in the Holmul Region. If technologies in certain traditions are found to be lacking in others, this could represent

restricted access to, or the lack of knowledge of, certain technologies – still resulting in the deployment of restricted technologies by *certain* elites. Furthermore, comparison of technologies within traditions at different sites across the region can also reveal what elites at what sites may have had access to, or knowledge of, certain technologies. These data can then be compared to monumental construction episodes and occupation histories at specific sites and used to formulate ideas about the relationship of the presence of restricted technologies and the success of political actors during certain periods in a particular site history.

In conclusion, my main objective is not to reconstruct the ceramic economy of any one period in the history of the Holmul Region, such as the Terminal Preclassic period. Instead, it is to compare the production technologies within three chronologically isolated traditions in order to identify and quantify potential restricted technologies that may have developed out of a need to create a new set of social valuables for use in important sacred and secular elite feasting rituals during a turbulent political period in the Holmul Region. The current sample is more than adequate to address this research question.

### **Modal Analysis**

The modal analysis of pottery from the three traditions defined above comprised the bulk of the present research. In a modal analysis each individual rim sherd or vessel is analyzed within categories corresponding to the five processes of ceramic vessel production: these are 1) paste composition, 2) forming, 3) firing, 4) surface finish, and 5) decoration. Analyzing ceramics in this manner is similar to the *chaîne opératoire* approach commonly used in lithic studies (see Dobres 2000). This type of analysis essentially breaks a sherd or

vessel down into its constituent production steps allowing an analyst to quantify attributes, or characteristics of each part of the production process. Traditionally in ceramic analyses of pottery from the Maya lowlands and Mesoamerica, modal analysis takes place after initial type-variety classification. Ceramicists then study type-varieties in an effort to quantify specific paste, form, firing, and surface-finish modes that crosscut types and may be indicative of finer chronological and/or spatial significance (e.g., Demarest 1984, 1986; Sharer 1978; Forsythe 1983, 1989; Sabloff 1975). More recently ceramicists in the Maya area have employed modal analysis to study aspects of production (Bill 1997; Foias 1996; LeCount 1996; Muñoz 2006). This is the case with the present study.

Here modal analysis is used to quantify and compare production technologies within the three traditions defined above in an effort to identify restricted or prestige technologies associated with ceramics of the orange gloss traditions. Each sherd was coded for a total of approximately two hundred variables within the categories of paste, form, firing, finishing, and decoration. The coding key and associated charts used for measurements are presented in Appendices B - D. The coding form template was created using Microsoft Access. Each sherd used in the study corresponds to an individual coding sheet which is linked to all other sheets in the study through the Microsoft Access database. Variables recorded on the coding form are briefly discussed below (see Appendix B for standards of measurement and definitions/references to terminology).

### *Catalogue*

The catalogue portion of the coding form contains basic information about each sherd in the modal analysis. The catalogue begins with the individual sherd number that identifies

and links each sherd to one another in the rest of the database. Other categories of variables include information such as archaeological context, type-variety, and Small Find (SF) number.

### *Form (Morphology)*

The form portion of the coding form contains metric and non-metric variable categories related to vessel morphology. Categories include general vessel form, morphology of the component parts of vessel form (e.g., rim and lip), and metric measurements. See Appendix B for notes concerning definitions and standards for measuring metric and non-metric attributes.

### *Paste*

Paste analysis was conducted both at the macroscopic and microscopic level using an Omano stereo-zoom microscope with magnification between 10X – 70X. Categories of variables recorded included texture, color, particle density, sorting, type of inclusions, relative modes of inclusions, and size of inclusions.

Microscopic modal paste analysis formed part of a three-tier paste compositional analysis. The purpose of this type of analysis was to 1) characterize the mineralogical and chemical composition of pastes within the three traditions, 2) seek to identify any restricted technologies in the form of paste recipes identified by unique mineral and chemical combinations associated with specific ceramic traditions, 3) characterize the potential geologic origin of paste recipes used within each tradition, and 4) test a new methodology for paste composition analysis in which the ceramicist is able to characterize mineralogical paste

composition in the field/foreign laboratory using a simple stereo microscope before resorting to higher level mineralogical and chemical analyses. Paste variants within each tradition were created based upon the first two major inclusions within a degree of texture (e.g., fine, medium, coarse) for each sherd. Analysis revealed three major medium-textured paste groups based upon three major inclusion types: those groups are 1) crystalline calcite, 2) gray calcite, and 3) ash. I was able to further sub-divide these three major groups based upon major secondary inclusions (see chapter 6). Thin sections of one sherd from each of these major groups and sub-groups from each site in the region (when available) was created and used in the petrographic analysis for a total of ninety four thin sections. These same samples were then subject to Instrumental Neutron Activation Analysis by researchers at the Missouri University Research Reactor. Results from all three analyses were then compared to one another in an effort to see if the methods yielded similar, albeit complementary, results. Ceramic pastes from each sherd were photographed at 35X and 70X using a 10 mega-pixel Canon Eos digital camera and Camadapter photographic system

### *Firing*

Variables related to evidence of the firing process overlap with variables associated with paste and surface modes. Specific modes that were studied as evidence of firing practices and related to paste analysis included paste hardness, presence/absence of firing core as well as the location, size, and color of core. Variables related to the study of surface modes included the presence/absence of fire clouds and crazing or crackling on interior and exterior vessel surfaces.

### *Surface Finish*

The surface finish portion of the coding form contains information relevant to the technologies used to finish vessel surfaces as well as potential evidence of firing processes. Surface characteristics were coded for both the interior and exterior of individual sherds and include smoothing, polishing, appearance, presence/absence of slip or unsipped color, and slip or surface hardness. As a note, because the sample of painted ceramics was so small and one of the interior or exterior surfaces usually so eroded, the results of separate decoration or painting analysis did not produce any reliable or relevant results for the study, and therefore are not reported upon at this time.

### **Petrographic Analysis**

Petrographic analysis is an extension of the microscopic paste analysis. Here petrographic analysis is used to quantify and compare production technologies, specifically paste recipes and slip application, within the three traditions defined above in an effort to identify restricted or prestige technologies associated with ceramics of the orange traditions. The objective of petrographic analysis was to quantify differences in mineralogical composition of pastes within the three traditions in an effort to identify any restricted technologies, namely paste recipes.

Petrographic analysis is borrowed from the field of geology, specifically the sub-field of petrology – or the study of how rocks form. Petrographers use a special microscope which restricts light into specific planes. The light source is located underneath the sample under study and shines up through the specimen into the lenses. The sample is viewed under polarized light (light restricted to the E-W plane) and crossed polarized light (light restricted

to the E-W plane shown through the sample and subsequently restricted to the N-S plane). Different characteristics of the minerals within the sample allow a researcher to characterize the sample's composition. Minerals present and their specific characteristics allow petrographers to make hypotheses about where the rock came from, how, and even when it might have formed.

Ceramicists utilizing petrography take much the same approach. Ceramic petrography begins by creating a thin section (30 microns or 0.03 mm thick) of a ceramic sherd. The section is mounted on a glass slide and observed under a polarizing microscope. Under plain and polarized light an analyst is able to identify the types of minerals present from their physical properties: including color, habit (or shape), relief, cleavage, and extinction angle (the angle at which minerals become opaque). Ceramicists can compare the presence of these minerals to geological formations in the area under study. Similarities in presence/absence and characteristics of minerals will tell the researcher if the paste was locally procured or was foreign in origin. Using shape (roundness/angularity), analysts can even determine if minerals were naturally occurring in the clays or if they were added later – naturally occurring aplastics tend to be more rounded from years of erosion, while added particles will be more angular due to human processing, such as crushing larger rocks or sherd fragments into individual crystals or particles, before adding to the clay.

Petrographic analysis was pioneered by Anna Shepard in American archaeology (see Shepard 1936, 1939, 1942). While researchers have continuously employed this approach in archeological ceramic studies of the Old World and North America (see for example Jordan and Schrire 1999; Mason and Golombek 2003; Stoltman 1989, 1991; Stoltman and Mainfort 2002), only a handful of analysts have utilized petrography in Mesoamerica since Shepard's

work in the middle nineteen hundreds (Angelini 1998; Barlaz 1978; Bartlett 2004; Iceland and Goldberg 1999; Jones 1986; Rands 1967). One of the first of these scholars was Barlaz (1978) at Cuello where she determined all sherds in the site sample were derived from local clays with the exception of one sherd from El Salvador. Interestingly, Bishop (1991) attributes the lack of petrographic work to the legacy of Shepard herself. Through a biographical analysis of Shepard's personal letters and work papers, Bishop identifies instances where Shepard reveals her belief that petrographic analysis should only be performed by trained geologists and never subject to interpretation by seemingly untrained archaeologists.

Regardless of Shepard's opinion, Rice (1987b:382) notes, "...the technique can provide useful information on the pottery fabric with minimal training of the analyst." I agree with Rice. In preparation for my petrographic analysis of Holmul pottery, I completed a course on igneous and metamorphic petrology with petrography lab component at Vanderbilt University in spring 2006. While I am not an expert and anticipated a learning curve when analyzing Holmul ceramics, I have more than a basic knowledge of petrographic ceramic analysis and tailored my study to the level of my expertise.

I am aware of the limitations of the sample as well as the questions that the sample will allow me to address. Specifically, no accompanying geological survey was conducted within the Holmul Region to coincide with petrographic paste analysis. This means that data from the petrographic analysis cannot be compared to local geology or potential clay deposits. Paste variants defined from the petrographic analysis based on mineralogical composition do not represent clay sources. Instead, paste variants are better conceptualized as paste recipes created by prehistoric potters through a combination of choices based on

cultural and material preferences or constraints (Arnold 1985, 2000). Questions pertaining to the origins of these paste recipes (that is, within the Holmul Region or from foreign areas) can better be answered by a complementary analysis of petrography and INAA discussed in the next section.

However, despite the lack of a separate geologic survey aimed at sampling potentially local clay sources, I am not prohibited from making assumptions about the origins of specific recipes. Based upon the “provenience postulate” (Rands and Bishop 1980; Bishop et. al. 1982; Weigand et. al. 1977), the principle of “criterion of abundance” (Rands and Bishop 1980; Bishop et. al. 1982), and the concept of the “procurement zone” (Rands and Bishop 1980; Bishop et. al. 1982), I can make an informed assumption about the location of potential clay sources and even production areas (on the site level) for specific paste recipes. Simply stated, the provenance postulate is the idea that variation between two ceramic sources can be measured using scientific techniques and that variation between sources is greater than it is within a source in order for these differences to be archaeologically significant. Until the advent and application of sophisticated compositional analyses (see Sayre et. al. 1971), archaeologists had used what is called the criterion of abundance hypothesis to identify the center or region of production of a specific ceramic sherd or piece of archaeological material. The criterion of abundance simply states that if many items of the same type are found in the same area, it may be safe to assume that these items were made in that same area. Higher level mineralogical and chemical compositional techniques still rest upon these two concepts in that when many pastes seem to cluster in one geographical area and share the same compositional signatures, analysts assume that the pottery was derived from the region in which they were found. Ethnoarchaeological data collected by Hammond and Hughes-Hallet

(Hammond et. al. 1976) in Belize, Arnold (1985) in Mexico, and Longacre and colleagues (see Longacre 1991) in the Philippines support this idea. Rands and Bishop (1980) use these data to suggest that producers commonly get their clays from within 7km of their production locales and temper within 15 km. Thus, the combination of ethnoarchaeological data and the principles discussed above suggest that results from a compositional analysis of archaeological materials in the absence of geological surveys can characterize particular sources and even point to general areas of production.

As I noted above, paste variants within each ceramic tradition were first created using the stereo microscope. Variants were defined by the first two major inclusions of the paste of each sherd. Analysis revealed three major groups and eight sub-groups of general paste composition or paste recipes used to manufacture sherds within the three traditions. Using a tile cutter, samples (no smaller than 1cm<sup>2</sup>) were snipped from one sherd from each of the nine groups within each of the type-variety-form categories composing each tradition and from each site in the region (when available) for use in the petrographic analysis for a total of ninety four thin sections. Samples were not always cut on the same angle. It would have been ideal for all samples to be cut perpendicular to the vessel orifice. However, due to the shape and friable nature of some sherds, some of the samples needed to be cut parallel to the vessel orifice. Unfortunately, this kind of sample precluded certain analytical techniques such as point-counting (see Stoltman 1989, 1991) and the study of forming processes on the microscopic level (see Angelini 1998; Bartlett 2004) because not all thin sections would be oriented in the same direction, yielding an irrelevant, unreliable, and non-standardized sample which is not adequate for these types of analyses.

Thin sections were created by Applied Petrographic Services Inc. of Greensburg, PA. A fresh edge was trimmed using a diamond saw blade from a Hillquest Thin Section machine. Samples were then oven-dried for several hours at a temperature of 30-40° C and later impregnated with a low viscosity adhesive solution to ensure the sample would not crumble during the sectioning process. The sample was then mounted to a ground glass slide and trimmed using the thin section machine to a thickness of approximately 0.04mm. Final grinding was then performed by hand to achieve a more specific thickness of 0.03mm using a fine woven steel-mesh pad (e.g., Buehler's UltraPlan) charged with 15 to 25- $\mu$ m size diamond suspension or paste.

I studied thin sections using a Nikon trinocular petrographic microscope in the petrology laboratory of the department of Earth and Environmental Sciences at Vanderbilt University. Samples were studied under polarized and cross-polarized light at magnifications of 15X, 60X, and 150X. Photographs were taken at varying magnifications using an Olympus 5 mega-pixel digital camera and camera adapter fastened to the third ocular. Similar to the modal paste analysis outlined above, data for each thin section were entered into its own form within a petrographic coding database designed in Microsoft Access. Categories and variables are briefly discussed below. For more detailed definitions of terminology and standards of measurement see the petrographic coding key in Appendix E.

### *Catalogue*

The catalogue portion of the coding form contains basic information about each sherd in the petrographic analysis. The catalogue begins with the individual sherd number that identifies and links each sherd to one another in the rest of the database. Other categories of

variables include information such as archaeological context, type-variety, and Small Find (SF) number.

### *Groundmass*

In this research groundmass is defined as the combination of particles smaller than the size of silt (0.0625mm) that make up the paste fabric. In other words, groundmass is the matrix in which larger inclusions (naturally occurring and added) are suspended. The compositional characteristics of the groundmass best represent the compositional characteristics of the source from which the ceramic paste may have been fashioned. Groundmass consists of individual clay particles that are not visible even at the greatest magnifications of the petrographic microscope, as well as any other naturally occurring inclusions smaller than the size of silt. A preliminary analysis of all ninety four thin sections was performed first to identify and quantify specific characteristics of groundmass for each of the samples. After initial analysis, five categories of groundmass were created based on amount of clay and type of primary inclusion smaller than the size of silt. Each sample was then coded for one of these five types of groundmass.

### *Inclusions*

Inclusions are defined in this analysis as any particle larger than the size of silt (e.g., greater than 0.0625mm). Preliminary analysis was performed on all ninety four samples to define a range of inclusion types before coding of samples began. Eighteen types of mineral inclusions were identified and correspond approximately to the twenty two types of inclusions defined in the stereoscopic modal paste analysis. Approximate modes, or counts,

of inclusions were tabulated during coding and minerals were ranked in order of occurrence from one to five within each thin section. Inclusions occurring only once or twice in a sample were coded as additional inclusions. Additional inclusions were similarly quantified and coded in order of frequency from one to three. Sizes of types of inclusions and additional inclusions were measured using the cross-hairs of the microscope in accordance with the proper calculation for magnification. Angularity and sphericity of inclusions and additional inclusions were also quantified using angularity/sphericity standards revised from Powers' Scale of Roundness as presented in Barraclough (1992). Quantifying angularity and sphericity would allow me to identify potential naturally occurring inclusions versus added ones. Finally, because the overwhelming majority of groundmass and primary inclusion types were calcite-based, specific characteristics of calcite minerals were recorded for the primary type of calcite present in each sample. These characteristics included calcite type, size, interference color, relief, angularity, and sphericity. As I discuss in chapters 6-7, although the majority of pastes contained calcite inclusions, the type of calcite and its specific petrographic characteristics varied, allowing me to sub-divide further this relatively larger composition group into smaller more descriptive units and potential clay sources.

### *Underslip*

Brady and colleagues (1998) claim that one of the identifying characteristics of orange gloss ceramics from the Terminal Preclassic period is a thin cream underslip or highly burnished light colored vessel surface. They argue that true orange gloss material can and should be distinguished from contemporaneous "waxy" red (Sierra type), matte orange (Aguacate type), and "waxy" orange (Iberia type) ceramic material through identification of

this unique production technology. They similarly argue that it is this specific technology which gives orange gloss ceramics of the Terminal Preclassic period their signature shine in comparison to the waxy luster of monochrome red ceramics of the preceding Late Preclassic period. However, during their own petrographic analysis, they found the presence of an underslip on orange gloss ceramics either difficult to identify or not present. One of my objectives was to test the hypothesis that it was this cream underslip that distinguished orange gloss ceramics from contemporaneous orange matte and waxy red and orange monochrome material. If present only on orange gloss material, this cream underslip could be an indication of the use of a prestige technology in the production of orange gloss material. Therefore, presence/absence of underslip was noted for each of the samples where slip was left intact after thin-sectioning.

Finally, in accordance with the three-tiered compositional methodology of the present research, petrographic results were compared with the results of modal paste analysis using the stereo microscope. Error rates were calculated and effectiveness was evaluated, both of which will be discussed in the proceeding chapters. These optical and mineralogical results were then compared to chemical composition studied using INAA. These results are discussed in chapter 8.

### **Instrumental Neutron Activation Analysis (INAA)**

With Instrumental Neutron Activation Analysis, researchers use a small sample of ceramic paste taken from within a sherd and expose it to nuclear radiation in an effort to quantify the paste's chemical composition. Paste samples are extracted by drilling into sherds and collecting the sherd dust, or cutting a small piece off the sherd and then grinding

down external surfaces until an untouched interior paste core remains. The current analysis uses the second method. After grinding, researchers at the Missouri University Research Reactor crushed the interior paste core and prepare it for analysis. The sample was next subject to the bombardment of neutrally charged sub-atomic particles (neutrons). These neutrons plunged into the existing atomic nuclei of the elements that make up the paste and turned them into radioactive isotopes. The sample was left to stabilize for a standardized period of time. Over this period of time as the unstable isotopes decayed they released gamma rays that were detected and recorded. Each element decays at its own rate releasing specific gamma rays which are recorded and gives researchers an exact composition of the elements (and their percentages) present in the sample.

Over the past fifty years researchers in the Old and New Worlds have contributed to the ever increasing databases of pastes and clay samples tested by INAA (Bishop et. al. 1982). Initial projects began to create databases back in the 1950's by Sayre (Sayre and Dodson 1957; Sayre et. al. 1958; Sayre et. al. 1971) and Harbottle (1970). Now when a sample is run for INAA it is compared to other samples of both vessels and clay samples that have been run previously. Using specially designed statistical methods, the samples in the database can be compared to one another and similarities can be seen between them.

Like petrography, it is important to note that INAA does not actually identify clay sources in the archaeological record. It identifies groups of like clays based upon concentration levels of elements. Using the criterion of abundance principle along with the "procurement zone" idea, clay production sources for a specific sample of paste are merely *suggested* (Rands and Bishop 1980).

A recent debate concerning neutron activation of ceramics from sites dating to the Early Formative period in Mexico highlight some of the limitations of INAA. The debate has called into question many of the fundamental assumptions and procedures underlying INAA. I believe it is worth discussing the arguments of each side in order to justify the use of INAA in my own present analysis. The debate began with the publication of a paper by Blomster and colleagues (Blomster et. al. 2005) who had been studying ceramic material at the Early Formative Olmec site of San Lorenzo, Mexico. They reported that INAA data had revealed that all the pottery present in San Lorenzo was actually produced locally and not imported into this first great Olmec capital. Furthermore, they reported that tests on pottery found at other Early Formative sites (those in the Oaxaca Valley and the Basin of Mexico) revealed that these sites were not trading ceramic vessels with one another and received all of their foreign pottery from San Lorenzo. Blomster and colleagues used these findings to support the idea that the Olmec served as a type of “mother culture” from which all other contemporary and future Mesoamerican civilization arose.

Flannery and colleagues (Flannery et. al. 2005) and Stoltman and colleagues (Stoltman et. al. 2005) presented critical articles in the *Proceedings for the National Academy of Sciences* at the same time that Blomster and colleagues’ article appeared in *Science*. Flannery critiqued Blomster’s data on four levels: 1) the level of error inherent in INAA, 2) Blomster’s sampling procedure, 3) the statistical method used to correlate likeness between paste samples in the INAA database, and 4) creating archaeological hyperbole solely in order to validate the “mother culture” model.

Flannery’s first concern was that INAA is a bulk technique. That is, it measures the chemical signatures of all aspects of the paste together at once – clay, naturally occurring

inclusions, and added inclusions. By measuring chemical frequencies in bulk, errors in INAA can result from 1) local variation within a clay sample, 2) added material (temper), 3) elements present in the water used to mix clay during the preparation process, 4) elements from substances that were stored in clay objects for long periods of time before disposal, and 5) “diagenesis” or the process of elements seeping into clay material after deposition occurs which can last some hundreds or even thousand’s of years.

Flannery’s problem with Blomster’s sampling concerns the fact that Blomster included a very large amount of locally made storage jars in his San Lorenzo sample. Large course storage jars are notorious for being made close to their distribution locale because of their size (Fry 1979). Blomster then went to other sites and chose pottery to include in the INAA sample that looked like it came from San Lorenzo (namely – carved gray ware). He did not choose a representative sample of non-San Lorenzo styled ware at the site of San Lorenzo itself. This would cause the sample to be enormously biased in terms of local pottery found at San Lorenzo.

As concerns the statistical question, Flannery and colleagues believe that the Mahalanobis technique which has been used for almost 50 years to determine groups of likeness among paste samples in the INAA database leaves out too many outliers. They cite the exclusion of at least 48 samples that Blomster et al did not include in the study.

Finally, Flannery and his colleagues believe that Blomster and his colleagues were skewing the data – or more specifically creating hyperbole – to account for the lack of data that San Lorenzo and the Olmecs were a form of “mother culture” (specific examples included the hyperbolization of the “red palace” at San Lorenzo, the disputable size of the

actual site, and the fact that it would be almost impossible for San Lorenzo not to have received some kind of trade goods from other areas like Oaxaca).

In their article, Stoltman and colleagues argue that petrographic data show that some of the same vessels that INAA classified as being made at San Lorenzo may actually have been made in Oaxaca. He cites the fact that the potential Oaxaca Gray wares contain locally occurring volcanics like tuff and gneiss fragments. Vessels with these minerals were found not only in Oaxaca, but also at San Lorenzo where such minerals are absent – thus, showing evidence of trade between San Lorenzo and Oaxaca. Furthermore, Flannery adds that this type of gray ware was found even earlier in other areas outside of San Lorenzo and appeared there in bulk numbers all at once – this suggests the possibility that the infamous carved gray ware (“Calzadas”) of San Lorenzo may have been a borrowed technology.

In a later edition of *Latin American Antiquity*, Neff and colleagues (Neff et. al. 2006) refute the charges made by Flannery, Stoltman, and colleagues in their previous articles. They cite problems with Stoltman’s use of specific petrographic material to determine location of production. They also cite the fact that Stoltman’s sample is quite small and may not even be from some of the same vessels in their original study. They also stand by the original strength of their Mahalanobis technique. Finally, Sharer and colleagues (Sharer et. al. 2006) respond in the same issue stating that, once again, they are not attacking INAA, only how it was used by Blomster and his colleagues.

The conclusion to be reached by this lengthy and often ugly debate is that these different ceramic analytical methods test different aspects of ceramic composition (mineralogy for petrography and chemical composition for INAA). They are most useful to the analyst when they are used to complement one another. Furthermore, each method must

employ rigorous and relevant sampling strategies or the resulting data are not only meaningless, they can ultimately hinder archaeological advancement. Finally, the debate urges archaeologists to maintain reflexivity, continually ensuring that finding support for an archaeological theory does not take primacy over effectively conducting and reporting archaeological research.

The same samples used for petrographic analysis in the present study were used for INAA. This allowed me to associate mineralogical composition with chemical composition. As with the petrographic analysis, in accordance with the three-tiered compositional methodology employed in this study, INAA and petrographic results were compared to findings of the first-level stereo-microscope study. The ultimate goal of this research was to create a baseline for the study of ceramic pastes in the Holmul Region whereby initial results obtained using the stereo-microscope could be used, in a general manner, to predict mineralogical and chemical composition allowing me immediately to place sherds in potential source groups during future analysis in the region.

INAA results were also compared to the results of previous INAA performed on ceramics in neighboring Peten sites. On the inter-site level, the ceramics analyzed in the present study were compared to ceramic material from other sites in the Maya lowlands in an effort to identify any imported ceramic types into the Holmul Region during the Terminal Preclassic period. Similarly, results could also identify material found at other sites as potentially being produced within the Holmul Region during this time. This type of analysis essentially enabled me to formulate patterns of intraregional and interregional ceramic exchange based on chemical composition.

## Standardization

The level of standardization of an attribute in an artifact class can be used to infer level of *scale* (Costin 1991) or the amount of producers involved in making one artifact class. Standardization is defined by the “relative degree of homogeneity or reduction in variability in the characteristics of pottery” (Rice 1981: 268). It has generally been found among prehistoric and contemporary pottery making communities that as standardization increases, the amount of producers (scale) decreases, resulting in a higher level of specialization (Rice 1987b; Stark 2003). The most common measure of standardization is the coefficient of variation. The coefficient of variation is a measure of dispersion of a probability distribution and is defined as the ratio of the standard deviation “ $\sigma$ ” to the mean “ $\mu$ ”:

$$c_v = \frac{\sigma}{\mu}$$

The coefficient of variation is a standardized manner in which to express and compare variance of different samples around different mean values. It is most commonly expressed as a percent of one hundred in archaeological literature – this is done simply by multiplying the results of the above equation by 100%. Both archaeologically and ethnoarchaeologically (Benco 1988; Blackman et al 1993; Longacre 1991), higher coefficients of variation almost always reflect lower levels of standardization (and therefore lower levels of specialization and higher numbers of producers).

Three morphological variables (rim thickness, rim diameter, and wall thickness at the rim) were used to measure levels of standardization in the production of the previously defined shape-classes within the three traditions under study. Coefficients of variation for rim diameter, rim thickness, and wall thickness at the rim were compared against one another

to determine relative levels of standardization for each type-form of the three larger traditions.

It should be noted that standardization studies of pottery industries that seek to infer aspects of *context*, specifically degree of centralized control over an artifact industry, have been heavily criticized in recent literature (for recent discussions see Arnold 2000; Costin 2001:301-303; Foias 1996: 193-196). This is because the level of standardization does not necessarily depend on elite control, but can be a function of other factors such as cultural aesthetic (Hodder 1982), constraints on natural resources (Arnold 2000) or even market demands for a more standardized product (Arnold and Nieves 1991). Because of these problems, such an approach will not be taken here. The purpose of this standardization study is simply to get a better idea of how many producers may have been manufacturing ceramics within the orange gloss traditions versus those producing ceramics within the red monochrome tradition.

### **Non-Metric Intra-Product Diversity**

The metric morphological standardization study was complemented by separate measurements of richness and evenness of non-metric variables of paste and surface-finish. The theory behind studies of non-metric variables is similar to that of standardization studies. As concerns the present study, more variation within a defined variable of a product class may be indicative of the involvement of more individual producers or production units in the manufacture of each type-form. Studies of intraproduct and interproduct diversity are not uncommon in archaeological ceramic analysis within the Maya area (Bill 1997; Foias 1996; Rice 1981). Diversity analyses essentially measure two categories: “richness” or the number

of categories present within a sample, and “evenness” the number of individuals within each category. A sample with many categories (high richness) and evenly distributed number of individuals within those categories (high evenness) is considered to be more diverse than a sample that is not. The application of diversity studies to ceramic analysis was borrowed from the field of environmental ecology where scientists use measurements of diversity to compare species populations within different environmental areas (see Magurran 2003).

The most commonly applied measurement of diversity by ceramicists is the Shannon Index (also known as Shannon-Weaver Index or Shannon-Weiner Index) defined by the following equation:

$$H' = - \sum_{i=1}^S p_i \ln p_i$$

Where:

$n_i$  = The number of individuals in each species; the abundance of each species.

S = The number of species. Also called species richness.

N = The total number of all individuals

$p_i$  = The relative abundance of each species, calculated as the proportion of individuals of a given species to the total number of individuals in the community

The Shannon Index is not used in the current study for a number of reasons. First, the current sample size for each type-form is relatively small and the Shannon Index produces the best results only when samples being compared are relatively large. Second, the sample sizes of each type-form in the present study are not equal and proper use of the Shannon Index necessitates samples of approximately the same size. Finally, as Bill (1997) notes, “a single measure of heterogeneity masks the features of richness and evenness that define the

different structural properties of an assemblage. As a result, assemblages with two very different structures – one with high richness and low evenness and one with low richness and high evenness – may have the same compound value of diversity (Rindos 1989:13).”

In this study I employ Margalef's Index to measure species or category richness which is represented by the following formula:

$$SR = (S - 1)/\ln N$$

Where S represents the number of species or categories, and N is the number of individuals. This index provides a measure of species or category richness that is roughly normalized for sample size. Measurements for evenness are represented by the standard deviation of species or categories within each type-form. A high standard deviation would represent a relatively low evenness while a low standard deviation would represent a high level of evenness. Non-metric variables subjected to separate richness and evenness tests were paste variant (or paste recipe), paste color, and surface color.

Upon completion of non-metric and metric diversity studies, ideally, higher levels of morphological standardization would correspond to lower levels of richness and evenness for paste recipes within specific traditions leading me to conclude that fewer producers created the specific tradition under study. Inversely, lower levels of standardization should correspond to higher levels of richness and evenness in paste recipes indicating that more producers were involved with the production of a specific tradition. Ultimately, the combined results of these various analyses would aid in answering some of the corollary questions of this production analysis, namely characterizing the level of specialization and mode of production within each type-form and tradition during the Late Preclassic, Terminal Preclassic, and Early Classic periods.

## **Conclusions**

I have specifically tailored the methodology of this ceramic production study, keeping in mind the limitations of the current sample, the anthropological and culture-historical questions that the sample can address, and the theoretical framework underlying the current study. While the dataset clearly has its limitations, a great deal of information regarding the production technologies used by potters to make ceramics belonging to the three traditions defined above can still be gained by employing a suitable suite of analytical techniques. Before reporting on the results of the modal, diversity, standardization, petrographic, and INA analyses, I present the newly revised Holmul region ceramic chronology followed by the Holmul Region ceramic typology.

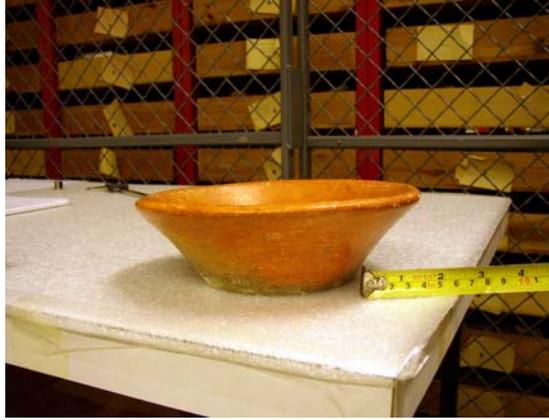


Figure 3.1 Sierra Red flaring bowl form (photo by author)



Figure 3.2 Sierra Red flaring bowl with incurving rim form

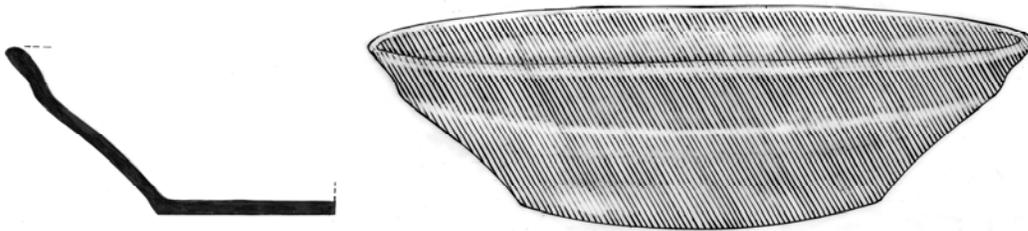


Figure 3.3 Sierra Red composite bowl form (lateral angle) (not to scale)

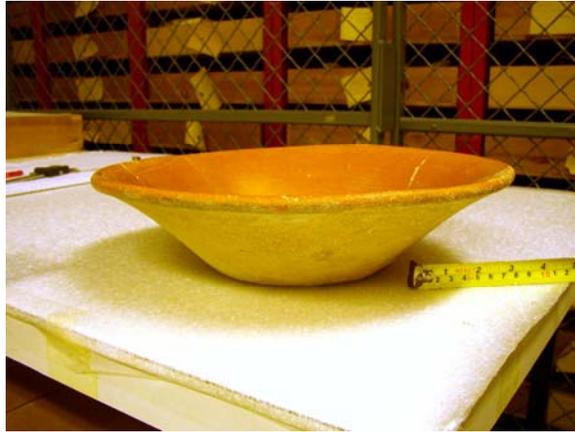


Figure 3.4    Aguila Orange flaring bowl form (this vessel is actually Nitan Composite: Variety Unspecified, but the form and interior slip are identical to Aguila flaring bowl forms) (photo by author)



Figure 3.5    Aguila Orange composite bowl form (rounded z-angle form) (photo by author)



Figure 3.6 Ixcario Orange Polychrome composite bowl form (photo by author)



Figure 3.7 Actuncan Orange Polychrome composite bowl form (photo by author)



Figure 3.8 Boleto Black-on-Orange composite bowl form (photo by author)

## CHAPTER IV

### THE HOLMUL REGION CERAMIC CHRONOLOGY

#### Introduction

George C. Vaillant used Raymond Merwin's field notes and ceramic cross dating techniques to construct the original ceramic sequence for the site of Holmul, Guatemala (Merwin and Vaillant 1932: 60-84; Vaillant 1927: 300-316). Based upon ceramic style, stratigraphic position of pots with particular styles, and potential episodes of architectural construction at Holmul, Vaillant proposed a series of five ceramic phases for the site (Vaillant 1927:300-316). Prior to the publication of his co-authored monograph with Merwin, but after Merwin's initial excavation of Holmul and subsequent death, Vaillant related these ceramic phases and specific styles to pottery from other sites in the Maya area in an effort to create the first interregional ceramic chronology for ancient Maya civilization (Vaillant 1927). While Vaillant and Merwin's combined work served as an important building block for initially understanding chronological sequences in ancient Maya archaeology, little direct study of the original Holmul material, and revision of Merwin and Vaillant's initial sequence, has taken place until the initiation of Boston University Holmul Project investigations in 2000 (Kosakowsky 2001; for previous study see Hammond 1984; Pring 2000: 44-56, 1977; Smith 1955: 22-23; Vaillant 1927: 300-316).

In this chapter I will briefly review Vaillant's original chronology for the site of Holmul and present a revised chronology for the Holmul Region based upon, 1) previous interpretations of Merwin and Vaillant's (1932) original work at Holmul, 2) my own study of Holmul ceramic material recovered from Merwin's excavations in 1911 and currently stored in the Peabody

Museum of Archaeology and Ethnology in Cambridge, MA, and 3) my analysis of pottery recovered in Holmul Project excavations sponsored by Boston University in 2000 and by Vanderbilt University in 2001-2007.

### **Vaillant's Ceramic Chronology**

Vaillant's original ceramic sequence for Holmul was based upon the ceramic style of whole vessels discovered in three structures in the Holmul site center: these structures are Building B, Group II; Building F, Group I; and free standing structure Ruin X. Material from tombs in Building B, Group II contributed to Vaillant's ceramic phases Holmul I-IV while material in Building F, Group I and Ruin X was exclusively from Vaillant's latest ceramic phase, Holmul V. While Vaillant believed Phases I, II, IV, and V encompassed relatively singular architectural events and ceramic advances, he divided Phase III into four episodes or sub-phases. The defining ceramic modes of each phase are presented below, taken directly from Vaillant's original monograph (Merwin and Vaillant 1932: 82):

**HOLMUL I:** Bowls with tetrapod support; bowls with concave bottom; spouted pot forms; sparing use of complicated design forms; pot-stands.

**HOLMUL II:** Transition into basal form of composite silhouette bowl; appearance of scutate covers with animal heads; pot-stands.

**HOLMUL III:** First Phase, absent. Second Phase, development of the composite silhouette bowl with basal bevel; scutate covers with well-modeled animal heads; few examples of polychrome design; virtual absence of the leg as support. Third Phase, fall of decorated black lacquer and rise of polychrome decoration; scutate covers with effigy knobs in polychrome; simple forms of bowls. Fourth Phase, tendency for polychrome pottery patterns to degenerate and simplify; rise of undecorated vessels and new forms, such as modeled effigy covers and low cylindrical jars; pot-stands.

HOLMUL IV: Continuance of degenerate polychrome patterns and tendency for the sharply defined composite silhouette bowl with basal bevel to lose its clarity of outline.

HOLMUL V: New styles like tall cylindrical vase and flat-bottomed bowls with cylindrical tripod support; use of glyphs and life forms as decorative elements.

Vaillant cross-referenced the Holmul pottery with traits listed above to pottery with similar traits recovered from other Maya sites where archaeologists were able to create a more secure chronology using relatively absolute dating methods at the time. This resulted in the following suite of dates presented in Vaillant's dissertation (1927: 335):

**Table 4.1 Vaillant's Original Ceramic Complexes for Holmul**

<b>PHASE</b>	<b>DATE RANGE</b>
Holmul I	200 BC – AD 100
Holmul II	AD 100 – 300
Holmul III	AD 300 – 455
Holmul IV	AD 455 – 540
Holmul V	AD 540 – 600

Vaillant later revised his chronology (Merwin and Vaillant 1932: 82) to extend the end of Holmul V into the middle ninth century AD.

Vaillant's original Holmul sequence is not widely used today perhaps owing in part to, 1) the lack of more absolute dating methods to determine ceramic phases at Holmul, 2) the general lack of material, specifically complete ceramic assemblages or complexes from Merwin's original excavations, and 3) the publication of the firm sequence created by Robert Smith (1955)

using abundant and chronologically reliable material from the central Peten site of Uaxacatun, Guatemala. Despite the relatively little reference to Vaillant's Holmul ceramic sequence after the publication of Smith's monograph in 1955, ceramics from Vaillant's Holmul I and Holmul V phases continue to occupy the attention of archaeologists. As I noted in chapter 1, the stylistic origins of Holmul I ceramics have fueled debates concerning the rise of Classic Maya civilization in the lowlands. Additionally, one specific type of ceramic material from Vaillant's Holmul V Phase, Cabrito Cream Polychrome, has contributed to debates concerning ancient Maya politics, economy (including craft specialization and trade), and iconography (Reents 1985; Reents-Budet 1991; Reents-Budet et al 1994; Reents-Budet et al 2000).

### **Problems with the Original Chronology**

New archaeological data from the Holmul Region and beyond, as well as continued re-interpretations (Hammond 1984; Pring 1977, 2000; Willey and Gifford 1961) of Merwin and Vaillant's original data both contribute to the need to revise Vaillant's original ceramic sequence. Vaillant himself knew this would happen and aptly writes, "Continued excavation and research will render obsolete and mistaken much of the analytical data contained in this discussion of the finds at Holmul" (1932: 96). However, this in no way makes light of the significant contribution Merwin and Vaillant made to the field of Maya archaeology and Americanist archaeology in general. The results and success of their work contributed to the theory that Classic Maya civilization arose out of multiple local origins rather than wholesale diffusion from single previously established civilizations in South and Central America. Their work also emphasized the differences in regional ceramic culture in contrast to seeming interregional similarities in monuments, calendars, and to a lesser extent architecture. This led them to suggest that Maya

culture was far from homogenous and deserving of interregional comparison only after specific regional study. Finally, and most significant to American archaeology, their work emphasized the importance of using a methodologically oriented scientific archaeology in conjunction with then current ethnological comparison to gain a better understanding of ancient culture. I present this list of accolades to Merwin and Vaillant because it is only after I have acknowledged the significance of their original work that I feel qualified to critique it.

There are four types of problems inherent in Merwin and Vaillant's (1932) original ceramic sequence for the site of Holmul. The first problem is one of context. The bulk of material for Vaillant's Phases Holmul I through IV come from burials in Building B, Group II at Holmul. Merwin notes on separate occasions (see references in discussion of rooms below) that rooms in Building B, Group II may have been re-entered after initial deposition and that both bones and artifacts may have been moved from their original locations. Similarly, it appears from Merwin's descriptions of certain burials that bones may have been burned before, during, or after deposition also implying potentially numerous depositional episodes or at least multiple entrances into the sealed rooms of Building B. A preliminary osteological analysis of Building B, Group II burials by Anna Novotny (n.d.) of the University of New Mexico supports these findings. Described below, Novotny notes that none of the skeletons belonging to burials in Building B are complete and most were found disarticulated. The ceramic offerings found associated with burials in Building B, Group II reflect these problems of context in that ceramic vessels displaying modes clearly associated with specific time periods are found in association with ceramic vessels of the preceding or succeeding periods (e.g., Room 8 and its vault, and Rooms 1 and 2). All of this points to the conclusion that the stratigraphic position of the burials alone is not a reliable indicator for the purposes of dating the burials or the vessels associated

with them. A detailed reinterpretation of the archaeology of Building B, Group II, such as that performed by Hammond (1984), must be performed in conjunction with ceramic cross-dating to verify the construction sequences and relative dates of burials.

The second problem with Vaillant's analysis is that there exist certain discrepancies in the data as they are presented by Merwin (Merwin and Vaillant 1932), Vaillant (1927; Merwin and Vaillant 1932), and the Peabody Museum catalogue. The discrepancies often concern the assignment of incorrect catalogue numbers to vessels pictured in the Plates of Merwin and Vaillant's 1932 publication, confusion of catalogue numbers in published material and on the actual vessels, differences between Merwin and Vaillant's physical description of certain vessels, and in one instance Vaillant's assignment of a vessel to a different room than was originally described by Merwin. Taken separately these discrepancies do not appear extremely significant, and most of them have been noted by the handful of scholars who have worked with the Holmul material previously (Hammond 1984; Pring 2000). However, taken together, and in conjunction with the already problematical nature of the archaeological contexts discussed above, these discrepancies make it difficult to trust in the validity of the original Holmul publications completely and the way in which the data were first presented.

The third critique I have of Vaillant's original sequence concerns his strict adherence to an evolutionary theoretical framework. Vaillant's evolutionary scheme emphasizes aspects of quality in form and decoration through time. In Vaillant's view, taken together, and in relatively strict stratigraphic sequence, the pottery of Building B, Group II reflects the waxing and waning of what he considers to be the "Old Empire" (Early Classic) ceramic tradition. Discussed below, the situation is slightly more complex than this, especially considering the pottery associated with Room 10, or Vaillant's final Early Classic sub-phase, Holmul IV. The relatively "poor"

quality or “decadent” aspects of what Vaillant considers Holmul IV pottery may actually be the result of these pots being *earlier* than his Holmul IV Phase or perhaps even imported to the site.

My final critique is that the sequence was created in isolation from the rest of the Holmul region ceramic material. This problem contributes to the critique outlined above. Discussed below in the room-by-room analysis of Building B, Group II, while I agree with Vaillant that certain vessels in Rooms 1 and 2 post-date others and are representative of a succeeding period (namely Tzakol 3 as opposed to Tzakol 2), their physical characteristics being monochrome or “less complex” does not warrant Vaillant’s notion of “decadence” in his Holmul III Phase. These vessels are merely plain serving vessels and are part of a larger assemblage complete with well-executed fine-ware. The interpretation of these vessels in isolation together with a strict evolutionary theoretical framework forces Vaillant to overlook important changes in burial patterns over time or even differences in the socio-economic status of individuals interred during different chronological periods.

These critiques do not belittle the importance of Merwin and Vaillant’s contribution to Maya archaeology, nor do I attempt to label these scholars as incompetent. After all, Merwin’s original research design was not regional, Vaillant was simply using the predominant theoretical paradigm of his day to understand what he perceived as ceramic change in Building B, and finally, many people, including the Peabody curators and Vaillant himself, were left guessing at some of Merwin’s original data after his untimely death. While Merwin and Vaillant’s original publications may be slightly flawed, they were reliable enough to spawn a number of significant debates about the rise of Classic Maya civilization and the nature of ancient Maya politics and economy. I will now proceed where Merwin and Vaillant left off, and discuss the newly revised Holmul Region ceramic chronology.

## **Current Chronology**

The current Holmul Region chronology is the result of ceramic analysis and interpretation by a combination of scholars over the course of many years. As I discussed earlier, the sequence is derived from Merwin's original excavations (Merwin and Vaillant 1932: 20-41, 50-52), Vaillant's analysis of pottery from Merwin's excavations, as well as his interpretations of Merwin's notes (1927: 300-335; Merwin and Vaillant 1932: 13-16, 54-84). Comparative work was later performed by Willey and Gifford (1961:152-155), Pring (1977a, 2000: 44-56), and Hammond (1984: 1-7). These scholars focused exclusively on the pottery found in Room 8, the Room 8 Vault, and Room 9 from Building B, Group II. The purpose of their studies was to better understand the pottery in these rooms and its relation to the rise of Classic period civilization. Dorie Reents-Budet (Reents 1985; Reents-Budet 1991) performed a previous analysis on specific vessels (Pots 1 and 3) from Room 1, Building F, Group I in an attempt to understand iconographic themes and painting styles depicted on these vessels. Until the present work, a reanalysis of the whole vessels from Rooms 1, 2, 3, 4, 7, and 10 from Building B, Group II, the remaining pottery from Room 1 in Building F, Group I, and all the pottery from Ruin X remained unexamined aside from Merwin and Vaillant's (1932; Vaillant 1927) original assessment. Ceramic material from Holmul Project excavations sponsored by Boston University in 2000 was examined by Laura Kosakowsky (2001). Kosakowsky was able to extend Merwin and Vaillant's original sequence both back in time through the Late Middle Preclassic period and forward to the Terminal Classic period. Bernard Hermes analyzed ceramic material from Vanderbilt University Holmul Project excavations in 2001-2004 and was able to identify a potential Early Middle Preclassic component to the sequence. I began a more long

term analysis of all Holmul Project ceramic material in 2005 and was able to flesh out the sequence created by previous scholars.

The current Holmul Region ceramic chronology is presented in isolation in Table 4.2 and in relation to other Maya area sequences in Figure 4.1. Because some phase names from Vaillant’s original sequence have been thoroughly cited in archaeological literature, I decided to revise his previous chronology equating his phase names with newly defined ceramic complexes in the Holmul Region whenever I could.

**Table 4.2 Current Holmul Region Ceramic Chronology**

<b>CERAMIC COMPLEX</b>	<b>DATE RANGE</b>	<b>TIME PERIOD</b>
K’AWIL / EARLY EB	1000 – 850 BC	EARLY MIDDLE PRECLASSIC
IXIM / LATE EB	850 – 600 BC	EARLY MIDDLE PRECLASSIC
YAX TE / MAMOM	600 – 350 BC	LATE MIDDLE PRECLASSIC
ITZAMKANAK / CHICANEL	350 BC – AD 250	LATE PRECLASSIC
WAYAAB (SUB-COMPLEX)	AD 150 – 250	TERMINAL PRECLASSIC
K’AHK 1 / TZAKOL 1	AD 250 – 350	EARLY CLASSIC
K’AHK 2 / TZAKOL 2	AD 350 – 450	EARLY CLASSIC
K’AHK 3 / TZAKOL 3	AD 450 – 550	EARLY CLASSIC
CHAK / TEPEU 1	AD 550 – 650	LATE CLASSIC
IK-CHUAH / TEPEU 2	AD 650 – 830	LATE CLASSIC
KISIM / TEPEU 3	AD 830 – 900	TERMINAL CLASSIC

The current ceramic sequence was created by using a combination of relative dating techniques including, 1) carbon dating of organic material found in association with whole vessels in sealed, well-stratified contexts, 2) ceramic seriation of modes and types of pottery found in Holmul Region excavations, and 3) cross-dating ceramic modes and types of Holmul Region pottery with pottery found in other Maya sites. Details associated with the carbon dates are presented on the next page Table 4.3.

The ceramic material of the Holmul Region warranted the creation of its own sequence and series of complexes. After intense preliminary and subsequent formal analyses, I believe the ceramic material recovered from sites excavated in Holmul Project excavations sponsored by Boston University in 2000 and Vanderbilt University in 2001-2007 shared certain regional modal similarities, as well as common interregional modal differences in comparison to nearby sites with previously well-established ceramic complexes such as Tikal (Culbert 1993, n.d.), Uaxactun (Smith 1955), and Barton Ramie (Gifford 1976). It is important to note that at this point more material is associated with some complexes than others. This uneven distribution in overall material is compounded by an uneven distribution in serving ware versus utilitarian ware. Because of this potential fault of utilitarian ware, some complexes remain somewhat more theoretical than actual. That is, they may only be represented by a sub-complex of serving ware and not consist of complete and different ceramic assemblages. These problems are discussed in more detail in chapter 4.

**Table 4.3 Carbon Dates from Archaeological Contexts within the Holmul Region, Guatemala**

<b>CONTEXT</b>	<b>UNCALIBRATED</b>	<b>1-SIGMA</b>	<b>2-SIGMA</b>	<b>COMPLEX</b>	<b>REFERENCE</b>
Cival, Burial 33: bone collagen from burial	2670+/-40 BP	895-840 BC	900-790 BC	K'awil/ Early Eb	Estrada-Belli (2008:44)
Cival, Cache 4: charcoal from floor that sealed the cache	2520+/-40 BP	790-760 BC, 680-550 BC	800-520 BC	Yax Te/ Mamom	Estrada-Belli (2008:44, 2006b:63)
Holmul, Building B, Group II, Phase I: charcoal within stucco of mask	2300+/-40 BP	400-340 BC		Itzamkanak/ Chicanel	Estrada-Belli (2008:15)
Cival, Structure 1, Phase 4: charcoal within north mask 1	2170+/-40 BP	260-160 BC	360-90 BC	Itzamkanak/ Chicanel	Estrada-Belli (2006b:65)
Holmul, Building B, Group II, Burial 10: bone collagen from burial	1840+/-40 BP	AD 120-230	AD 80-250	Wayaab	Estrada-Belli (2006a:4)

Holmul Region ceramics manifest specific modes of material common to neighboring regions during certain complexes – specifically the Central Peten and the Belize River Valley. Briefly, ceramics from the K’awil/Early Eb complex share closest affiliations with nearby Belize River Valley ceramic traditions in paste, form, and finishing/decoration. Ixim/Late Eb complex and Yax Te/Mamom material begins to show form modes common to Central Peten ceramics of the Mamom ceramic sphere, but still using K’awil/Early Eb paste recipes. Itzamkanak/Chicanel material displays modes firmly established elsewhere for Late Preclassic ceramics in the Central Peten and Chicanel Sphere in all aspects of production – paste preparation, form, firing, and surface. The Terminal Preclassic Wayaab sub-complex of fine-ware displays modes strongly affiliated with pottery from the same time period and found at sites in the Belize River Valley, northern Belize, as well as funerary offerings found in Central Peten sites. In the K’ahk 1/Tzakol 1 complex, ceramic modes of serving ware, utilitarian ware, and imports become strongly anchored in Central Peten traditions displayed in characteristics of Tzakol I Sphere ceramics. These preferences for Central Peten modes continue through the K’ahk 2/Tzakol 1, K’ahk 3/Tzakol 3, Chak/Tepeu 1, and Ik-Chuah/Tepeu 2 complexes. Kisim/Tepeu 3 complex ceramics again share modal similarities with material recovered in excavations from Belize River Valley sites such as Xunantunich along with strong continued Central Peten influences.

The discussion of the new Holmul Region ceramic chronology presented above provides only a brief and very general explanation of the sequence. More specific interpretations of production, distribution, and exchange modes are explained within each ceramic complex description in chapter 4. The remaining purpose of this chapter is to integrate Merwin’s original data and Vaillant’s interpretations into the new chronological sequence.

## **Reassessment of Vaillant's Original Sequence**

In this remaining section, I will re-interpret the chronological and cultural significance of whole vessels found in Building B, Group II; Building F, Group I; and Ruin X at Holmul originally excavated by Merwin and analyzed by Vaillant (Merwin and Vaillant 1932; Vaillant 1927). The discussion that follows is not based upon Merwin's original excavation notes or a firmly established construction sequence based on reliable stratigraphy found by Merwin in buildings at Holmul. Although many of the contexts that Merwin excavated were sealed tombs, they were re-entered numerous times in antiquity, thus prohibiting anyone from reliably using the ceramic material in the contexts as precise chronological markers – they are simply too mixed to gain accurate dates of deposition. Therefore, the chronological patterns that I outline below are largely conjectural and are by no means conclusive or irrefutable. I will first discuss the pottery of Building B, Group II beginning with the ceramic material that, based upon Merwin's original excavation data (Merwin and Vaillant 1932: 37-39 also see Hammond 1984:4-5) and recent Vanderbilt Holmul Project investigations (Neivens 2004), I believe was deposited first. I will then move forward in time through subsequent depositional episodes. Therefore, the order of discussion will be south side of Room 8, newly discovered Burial 10 (Neivens 2004: 88-90), Room 9 and its vault, Room 8 vault and the north side of Room 8, Room 7, Room 3, Room 2, Room 1, and then the problematical Room 10. I will then discuss the whole vessels in Room 1, Building F, Group I and Room 1, Ruin X. In order to provide an accurate description of the context of each room, I will present a brief discussion of the architecture and osteological material found in association with the ceramic material. I will then present a brief physical description of each vessel including any current type-variety name. I will compare physical characteristics of the vessels to similar vessels found in Maya sites where the data are available

and relevant. I will end the description of pottery found in each room with an overall conclusion about its chronological and cultural significance within the framework of the new Holmul Region chronology. Appendix A should aid in this reappraisal of pottery recovered in Merwin's original excavations as it contains the original context for each vessel, the Peabody Museum catalogue number, descriptions and illustrations of each vessel as they appeared in Merwin, Vaillant's, and Pring's original publications, as well as a note about any discrepancies that I may have encountered when compiling the original data.

### *Building B, Group II*

Building B is one of six masonry structures arranged around a patio in Group II of the Holmul site center (Figure 4.2). The building consists of four rooms atop a sub-structure of rubble construction fill and a Late Preclassic building. The original purpose of the structure remains unclear. Whether it functioned primarily as an elite residence, space for elites to hold court, or a small temple or shrine is difficult to assume. The building contains two small tombs (Rooms 8 and 9) and a burial cyst built into the sub-structure (Burial 10). Rooms 8 and 9 both contain an accompanying smaller vault dug through the floor. Merwin and Vaillant's interpretation of architectural sequences varies slightly, specifically in respect to the construction of Rooms 8 and 9 which I will address below, but they both agree upon roughly four larger construction phases (Merwin and Vaillant 1932: 40-41). The first phase witnesses the construction of the sub-structure platform and corbelled-vaulted Rooms 1, 2, and 3. In the second phase, the substructure was expanded north and Rooms 7 and 4 were constructed. It was also during this time that the exterior walls of the building were covered in plaster complete with stucco ornamentation on the upper register. The third construction phase involved converting the

upper Rooms 1, 2, 3, and 4 into burial chambers. In at least two separate events, but possibly four according to Vaillant (*ibid*: 40), osteological material and funerary furniture was placed in these four rooms and the only entrance to the building sealed. The fourth and final phase witnessed the covering of the stucco-ornamented building with rubble fill and subsequent plaster-finishing of this new platform.

Vanderbilt Holmul Project excavations in 2003-2007 have expanded upon Merwin and Vaillant's original interpretations of the architectural sequence of Building B. In 2003-2007, Building B was the focus of excavations conducted by Nina Neivens de Estrada (Neivens 2004: 88-90; Neivens de Estrada 2006:22-27). Over the past four years, Neivens de Estrada has discovered three more building phases antedating those proposed by Merwin and Vaillant (Figure 4.3). The first witnesses the construction of a masonry platform complete with stucco-plastered façade and deity masks. Construction fill of the platform supporting this building, and construction fill used to fill the building in Phase 2, both contained large quantities of K'awil/Early Eb complex ceramic material mixed with other Ixim/Late Eb and Itzamkanak/Chicanel material. The second and third phases of construction inter the original Late Preclassic building and it is not until Phase 4 when construction occurs on Rooms 1-3 in Building B. As I noted above, not only did Neivens de Estrada discover three new construction phases antedating the construction of Rooms 1-3 in Building B, but she also discovered a previously undiscovered cyst burial containing Wayaab sub-complex pottery (Burial 10 with vessel SF# HT.41.10.02.01) located in the substructure south of Room 1 (Figure 4.4). While this new data expand the construction sequence of Building B back in time, it unfortunately does little to aid in understanding the depositional sequence of pottery and osteological material in Rooms 1-10. Although Burial 10 is stratigraphically lower than Rooms 8 and 9, there still

remains no definitive way to determine if it was cut into the sub-structure and sealed before or after the construction of these other rooms.

Pottery from Room 8, the Room 8 vault, and Room 9 of Building B, Group II has been the subject of much previous study (see for example, Hammond 1984; Pring 1977, 2000: 44-56; Willey and Gifford 1961). There is little more I can add to the discussion about the nature and significance of these vessels that has not been stated in earlier publications – except for assigning type-variety names to the material when possible. Aside from integrating these vessels into the new Holmul Region ceramic chronology, one of the most significant contributions of this re-appraisal of Merwin and Vaillant’s original research is the analysis and description of vessels in Rooms 1-3, 7, and 10 of Building B, Group II. Many of these vessels have not been analyzed prior to this work, much less sufficiently described or illustrated. These pots are significant in that they reflect the previously unreported participation of Holmul Region elites in an exclusive Early Classic political network centered at Tikal, as well as possible earlier connections to Calakmul and Becan. Discussion of these vessels helps flesh out not only the ceramic sequence in the Holmul Region, but the role of Holmul Region elites in important lowland Maya socio-political events of the Early Classic period.

### **Room 8, South Side**

Room 8 is located directly below the floor of Rooms 1 and 2 in Building B, Group II (Figure 4.2). The north side of the room appeared to be separated from the south side of the room by a crudely built wall (Merwin and Vaillant 1932: 37). The vault in Room 8 was dug into the floor of the northeast corner of the room. Merwin’s description of the room is as follows:

This room was found because it was noticed that the painted plaster on the end of the floor between Rooms 1 and 2 extended below the floor of Room 2. Digging through the small rocks and mortar which composed the floor of Room 1, a sealed entrance was disclosed under the edge of the floor of Room 2. To the south of this entrance was solid masonry, but the floor and walls extended beyond. The floor, which was covered by large and small rocks laid in hard mortar, reached at least to a point in line with the south wall of Room 1. The unplastered roof conformed to the line of the floors in Rooms 1, 2, and 3 and was of very crude masonry with large pieces of mortar and rocks projecting. Yet the walls were plastered with some care. The floor was also smoothly plastered and was colored black. The walls were built on the plastered floor, and while a few pieces of charred wood were found, they showed no trace of fire.

In the south end of this room, fragments of human bones were found in the mortar between the first and second strata of rocks above the floor. This end was sealed up with heavy rocks laid in thick plaster. The wall was crude, neither smoothed nor plastered; its north face was in line with the south edge of the floor in the entrance between Rooms 1 and 2. It is highly probably that the south end of the room was filled up, and that exit was made through the roof to the room above. (Merwin and Vaillant 1932: 37)

One of the most significant aspects of Merwin's description is that the walls and floor of the room seem to have been "plastered with some care". Described below, in comparison to Room 9, the architecture of Room 8 appears to be formal and carefully prepared – in other words, a proper burial chamber or tomb. Furthermore, Merwin speaks of the south side of the room being "sealed up with heavy rocks laid in thick plaster", thus creating spatial and probably even chronological division between the north and south sides of the room. It is only in the sealed south end that human bones are found. Merwin initially identified three groups of bones and assumed they represented the remains of three separate individuals, naming them Skeletons 17, 18, and 19. Novotny's (n.d.: 2-4) analysis reveals that none of these groups of burials represented a complete skeleton. Furthermore, the groups of bones each represented at least two adult males. Based on the count of specific bones found with each "Skeleton" grouping, she believes Skeletons 17, 18, and 19 may have represented at least two, but possibly as many as six individuals. However, overall particular bone fragment counts suggest the lower number of two

individuals. All Skeletons contained bones with evidence of burning or at least coming in contact with fire. Associated with the bones are Vessels 1, 2, 3, 6, and 7 (Figure 4.5). As a group and based on form and slip characteristics, Smith (1955:22) places these vessels firmly within the Tzakol Sphere. Like Hammond (1984: 4) and Pring (200:47), I disagree and based on personal observations (except Vessel 2), believe they belong in the late Chicanel Sphere or Itzamkanak/Chicanel Complex in the Homul Region. All five vessels display characteristic production modes of the Late Preclassic period in the Maya lowlands. As a note, Vaillant placed all five vessels within his Holmul I Burial Period (Merwin and Vaillant 1932:61).

Vessel 1 (Figure 4.6) is a small flaring-walled dish with direct rim, rounded lip, and flat base. Slip is a thick red with signs of fire-clouding. I have classified Room 8 Vessel 1 as Sierra Red: Sierra Variety.

Vessel 2 (Figure 4.7) is a small vase with flaring walls, direct rim, rounded lip, and flat base. The vase has four hollow mammiform supports with air vents and nubbin tips. This is the only vessel from the south side of Room 8 that I did not observe in person, but based on previously published illustrations and drawings (Hammond 1984: Figure 2; Merwin and Vaillant 1932: Plate 91, d; Pring 2000: Figure 2) as well as photos taken by Dr. Francisco Estrada-Belli at the American Museum of Natural History in New York City, I agree with Hammond (1984: 4) and Pring (2000: 47) and feel comfortable placing Vessel 2 within the Late Preclassic ceramic tradition. While the vessel does display the mammiform support mode of the Terminal Preclassic Wayaab sub-complex, because it is grouped with other clear examples of Late Preclassic pottery and because of its lack of orange slip and polychrome painting, as well as its seemingly close similarity to Sierra type modes, I still choose to classify it as Sierra Red: Variety Unspecified.

Vessel 3 (Figure 4.8) is a bowl with round or even slightly incurved sides, direct rim, rounded lip, and flat base. The slip is a deep red with noticeable fire-cloud at the base. Vessel 3 from Room 8 is classified as Sierra Red: Sierra Variety.

Vessels 6 and 7 (Figures 3.9 and 3.10) are almost identical and were found inverted over one another or lip to lip in the side of Room 8. Both are dishes with flaring walls, direct rims, rounded lip, and flat bases. Both possess a deep red slip with signs of fire clouding on the walls and base and I place them in Sierra Red: Sierra Variety.

To summarize the analysis of architectural, osteological, and ceramic remains in the south side of Room 8 Building B, Group II, I believe that this room was constructed and bodies and vessels interred prior to construction and interment in Room 9, the north side of Room 8, Room 8 vault, and Rooms 1, 2, 3, 4, 5, 7, and 10. The architecture in the south side of Room 8 suggests the creation of a formal burial vault in the fourth phase sub-structure of Building B, Group II. The fact that all vessels in the south side all date relatively firmly to Itzamkanak/Chicanel ceramic complex potentially make them the earliest or oldest vessels in Merwin and Vaillant's original sequence. As Hammond suggests (1984: 4) the contents of Room 8 may have originally been placed in the center of the room, but later pushed to the south side and sealed sometime during the Terminal Preclassic or Early Classic periods during the construction of the Room 9 tomb and vault, and the Room 8 vault. Discussed below, architecture and pottery in Room 9, the Room 8 Vault, and the north side of Room 8 support this idea.

## **Room 9 and its Vault**

Room 9 is the lowest stratigraphically positioned tomb in Building B, Group II (see Figure 4.2). Significant aspects of the description of the architecture of the room are presented here as they originally appear in Merwin's portion of the Peabody monograph (1932: 39):

This room, compared with Room 8, was of very crude masonry. Its walls were of rough stones, and in some places no attempt had been made to cover them with stucco. Its roof was formed by flat rocks placed upon the side walls and slightly projecting. Upon these were long, unplastered, flat slabs, not all lying in the same plane; frequently one was entirely above the adjacent. The height of the roof varied from three feet six inches to four feet six inches, and its floor sloped to the south. The corners of the room were slightly curved.

The south end of the room was formed by two large limestone slabs, a few small rocks, and mortar. It was evident that this end had been filled up by working from the inside and that exit must have been through its roof, and through the sunken vault in Room 8. As proof of this fact, it was noticed that the roof of Room 9, under the vault, consisted of a single slab. It was an easy matter for us to dig away the mortar around the rock and remove it without destroying the walls of the vault in Room 8.

Merwin's first impression of the architecture in Room 9 is that it is "very crude" when compared to Room 8. It apparently lacks the finished plaster floors and walls of Room 8. This suggests that the vault was perhaps an afterthought in the construction of the Phase 4 sub-structure of Building B and that Room 8 served as the original and earlier burial chamber. Merwin suggests this in the description above where he states that it was possible for builders to fill Room 9 and exit through the Room 8 vault, into Room 8, and eventually through the floor of Room 2. Hammond (1984: 5) also notes this part of Merwin's description and leans toward this explanation of the Building B chronology. The skeletal material associated with Room 9 appears in a vault dug through the floor in the east half of the room. Novotny's analysis of Skeleton 21 reveals that the bones represent the remains of at least one adult male (n.d: 1-2). The skeleton appears to have been found disarticulated and the bones were very badly eroded. Merwin notes that while no pots were found directly associated with the burial, approximately "twenty sherds

of at least six broken pots” (Merwin and Vaillant 1932: 39) were discovered. Hammond, Pring, nor I were able to locate these sherds in the Peabody Museum collections.

Six of the seven vessels found in Room 9 belong firmly within the Wayaab Sub-Complex: these are vessels 1-4, 6 and 7 (see Figure 4.11 for location of vessels). Vessel 5 displays form and surface modes more characteristic of Itzamkanak/Chicanel ceramics. After Merwin and Vaillant (1932; Vaillant 1927), Smith (1955: 22-23) was the first to publish his opinion about the chronological significance of the vessels in Room 9. He correctly points to the combination of Late Preclassic form modes and Early Classic decorative modes in the seven vessels. However, as noted above, he incorrectly classifies the Sierra Red ceramics located in the south side of Room 8 as Aguila Orange varieties, thus throwing off the scheme of the actual depositional phases in Building B. Both Hammond (1984: 5-6) and Pring (2000: 45-46) cite this misinterpretation and instead suggest that vessels 1-3, 6 and 7 of Room 8 actually pre-date the vessels in Room 9. I am in agreement with their interpretations. As a note, Vaillant placed all vessels within his Holmul I Burial Period (Merwin and Vaillant 1932:61).

Vessel 1 (Figure 4.12) from Room 9 is a bowl with flaring sides, direct rim, rounded lip, and annular base. The vessel is slipped orange with red and black painted decoration in the form of simple horizontal bands and, on the exterior, ten groups of three vertical wavy black lines. As Pring notes (2000: 52), the decoration is reminiscent of earlier attempts at Usulután decoration in the lowlands. The vessel form and decoration are similar to vessels dating to the Terminal Preclassic period and found at Nohmul, Belize (e.g., Vessels 9, 12, and 16). These vessels were placed by Pring (2000: 75-96) in the Ixcánrio Orange Polychrome: Turnbull Variety and I believe Vessel 1 from Room 9 should be classified as Turnbull variety as well. A vessel with similar design pattern, but entirely different form was found in Cimi deposit PD 87 at Tikal

(Culbert 1993: Figure 140, b, 1). Because the vessel only displays black on orange decoration, Culbert classifies it as Sacluc: Xux Variety.

Vessel 2 (Figure 4.13) is a bowl with outcurving walls, direct rim, rounded lip, concave base, and four large hollow mammiform supports with vents and nubbin tips. The vessel is slipped a glossy orange with the exterior displaying a decorative panel consisting of a repeating “serpent” (Smith 1955:70-71) pattern. While the vessel is definitely an Ixcario Orange Polychrome type, I will leave the variety unspecified for now, because I have yet to see another example of this decoration scheme on this form of vessel in previous publications or collections. Smith (1955: 22-23) notes that this motif is commonly found upon Early Classic period polychrome vessels, further supporting the idea that these Wayaab sub-complex vessels are truly transitional in terms of decorative design.

Vessel 3 (Figure 4.14) is a bowl with outcurving walls, exterior folded rim, rounded lip, z-angle basal break, and concave base with four hollow mammiform supports with air vents, nubbin tips, and rattles. The entire vessel is slipped a glossy orange and I agree with Pring (2000:53) that the vessel should be placed in the Aguila Group: Variety Unspecified. It is possible that this early form of Aguila Orange may be what Brady (1989; Brady et. al 1998) considers Aguila Orange: La Compuerta Variety. Because I have yet to identify any similar varieties in the Holmul Region material collected to date, I would rather leave the variety Unspecified for the moment.

Vessel 4 (Figure 4.15) is a bowl with outcurving walls, exterior thickened rim, rounded lip, and concave base with four mammiform hollow supports with air vents and nubbin tips. The entire vessel is slipped a glossy orange. The vessel is decorated in red and black paint. The main design on the exterior is a frame of geometric patterns consisting of “reverse angles”,

dotted lines, triangles, wavy lines, and simple bands and lines. The form and decorative modes place this vessel firmly within Ixcanrio Orange Polychrome: Ixcanrio Variety. Interesting is that the designs on this vessel seem almost identical to the design scheme of the small tetrapod vase in Room 9, Vessel 6, suggesting that these pots may have been painted by the same artist (Pring 2000: 45-46).

Vessel 5 (Figure 4.16) is a pitcher or jar with spout. Noted above, this form is more characteristic of Late Preclassic period ceramics in the Maya lowlands (Smith 1955: 21, 117-125). The spout is attached to the neck of the jar by a narrow flattened bridge. The surface was slipped a waxy buff or cream color and then incised, as the pink or buff paste is visible in the rough incision lines. While Pring suggests this vessel may belong to the Cockscomb Buff type, I feel it can fit well into the incised type of the Flor Group within the Holmul Region, making it an Accordion Incised: Variety Unspecified vessel.

Vessel 6 (Figure 4.17) is a small vase with flaring sides, a chamfer on the lower third of the exterior body, slightly everted rim, rounded lip, and flat base with four hollow ovoid shaped supports with air vents – and as Pring (2000:54) noted – one rattle left in one of the supports. The exterior of the vessel is slipped a glossy orange and decorated in red and black paint. Noted above, the design scheme is similar to that on the exterior of Vessel 4 consisting of a frame of geometric elements including “reverse angles”, dotted lines, triangles, wavy lines, and simple bands and lines. The form of this vessel is similar to Vessel 2 from Nohmul (Hammond 1984: 11, Figure 2; Pring 2000: 76, Figure 37, Plate V). Vessel 6 from Room 9 is clearly Ixcanrio Orange Polychrome: Ixcanrio Variety.

Vessel 7 (Figure 4.18) is a plate with outcurving sides, slightly everted downward rim, rounded lip, and slightly concave base with four swollen cylindrical supports with air vents and

rattles. The entire vessel is slipped a glossy orange and like Pring (2000: 56), I place this vessel in the Aguila Group: Variety Unspecified. The form of this vessel is similar to Vessel 9 of Nohmul (Hammond 1984: 11, Figure 2; Pring 2000: 82, Figure 41), but lacks the nubbin tips on the swollen supports.

To summarize the architectural, osteological, and ceramic material associated with Room 9, Building B, Group II, it appears that Vessels 1-4, 6 and 7 can be definitively placed within the Wayaab Terminal Preclassic sub-complex. Although Vessel 5 displays both form and surface modes associated more with the Late Preclassic than Terminal Preclassic sub-complex, this does not seriously jeopardize the chronological integrity of the deposit. After all, the Wayaab sub-complex overlapped with the end of the Late Preclassic and beginning of the Early Classic in the Holmul Region and it would not be surprising to find vessels of both dominant ceramic traditions within the same deposit. Because these vessels so clearly exhibit modes of the Terminal Preclassic sub-complex and because the architecture of the room appears to be more hastily built than Room 8 above, I tend to agree with Merwin's original interpretation of the depositional sequence of Building B. I believe the vessels and possibly burial in Room 9 vault were deposited after the construction and interment of Room 8 and its associated burial and offerings. As Merwin notes, because of the structural integrity of the walls of Room 9 and the placement of the Room 8 Vault in the north end of Room 8 (1932: 39), it is possible that the people constructing and interring the objects in Room 9 entered through the Room 8 Vault, dug out the Room 9 tomb and vault, deposited the burial and offerings, and exited through the roof or Room 8 Vault.

The production location for these vessels is difficult to determine. Ceramic paste analysis would be the best way to conclude if the vessels were of local or foreign manufacture. However,

because these vessels were museum pieces at the Peabody, I was not able to obtain a fresh sample of the ceramic fabric and was left to guess at the possible recipe using a handlens to see through the slip. Furthermore, Vessels 1, 5, and 6 were on display at the time I visited the Peabody and I was not able to handle the material, only view it through display glass. What I can conclude about these orange gloss vessels follows. First, the distribution of these vessels in the Holmul Region is extremely limited at this time. Whole vessels are only found in Building B, Group II at Holmul and only a handful of Ixcario sherds have been recovered in the past eight years of regional excavations in the area. Second, as I will discuss in Chapters 6 and 7, the pastes of these sherds is extremely varied and while they may share the same dominant inclusion types (e.g., grog, ash, calcite) of late Preclassic or Early Classic material included in this study, the quality and quantity of these inclusions, as well as groundmass texture, do not resemble pastes belonging to either the Late Preclassic Sierra, Polvero, and Flor ceramic traditions or the Early Classic Aguila traditions. Third, I believe the eclectic nature of the forms and painting styles suggests the vessels may have been produced by different artisans (with the exception of Vessels 4 and 6), possibly located in different areas of the Holmul Region or beyond. Finally, despite these apparent differences in paste and decoration, many of the vessels share similarities in form: specifically, a concave base, large bulbous mammiforms, and appliqué nubbins on the base of these mammiforms (Hammond 1984: 4). My conservative conclusion about the potential production location and production context of these vessels is that they represent unique social valuables created by local or foreign artisans for use during exclusive elite feasting events. Due to their limited distribution, relatively varied decoration and paste composition, but quantifiable similarities in form, I believe the overall collection of the vessels in one tomb may represent the

remnants of feasting events and the materialization of prolonged social and/or political relations between elite individuals in the Holmul Region and perhaps even beyond.

### **Burial 10**

Burial 10 is located in the Phase 4 substructure of Building B, Group II (see Figure 4.3). It was discovered in the fill of the substructure platform south of Room 1 and below the floor of Room 8 (Neivens 2004). Like Room 9, the architecture of the tomb was crude in comparison to Room 8. The cyst was, "...lined with roughly cut blocks and capped by four rectangular blocks which were supported by large upright rectangular blocks placed intermittently within the stone lining" (Neivens 2004: 88). A single body was laid out on an east-west axis with the head facing east. The remains were of a young adult, sex unknown due to the poor preservation of the bones and lack of diagnostic fragments (Novotny n.d: 12). Associated with the remains were one Wayaab sub-complex vessel, a jade bead, piece of animal bone, and thin stucco lining from an unknown perishable object (possibly a gourd or paper/codex) (Figure 4.4).

Vessel with SF# HT.41.10.02.01 (Figure 4.19) is a bowl with outcurving walls, direct rim, rounded lip, and concave base with four hollow mammiform supports with air vents, rattles, and nubbin tips. The entire vessel is slipped a glossy orange and decorated with red and black paint. The main design on the exterior is a frame enclosing a cream or buff background upon which is depicted a repeating mat or weave pattern in black fine line execution. Weave or mat motifs are separated by crosses of fine red and black lines. While the design is not common to other Wayaab sub-complex vessels found in the tombs of Building B, certain elements of the design are. The cream or buff background panel is also found on Vessel 10 of the Room 8 Burial Vault which depicts stylized macaws flying on a cream background panel. This pattern later

becomes a symbol of elite or royal power in the Classic period, as it was on a woven palm-frond mat, or *petate*, that elites and royalty sat when receiving subjects. The weave pattern is also not uncommonly found on Terminal Preclassic sub-complex pottery from other sites including Chetumal (Pring: 98, Figure 63). Like the vessels from the Peabody, SF# HT.41.10.02.01 was discovered whole, and I am unable to get a sample of the paste. It is interesting to note that while specific aspects of decoration may differ from the other Wayaab sub-complex vessels found in Room 9 and the Room 8 Vault, SF# HT.41.10.02.01 does share some similarities in terms of vessel form and decorative technique. Like other Building B mammiform bowls, SF# HT.41.10.02.01 has a slightly concave base and the tetrapod mammiforms also have nubbin tips and air vents. Orange slip color is also quite similar to the other vessels falling in the 2.5YR5/8 range. The similarities in the form and decorative modes certainly place it contemporaneous with the Room 9 vessels. These similarities also further support the inclusion of this vessel in a potential Terminal Preclassic feasting network centered more locally in or around the Holmul Region, but with participation reaching east as far as sites in northern Belize.

Because of the similarities in form and decoration modes between the vessels in Room 9 and Burial 10, we can also assume they were deposited around the same date. Collagen from a rib fragment associated with Burial 10 was analyzed using AMS dating and produced an uncalibrated date of 1840 +/- 40 BP, with calibrated 1-sigma range AD 120-230 and 2-sigma range AD 80-250, producing a probable date of deposition of approximately AD 150 (Estrada-Belli 2006c:4). This date falls well within the beginning of what Brady and colleagues consider the second half of the Terminal Preclassic period in the Maya lowlands – a period marked by the spread of the combination of a number of ceramic modes including swollen mammiform supports, glossy orange slip, and polychrome painting. Radiocarbon dates from organic material

associated with pottery in the remaining rooms of Building B, Group II would certainly solve the problem of depositional chronology. Unfortunately, there are no available organic materials from Merwin's original excavations to perform the tests and the osteological curators of the Peabody do not believe the human remains from the burials in Building B contain enough collagen to warrant the destruction of bones using the AMS dating technique.

### **Room 8 Vault**

The Room 8 Vault was dug into the northeastern quarter of Room 8 (see Figures 3.2 and 3.5). Merwin's description follows:

The floor in the north half of Room 8 was raised by the addition of three large rocks covered with mortar – the rocks themselves resting upon the floor of Room 8. These served as a covering for a burial vault built through the floor of the room. It was irregular in shape, the north end of the floor being about seven and one-half inches higher than the south end. Its walls and floors were roughly plastered. This vault was of varying dimensions, but was on average two feet wide (east and west) and three feet ten inches long; the depth was one foot ten inches. It was located in the northeast corner of Room 8 (Merwin and Vaillant 1932: 38).

The vault also contained the disarticulated remains of one adult (Novotny n.d: 4). Sex could not be determined because the skeleton only contained six bones belonging to the feet and three teeth. Like Skeletons 17, 18, and 19 bones from Skeleton 20 showed signs of burning. In the vault were also found three whole vessels representing form and decoration modes from the Late Preclassic, Terminal Preclassic, and Early Classic complexes at Holmul. As a note, Vaillant placed all vessels within his Holmul I Burial Period (Merwin and Vaillant 1932:61).

Vessel 8 [Merwin numbered the Room 8 Vault vessels within the larger Room 8 collection] (Figure 4.20) is a bowl with round sides, direct rim, rounded lip, and annular base. The entire vessel is slipped a glossy orange and the annular base is fire-clouded to a buff color. The vessel clearly belongs in the Aguila Orange Group although I will refrain classifying a

specific variety at this point. The annular base form is common in the larger Maya lowlands during the Early Classic (Smith 1955:22). The large buff fire-cloud at the base of the vessel is interesting, as this is more characteristic of Sierra Red vessels dating to the Late Preclassic period. Again, this shows the potential combination of Preclassic and Classic period production techniques: in this case, Early Classic slip and form with Preclassic firing processes.

Vessel 9 (Figure 4.21) is a pitcher or jar with spout attached to the neck by a flattened bridge. The exterior has been covered with stucco and painted pink and green with fine black lines creating step patterns and bands. However, underneath is a cream or buff colored surface. The form and slip color beneath the stucco is similar to Vessel 5 from Room 9 and I would feel comfortable placing the vessel in the Flor Cream Group.

Vessel 10 (Figure 4.22) is a bowl with outcurving sides, direct rim, rounded lip, slightly concave base, and mammiform supports with air vents and large cylindrical nubbins. The vessel is slipped a glossy orange and the main design on the exterior consists of a frame with cream or buff background upon which repeated stylized macaws have been painted. Like Vessel 8 and its form mode, Vessel 10 leans towards the later part of the Terminal Preclassic period and shows decorative modes more common in the Early Classic. The flying macaw motif is similar to other motifs found on basal flange polychromes of the Tzakol 2 Complex at Uaxactun (Smith 1955: Figure 28a, 1) and this fact has been amply noted by Smith (1955:22), Pring (2000: 51), and Hammond (1984: 4-5). Both Hammond (1984: 4) and Pring (2000: 51) note that they can see sherd temper protruding through the surface of the cream or buff underslip behind the macaw designs. This is yet another testament to the combination of Late Preclassic and Early Classic manufacturing modes that potters used to produce these ceramics – the sherd temper is clearly a

Late Preclassic paste mode, while the polychrome painting an Early Classic technique. I classify the vessel as Ixcario: Variety Unspecified.

Aside from the form of Vessel 9, form and decorative modes of vessels in the Room 8 Vault appear to be later than those of Room 9, Burial 10, and Room 8 south side vessels. Upon closer examination of decorative modes, even Vessel 9 can be safely placed within the end of the Terminal Preclassic period and beginning of Early Classic period in the Holmul Region. Covering pots with painted stucco decoration is strictly an Early Classic mode of decoration in the Holmul Region and would imply that the Late Preclassic Flor Cream pitcher may have been an heirloom which was later modified at the start of the Early Classic period and placed in the Room 8 Vault along with Vessels 8 and 10.

### **Room 8, North Side**

Discussed above, the north side of Room 8 was separated from the south side by a crude wall (Merwin and Vaillant 1932: 37) creating a spatial and chronological division in the room (see Figures 3.2 and 3.5). The vessels on the south side of the wall all share form and surface modes common among pottery made in the Late Preclassic Sierra Red tradition. The remaining two vessels on the north side of the room share form and decoration modes common to Early Classic ceramics of the K'ahk 1/Tzakol 1 complex. According to Merwin's notes (Merwin and Vaillant 1932: 38), these pots were found directly atop the large stones covering the Room 8 Vault, making them the last vessels to be placed in Room 8. Their form and surface modes further support this argument. As a note, Vaillant placed the vessels within his Holmul I Burial Period (Merwin and Vaillant 1932:61).

Vessel 4 (Figure 4.23) is a bowl with flaring walls, direct rim, rounded lip, basal flange, and ring base. The vessel is slipped a glossy orange and decorated in red and black paint. As Pring (2000: 48) notes, the design is quite complex consisting of a combination of geometric elements including dotted lines, circles, triangles, and reverse angles. I am in agreement with Pring and place the vessel within the Actuncan Orange Polychrome Group. However, I will leave the variety unspecified for the moment because I have yet to see any other Actuncan sherd or whole vessel like it in the Holmul Region collections to date. The form and general design elements are firmly within the Actuncan tradition both in the Holmul Region and the Maya lowlands (Smith 1955: Figure 25a) suggesting the pot was placed above the vault during the time of the K'ahk 1/Tzakol 1 ceramic complex (~AD 200-250).

Vessel 5 (Figure 4.24) is a “spindle-whorl” pot-stand with series of strainer holes in the body. The vessel appears to be slipped a deep red, but is severely fire-clouded. The thick red slip and seemingly “waxy” texture make me want to place the vessel in the Sierra Red Group and Pring (2000: 48-49) does the same. In this case, I agree with Smith (1955: 22) and believe that the pot-stand is more of an Early Classic period form than Late Preclassic. While still relatively rare in the Holmul Region, pot-stands are exclusively found in Early Classic contexts (K'ahk 3/Tzakol 3 complexes), mostly at the site of La Sufricaya. The fact that the slip is consistent with Sierra Red is interesting, as it is rare in the Holmul Region to see combination of Late Preclassic surface technologies with Early Classic forms. Vessel 5 could represent the “last gasp” of Late Preclassic ceramic traditions as potters transition out of, or completely abandon, old manufacturing techniques.

To summarize, the two vessels on the north side of Room 8 both display form and/or decorative modes common to K'ahk 1/Tzakol 1 complex ceramic material. The placement of

these vessels atop the Room 8 vault-stones further supports their late position in the depositional sequence of Rooms 8 and 9 – a fact originally noted by Hammond (1984: 4) in a previous publication. With the conclusion of the discussion of vessels found in Room 8, the Room 8 Vault, Room 9, and Burial 10, we now move forward in time, out of the Terminal Preclassic period and the Wayaab sub-complex, and firmly into the Early Classic period.

### **Room 7**

Room 7 is located in the Phase 5 sub-structure of Building B, Group II (Figure 4.2). The Phase 5 sub-structure was added to the north side of Building B and consisted of the expansion of the Phase 4 sub-structure to the north as well as the addition of Room 4 which could be entered through the main entrance of Building B after passing through Rooms 1, 2, and 3. In other words, during the fifth construction phase Room 4 became the northern most room in Building B. Room 7 is located below Room 4 in the new Phase 5 substructure making it chronologically later than Room 8, Room 9, the room 8 Vault, and Burial 10. Merwin (Merwin and Vaillant 1932: 36-37) explains that approximately four inches of construction fill separated the floor of Room 4 from the roof of Room 7. Merwin penetrated the roof to enter Room 7.

Merwin states:

Throughout this room were found the broken bones of an adult skeleton. These, as well as the specimens, were found in a fine reddish deposit which covered the floor and was about one and one-half inches thick. The greatest number of these fragments of bones were found in the center or the north end of the room. (Merwin and Vaillant 1932: 37)

Novotny (n.d: 18) identifies the bones as belonging to an adult, sex unknown due to poor preservation and lack of diagnostic material. Also found associated with the human remains in the burial chamber were five vessels clearly diagnostic of the K'ahk 1-2/Tzakol 1-2 complexes

and the first half of the Early Classic period in the Holmul Region. As a note, Vaillant placed the vessels within his Holmul II Burial Period (Merwin and Vaillant 1932:65).

I did not analyze Vessel 1 because it did not appear in the collections at the Peabody Museum. Merwin describes Vessel 1 as a “plain polished black olla” (Merwin and Vaillant 1932: 37) and Vaillant says it is a “polished black olla” (ibid: 65). The vessel is listed as c-5629 in the Peabody catalogue and Merwin and Vaillant’s monograph, but it is not listed in Vaillant’s dissertation. This vessel may be confused with another vessel or may not exist.

I encountered similar problems with Vessel 2. Unlike Vessel 1, however, Vessel 2 was listed as unidentified in both Vaillant’s portion of the Peabody monograph (ibid: 65) and his dissertation. Merwin identifies the pot as, “Plain: found in fragments between Pots 1 and 3” (ibid: 37). Also unlike Vessel 1, this vessel has no number in the Peabody catalogue. This vessel may have been confused with another vessel or may have been a number of sherds that Merwin bagged separately.

Vessel 3 (Figure 4.25) is a bowl with composite silhouette shape, direct rim, rounded lip, rounded z-angle basal break, and ring base. The entire surface is slipped a glossy orange. A large fire-cloud appears on the base of the vessel and extends up parts of the exterior walls. The vessel clearly belongs in the Aguila Group: Variety Unspecified. The rounded z-angle form appears to be a mode found mostly in the early part of the Early Classic period in the Holmul Region. The paste appears similar to other Aguila Group ceramics of this time period with buff color, medium to fine texture, and loaded with rounded gray calcite inclusions.

Vessel 4 (Figure 4.26) is a pot-stand with vertical sides, everted rim, rounded lip, and everted base with four solid nubbin-like supports. The vessel is slipped black and fine line incision is executed after slipping. The incised design consists of a pattern of two sets of semi-

circles along a thin line enclosing a diagonal zigzag line. The design is not Preclassic and looks more like another representation of what Smith (1955: 73) would consider a “sky band” element. I classify the vessel as Lucha Incised: Variety Unspecified.

Vessels 5 and 6 are the lid and bowl of the same vessel (Figure 4.27). The lid (Vessel 5) is a scutate cover with effigy handle. The lid is slipped black and incised. Incised decoration consists of two bands around the circumference of the lid and the splayed out body of the animal represented by the effigy handle. The bowl (Vessel 6) has flaring walls, direct rim, rounded lip, a small basal flange with slightly concave base, and four hollow swollen supports. The bowl is slipped black with gauge-incision. The main incised design repeats and appears to be either a stylized serpent or yet another representation of a “sky band” element. I classify the vessel as Urita Gauge-Incised: Variety Unspecified. Interesting to note is the relatively mottled appearance of the black slip. This is characteristic of other Balanza Group vessels in the Holmul Region and possibly indicates that the pot is of local origin. The pot dates well within the K’ahk 2/Tzakol 2 complex and the early part of the Early Classic period in the Maya lowlands. Vessels 5 and 6 from Room 7 in Building B, Group II at Holmul are similar to Vessel 8 found in tomb I, Structure III at Calakmul (Folan et. al. 1995: 322-323; Pincemin 1994: 57-75) which dates to the early fifth century. However, I believe Vessels 5 and 6 of Room 7 may be slightly earlier as they are found in relative isolation and lacking any of the other strong later K’ahk 2/Tzakol 2 markers, such as the large modeled Dos Arroyos polychromes that would justify a later date. A slightly earlier date is also supported by the presence of Vessel 3, the rounded z-angle Aguila Orange bowl – a relatively firm marker of the K’ahk 1/Tzakol 1 complex.

Discussed below, a slightly later manifestation of this same black incised tradition of fineware will come to dominate briefly the funerary furniture in Building B as exemplified by

the offerings associated with Skeletons 13 and 14 in Room 2. The presence of this specific style of black pottery in Room 7 along with a locally manufactured Aguila Orange vessel suggests that elites at Holmul still held important political and/or social connections with elites in other sites of the lowlands during the early part of the Early Classic period.

What is interesting to note, however, is that there is no isolated or separately constructed K'ahk 1/Tzakol 1 deposit in Building B, Group II. While the vessels in the north side of Room 8 fall firmly within the K'ahk 1/Tzakol 1 complex (e.g., the Actuncan polychrome and transitional Sierra pot-stand), these vessels are not immediately associated with any osteological remains. They literally share a grave with an earlier interment (Room 8, south side). This may suggest something about the political fortunes of Holmul in the years AD 200-300 and that Holmul elites garnered less political relations, and perhaps importance or strength, than in previous and succeeding years.

### **Room 3**

Room 3 is a narrow, east-west oriented, space between Rooms 2 and 4 of the stone superstructure of Building B (Figure 4.2). It was sealed in Phase 6 of the current architectural sequence (Vallaint's first phase of the second building episode [Merwin and Vaillant 1932: 40]) and included the interment of Burial 15 which was found with no offerings. However, Merwin did encounter two whole pots in the fill of Room 3 (ibid: 40). These vessels are possibly Peabody catalogue numbers c-5622 and c-5623, both listed as "Pottery Dish Holmul, Ruin B, Room 3, Group II". While I have no illustrations of the vessels, I did view them, as they were contained in the same storage drawer as Vessel 4 from Room 7. The vessels are almost identical. The vessels are bowls with flaring walls, direct rims, rounded lips, and flat bases. They belong

to the Aguila Orange Group and from the looks of their carbonate based paste they date to the K'ahk 2/Tzakol 2 complex.

### **Room 2, Skeletons 13 and 14**

Room 2 is another relatively narrow east-west oriented space between Rooms 1 and 3 in Building B (Figure 4.2). The entrance to Room 3 to the north was sealed in Phase 6 and two benches, H and I, constructed against this new north wall. Slightly later, Room 2 began to be converted into a burial chamber with the interment of Skeletons 13 and 14. Skeletons 13 and 14 were discovered by Merwin in extended position oriented east-west with heads to the east (Figure 4.28). They were relatively centered in the room, but extended slightly more into the east side. Because of the position below the remains of Skeletons 9 and 10 above to the east, and Skeleton 5 above to the west, Merwin and Vaillant believed these skeletons were the first to be deposited in the Room 1 and 2 multiple interments. Novotny (n.d: 10-11) reports that the bones of Skeleton 13 were that of an adult, sex unknown, and the bones of Skeleton 14 an adult, possibly male. Like the rest of the osteological remains in Building B, these “Skeletons” contained bones of more than one individual – most likely indicating that the rooms were entered and remains disturbed on more than one occasion. Grave goods including shell beads and discs, and one piece of jade, were found associated with these individuals (Merwin and Vaillant 1932: 34-35). Seven vessels (12 according to the Peabody catalogue numbers which counts lids of the same vessel as separate pots) were found associated with the bodies and piled up in the east side of Room 2 (ibid: 35). The vessels all display form and surface modes consistent with K'ahk 2/Tzakol 2 complex material and indicate possible political links to other powerful sites in the Maya lowlands including Tikal, Uaxcatun, and even Calakmul and Becan in Campeche, Mexico.

As a note, Vaillant (Merwin and Vaillant 1932:66) placed all these vessels within his Holmul III Phase 2 burial period.

Vessels 1 and 2 belong to the same pot, Vessel 1 being the scutate lid for Vessel 2 (Figure 4.29). The lid is slipped black and incised with fine lines. The handle for the lid is a modeled effigy in the shape of a jaguar with open mouth. The incision on the lid depicts the body of the jaguar complete with spots. Vessel 2 is a bowl with composite silhouette sides, direct rim, rounded lip, basal flange, and ring base. The bowl is also slipped black and incised with fine lines. Decoration is simple consisting of circumferential bands around the rim, and circumferential bands on the basal flange together with groups of vertical tick marks. The slip is the same mottled brown color of Vessels 6 and 7 in Room 7 as well as other black incised vessels of this complex found in the Holmul Region. I would not be surprised if this vessel was locally manufactured. I classify Vessels 1 and 2 as Lucha Incised: Lucha Variety. The overall form and decorative modes of these vessels, as well as vessels 6 and 7, 8 and 9, 10 and 11, and 12 are common in the lowlands from approximately AD 250-350. They date to the Tzakol 2 Complex at Uaxactun (AD 300-400) (Smith 1955), Manik 2 Complex at Tikal (300-378) (Culbert 1993), and Chacsik Complex in Becan (AD 250-450) (Ball 1977). This is the time period before the significant political events of AD 378 and the widely documented “entrance” or influence of Mexicanized elite culture and ideology into the Peten lowlands (Stuart 2000).

Vessel 3 (Figure 4.30) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The vessel exterior and interior is slipped a reddish orange, but leaning more towards red. On the exterior a large black fire cloud is visible. The slip on the exterior is unevenly applied or polishing/burnishing lines make it appear this way. I classify the

vessel as Dos Hermanos Red: Dos Hermanos Variety. This type is relatively rare in the Holmul Region, but has been reported in other lowland sites (e.g., Forsyth 1989; Graham 1994).

Vessel 4 (Figure 4.31) is a jar with vertical neck, direct rim, rounded lip, spout, globular body, and flat base. The vessel is unslipped, but striated beginning at the shoulder-break below the neck. A single row of fingernail impressions encircles the neck at the shoulder-break. While I have not seen anything else like this vessel in the Holmul Region collections to date, Vessel 4 definitely belongs in Triunfo Group, but I will leave the variety unspecified.

Vessel 5 (Figure 4.32) is another jar with almost “shoe-pot” shape, outcurving neck, direct rim, rounded lip, spout, and flat base. Vessel 5 is an effigy pot with the modeled snout and ears of a peccary. A single appliqué filet with tick impressions encircles the neck at the shoulder-break. The vessel form is reminiscent of Late Preclassic period shoe-pots which are usually found in ritual deposits, often in caves (Brady 1989, 1992). Relatively course-grained calcite inclusions show through the surface suggesting a carbonate-based paste recipe. The type and variety are difficult to determine owing to the unique form and decoration of the vessel. I will place the vessel within the Quintal Group for the present time, type and variety unspecified.

Vessels 6 and 7 (Figure 4.33) are the lid and vessel of the same pot. Vessel 6 is a scutate lid with cylindrical knob. The vessel appears to be slipped orange with polychrome red and black decoration. The lid, like the rest of the vessel, was then covered in stucco and painted red and green. Vessel 7 is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The exterior was also decorated in red and black polychrome paint and then covered with red and green painted plaster. Only traces of the plaster still remain. The main polychrome design panel on the vessel contains a representation of Smith’s (1955: 70) “undulating serpent” motif. The form and decorative modes place the vessel in the K’ahk

2/Tzakol 2 complex and I classify the pots as Dos Arroyos Polychrome: Variety Unspecified. Vessels 6 and 7 are contemporaneous with similar vessels from Burial 22 at Tikal (Culbert 1993: Figures 22-24) and Problematical Deposits (PNT 025, 062, 019) in the Mundo Perdido Complex also at Tikal (Laporte and Fialko 1995: Figures 29 and 31). Vessel 9 from Calakmul Tomb I, Structure III at Calakmul (Folan et. al. 1995: 322-323; Pincemin 1994: 57-75) is also similar to Vessels 6 and 7 from Building B, Group II at Holmul. All of these vessels date to AD 300-450 within their respective sites. Noted above, this is the time period before or at the immediate moment (in the case of Burials 10 and 22 at Tikal) of the introduction of highland Mexican political and cultural influence into the Peten lowlands. It is possible that these types of polychromes, as well as the black incised vessels found in association with them, constituted parts of a local Peten lowlands ceramic industry which existed prior to the influence of Mexican ideology. Shortly after AD 378, ceramic form modes begin to change and preference is given to slab foot cylinder tripods, sometimes with lids, and basal flange bowls with lower, more open walls, lacking lids. Discussed in the previous chapter, this may have to do with changes in the performance or serving food at elite feasting rituals. Decoration still emphasizes polychrome painting, but a new form of black slip gauge-incision is introduced to pottery surfaces as well as the frequent use of appliqué elements in the form of “screwheads”, “feathers”, and other stylized objects. Finally, at least in the Holmul Region, paste composition also changes dramatically shifting from carbonate to tuff based recipes in serving ware.

Vessels 8 and 9 (Figure 4.34) are the lid and vessel of the same pot. Vessel 8 is a scutate lid with effigy handle in the form of a “tiger” head (Merwin and Vaillant 1932: 35). Incision on the lid is similar to Vessel 1. The incision depicts the splayed out body of a jaguar whose head is represented by the lid handle. Vessel 9 is a bowl with composite silhouette walls, direct rim,

rounded lip, basal flange, and ring base. The bowl is slipped black and displays simple fine line incision similar to Vessel 2. The lines are horizontal bands on the rim and basal flange of the bowl – the basal flange also displaying groups of vertical tick marks. I classify the vessels as Lucha Incised: Variety Unspecified.

Vessels 10 and 11 (Figure 4.35) are also the lid and vessel for one pot. Vessel 10 is a scutate lid with “grotesque” (Merwin and Vaillant 1932: 35) effigy handle. The lid is slipped black and decorated with fine line incision. Unlike Vessels 2 and 9, however, the incision does not display the splayed out body of the animal depicted in the effigy handle. Instead, four abstract groups of elements radiate out from the handle and project down to the rim of the lid. Vessel 11 is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The vessel is also slipped black and incised. Incised decoration also appears on the rim and basal flange, but varies slightly from Vessels 2 and 9. Instead of horizontal bands with tick marks, the incision on the basal flange of Vessel 11 takes the form of a double band of angular, undulating, lines. I classify the vessels as Lucha Incised: Variety Unspecified.

Vessel 12 (Figure 4.36) is only a scutate lid slipped black and incised. The handle is not an effigy, but a simple cylindrical knob. Incised design composition also varies from Vessels 1, 8, and 10. Vessel 12 depicts two human faces with associated abstract elements staring across the lid at one another. The faces possibly represent the corn god. I classify the vessel as Urita Gouged-Incised: Variety Unspecified. Merwin and Vaillant (1932: 35) believe Vessel 12 is the lid for another black slipped incised pot found in Room 1: specifically, Vessel 16 associated with Skeleton 1. While the lid fits the vessel and the Peabody museum has the two vessels displayed together in the exhibition of Building B, Group II ceramics, there is really no clear evidence to suggest the two pots should be grouped together. Although, considering the multiple interments

in Rooms 1 and 2 of Building B, Group II, it certainly is possible that one part of the vessel was moved after initial deposition.

Taken together, the vessels associated with Skeletons 13 and 14 display form and surface modes of the K'ahk 2/Tzakol 2 complex. In comparison to funerary or cache assemblages at other lowland Maya sites (Culbert 1993; Folan et. al. 1995; Laporte and Fialko 1995), it is safe to assume they were manufactured and deposited anywhere from AD 350-450 before or immediately following the introduction of highland Mexican influence into the Peten lowlands. Compared to the other vessels in Rooms 1 and 2, this date fits well within Merwin and Vaillant's original depositional sequence of skeletons. These pots, and to a lesser extent those associated with Skeleton 5, represent the earliest form and decoration modes for ceramics in Rooms 1 and 2 of Building B, Group II. The presence of these vessels in Building B shows that the elites buried there participated in the greater political and social networks of the Peten lowlands and nearby Campeche Mexico, and possibly enjoyed a relative high local and interregional socio-economic status.

### **Rooms 1 and 2, Skeletons 5 and 12**

Physical placement and ceramic evidence suggest that Skeletons 5 and 12 were the next bodies interred in the Room 1 and 2 mortuary deposit (Figure 4.28). Vaillant places the interment of Skeleton 5 in the third phase of his own Holmul III period (Merwin and Vaillant 1932: 40-41). Merwin's notes and drawings pertaining to the placement and description of Skeletons 5 and 12 reflect the mixed nature of the actual deposit. From Merwin's drawing of Rooms 1 and 2 it appears he discovered the cranium and upper torso of either Skeleton 5 or 12 (or both) in the center of Room 2 placed over the lower limbs of Skeletons 13 and 14. The lower

limbs of Skeleton 5 or 12 (or both) stretched into the center of Room 1. Novotny (n.d: 11-13) reports that the bones labeled as belonging to the remains of Skeleton 5 did not contain cranial fragments and that multiple examples of the same bones suggest that the osteological grouping labeled “Skeleton 5” represented skeletal fragments from as many as four individuals, all adults, sex unknown. Bones found in boxes labeled “Skeleton 12” did, however, contain cranial remains, but also from as many as two individuals, both adults, sex unknown.

The Skeleton 5/12 grouping was associated with a large amount of burial furniture including the most amounts of worked non-ceramic material (such as jade, shell, pyrite, obsidian, and bone) in Building B (Merwin and Vaillant 1932: 31-33). Among the most significant finds was a stingray spine carved with legible text. Alexandre Tokovinine (2006: 328-331) reports that the text on the stingray spine included the title *chak tok wayaab* which has been found carved or painted on objects belonging to sub-royal or perhaps royal elites associated with sites in the eastern Peten lowlands, and also specifically with royalty associated with the site of Naranjo. The *chak tok wayaab* title could signify some kind of high ranking important political and/or religious office in the Holmul Region as this title is found on other examples of material culture associated with prestigious objects or locations in the region at different periods in time: for example, on Mural 7 in an Early Classic phase of Structure 1 at La Sufricaya (ibid: 324-331) and again carved onto a Terminal Classic piece of pottery found in Group III at Holmul (ibid; 331-332). Tokovinine does not think it improbable that the skeletal remains associated with Skeletal groups 5 and 12 in Building B, Group II at Holmul belonged to the holder of the title *chak tok wayaab* in this phase of the Early Classic period at Holmul (Tokovinine 2006:329).

Merwin associated two groups of ceramic material with Skeleton 5/12. Vessels 1 through 5 were discovered in the north center of Room 1 and possibly placed around the pelvic area of

Skeleton 5/12 (Figure 4.28). Vessels A through C were discovered in the northwest corner of Room 2. Both groups of material share similar form and decorative modes placing them in the K'ahk 2/Tzakol 2 complex. As a note, Vaillant (Merwin and Vaillant 1932:68) placed all these vessels within his Holmul III Phase 3 burial period.

Vessel 1 (Figure 4.37) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The bowl is slipped a mottled black with many rootlet marks. The vessel was on display when I visited the Peabody Museum and I was not able to view the paste texture first-hand. However, I classify the bowl as Balanza Black: Balanza Variety.

Vessel 2 was not found in the Peabody collections. Merwin's description of the vessel is as follows, "Black, line design; found crushed under 1 and over the lower femori. Missing fragments were also found with those of pot 16, Skeleton 1" (Merwin and Vaillant 1932: 31). However, Vaillant describes the vessel as an, "orange lacquer composite silhouette bowl" (ibid: 68). Because of the two completely different descriptions of the same vessel, it is difficult to guess what form and decoration the pot may have taken. I will simply leave Vessel 2 as unidentified.

Vessels 3 and 4 (Figure 4.38) were the lid and bowl of the same vessel. Both vessels were in the display case making it impossible to study them closer. Vessel 3 is a scutate cover with bird effigy handle. The decoration appears to consist of a cream or buff underslip and a light coat of orange slip, upon which is painted the breast design, wings, and tail feathers of the bird-head handle in red and black. Vessel 4 is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The bowl is decorated with the same cream underslip, orange slip, and red and black polychrome paint. The main design frame consists of two sets of repeating designs. One of the designs is a simple rectangular panel showing the cream underslip

and orange overslip. The second design consists of another panel containing a step design surrounded by bouncing or squiggly lines. The design is framed by a scroll pattern, still within the larger panel. I classify Vessels 3 and 4 as Dos Arroyos Orange Polychrome: Variety Unspecified. The form and decoration of the vessels are very similar to others dating to the Tzakol 2 Sphere and found in Uaxactun (Smith 1955: Figure 29), the Three Rivers Region in Belize (Sullivan 2002: Figure 7.8), burial 22 at Tikal (Culbert 1993: Figures 15-16), and deposits within Mundo Perdido also in Tikal (Laporte and Fialko 1995: Figures 29, 33, 35). The form and decorative modes place this vessel, like those associated with Skeletons 5, 13, and 14 within the Tzakol 2 or Manik 2 Ceramic Spheres.

Vessel 5 (Figure 4.39) is a small bowl with round sides that are pinched in two places, direct rim, rounded lip, and flat base. The bowl is slipped a mottled black and also has many rootlet marks. These rootlet marks are found on much of the black and orange pottery of the K'ahk 3/Tzakol 3 complex. I classify the bowl as Balanza Black: Balanza Variety.

Pot A (Figure 4.40), the first labeled vessel discovered in the northwest corner of Room 2, is a bowl with scutate lid. The lid handle takes the form of a modeled bird, possibly a parrot or macaw, effigy. The entire exterior of the lid is slipped orange with a black band on the lip. The bowl has composite silhouette walls, a direct rim, rounded lip, basal flange, and ring base. The bowl was first decorated by a cream underslip and then slipped orange. The main design is in painted red and black polychrome and consists of two repeating themes. The first of the two themes is a simple framed rectangular panel. The second is an outstretched man lying on his stomach with hands stretched in front and legs crouched behind him. Inside the bowl is an eroded red and black design, possibly representing a coiled serpent. Pot A was on display and I

could not analyze it firsthand. I classify the vessel as Dos Arroyos Orange Polychrome: Variety Unspecified. The vessel is similar to Vessels 3 and 4 associated more directly with Skeleton 5.

Pot B (Figure 4.41) is a bowl with composite silhouette walls, direct rim, rounded lip, z-angle basal break, and four large hollow cylindrical supports with slash vents. The bowl is slipped orange on the exterior and interior. The interior walls display some black fire-clouding. The vessel form is extremely rare for the K'ahk 2/Tzakol 2 complex, but still does not belong in any earlier complex – specifically the Wayaab sub-complex. The supports are not mammiform, the base is not concave, and the slip resembles color and application more in keeping with K'ahk 2/Tzakol 2 complex techniques. I will classify the vessel preliminarily as Aguila Orange: Variety Unspecified.

Pot C was not stored in the Peabody collections, but is pictured in Merwin and Vaillant's monograph (1932: Plate 26c). It is currently stored in the Museum of Natural History in New York. From the plate in Merwin and Vaillant's monograph (1932), it appears that Pot C has composite silhouette sides, a direct rim, rounded lip, basal flange, and ring base. The vessel is slipped black with fine incision. The design consists of circumferential bands on the exterior rim and long reverse-angles on the basal flange. I classify Pot C as Lucha Incised: Lucha Variety.

To conclude, the ceramic material associated with the remains of Skeletons 5 and 12 display K'ahk 2/Tzakol 2 complex form and decorative modes, but do not represent the same ceramic traditions as the vessels found with Skeletons 13 and 14. More specifically, the vessels associated with Skeletons 5 and 12 contain the traditional Early Classic Tzakol 2 Sphere polychromes, but lack much of the incised black ware associated with Skeletons 13 and 14. This could represent a change or difference in social and political relations as they were materialized through the presence of pottery in funeral deposits or perhaps even a factor of chronology, the

Skeleton 13 and 14 material being earlier than that associated with Skeleton 5/12. The high quality of many of the vessels supports the notion that the individual(s) associated with this pottery certainly may have been an important political figure in the Holmul Region at the time of his/her death and deserving of the *chak tok wayaab* title engraved onto the piece of bone found associated with the osteological remains.

### **Room 1, Skeleton 1**

Vaillant places the interment of Skeleton 1 in the fourth phase of his own Holmul III Period (Merwin and Vaillant 1932: 40-41). It is impossible to tell from Merwin's notes and his drawings of the positions of the bodies in Rooms 1 and 2 which one of the Skeletons (1, 2, or 6) was actually interred after Skeleton 5. Merwin and Vaillant both believe that the interment of Skeletons 1, 2, and 6 all occurred shortly after the interment of Skeleton 5 and possibly even all at once (Merwin and Vaillant 1932: 29, 40-41). From Merwin's drawing (Figure 4.28) it appears Skeleton 1 was discovered with head to the north in Room 1, body relatively extended to the south with parts of the lower limbs stretching into Room 2. Novotny's analysis reveals that the osteological remains catalogued as belonging to the group of bones labeled "Skeleton 1" actually contains the remains of at least two individuals, both adults, sex unknown. Skeleton 1 was associated with the largest amount of ceramic vessels dating to the late K'ahk 2/Tzakol 2 and possibly even early K'ahk 3/Tzakol 3 complexes. Most interesting about the collective vessels associated with Skeleton 1 is a general lack of fine polychrome or black incised serving ware – such as that associated with Skeletons 13, 14, and 5/12. This could be an indication of lower status or perhaps, as Merwin and Vaillant suggest, later placement in the Holmul Region chronology. However, because we do not have a greater representative sample of monochrome

-serving ware associated with the K'ahk 2/Tzakol 2 complex, it is hard to support this argument strongly. Discussed below, I do see similarities between the form and decorative modes of the monochrome serving vessels associated with Skeleton 1 and those associated with later K'ahk 3/Tzakol 3 deposits in La Sufricaya.

Vessel 1 (Figure 4.42) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The vessel has a cream underslip, orange slip, and is decorated in black and red paint on the interior and exterior. The main design on the exterior consists of four repeating rectangular panels similar to those found on Vessel 4 associated with Skeleton 5. I classify the bowl as Dos Arroyos Polychrome: Variety Unspecified. The form and decorative modes suggest this vessel still belongs in the K'ahk 2/Tzakol 2 complex (Tzakol 2 and Manik 2 Spheres)

Vessel 2 (Figure 4.43) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The vessel is slipped orange on the interior and appears to be unslipped or slipped with a light cream underslip, then polished, on the exterior. The combination of these form and surface modes is found on sherds associated with K'ahk 3/Tzakol 3 complex deposits in La Sufricaya. The vessel is a new variety of the Aguila Orange type, one that I am tentatively classifying as Aguila Orange: Polished Buff Variety.

Vessel 3 (Figure 4.44) is a bowl with round sides, direct rim, rounded lip, and ring base. The vessel is slipped orange on the interior and exterior. However, the slip on the exterior extends down the walls only about three quarters leaving the base unslipped. The vessel form suggests it could belong in the beginning of the K'ahk 3/Tzakol 3 complex. I classify the vessel as Aguila Orange: Variety Unspecified. The orange slip also displays many rootlet markings, a

characteristic common to Aguila Orange pottery of the K'ahk 3/Tzakol 3 complex at La Sufricaya.

Vessel 4 (Figure 4.45) is a small bowl with round sides, direct rim, squared lip, and round base. The vessel is slipped black on both interior and exterior. The slip shows many signs of rootlet marks. The rootlet marks and squared lip suggest this bowl may belong in the beginning of the K'ahk 3/Tzakol 3 complex. The vessel is Balanza Black: Balanza Variety.

Vessel 5 (Figure 4.46) is a bowl with round sides, direct rim, rounded lip, and ring base. The vessel is slipped orange on the interior and unslipped on the exterior. The exterior has been roughly smoothed producing a combing or slight striation of the paste surface. This type of ceramic has been classified as Nitan Composite of the Aguila Ceramic Group in other lowland Maya sites (Foias 1996:387-389; Forsyth 1989: 67). Sherds with similar form and decorative modes have been found in K'ahk 3/Tzakol 3 complex deposits at La Sufricaya.

Vessel 6 (Figure 4.47) is a pot-stand with slightly everted rim and base and rounded lip. The vessel is slipped black with fine incised bands circling the rim and base. The vessel is classified as Lucha Incised: Variety Unspecified.

Vessel 7 (Figure 4.48) is a bowl with round sides, direct rim, rounded lip, and ring base. The rim appears slightly pinched on the exterior approximately 1 cm below the lip. Vessel 7 is highly eroded, but form and surface modes are similar to Vessel 3. The vessel was slipped orange on the interior. It was also slipped orange on the exterior, but the slip extends only about three quarters down the wall leaving the base unslipped. The vessel is classified as Aguila Orange: Variety Unspecified.

Vessel 8 (Figure 4.49) is a bowl with round sides, direct rim, rounded lip, and annular base. The vessel is slipped orange on the interior and exterior. A thick, rough line of post-slip

incision appears on the exterior rim. Two rough lines of post-slip incision circle the annular base. A large black fire-cloud appears on one side of the exterior of the vessel. The form, surface, and firing modes suggest the vessel is Pita Incised: Unspecified Variety of the K'ahk 1-2/Tzakol 1-2 complexes. The vessel is similar, except for incised decoration, to Vessel 8 found in the Room 8 Vault.

Vessel 9 (Figure 4.50) is a cylinder with vertical walls, slightly everted rim, rounded lip, flat base, and four hollow cylindrical supports. The vessel also has two chamfers on the exterior: one near the base and one at the rim. The entire vessel, except the base and supports, is slipped red. The form and surface modes are extremely rare. The only other vessel in the Holmul Region that comes close to displaying these modes is Vessel 3 associated with Skeleton 6 in Room 1. The cylindrical form and short supports are common to ceramics of the Tzakol 3 or Manik 3 spheres found elsewhere in the lowlands (Culbert 1993: Figures 19, 20; Smith 1995:52). These modes are part of the suite of Mexican influenced material culture that is introduced to the Peten lowlands after AD 378. However, Vessel 9 does not display the usual or common form and decorative traits of Tzakol 3 Sphere ceramics. Vessel 9 has four supports that are cylindrical and hollow, not three solid slab supports (see also Smith 1955: Figure 22, i, w, and k'). The short squat cylinder form is chamfered on the exterior and has an everted rim, unlike the common vertical walled cylinders with direct rim common to Tzakol 3 Sphere ceramics in the lowlands. In summary, Vessel 9 may represent a local imitation of Tzakol 3 Sphere modes. I place Vessel 9 in the early K'ahk 3/Tzakol complex, but leave the type and variety unspecified.

Vessel 10 (Figure 4.51) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The vessel interior and exterior are slipped orange, but heavily fire-

clouded and marked with rootlets. The vessel appears to be an Aguila Orange: Aguila Variety bowl, possibly of the K'ahk 2-3/Tzakol 2-3 complexes.

Vessel 11 (Figure 4.52) is a bowl with markedly incurved walls, direct rim, rounded lip, and round base that is fastened upon a pot-stand with cylindrical body, everted rim and base, and rounded lip. The bowl is fashioned from a buff or cream paste and slipped a brownish cream. Two bands of red paint encircle the restricted orifice at the rim. The pot-stand is slipped orange and contains four repeating cross designs framed by fine, but crude, post-slip incision on its body. The entire vessel composition is extremely rare for the Holmul Region. However, the pot-stand mode is common to the Early Classic period ceramic complexes. The vessel may have been produced during the K'ahk 2/Tzakol 2 or even K'ahk 1/Tzajol 1 complexes. Other vessels like it have been found at the site of Nohmul (Hammond 1984:11; Pring 2000:77-78) that date to the early Early Classic or even Terminal Preclassic periods. I leave the type and variety unspecified for now. I believe the vessel may have been an import into the Holmul Region.

Merwin reports that Vessel 12 and Vessel 19 are a set and were found together placed roughly over the pelvic area of Skeleton 1 (Merwin and Vaillant 1932: 30-31). Vessels 13 and 14 were also a set of similar pots found in the same area of the Skeleton in Room 1. The catalogue numbers were somewhat confused at the Peabody and one vessel from each set was on display at the time of my visit, possibly Vessels 13 and 19. Vessel 12 (Figure 4.53) was available in the storage collection and is a modeled animal effigy. Merwin describes it as a “cover” and reports it being found within a spouted bowl (ibid). The vessel is hollow and slipped black on the exterior with many rootlet marks. Vessel 19, or the spouted bowl that Vessel 12 was supposedly found within, was paired with Vessel 13 or 14 (the other animal effigy) in the display case of the Peabody museum (Figure 4.54). Finally, the remaining spouted

black bowl (again, either Vessel 13 or 14 with Peabody catalogue number c5436) is currently located in the storage facilities of the American Museum of Natural History in New York. All the vessels belong to the Balanza Black: Variety Unspecified. Similar animal effigies have been found in Burial A22 at Uaxactun (Smith 1955: Figure 5) where Smith dates them to the Tzakol 3 period. Sullivan also reports a similar vessel found at the site of Dos Hombres in the Three Rivers Region, Belize (Sullivan 2002: 204-210) and places it within the Early Classic Period, but does not assign it a specific sub-phase or ceramic complex. She reports the animal as being a coatimundi effigy. Vessels of similar form were also found in Burials 10 and 22 (Culbert 1993: Figure 18b, 26b) and the Burial PNT-062 in the Mundo Perdido Complex (Laporte and Fialko 1995: Figure 30), both at Tikal.

Vessel 19 (Figure 4.54) is a bowl with composite silhouette walls, direct rim with gutter spout, rounded lip, rounded z-angle basal break, and flat base. The vessel was also slipped a mottled black and many rootlet marks can be seen on the surface. This form of open bowl with gutter spout is commonly found within Tzakol 2 and 3 deposits at Uaxactun. The overall cross-comparison between Vessels 12 and 19 (and 13 and 14) and similar vessels from other sites suggests these form and surface modes date to somewhere in the late K'ahk 2/Tzakol 2 or early K'ahk 3/Tzakol 3 complexes. They also suggest sustained political contact between the elites of Holmul and other important lowland sites during the later Early Classic.

Vessel 13 (Figure 4.54) was not available at the Peabody when I visited, but was probably the spouted bowl that Merwin reported finding in association with Vessel 14.

Vessel 14 (Figure 4.54) was possibly one of the vessels on display at the time of my visit. It is another coatimundi effigy vessel with mottled black slip and many rootlet marks.

Vessel 15 (Figure 4.55) is a jar with markedly incurving walls, outcurving neck, direct rim with spout, rounded lip, and flat base. The exterior is slipped a thick black. Below the shoulder-break and immediately below the spout is an appliqué filet with simple impressed design. Vessel 15 resembles the form of Vessels 4 and 5 associated with Skeletons 13 and 14 in Room 2. Smith places this combination of form and surface modes in the Tzakol 2 period at Uaxactun (Smith 1955: Figure 71, b, 3). This would place the vessel within the K'ahk 2/Tzakol 2 complex. Again, we find another example of K'ahk 2/Tzakol 2 pottery associated with Ka'ahk 3/Tzakol 3 pottery in the Skeleton 1 deposit of Room 1. The vessel is too rare to assign it a type and variety name at this moment.

Vessel 16 (Figure 4.56) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The bowl is slipped a mottled brown/black and has fine incised lines on both the exterior rim and basal flange. The bowl was on display with Vessel 12 (an incised lid) associated with Skeletons 13 and 14 when I visited the Peabody in the fall of 2006. Noted earlier, while there is no good reason to assume the lid and bowl are of the same vessel, Merwin and Vaillant both seemed to believe this (Merwin and Vaillant 1932: 30, 68). Again, the highly disturbed nature of the Rooms 1 and 2 mortuary deposit does not make this idea impossible. The vessel will be classified as Lucha Incised: Lucha Variety.

Vessel 17 (Figure 4.57) is a bowl with composite silhouette sides, direct rim, rounded lip, basal flange, and ring base. It is slipped orange and highly fire-clouded with many rootlet marks. The bowl form, decoration, and firing resemble Vessel 10 also associated with Skeleton 1. The vessel is most likely Aguila Orange: Variety Unspecified.

Vessel 18 (Figure 4.58) is a bowl with round sides that are pinched at the rim in two places, direct rim, rounded lip, and flat base. The entire vessel is slipped a mottled black and

many rootlet marks are present. The bowl is almost identical to Vessel 5 associated with Skeleton 5. The bowl is Balanza Black: Variety Unspecified.

To conclude the discussion of ceramics associated with Skeleton 1, while the vessels seem to suggest a mixture of both K'ahk 2/Tzakol 2 and K'ahk 3/Tzakol 3 complex material, it is difficult to draw any firm conclusions. Firm chronological conclusions cannot be supported because most of the vessels associated with Skeleton 1 are monochrome serving ware. Because we do not currently have an adequate representative sample of K'ahk 2/Tzakol 2 complex monochrome serving ware it is difficult to know if these supposed K'ahk 3/Tzakol 3 vessels were actually contemporaneous with K'ahk 2/Tzakol 2 highly decorated fine ware (such as the polychrome and black material associated with Skeletons 5/12, 13, and 14). The presence of sherds displaying many of the same form and surface modes found in K'ahk 3/Tzakol 3 complex deposits in Structure 1 at La Sufricaya do lend credence to the argument that these monochrome vessels may be slightly later than the material associated with Skeletons 5/12, 13, and 14. However, some vessels, such as Vessels 8 and 15 are so similar to K'ahk 2/Tzakol 2 complex pottery found elsewhere in Building B, they must have been produced during that time. Also, as discussed above, strong typological comparisons to pottery from other sites with well established sequences support this idea. However, until more reliable K'ahk 2/Tzakol 2 contexts containing both decorated and monochrome serving ware (as well as utilitarian ware) are discovered, I cannot make any irrefutable statements about the chronological or socio-political significance of the vessels associated with Skeleton 1 in Room of Building B, Group II.

## **Room 1, Skeleton 6**

Skeletons 2 and 6 were also part of Vaillant's fourth phase of his Holmul III period (Merwin and Vaillant 1932: 40-41) (Figure 4.28). No ceramic material was associated with Skeleton 2, so it will not be discussed here. Merwin reports that Skeleton 6 was interred in an extended position with head to the north in Room 1 and lower limbs extending into Room 2. Novotny's analysis reveals that while Skeleton 6 may not have been complete, it did represent the remains of only one individual, juvenile, sex unknown. The skeletal material was associated with seven vessels. Like Skeleton 1, the vessels share form and decorative modes with both K'ahk 2/Tzakol 2 and K'ahk 3/Tzakol 3 complex material.

Vessel 1 (Figure 4.59) is a bowl with flaring walls, direct rim, rounded lip, and flat base. The vessel is slipped orange and polished on the interior. The exterior is smoothed, but left unslipped. I will classify the vessel as Nitan Composite: Variety Unspecified.

Vessel 2 (Figure 4.60) is a partial bowl with flaring walls, direct rim, rounded lip, and flat base. The vessel is slipped orange and polished on the interior. It is almost identical to Vessel 1. I will also classify Vessel 2 as Nitan Composite: Variety Unspecified.

Vessel 3 (Figure 4.61) is a cylinder with vertical walls, slightly everted rim, rounded lip, and flat base with three solid slab supports. The exterior vessel walls display two chamfers: one appears at the base and the other below the rim. The vessel is slipped red and heavily fire-clouded with rootlet marks on both the interior and exterior. Aside from the three slab feet, the vessel is almost identical to Vessel 9 associated with Skeleton 1. Like Vessel 9, the form suggests a modified version of Tzakol 3 sphere modes.

Vessel 4 was not found in the Peabody collections. Merwin states that Vessel 4 was, "in contact with left ulna, lower part of pelvis, and slightly under right femur; large amount of red

and green paint around it and under it, probably had been painted” (Merwin and Vaillant 1932: 33). In Vaillant’s part of the same monograph he reports the vessel as “not found in collections” (ibid: 69). Furthermore, the vessel is not assigned a Peabody catalogue number. It is possible that this vessel no longer exists.

Vessel 5 (Figure 4.62) is a miniature vessel. The form is a jar, with markedly incurving sides, vertical neck, everted rim, squared lip, and flat base. The sides have been gadrooned. The miniature vessel is slipped red, but highly eroded. The vessel is too rare to assign a type-variety classification at this time. Miniature vessels are not uncommon during the Early Classic period in the lowlands (Smith 1955: Figure 66).

Vessel 6 (Figure 4.63) is a bowl with round sides, direct rim with gutter spout, rounded lip, and ring base. The vessel is slipped entirely black with many rootlet marks. In comparison to other black pottery found in Building B, the slip on Vessel 6 is much deeper, thicker, and not as mottled. This could suggest a different production technique – possibly even different variety of the type. For now, I am labeling the vessel Balanza Black: Variety Unspecified.

Vessel 7 (Figure 4.64) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The interior of the bowl is slipped orange with a cream underslip and bands of red and black paint encircling the rim. On the base of the interior is the depiction of a human figure painted in red wearing a costume. Vaillant called the figure a “man with bee’s body” (Merwin and Vaillant 1932: 69). The exterior only displays the cream underslip upon which is painted a repeating design in red and black paint. The main design is a step and angular scroll which repeats twice in red and twice in black. The rim of the exterior is encircled by a band of red chevrons. The interior design on the bowl is similar to bowls found in the Three Rivers Region, Belize (Sullivan 2002: Figure 7.4) and Uaxactun (Smith 1955: Figure 76, b, 5).

Smith dates his vessel to the Tzakol 2 period. It is possible Vessel 7 dates to the same period and is part of the K'ahk 2/Tzajol 2 complex. I classify the vessel as Caldero Buff Polychrome:

Variety Unspecified.

In conclusion, collectively the vessels associated with Skeleton 6 suggest the body was interred between the end of the K'ahk 2/Tzakol 2 Complex and beginning of K'ahk 3/Tzakol 3. Like the pots associated with Skeleton 1, these vessels display form and surface modes consistent with both K'ahk 2-3/Tzakol 2-3 complexes and also suggest maintained contact between elites at Holmul and other important lowland centers at this time.

### **Room 2, Skeleton 10**

Merwin and Vaillant believe Skeleton 10 was the last group of osteological remains to be interred before the superstructure of Building B, Group II was sealed. Skeleton 10 is located in the east side of Room 2 (Figure 4.28). Merwin's drawing depicts the body as being interred in a flexed position with head to the west above the remains of Skeletons 13 and 14. Novotny once again identifies the remains of at least two individuals, adults, sex unknown in the catalogued grouping of bones labeled "Skeleton 10". It is possible that the remains of Skeleton 10 are mixed with the remains of Skeleton 9 which was supposedly interred, without funerary furniture, at the same time as Skeleton 5 in the third phase of Vaillant's Holmul III Period. Only two ceramic vessels were found associated with Skeleton 10. The vessels were formed and decorated in the same style and suggest an interment date in the late K'ahk 2/Tzakol 2 or early K'ahk 3/Tzakol 3 complex.

Vessel 1 (Figure 4.65) is a narrow cylinder with vertical walls, direct rim, rounded lip, flat base and accompanying lid. The lid is trapezoidal in shape and has a modeled human head

complete with headdress and earflares for a handle. The exterior of the lid and vessel displays an orange-red underslip. Potters used a black smudging technique to create designs in the red slip possibly using some sort of resist technique. Vaillant calls the main design on the lid of the vessel a “monkey pattern” (ibid: 69). The design on the vessel exterior is much more abstract and almost looks like pseudo-glyphs. I classify the vessel as Japon Resist: Variety Unspecified.

Vessel 2 (Figure 4.66) is also a narrow cylinder with vertical walls, direct rim, rounded lip, flat base and accompanying lid. The lid is trapezoidal in shape and has a modeled human head complete with headdress and earflares for a handle. The exterior of the lid and vessel displays an orange-red underslip. Potters used the same smudging technique as seen on Vessel 1. No design appears on the lid. The main design on the cylinder is an abstract pattern surrounded by rows of dots and framed by two sets of diagonal lines. I also classify Vessel 2 as Japon Resist: Variety Unspecified.

Japon Resist is very rare in the Maya lowlands, but is reported by Culbert (1993: Figures 21, a, and 27, a, 1) in Burials 10 and 22 at Tikal as well as Uaxactun (Smith 1955: 1, k). Smith places Japon Resist within Tzakol 3, but because it was discovered in association with other Manik 2 vessels at Tikal, it is possible this type could represent another style that bridges the Tzakol 2 – 3 (or Manik 2 – 3) complexes. Regardless of the specific period, Vessels 1 and 2 associated with Skeleton 10 fit within the overall chronology of Rooms 1 and 2 possibly anchoring it to the beginning of the K’ahk 3/Tzakol 3 complex.

After this last deposition episode, the superstructure containing Rooms 1-4 in Building B, Group II is sealed and the entire building covered in construction fill in order to create a large plastered platform. The last of the rooms to be discussed in Building B, Group II lies buried within this fill and outside the superstructure of the original structure.

## **Room 10**

Room 10 is located in the construction fill of the last building phase of Building B, Group II (Figure 4.2). The room was constructed against the exterior north wall of Room 4. Merwin describes the architecture of Room 10 as follows:

The masonry was very crude. The floor was roughly covered with mortar, and the walls were of crudely worked stones held together by a concrete consisting of mortar and small stones. The roof was formed by small rocks (about two feet by eight inches by ten inches), resting on the top of the side walls, projected to support large cross slabs. Inside the room, these slabs were bare of stucco and over them was a covering of mortar and small rocks. (Merwin and Vaillant 1932: 40)

A number of skeletal remains were found in the room along with four vessels (Figure 4.67).

Unfortunately, Skeleton 22 was not located by Novotny and does not appear in her unpublished Building B, Group II burial report. Three vessels, however, were located in the Peabody Museum and one was located in the American Museum of Natural History in New York. As a note, Vaillant (Merwin and Vaillant 1932:71-72) placed all these vessels within his Holmul IV burial period.

Vessels 1 through 4 of Room 10 are problematic because they display form and surface modes of the earlier K'ahk 1/Tzakol 1 complex, but they are found in a construction layer which obviously dates to the later half of the Early Classic period. Based on quality of surface design, Vaillant placed these vessels within his Holmul IV Period and believes the vessels represent a kind of decadent transitional period between the fall of the "Old Empire" elites at Holmul and the rise of the "New Empire" (Merwin and Vaillant 1932: 72; Vaillant 1927:300-334). He compares the similarities in form between the vessels found in Room 10 and those in Rooms 1 and 2 and assumes because Room 10 is located in the succeeding architectural phase that covers Rooms 1-4, the vessels in Room 10 must have been produced after the vessels in Rooms 1-4. More than once he comments on the "degeneracy" and lack of sophistication of the designs on

the vessel surfaces. While Vaillant correctly assumes that Vessels 1-4 in Room 10 may not have been part of the same ceramic production traditions as those vessels discovered in Rooms 1 and 2, he incorrectly assumes that all the vessels in Room 10 must be younger than those in Rooms 1 and 2. Form and decorative modes are discussed below.

Vessel 1 (Figure 4.68) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The interior is slipped orange with a cream underslip. Red and black bands of paint run the circumference of the rim. The exterior displays the cream underslip upon which is painted a repeated serpent motif in red and black. The motif appears three times and is separated each time by three thick vertical bands of black, red, and black paint. I classify the bowl as Caldero Buff Polychrome: Variety Unspecified and believe the vessel was produced within the K'ahk 2-3/Tzakol 2-3 ceramic complexes.

Vessel 2 (Figure 4.69) is a bowl with composite silhouette sides, direct rim, rounded lip, z-angle basal break, and ring base. The interior is slipped orange with one red band running the circumference of the rim. The exterior is slipped orange and painted in red and black. The main design is simple and consists of horizontal bands of red and black paint framing one single squiggly black line. The form and decorative treatment both suggest a production date that is possibly earlier than the K'ahk 3/Tzakol 3 complex, perhaps within K'ahk 1/Tzaokl 1 or at least K'ahk 2/Tzakol 2. The z-angle basal break without basal flange is rarely seen in the Holmul Region after the K'ahk 1/Tzakol 1 complex. Furthermore, the crude painting style and simple design is more reminiscent of earlier attempts at polychrome painting than later ones. Smith (1955: Figure 26, a) places the “squiggly” line main design at least as early as the K'ahk 2/Tzakol 2 complex. The z-angle basal break is decorated by enclosed black semi-circles. This motif is seen on Boleto Black-on-Orange Vessels found at Hamontun (SF# HM.LT.01.00.02.01,

SF# HM.LT.01.00.02.02) in association with an excellent example of a firm K'ahk 1/Tzakol 1 complex marker, Actuncan Orange Polychrome (SF# HM.LT.01.00.02.05). The entire design scheme is also reminiscent of what Adams (1971: Figures 21, d 1-5) classifies as Ixcanrio Orange Polychrome at Altar de Sacrificios. Because of this chronological and stylistic confusion, the type name and complex will remain unassigned for the moment.

Vessel 3 (Figure 4.70) is a bowl with composite silhouette walls, direct rim, rounded lip, basal flange, and ring base. The interior is slipped orange as well as the exterior. The main design on the exterior consists of simple horizontal black bands on the rim and framing the basal flange. The basal flange is further decorated by enclosed black semi-circles. This type is none other than Boleto Black-on-Orange and is a firm K'ahk 1/Tzakol 1 complex marker.

Vessel 4 (Figure 4.71) is a bowl with composite silhouette sides, direct rim, rounded lip, z-angle basal break, and ring base. The interior and exterior are slipped orange. The main design on the exterior is very similar to Vessel 3 described above except that the enclosed black semi-circles appear on the z-angle as opposed to the basal flange. Like Vessel 3, the black painting is crude and the overall polishing appearing more like a heavy burnish than a true polish. Vessel 4 bears striking resemblance to vessels of the Gavilan Black on Orange types found at Altar de Sacrificios (Adams 1971: Figures 21 a-c). Although crude, the polish and shade of orange slip on Vessel 4 still warrants its inclusion in the Aguila Ceramic Group as opposed to Aguacate and I classify this vessel as Boleto Black-on-Orange: Variety Unspecified, again possibly within the K'ahk 1/Tzakol 1 complex.

In conclusion, the form and decorative modes of the vessels in Room 10 do not seem to correspond with the placement of the room in the larger Building B architectural sequence. Vessels 2-4 could be heirlooms from the K'ahk 1-2/Tzakol 1-2 complexes that were saved and

placed in Room 10 just before the building was covered. Regardless of the discordance between the funerary furniture in Room 10 and its place in the architectural sequence, we do know that the building was filled sometime during the late K'ahk 2/Tzakol 2 or early K'ahk 3/Tzakol 3 complexes. At the Peabody I found and analyzed two flaring walled bowls with direct rims, rounded lips, and flat bases belonging to the Aguila Group that were found by Merwin in the construction fill covering the superstructure of Building B as well as Room 10. The vessels are not listed in Merwin and Vaillant's monograph or Vaillant's dissertation, but they do have Peabody catalogue numbers and original tags that read "Pot 3 Roof, Bldg. B Group II" and "Pot 4 Roof, Bldg. B Group II". The vessels are in the form and decorative tradition of K'ahk 2/Tzakol 2 ceramics and support the assumption that the original Building B was sealed sometime at the end of the K'ahk 2/Tzakol 2 and beginning of K'ahk 3/Tzakol 3 complexes. Building B, Group II does not contain any material dating to Vaillant's original Holmul V Complex. For a look at this material, we must move on to the analysis of ceramics found in Building F, Group I and Ruin X.

### *Building F, Group I*

Building F is located in Group I of Holmul and contained one burial with eight vessels all dating to Vaillant's Holmul V period. Group I consists of a high platform with five buildings atop. Building D is the largest and northernmost mound with Buildings A, B, C, and E located approximately on the four corners of the platform (Figure 4.72). Building F is located on the southeast side of the platform immediately adjacent to Building A. The layout of Buildings A, B, C, D, and E is reminiscent of the Late Preclassic period while Building F appears to be a Late Classic addition. Vaillant describes the architecture and problems with interpretation as follows:

This was a burial structure jammed between the east end of Building A and the southeast corner of Building E. Its eastern edge was in line with the east edge of the plaza. Exact data on this mound are not clear, for plans and drawings are missing from the notes, and the memory of the excavator would have to supplement the missing data...The structure was oblong, with the long axis north and south, and was not a chambered building but a platform rising in two main blocks or masses...There seems no doubt that Structure F was intended solely for burial purposes and had not been converted from a habitation into a tomb. The method of constructing first a foundation and later the platform where the body had been prepared for burial is an interesting side light in Holmul burials. (Merwin and Vaillant 1932: 13-15)

As Vaillant describes, the mound appeared to resemble a tall platform as opposed to an actual building. After studying Merwin's notes, Vaillant did not believe there were any formal rooms found within Building F, but simply rubble fill within large retaining walls of un-faced stone. A burial was found in the northwest quarter of the construction fill. The skeleton was not analyzed by Novotny. Vaillant states the body was found flexed on its left side with head to southeast. Five vessels were found immediately associated with the skeleton (Vessels 1-5), two vessels were found in the general area of the skeleton (Pots A and B), and one vessel was found in the construction fill of the southwest wall of the structure (Pot C). All vessels date to Vaillant's (Merwin and Vaillant 1932:72) Holmul V building period. They date to the Ik-Chuah/Tepeu 2 ceramic complex in the revised Holmul Region ceramic sequence. Stylistic modes and hieroglyphic inscriptions reveal strong Late Classic political ties to the neighboring site of Naranjo and other unknown northeastern Peten polities.

Vessel 1 (Figure 4.73) is a plate with flaring walls, direct rim, squared lip, flat base, and three cylindrical hollow supports. The interior is covered in a cream slip upon which a design program in orange/red and black is depicted. The main design on the interior base of the plate depicts the "Holmul Dancer" theme (Reents 1985; Reents-Budet 1991). The theme consists of a dancing figure in ritual regalia supposedly representative of the corn god rising from the underworld at the moment of the present Maya creation cycle (Reents-Budet 1991: 217). The

figure is accompanied by a dwarf or hunchback. The two figures are framed by a solid red rectangle. The rectangle and Holmul Dancer theme are further encircled by a band of red and cream circles with solid circular centers. The interior walls of the vessel are separated into two design frames: one upper and one lower. In the lower frame is a band of repeating water birds in profile. In the upper frame is hieroglyphic inscription. The exterior walls are decorated in a repeating pattern of two design frames. One frame contains a water bird painted in red/orange in profile against a black background. The second frame is composed of a horizontal red weave pattern enclosed by horizontally oriented concentric triangles. The supports are slipped cream with two black horizontal bands or stripes. I classify the vessel as Cabrito Cream Polychrome: Variety Unspecified.

The plate may have belonged to a Late Classic ruler of the site of Naranjo and given to the individual found buried in Building F, Group I. According to Tokovinine the inscription on the interior of the plate names the owner of the vessel as Bat K'awil, son of the Late Classic period Naranjo ruler, *K'ahk' Ukalaw Chan Chaak* (Tokovinine 2006: 335). This would imply the vessel was commissioned by the ruler of Naranjo and made in the Naranjo site vicinity sometime around AD 780. However, Reents-Budet and colleagues (1994: 179) state that the chemical composition of the paste and the painting style place the vessel in a manufacturing tradition that may lie outside of a well-established Naranjo production tradition. While these views may seem in opposition to one another, they actually may lead to the same conclusion. Reents-Budet and colleagues' Naranjo based paste and style group appears to be based primarily upon ceramics dating to the reign of *K'ahk' Tiliw Chan Chaak* who ruled Naranjo at its apogee from approximately AD 693-728. *K'ahk' Tiliw Chan Chaak* appears to have used these types of polychrome vessels as a form of social valuable, commissioning them in his name and later

giving them to rulers at other sites during elite feasting or other events. The circulation of these social valuables in a northeastern Peten political network of the Late Classic period may have added to the symbolic capital of both *K'ahk' Tiliw Chan Chaak* as well as his allies at more provincial sites. Reents-Budet (1985; Reents-Budet et al 1994) believes many vessels displaying this style may have been crafted at the same workshop, even by the same artisan, in the Naranjo area – consequently creating a well-defined group of ceramics with almost identical paste chemical signatures and painting style. Vessel 1 from Building F was produced much later, possibly at a different workshop composed of potters who used a different paste recipe than earlier craftsmen, and certainly painted by a different artisan than the one who painted vessels under the reign of *K'ahk' Tiliw Chan Chaak*. Therefore, it is highly probable that Vessel 1 was commissioned by *Bat K'awil* of Naranjo, produced in or near Naranjo, and gifted to the unnamed individual in Building F, Group I.

Vessel 2 (Figure 4.74) is located at the American Museum of Natural History in New York. The Peabody has no catalogue number for it. I was able to view the vessel, however, using photographs provided by Francisco Estrada-Belli taken in 2006. Merwin describes the vessel as a “long cylindrical vase” (Merwin and Vaillant 1932: 15) and Vaillant describes it as a “tall cylindrical jar, yellow lacquer interior, white plaster on exterior with designs in black” (ibid: 72). The vessel is a tall cylinder, paste unknown, and surface all but completely eroded. However, polychrome decoration is visible in some areas. This vessel will remain an unidentified Late Classic polychrome for the present.

Vessel 3 (Figure 4.75) is a tall cylinder with vertical sides, direct rim, rounded lip, and flat base. The vessel was on display and I was not able to view the interior. The exterior is slipped cream with painted red/orange and black designs. An orange/red band encircles the base

of the vessel. The main design consists of a “Holmul Dancer” theme in red and orange. The rim of the vessel contains a horizontal band of hieroglyphs. One vertical band of glyphs extends down into the main design frame. Tokovinine believes the glyphs are written in an idiosyncratic style as compared to earlier and contemporary Holmul Style Polychromes (Tokovinine 2006: 336). The vertical column mentions an unknown toponym *yuk’ite* (ibid). Tokovinine concludes the vessel represents independent innovation or development in artistic style of the Holmul Style Polychromes. The vessel may be a local manifestation of the Cabrito Cream Polychrome type.

Vessel 4 (Figure 4.76) is a bowl with flaring sides, direct rim, rounded lip, and flat base. The interior is slipped orange with two horizontal red bands at the rim. The exterior is slipped cream with horizontal red bands encircling the lip and base. The main design consists of a repeating concentric circle made by fine black lines radiating out from the circle’s center. The concentric circles are framed by rectangles in fine black paint. I classify the vessel as Zacatel Cream Polychrome: Variety Unspecified.

Vessel 5 (Figure 4.77) is a plate with flaring walls, direct rim, rounded lip, flat base, and three hollow cylindrical supports. The interior is highly eroded, but the remnants of a figure painted in red are present on the base of the plate. The exterior walls are slipped cream with alternating bands of crudely painted red and black paint. I classify the vessel as Zacatel Cream Polychrome: Variety Unspecified.

Pot A (Figure 4.78) is a bowl with high rounded sides (almost barrel-like), direct rim, rounded lip, and flat base. The interior is slipped orange with two bands of red paint encircling the rim and lip. The exterior was covered in a cream underslip, above which was applied an orange slip, above which was again applied red paint. The paint is absent on the upper register of the vessel near the rim giving the appearance of two horizontal orange bands of different

thickness. The vessel form and decoration modes are somewhat rare for the Ik-Chuah/Tepeu 2 complex. The barrel shape form actually resembles polychrome vessels of the Saxche type of the Chak/Tepeu 1 Complex rather than those of the Ik-Chuah/Tepeu 2 complex. Because of these characteristics, I have decided to leave the type and variety unspecified for the moment.

Pot B (Figure 4.79) is a bowl with flaring sides, direct rim, slightly pinched lip, and flat base. The vessel is slipped orange on the interior and unslipped on the exterior. Rough smoothing or raking marks are visible on the exterior. The flaring form, orange slipped interior, and rough smoothing or raking on the exterior make the vessel resemble the Nitán Composite type of the Early Classic periods in the Holmul Region. However, the walls are much thinner than those of Nitán Composite and the form of the bowl slightly more rounded and not as straight or flaring. I will leave the type and variety unclassified for the moment.

Pot C (Figure 4.80) is located is located at the American Museum of Natural History in New York. The Peabody catalogue number appears on the exterior vessel base. I was able to view the vessel using photographs taken in 2006 by Francisco Estrada-Belli. There is no description of the vessel by Merwin. Vaillant describes the vessel as a, “bowl with flat bottom, three hollow cylindrical legs broken off, red-on-white lacquer exterior, red-on-yellow lacquer interior” (Merwin and Vaillant 1932: 72). The vessel is a bowl with flaring walls, direct rim, squared lip, flat base, and three hollow support scars. Paste is unknown, but looks fine and volcanic based from the photo. Surface is highly eroded. Legible interior design elements are found on the vessel wall and consist of repeating thick vertical red lines topped by red circles, and vertical rows of red dots. Red dots are arranged in rows of three.

The physical characteristics of the vessels reflect their different associations or locations in relation to the skeletal remains in Building F, Group I. Vessels 1, 2, 3, and 5 are all

manufactured in the cream polychrome tradition. Vessel 1 is almost certainly of foreign manufacture and was given to the individual in Building F by one of the final rulers of Naranjo. Vessel 3 is made in the same Holmul Style Polychrome tradition, albeit possibly produced by a local artisan. Vessels 4 and 5 are almost certainly of local manufacture as sherds and partial vessels displaying their styles have been found in Ik-Chuah/Tepeu 2 contexts elsewhere in the Holmul Region. Based on the description of Pot C by Vaillant (Merwin and Vaillant 1932: 72), the form and decorative modes of this vessel are more in keeping with the style of the Ik-Chuah/Tepeu 2 cream polychromes found immediately associated with the skeleton. This vessel was found in the wall of the tomb and indicates a firm construction date in the Late Classic period. However, Pots A and B are of different production traditions, quite rare to the Holmul Region during the Late Classic, and were not found in direct association with the skeleton in Building F. The vessels actually appear to be earlier than the cream polychromes immediately associated with the skeletal remains. Pot A displays a form mode common to Chak/Tepeu 1 polychromes while Pot B is similar to the Nitán Composite type of the K'ahk 2-3/Tzakol 2-3 complex Aguila Orange Group. The presence of these vessels in this later facet Late Classic context remains unclear for now. What can be inferred from Vessels 1-5 associated with Building F is that they represented the participation of Holmul's elites in a larger Late Classic period political network that encompassed the immediate northeastern lowlands. This relationship is further supported by the presence of similar vessels found associated with skeletal remains in Ruin X.

## *Ruin X*

Ruin X is a free-standing platform distinct from other architectural groups at Holmul (see Figure 1.4). Merwin describes the location and architecture as follows:

Ruin X, a unit structure, one hundred yards east of Group I but having no direct connection with it, proved to be very interesting after the debris had been removed...Originally, there had been a single-room building (Room 1) constructed upon a steep-faced pyramidal substructure about forty feet high. This long corridor-like room had four entrances, three on the west side, the other on the east...Later, but as a distinct substructure, was added the building designated in the plan as Room 2...Burials were discovered in the upper or original room only, and following the usual custom found here, the entrances to the room has been sealed up. (Merwin and Vaillant 1932: 50-51)

Ruin x is actually a 20m tall pyramid on the west side of Holmul's East Plaza. Its two upper temple rooms were facing east (on staggered terraces), and their doorways axially oriented with the plazas E-W axis, as was Stela 1 in the plaza's center and the temple on Str.7, and Stela 25 at the opposite end of the East Plaza. Merwin reports having found three skeletons within Room 1 of Ruin X. Skeletons 1 and 2 were found in a "very crude" burial vault in the center of the floor whereas Skeleton 3 was discovered in an even less sophisticated hole dug into the floor almost immediately adjacent to the vault. The only remains associated with ceramic vessels was Skeleton 1. Merwin explains of the remains, "this skeleton of a youth was buried horizontally, the legs straight and the arms at the side, with the skull resting on its back" (ibid: 51). All three vessels associated with the burial date to the Ik-Chuah/Tepeu 2 ceramic complex. As a note, Vaillant (Merwin and Vaillant 1932:73) placed all these vessels within his Holmul V burial period.

Vessel 1 (Figure 4.81) is an open plate with flaring walls, direct rim, rounded lip, basal ridge, concave base, and three support scars. The interior is highly eroded but the vessel surface appears to have been treated with a cream underslip before an orange slip. A red

anthropomorphic design appears on the interior base. The design is framed by circumferential black bands. Red bands appear on the rim and base of the interior walls. The red bands enclose a series of black bands and “Tau” like symbols extending down from the red rim band. The exterior is completely eroded. The vessel is an orange slipped polychrome of Ik-Chuah/Tepeu 2 form and I have no problems classifying it as Palmar Orange Polychrome: Variety Unspecified.

Vessel 2 was not found in the collections at the Peabody, but it does have a catalogue number. Merwin describes the vessel as a, “large bowl, plain grey ware slipped on the entire interior and on the exterior of the wall, found inverted over Pot 3; at left of skull” (ibid: 52) while Vaillant simply states the vessel is a “large plain bowl” (ibid: 73).

Vessel 3 (Figure 4.82) is a cylinder with vertical walls, direct rim, rounded lip, and flat base. The interior surface was covered in a thin cream underslip. The exterior surface is also slipped cream, but contains designs in red/orange paint. The main design pattern is a repeating water bird figure with a fish in its mouth. A band of pseudo-glyphs appears around the rim of the exterior. The lack of real glyphs and comparatively simple execution of the main design indicate that the vessel does not belong to the same specific tradition of cream polychromes found in association with the skeleton in Building F. Nevertheless, Vessel 3 is an example of a Cabrito Cream Polychrome, but of a lesser quality variety.

It is not uncommon to discover Cabrito vessels of varying artistic quality at sites in the northeastern Peten and adjacent Belize River Valley. As Reents-Budet (1985, 1991; Reents-Budet et al 1994; Reents-Budet et al 2000) has reported, Cabrito vessels represent a regional ceramic production industry located in the northeastern lowlands during the Late Classic period. Vessels of differing levels of quality were produced by potters with differing levels of skill at

various workshops throughout the region that were destined for consumption by individuals on various socio-economic levels.

Taken together, form and surface modes of these two vessels support the conclusion that Ruin X was sealed in the Late Classic period sometime during the Ik-Chuah/Tepeu 2 ceramic complex. In comparison to the vessels associated with the remains in Building F, Group I, the ceramic offerings in Ruin X do not indicate that the individuals buried there enjoyed the same high status as the individual in Building F. While within the same Late Classic tradition as Vessels 1 and 3 in Building F, Vessel 3 in Ruin X was most likely of local manufacture and does not indicate such important, possibly direct, political contacts with the site of Naranjo as evidenced in Vessel 1 from Building F. The juxtaposition of these Cabrito types is quite interesting though, showing us again how slight differences in ceramic surface modes may indicate significant differences in access to ceramic social valuables and potential socio-economic status of elite individuals within the same site.

## **Conclusions**

The main objectives of this chapter were to 1) present the newly revised Holmul Region ceramic sequence in order to establish a firm chronological baseline for the study of ceramics in the region, and 2) incorporate Merwin and Vaillant's original data and interpretations into this new schema.

The newly established Holmul Region chronology spans further back in time than Vaillant's original sequence to the Early Middle Preclassic period and also forward into the Terminal Classic. Discussed in the proceeding chapter, production, distribution, and exchange patterns vary within these periods reflecting stronger economic, political, and social relationships

with Central Peten, Belize Valley, and Northern Belize sites at different times in the prehistory of the Holmul Region.

Through incorporating studies of ceramic material recovered in recent excavations in the Holmul Region with Merwin and Vaillant's original studies, I have been able to revise and expand on Vaillant's original work. Combined with archaeological data (Neivens de Estrada 2006), my ceramic analysis reveals a slightly different sequence of ceramic deposition from the Late Preclassic through Early Classic periods in Building B, Group II: beginning with the construction of the platform at least as far back as the Late Preclassic period and Itzamkanak/Chicanel complex, the first deposition of materials in the south side of Room 8 during the end of Itzamkanak/Chicanel, and the continued deposition of materials up until the close of the second third of the Early Classic period during the end of the K'ahk 2/Tzakol 2 and beginning of the K'ahk 3/TZakol 3 ceramic complexes. I have also presented for the first time a complete analysis and interpretation of Early Classic ceramics in Rooms 1, 2, 3, and 10 suggesting the elites buried in Building B, Group II took part in important social, political, and perhaps economic relations with elites at other important Early Classic sites in the Central Peten and Mexico from AD 250-450. Finally, together with Tokovinine's recent analysis of hieroglyphic data, my analysis has revealed the pottery associated with burials in Building F, Group I and Ruin X date to the second component of the Late Classic period or at a time of the Ik-Chuah/Tepeu 2 ceramic complex. Ceramic and glyphic data suggest that some, but not all, Holmul elites took part in important political, social, and possibly economic relations with other powerful northeastern Peten centers including Naranjo and Tikal. Now that the chronological sequence has been firmly established and Merwin and Vaillant's previous data incorporated into

the new sequence, I can now present the results of a type-variety-mode classification of ceramics within the newly defined complexes discussed in this chapter.

YEAR	TIME PERIOD	HOLMUL	UAXACTUN	BARTON RAMIE	TIKAL	ALTAR DE SACRIFICIOS	SEIBAL	EL MIRADOR														
1000	POSTCLASSIC			NEW TOWN	CABAN			POST LAC NA														
900	TERMINAL CLASSIC	KISIN/TEPEU 3	TEPEU 3	SPANISH LOOKOUT	EZNAB	JIMBA	BAYAL	LAC NA														
800		IK-CHUAH/TEPEU 2	TEPEU 2		IMIX	BOCA																
700	LATE CLASSIC	CHAK/TEPEU 1	TEPEU 1	TIGER RUN	IK	CHIXOY	TEPEJILOTE	LAC NA														
600			TEPEU 1	TIGER RUN	IK	CHIXOY																
500	EARLY CLASSIC	K'AHK 3/ TZAKOL 3	TZAKOL 3	HERMITAGE	MANIK 3	VEREMOS	JUNCO	ACROPOLIS														
400		K'AHK 2/ TZAKOL 2	TZAKOL 2		MANIK 2	AYN																
300		K'AHK 1/ TZAKOL 1	TZAKOL 1		MANIK 1	SALINAS																
200		TERMINAL PRECLASSIC II	WAYAAB		MATZANEL				FLORAL PARK	CIMI	CANTUTSE	PAIXBANCITO										
100	TERMINAL PRECLASSIC I	ITZAMKANAK/ CHICANEL	CHICANEL	MOUNT HOPE	CAUAC	PLANCHA	CASCABEL															
0	LATE PRECLASSIC			BARTON CREEK	CHICANEL			MOUNT HOPE	CHUEN													
100										LATE PRECLASSIC	BARTON CREEK	CHUEN	PLANCHA									
200	LATE MIDDLE PRECLASSIC	YAX TE/ MAMOM	MAMOM	LATE JENNY CREEK	TZEC	SAN FELIX	ESCOBA	MONOS														
300						LATE MIDDLE PRECLASSIC	YAX TE/ MAMOM		MAMOM	LATE JENNY CREEK	TZEC	SAN FELIX	ESCOBA									
400	EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB		EARLY JENNY CREEK	EB			XE				REAL	MONOS									
500						EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB			EARLY JENNY CREEK	EB			XE	REAL							
600																EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB		EARLY JENNY CREEK	EB	XE	REAL
700																						
800	EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB		EARLY JENNY CREEK	EB			XE				REAL										
900						EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB			EARLY JENNY CREEK	EB		XE	REAL								
1000															EARLY MIDDLE PRECLASSIC	IXIM/ LATE EB		EARLY JENNY CREEK	EB	XE	REAL	

Figure 4.1 Holmul Region ceramic sequence shown in relation to sequences from other major lowland sites and regions

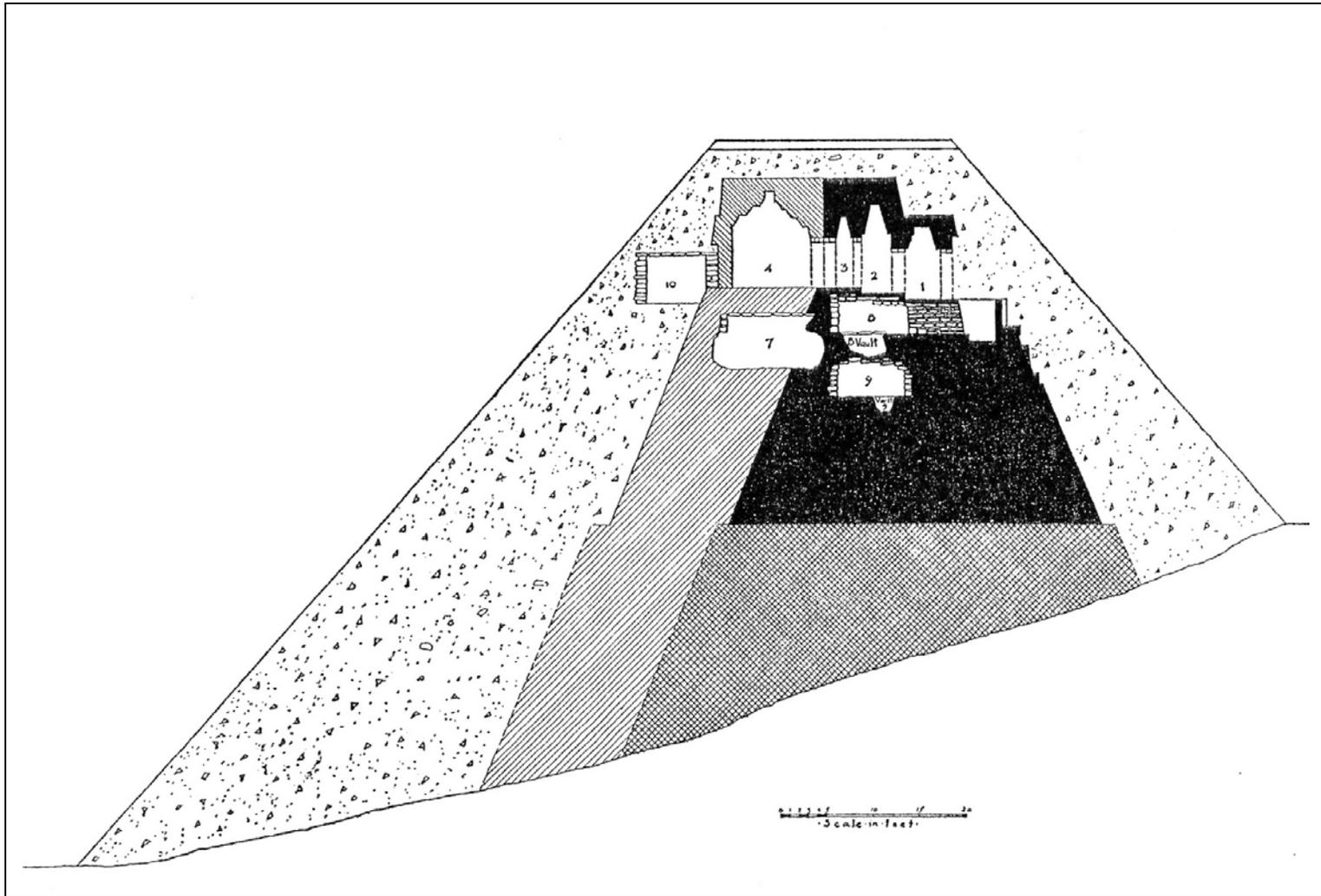


Figure 4.2 Profile of Building B, Group II, Holmul (from Merwin and Vaillant 1932: Figure 13). Note that Room 9 is positioned lower than it appears in the actual profile and that Burial 10 should be located below the south side of Room 8.

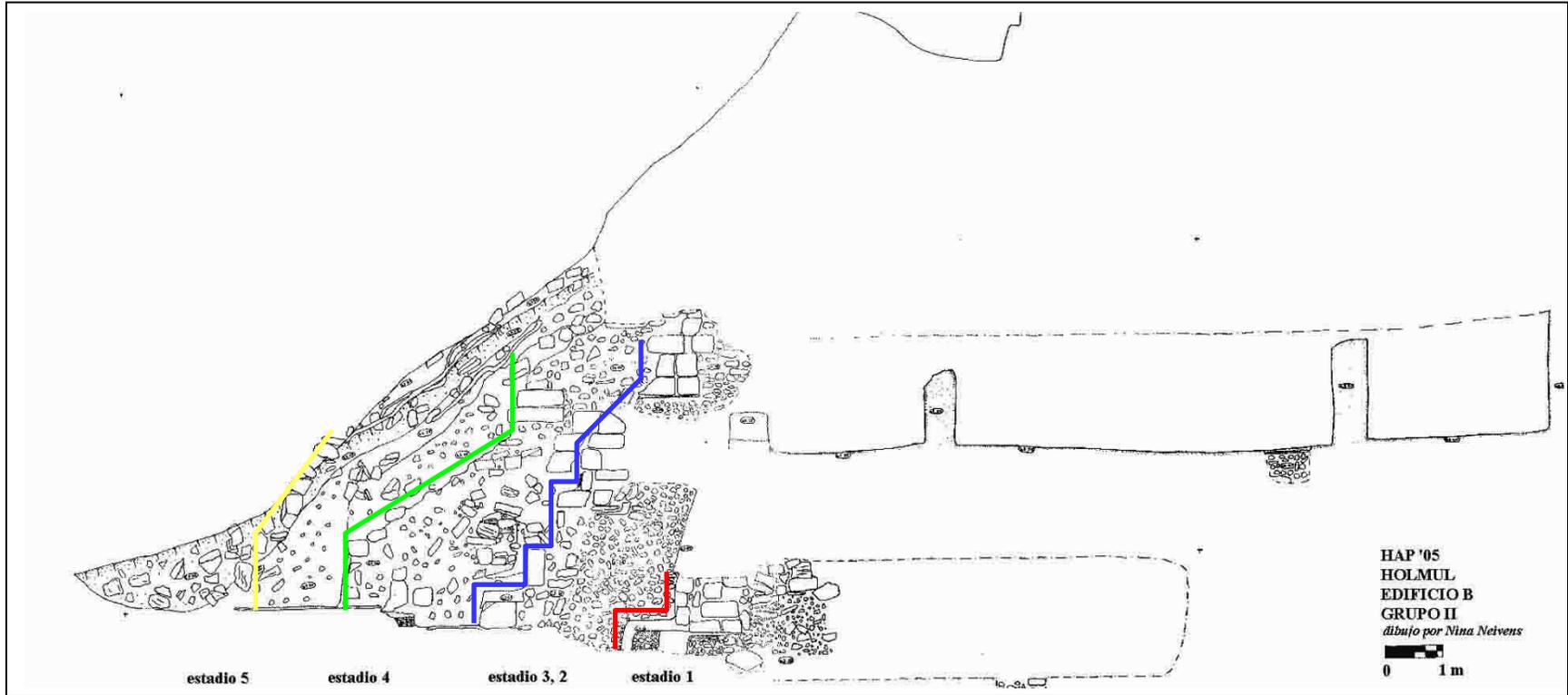


Figure 4.3 Recent profile of Building B, Group II, Holmul (modified from Neivens de Estrada 2006: Figure 1)

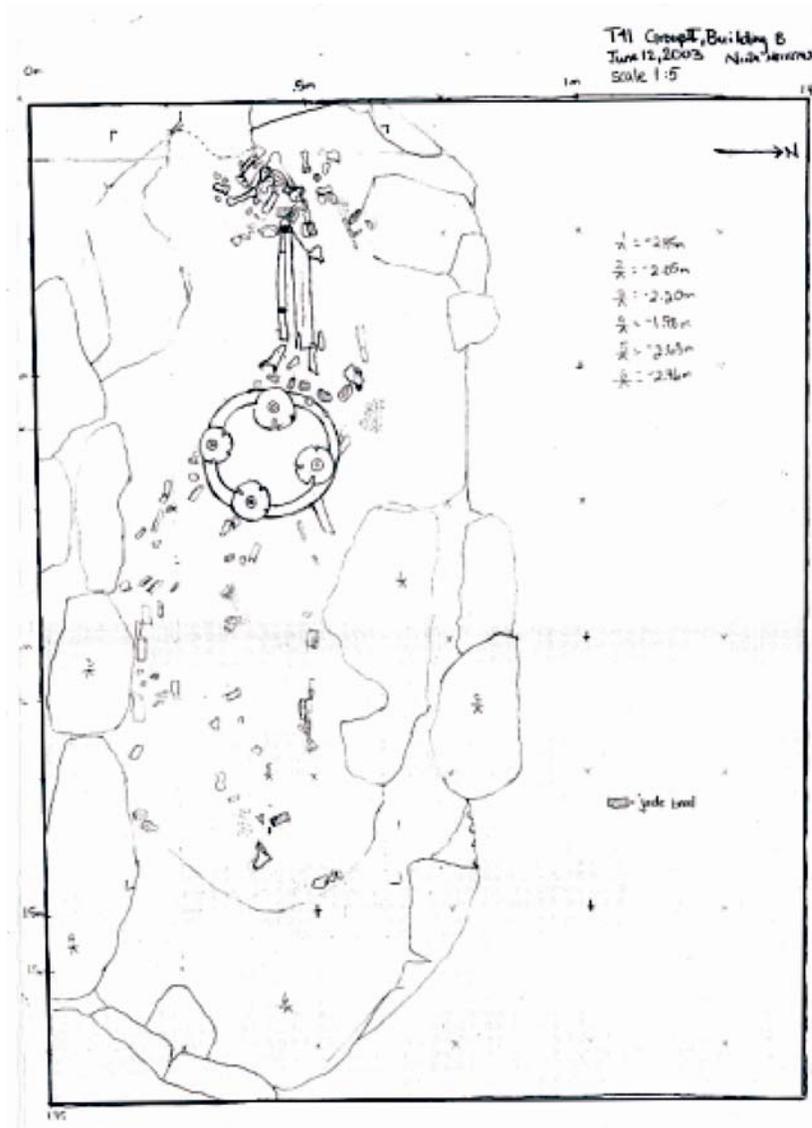


Figure 4.4 Plan drawing of Burial 10 showing cyst, orientation of skeleton, and upside-down tetrapod mammiform vessel (SF# HOL.T.41.10.02.01) (modified from Neivens 2005: Figure 1)

**ROOM 8 AND VAULT  
BUILDING B, GROUP II**

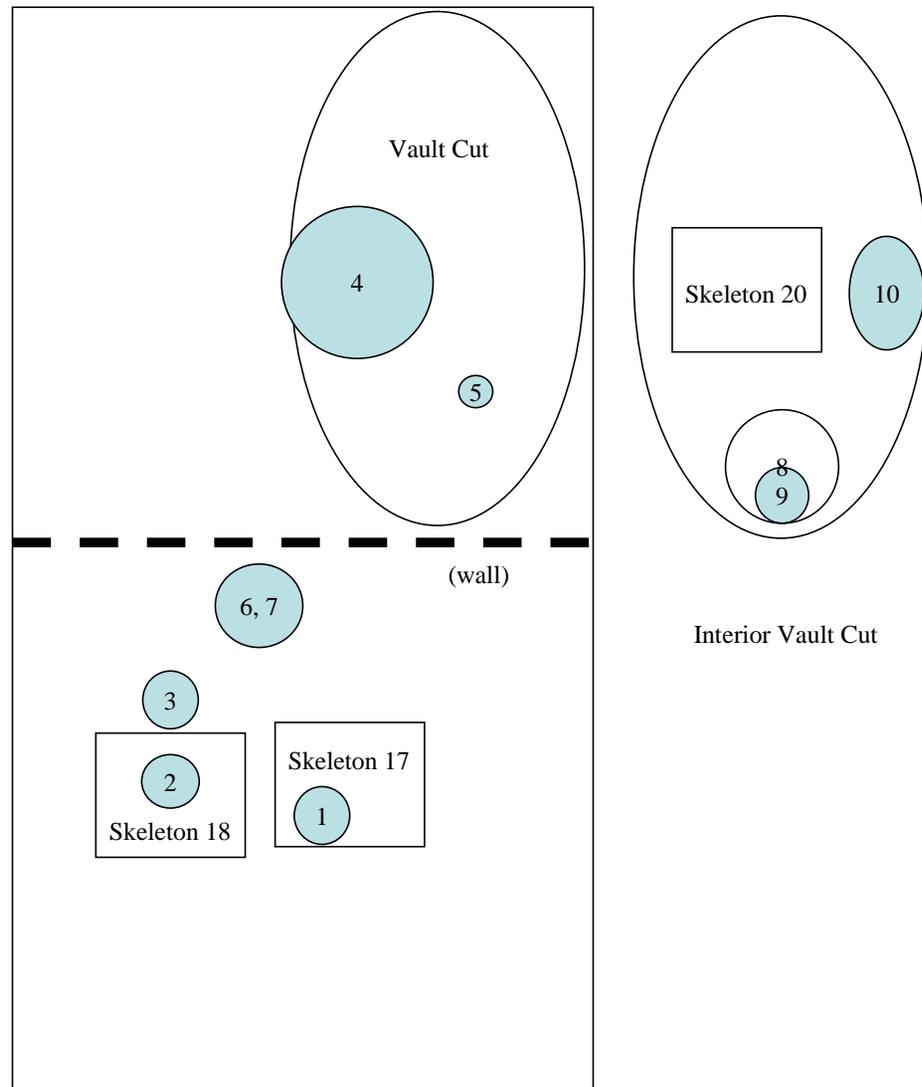


Figure 4.5 Plan of Room 8 and Room 8 Vault deposit showing approximate location of vessels and skeletal groupings based upon Merwin's original excavation data (see Merwin and Vaillant 1932:38)



Figure 4.6 Vessel 1, Room 8, Building B, Group II, Holmul (c5641) (photo by author),  
Sierra Red: Sierra Variety



Figure 4.7 Vessel 2, Room 8, Building B, Group II, Holmul (AMNH 30.0-6525) (photo by  
Francisco Estrada-Belli), Sierra Red: Variety Unspecified



Figure 4.8 Vessel 3, Room 8, Building B, Group II, Holmul (c5643) (photo by author),  
Sierra Red: Sierra Variety



Figure 4.9 Vessel 6, Room 8, Building B, Group II, Holmul (c5651) (photo by author),  
Sierra Red: Sierra Variety



Figure 4.10 Vessel 7, Room 8, Building B, Group II, Holmul (c5651) (photo by author),  
Sierra Red: Sierra Variety

**ROOM 9  
BUILDING B, GROUP II**

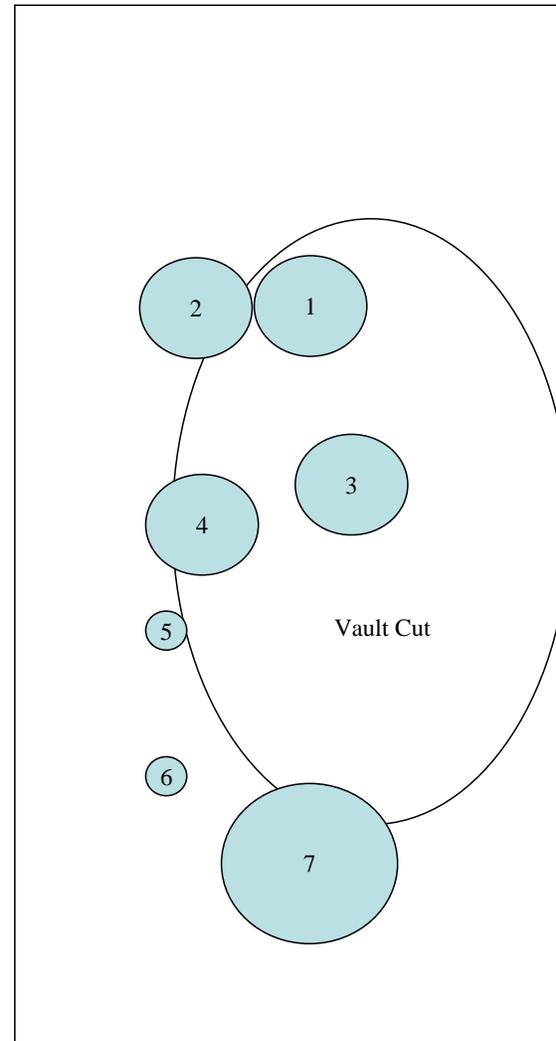


Figure 4.11 Plan of Room 9 deposit showing approximate location of vessels based upon Merwin's original excavation data (see Merwin and Vaillant 1932:39)



Figure 4.12 Vessel 1, Room 9, Building B, Group II, Holmul (c5656) (photo by author), Ixcanrio Orange Polychrome: Turnbull Variety

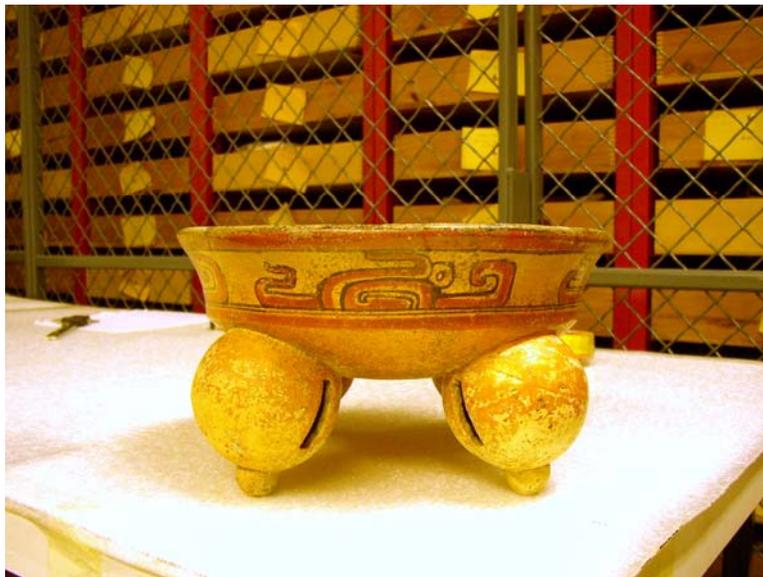


Figure 4.13 Vessel 2, Room 9, Building B, Group II, Holmul (c5657) (photo by author), Ixcanrio Orange Polychrome: Variety Unspecified



Figure 4.14 Vessel 3, Room 9, Building B, Group II, Holmul (c5658) (photo by author),  
Aguila Orange: Variety Unspecified



Figure 4.15 Vessel 4, Room 9, Building B, Group II, Holmul (c5659) (photo by author),  
Ixcanrio Orange Polychrome: Ixcanrio Variety



Figure 4.16 Vessel 5, Room 9, Building B, Group II, Holmul (c5650) (photo by author),  
Accordion Incised: Variety Unspecified



Figure 4.17 Vessel 6, Room 9, Building B, Group II, Holmul (c5646) (photo by author),  
Ixcanrio Orange Polychrome: Ixcanrio Variety



Figure 4.18 Vessel 7, Room 9, Building B, Group II, Holmul (c5647) (photo by author),  
Aguila Orange: Variety Unspecified



Figure 4.19 SF# HOL.T.41.10.02.01, Burial 10 (photo by author), Ixcario Orange  
Polychrome: Variety Unspecified

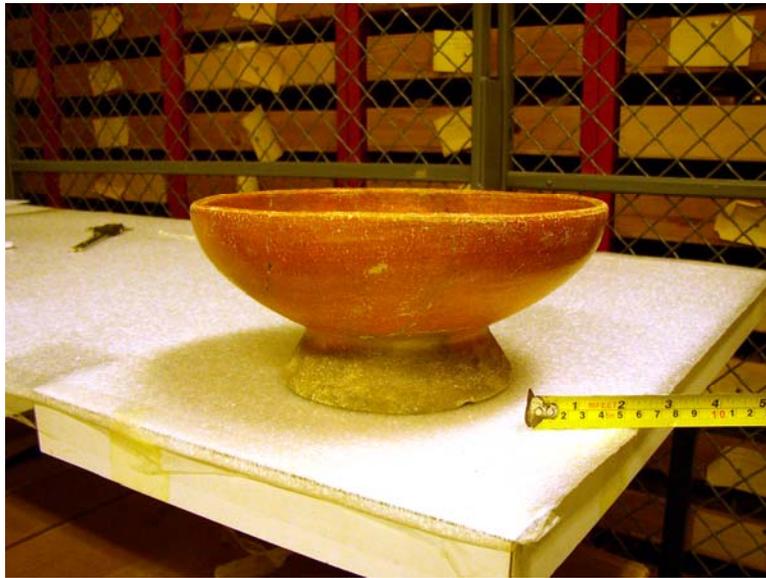


Figure 4.20 Vessel 8, Room 8 Vault, Building B, Group II, Holmul (c5648) (photo by author),  
Aguila Orange: Variety Unspecified

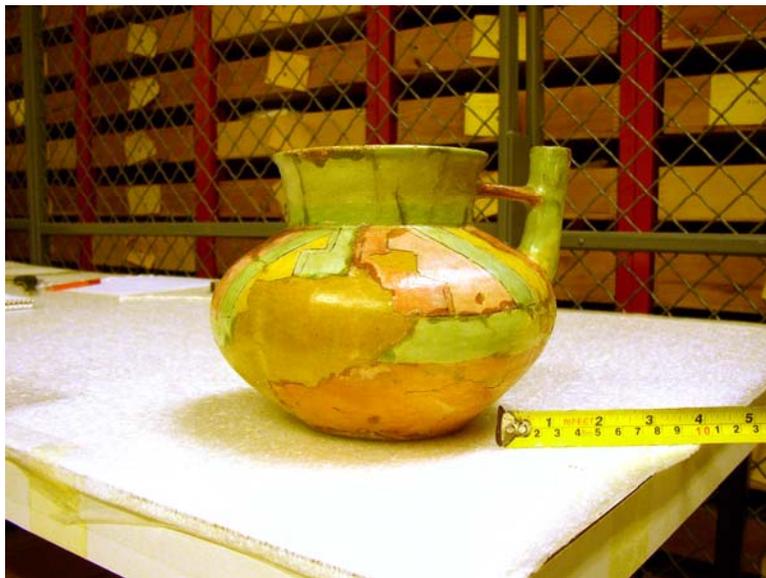


Figure 4.21 Vessel 9, Room 8 Vault, Building B, Group II, Holmul (c5649) (photo by author),  
Flor Group



Figure 4.22 Vessel 10, Room 8 Vault, Building B, Group II, Holmul (c5650) (photo by author), Ixcario Orange Polychrome: Variety Unspecified



Figure 4.23 Vessel 4, Room 8, Building B, Group II, Holmul (c5644) (photo by author), Actuncan Orange Polychrome: Variety Unspecified



Figure 4.24 Vessel 5, Room 8, Building B, Group II, Holmul (c5645) (photo by author), Sierra Red: Variety Unspecified



Figure 4.25 Vessel 3, Room 7, Building B, Group II, Holmul (c5683) (photo by author),  
Aguila Orange: Variety Unspecified



Figure 4.26 Vessel 4, Room 7, Building B, Group II, Holmul (c5630) (photo by author),  
Lucha Incised: Variety Unspecified



a



b

Figure 4.27 Vessels 5 and 6, Room 7, Building B, Group II, Holmul (c5631) (photos by author), Urita Gouged-Incised: Variety Unspecified

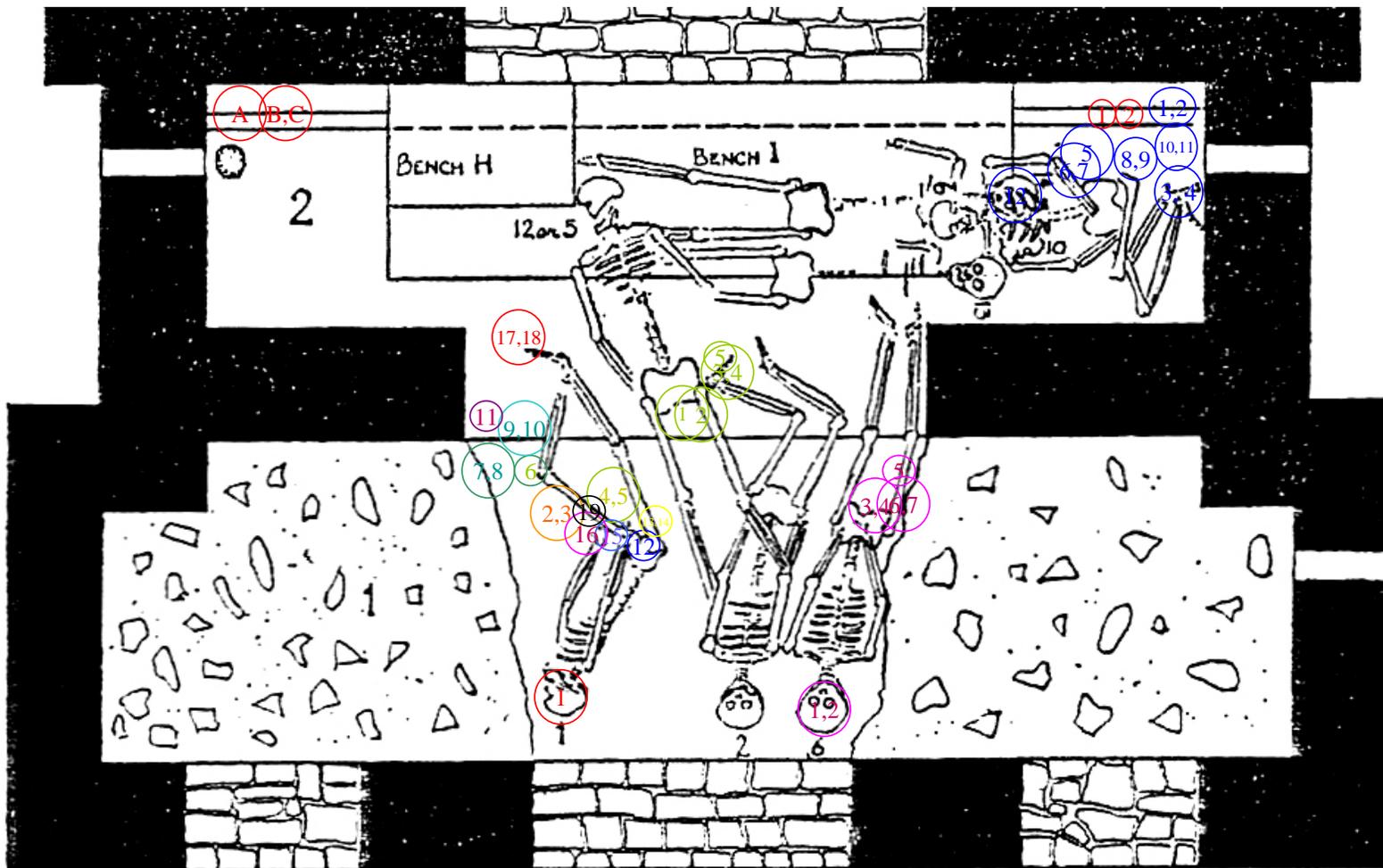


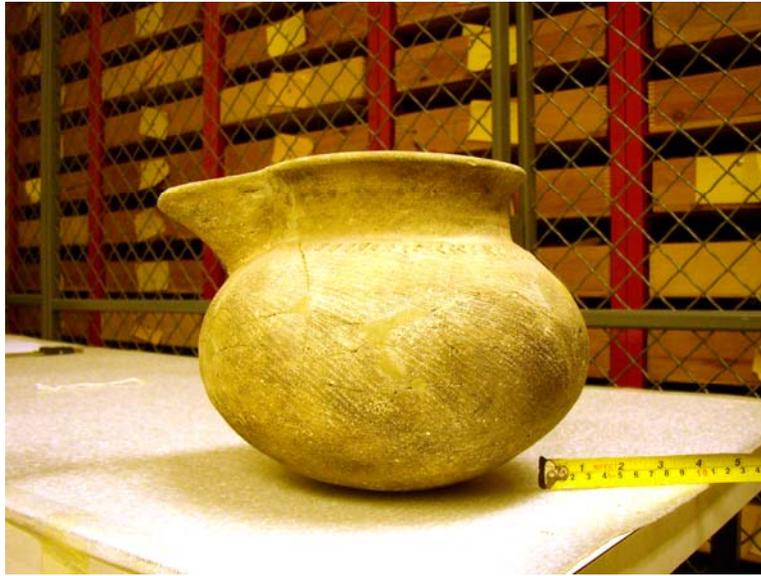
Figure 4.28 Plan of Rooms 1 and 2, Building B, Group II, Holmul with approximate locations of pottery based upon Merwin's original excavation data (see Merwini and Vaillant 1932:29-35) (modified from Merwin and Vaillant 1932: Figure 12)



Figure 4.29 Vessels 1 and 2, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5572) (photo by author), Lucha Incised: Variety Unspecified



Figure 4.30 Vessel 3, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5573) (photo by author), Dos Hermanoc Red: Dos Hermanos Variety



a



b

Figure 4.31 Vessel 4, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5574) (photo by author), Triunfo Group



a



b

Figure 4.32 Vessel 5, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5575) (photo by author), Quintal Group



Figure 4.33 Vessels 6 (c5576.1) and 7 (c5576), Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (photo by author), Dos Arroyos Orange Polychrome: Variety Unspecified



Figure 4.34 Vessels 8 and 9, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5577) (photo by author), Lucha Incised: Variety Unspecified



Figure 4.35 Vessels 10 and 11, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (c5578) (photo by author), Lucha Incised: Variety Unspecified



Figure 4.36 Vessel 12, Room 2, Skeletons 13 and 14, Building B, Group II, Holmul (vessel is only the lid) (c5579) (photo by author), Urita Gouged-Incised: Variety Unspecified



Figure 4.37 Vessel 1, Rooms 1 and 2, Skeleton 5/12, Building B, Group II, Holmul (c5476)  
(photo by author), Balanza Black: Balanza Variety



a



b

Figure 4.38 Vessels 3 [lid] (c5477) and 4 [pot] (c5478), Rooms 1 and 2, Skeleton 5/12, Building B, Group II, Holmul (photos by author), Dos Arroyos Orange Polychrome: Variety Unspecified



a



b

Figure 4.39 Vessel 5, Rooms 1 and 2, Skeleton 5/12, Building B, Group II, Holmul (c5479) (photo by author), Balanza Black: Balanza Variety



a



b

Figure 4.40 Pot A, (lid, c5592) (pot, c5591) Rooms 1 and 2, Skeleton 5/12, Building B, Group II, Holmul (photos by author), Dos Arroyos Orange Polychrome: Variety Unspecified



Figure 4.41 Pot B, Rooms 1 and 2, Skeleton 5/12, Building B, Group II, Holmul (c5593)  
(photo by author), Aguila Orange: Variety Unspecified



Figure 4.42 Vessel 1, Room 1, Skeleton 1, Building B, Group II, Holmul (c5665) (photo by author), Dos Arroyos Orange Polychrome: Variety Unspecified



Figure 4.43 Vessel 2, Room 1, Skeleton 1, Building B, Group II, Holmul (c5426) (photo by author), Aguila Orange: Polished Buff Variety



Figure 4.44 Vessel 3, Room 1, Skeleton 1, Building B, Group II, Holmul (c5427) (photo by author), Aguila Orange: Variety Unspecified



Figure 4.45 Vessel 4, Room 1, Skeleton 1, Building B, Group II, Holmul (c5428) (photo by author), Balanza Black: Balanza Variety



Figure 4.46 Vessel 5, Room 1, Skeleton 1, Building B, Group II, Holmul (c5429) (photo by author), Nitan Composite: Variety Unspecified



Figure 4.47 Vessel 6, Room 1, Skeleton 1, Building B, Group II, Holmul (c5430) (photo by author), Lucha Incised: Variety Unspecified



Figure 4.48 Vessel 7, Room 1, Skeleton 1, Building B, Group II, Holmul (c5431) (photo by author), Aguila Orange: Variety Unspecified



Figure 4.49 Vessel 8, Room 1, Skeleton 1, Building B, Group II, Holmul (c5432) (photo by author), Pita Incised: Variety Unspecified



Figure 4.50 Vessel 9, Room 1, Skeleton 1, Building B, Group II, Holmul (c5533) (photo by author), Unnamed type-variety

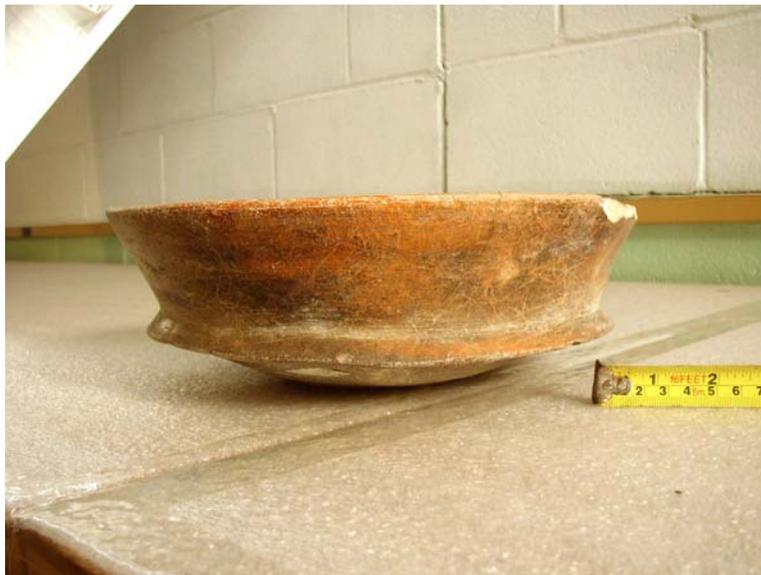


Figure 4.51 Vessel 10, Room 1, Skeleton 1, Building B, Group II, Holmul (c5434) (photo by author), Aguila Orange: Aguila Variety



Figure 4.52 Vessel 11, Room 1, Skeleton 1, Building B, Group II, Holmul (c5435) (photo by author), unnamed type-variety



Figure 4.53 Vessel 12, Room 1, Skeleton 1, Building B, Group II, Holmul (c5436-5439) (photo by author), Balanza Black: Variety Unspecified



Figure 4.54 Vessels 13 or 14 and 19, Room 1, Skeleton 1, Building B, Group II, Holmul (c5436-5439) (photo by author), Balanza Black: Variety Unspecified



Figure 4.55 Vessel 15, Room 1, Skeleton 1, Building B, Group II, Holmul (c5440) (photo by author), unnamed type-variety



Figure 4.56 Vessel 16, Room 1, Skeleton 1, Building B, Group II, Holmul (bowl only) (c5441) (photo by author), Lucha Incised: Lucha Variety

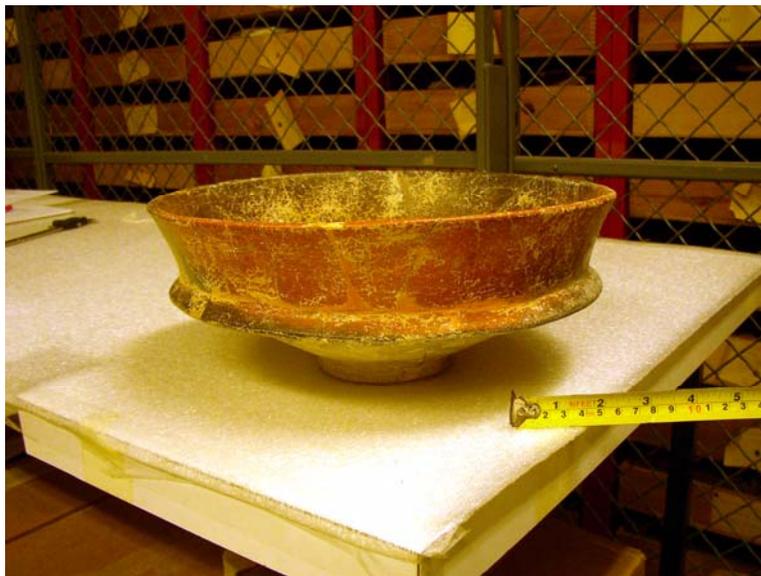


Figure 4.57 Vessel 17, Room 1, Skeleton 1, Building B, Group II, Holmul (c5442) (photo by author), Aguila Orange: Variety Unspecified



a



b

Figure 4.58 Vessel 18, Room 1, Skeleton 1, Building B, Group II, Holmul (c5443) (photos by author), Balanza Black: Variety Unspecified



Figure 4.59 Vessel 1, Room 1, Skeleton 6, Building B, Group II, Holmul (c5520) (photo by author), Nitan Composite: Variety Unspecified



Figure 4.60 Vessel 2, Room 1, Skeleton 6, Building B, Group II, Holmul (c5521) (photo by author), Nitan Composite: Variety Unspecified

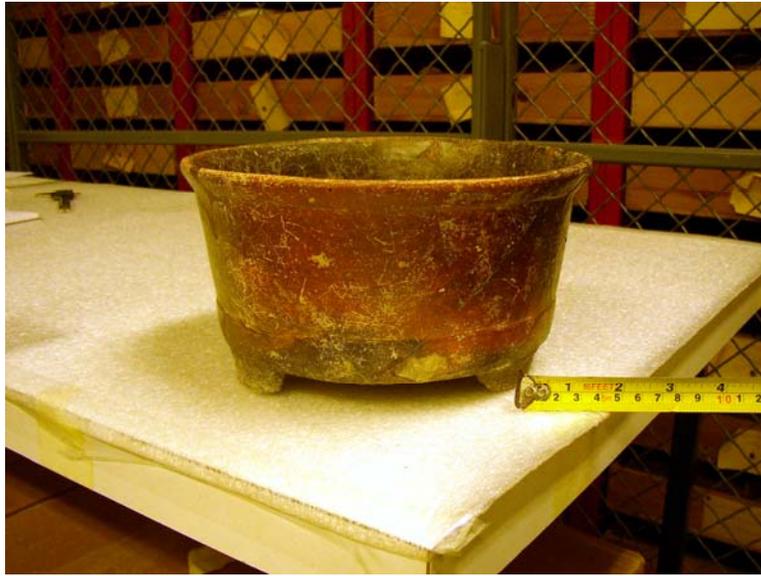
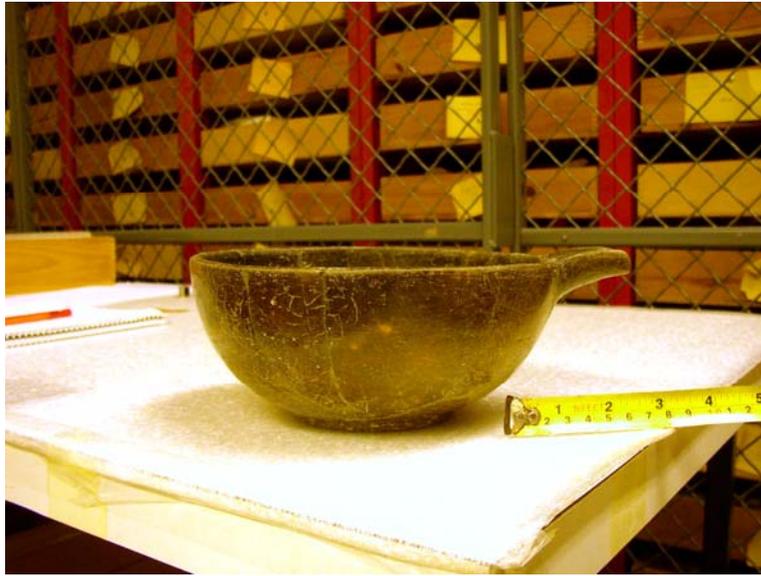


Figure 4.61 Vessel 3, Room 1, Skeleton 6, Building B, Group II, Holmul (c5522) (photo by author), unnamed type-variety



Figure 4.62 Vessel 5, Room 1, Skeleton 6, Building B, Group II, Holmul (c5523) (photo by author), unnamed type-variety

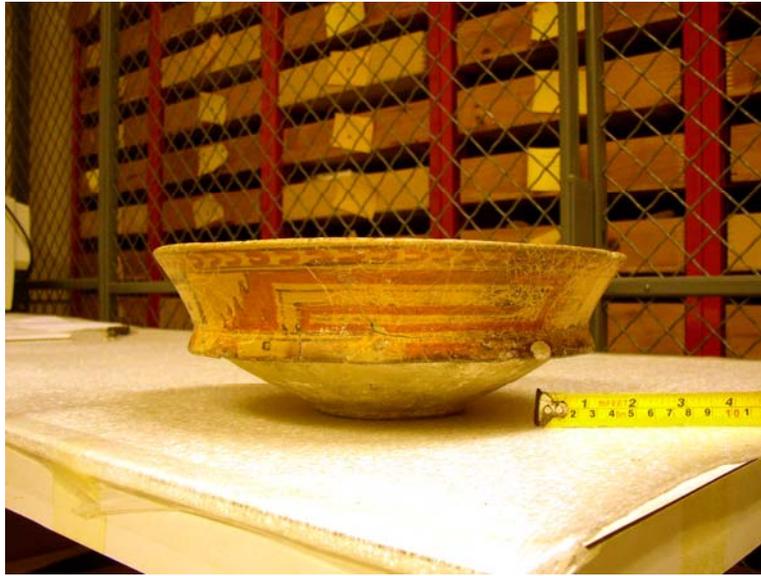


a



b

Figure 4.63 Vessel 6, Room 1, Skeleton 6, Building B, Group II, Holmul (c5525) (photos by author), Balanza Black: Variety Unspecified

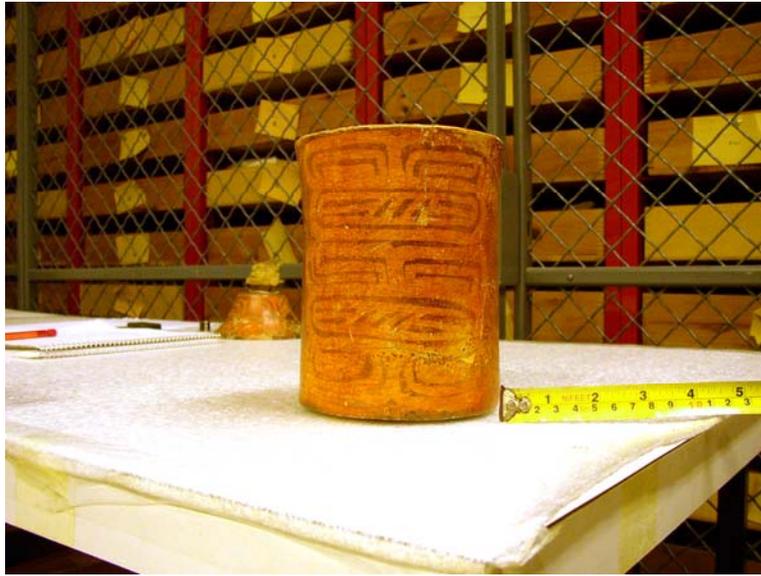


a



b

Figure 4.64 Vessel 7, Room 1, Skeleton 6, Building B, Group II, Holmul (c5524) (photos by author), Caldero Buff Polychrome: Variety Unspecified



a



b

Figure 4.65 Vessel 1, Room 2, Skeleton 10, Building B, Group II, Holmul (c5559) (photos by author), Japon Resist: Variety Unspecified



a



b

Figure 4.66 Vessel 2, Room 2, Skeleton 10, Building B, Group II, Holmul (c5560) (photos by author), Japon Resist: Variety Unspecified

**ROOM 10**  
**BUILDING B, GROUP II**

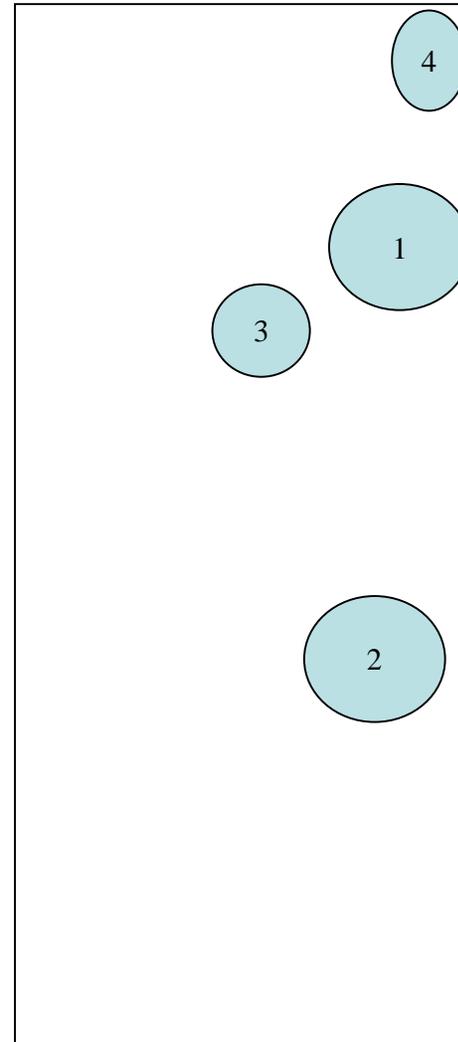


Figure 4.67 Plan of Room 10, Building B, Group II, Holmul showing approximate locations of pottery based upon Merwin's original excavation data (see Merwin and Vaillant 1932:40)



Figure 4.68 Vessel 1, Room 10, Skeleton 22, Building B, Group II, Holmul (c5661) (photo by author), Caldero Buff: Variety Unspecified



Figure 4.69 Vessel 2, Room 10, Skeleton 22, Building B, Group II, Holmul (AMNH 30.0-6528) (photo by Francisco Estrada-Belli), unnamed type-variety



Figure 4.70 Vessel 3, Room 10, Skeleton 22, Building B, Group II, Holmul (c5663) (photo by author), Boletó Black-on-Orange: Variety Unspecified



Figure 4.71 Vessel 4, Room 10, Skeleton 22, Building B, Group II, Holmul (c5664) (photo by author), Boletó Black-on-Orange: Variety Unspecified

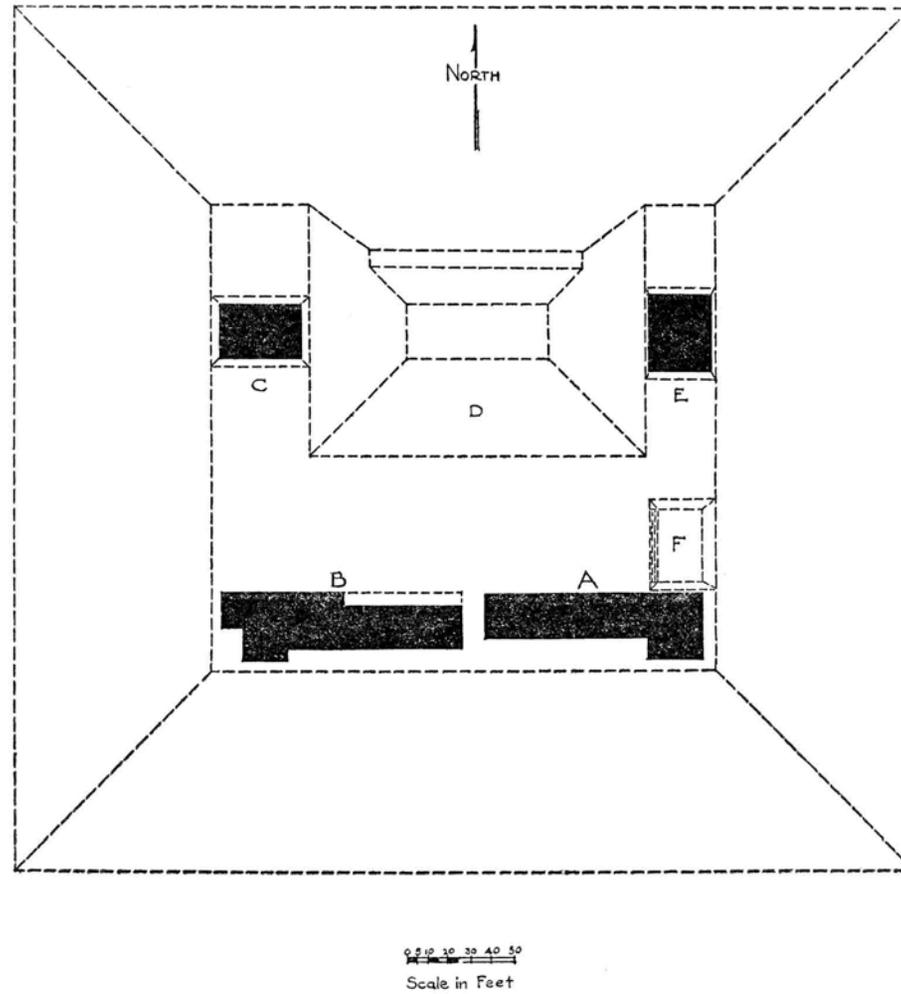


Figure 4.72 Plan view of Group I showing location of Building F (modified from Merwini and Vaillant 1932: Figure 1)



a



b

Figure 4.73 Vessel 1, Skeleton 1, Building F, Group I, Holmul (c5666) (photos by Alexandre Tokovinine), Cabrito Cream Polychrome: Variety Unspecified



Figure 4.74 Vessel 2, Skeleton 1, Building F, Group I, Holmul (photo by Francisco Estrada-Belli), unnamed type-variety



Figure 4.75 Vessel 3, Skeleton 1, Building F, Group I, Holmul (c5668) (photo by Alexandre Tokovinine), Cabrito Cream Polychrome: Variety Unspecified

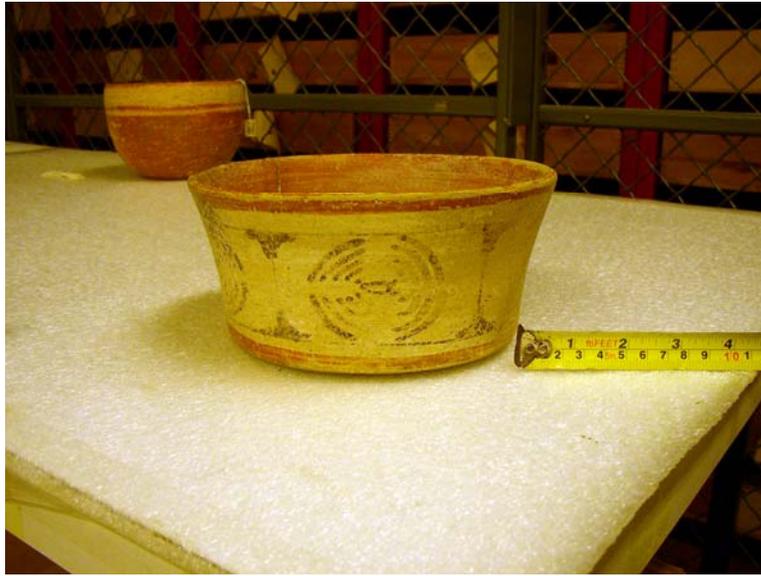


Figure 4.76 Vessel 4, Skeleton 1, Building F, Group I, Holmul (c5669) (photo by author), Zacatel Cream Polychrome: Variety Unspecified



Figure 4.77 Vessel 5, Skeleton 1, Building F, Group I, Holmul (c5670) (photo by author), Zacatel Cream Polychrome: Variety Unspecified

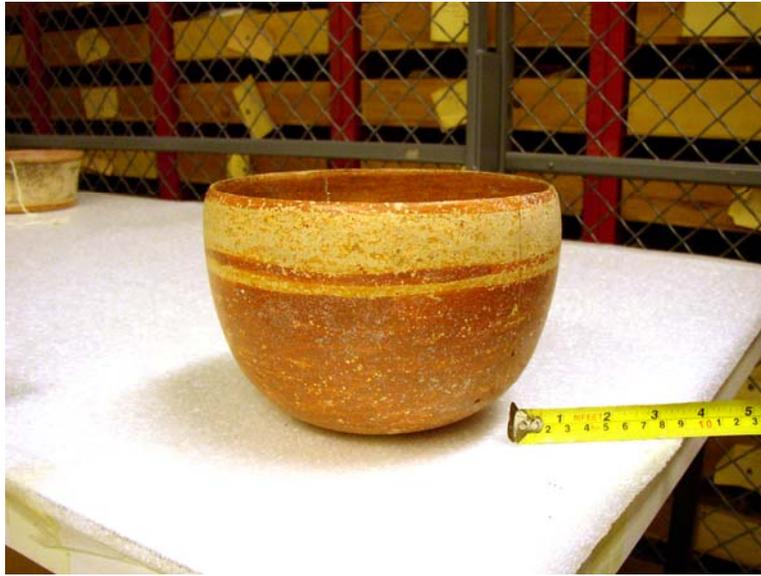


Figure 4.78 Pot A, Construction Fill, Building F, Group I, Holmul (c5671) (photo by author), unnamed type-variety



Figure 4.79 Pot B, Construction Fill, Building F, Group I, Holmul (c5673) (photo by author), unnamed type-variety



Figure 4.80 Pot C, Construction Fill, Building F, Group I, Holmul (c5672) (photo by Francisco Estrada-Belli), unnamed type-variety

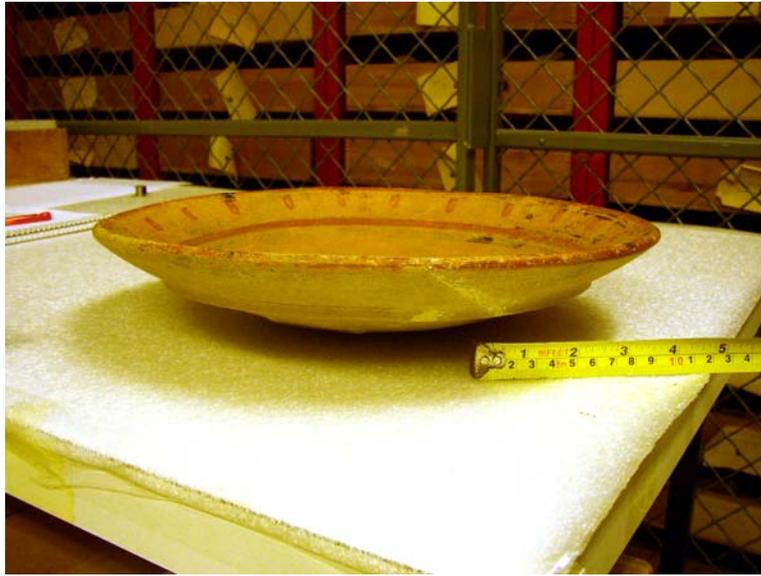


Figure 4.81 Vessel 1, Ruin X, Holmul (c5709) (photo by author), Palmar Orange Polychrome: Variety Unspecified



Figure 4.82 Vessel 3, Ruin X, Holmul (c5710) (photo by author), Cabrito Cream Polychrome: Variety Unspecified

## CHAPTER V

### THE HOLMUL REGION CERAMIC TYPOLOGY

#### Introduction

Prior to production analyses, the ceramics of the Holmul Region were placed into chronological and spatial context using the type-variety system of classification. Type-variety was created by archaeologists working in North America (Philips 1958; Sears 1960) and later applied to ceramic material by archaeologists working in Mesoamerica (Gifford 1960; Smith et al. 1960). A brief review of the main tenets of the system is presented below. Synthesis of terminology is based upon definitions and discussion provided by Gifford (1976:1-20) for the study of ceramics in ancient Mesoamerica. The following synthesis is not an exhaustive discussion of type-variety terminology, but only that used in the present analysis.

The type-variety system was developed as an attempt to classify individual ceramic sherds effectively and efficiently into chronological and spatial categories based upon similarities in physical *attributes*. Gifford (1976:9) uses Rowe's (1959:320) definition of a ceramic "feature" to define a ceramic attribute as, "any characteristic or detail of an object which can be observed or isolated, whether of material or workmanship or decoration". That is, an attribute is any aspect, or evidence, of the five processes involved in ceramic production: those are, paste composition, form, firing, surface finish, and decoration. Sherds with similar attributes or combinations of attributes are grouped into ceramic *types*. Gifford (1976:9) defines a type as, "an aggregate of distinct ceramic attributes that is indicative of a particular category of pottery produced during a specific time interval within a specific region". Types may be separated into

smaller analytical units, if they exist, based upon minor differences in attribute combinations – these “sub-types” are classified as *varieties*, the smallest unit of classification. Similar ceramic types (including their respective varieties) are grouped into larger analytical units or ceramic *groups*. Gifford (1976:17) defers to his previous definition of ceramic group and defines it as, “a set of closely related and very similar pottery types that demonstrate a distinctive homogeneity in range of variation concerning form, base color, technological, and other allied attributes (Smith and Gifford 1965)”. Ceramic groups are then placed into ceramic *wares* which should ideally be defined by ceramic groups composed of types that demonstrate, “a uniform consistency with respect to gross technological characteristics” (Gifford 1976: 14). The total combination of all wares, groups, types, and varieties occurring during a specific period in prehistory represents a ceramic *complex* which usually coincides with an actual cultural phase in a given regional history.

Each type would be given a two-part name: the first part consists of the *type* and the second part the *variety*. The structure of the naming system is similar to the *genus-species* nomenclature of biological taxonomy. The first half of the type name is taken from a geographical location in Mesoamerica, but specifically not the name of the site or region under study (this was done to avoid researchers equating a specific type with only one location in Mesoamerica). The second half of the type name would be descriptive in nature and refer to some defining aspect (attribute) of that type.

The variety name has relatively no restrictions and could be composed of yet another descriptive word, place name, person, etc. In the case that no additional attributes qualify a sherd as a specific variety of a type, it can be classified as the plain variety of that type. In the event that a sherd does display an attribute or set of attributes that warrant it not being included within

the plain variety or any other variety, the variety can simply be stated as “unnamed”. An example of how a researcher might classify a sherd using the type-variety system follows. If a body-sherd with red slip and waxy surface finish were discovered in a Late Preclassic context (300 BC – AD 300), the sherd could be classified as “Sierra Red: Sierra Variety”. This type-variety is part of the “Sierra Red Group”, within “Paso Caballo Waxy Ware”, and produced during the “Chicanel Ceramic Complex”.

Since its initial application by archaeologists working at Maya sites in the southern lowlands of Mesoamerica (Adams 1971; Gifford 1976; Smith and Gifford 1966; Willey et. al. 1967), type-variety classification has become the standard means of ceramic typological classification in the Maya area. While the system is extremely useful for creating local and regional ceramic chronologies and comparing interregional assemblages, it is problematic for a number of reasons. Problems include:

- Analytical emphasis on individual sherds and not whole vessels leads to misclassification of types and incorrect frequency counts (Demarest 1984; Foias 1996:182; Hammond 1972).
- Artificial and seemingly unnecessary splitting of types based upon an emphasis on chronological considerations (Foias 1996; Forsyth 1989; Sabloff 1975).
- An overemphasis on surface characteristics in defining types and lack of emphasis on paste and form characteristics (Culbert and Rands 2007; Foias 1996; Hammond 1972).
- Inherent contradictions in the definition of the *ware* category of analysis – rather than being a combination of technological characteristics, ware is more often defined in terms of one type of technology (e.g., paste as in “Mars Orange Paste Ware”) or another (e.g., surface finish as in “Petén Orange Gloss Ware”) (Rice 1976; Shepard 1982).

- Redundancy of similar types with different names at sites across the lowlands created by analysts with limited access to contemporaneous ceramic collections.
- Finally, an emphasis on the creation and use of arbitrary “etic” analytical categories based on attributes of surface treatment as opposed to potentially “emic” classificatory categories based on ancient production and consumption behavior arrived at through a more holistic synthesis of paste, form, surface finish, and decorative attributes (see Poponoe de Hatch 1997:101-108).

While admittedly the type-variety system of classification can be considered quite broken, it is beyond the scope of this dissertation and analysis to fix it. Like many other ceramicists before me (see for example Ball 1977; Bill 1997; Foias 1996; Forsyth 1983, 1989; Sabloff 1975) I have opted to revise the system within the scope of my own dataset. In this analysis I follow the definitions and terminology set forth by Gifford (1976) for Barton Ramie and type-variety names established by Smith and Gifford (1966) for Uaxactun. The structure and methodological framework of the type-variety system remains relatively intact for the Holmul Region analysis. Where differences do occur, they usually take the form of the addition or subtraction of new or previously established types from a given ceramic group and ware. Where this occurs, I fully explain my reasons for the change within the context of the related type-variety definition.

### **Presentation of the Current Type-Variety Classification**

Ceramic complexes are presented with a brief introduction followed by a complete list of ceramic types grouped according to ware and group. Brief type descriptions are then presented. Descriptions include:

*Type-Variety Name:* Provides the type-variety name based upon the type-variety mode classification system established by Smith, Willey, and Gifford (1960) for the Maya lowlands and definitions originally developed by Smith and Gifford (1966) at Uaxactun. Noted above the type-variety name consists of two facets: the type name composed of a geographical term and a descriptive term as well as a variety name (e.g. Actuncan Orange Polychrome: Actuncan Variety)

*Sample:* The first number represents the number of rims analyzed for the type-variety (including whole vessels which count as one rim), the second number represents the total number of sherds (including rims) analyzed for the type-variety, and the third number represents the type-variety's percent (based upon total type-variety sherds) of its respective ceramic group.

*Whole Vessels:* Whole vessels of the type-variety collected during Boston University sponsored Holmul Project excavations from 2000 and Vanderbilt University excavations from 2001-2007 are denoted by a Small Find number (SF#). In the instance that a Small Find number has yet to be assigned to the vessel, the context number appears in parentheses after the "SF#" designation. Whole vessels of the type-variety collected during Merwin's original excavations and currently stored in the Peabody Museum of Archaeology and Ethnology in Cambridge, MA are denoted by their Peabody Museum catalogue number which always begins with the prefix "cc" (e.g., cc5566). Whole vessels of the type-variety collected during Merwin's original excavations and currently stored in the American Museum of Natural History in New York, NY are denoted by their AMNH catalogue number (e.g., AMNH 30.0-6528).

*Established:* Provides a reference to when, where, and by whom the type and variety were established.

*Principal identifying modes:* Provides a list of the most common modes identified with the type and variety.

*Paste, firing, and temper:* Provides a description of paste texture, color, inclusions, and any evidence left of the firing process. Paste texture refers to the classification of the overall size of inclusions in the paste ranging from Very Fine Sand (1/16 to 1/8 mm) to Very Coarse Sand (1.0 to 2.0 mm) as defined by the Wentworth (1922) scale. Paste color is defined both in qualitative terms (e.g., “yellow”, “red”, “black”, etc.) and quantitative terms using the Munsell Soil Color Chart. Color readings were taken outside in daylight or with the use of a daylight bulb. Inclusions are considered any non-plastic particles visible with an Omano stereo-zoom microscope with magnification up to 70X. Overall paste classification or inclusion classification falls into three types: carbonate, volcanic, or mixed carbonate and volcanic. Firing characteristics refer to the presence/absence, location, relative color, and size of a firing core.

*Surface finish and decoration:* Provides a description of surface finish technique and decorative attributes. Attributes of surface finishing may include evidence of smoothing, slipping, polishing, or tooling. Slip and unslipped color were recorded both on a relative scale (e.g., “yellow”, “red”, “black”, etc.) and in quantitative terms using the Munsell Soil Color Chart. Color readings were taken outside in daylight or with the use of a daylight bulb. Evidence of firing technology as it pertains to surface appearance was also recorded and included the

presence/absence, location, size, and color of fire clouds as well as the presence/absence and extent of rootlet marks and slip crackling. Decorative attributes and painting were also recorded and qualified/quantified using metric measurements and the Munsell Soil Color Chart. Methods of decoration and types of design follow Smith (1955 v. 1:37-74).

*Form:* Provides a description of vessel form. Vessel forms encompass five general categories: plate, dish, bowl, vase, and jar. Vessel form and all other terminology pertaining to vessel morphology (e.g., rim form, wall form, lip form, base form, support form, etc.) adheres to categories used by Sabloff (1975:22-27) for his analysis of ceramics from the site of Seibal, Guatemala. Aspects of vessel forms were determined from morphologically diagnostic sherds such as rims, bases, and appendages.

*Intrasite locations and contexts:* Provides information on where the type-variety was found within the Holmul Region. The location is noted at the site level. Specific burials, caches, and large fill or midden deposits are mentioned when appropriate.

*Intersite locations and contexts:* Provides references to descriptions of the type-variety from other sites in the Maya area. References are by no means exhaustive and mostly include monographs and dissertations that are the product of large, multi-year, interdisciplinary projects focusing on regional research programs.

*Comment:* If included, provides a brief statement on some significant aspect of the type-variety in the Holmul Region and, when applicable, its relation to material from other sites.

*Illustration:* Provides figure numbers for profiles and sherd drawings in the present work.

## **K'AWIL/EARLY EB COMPLEX: EARLY MIDDLE PRECLASSIC PERIOD**

Two ceramic complexes have been found to predate the Mamom ceramic sphere in the Holmul region. The earliest is the K'awil/Early Eb complex. The exact dating of this material is still questionable as no isolated contexts of K'awil/Early Eb ceramics have been discovered in combined Holmul Project excavations to date (see Callaghan 2006). However, paste, form, and surface modes of K'awil/Early Eb material are markedly similar to those described for ceramics belonging to firmly established Pre-Mamom complexes of other Central Peten and adjacent Belize Valley sites: complexes such as the Eb Complex at Tikal (Culbert 1993; n.d; Laporte and Fialko 1993, 1995), the Cunil Complex at Cahal Pech (Awe 1992; Cheetham 1995, 1996, 2005, n.d; Cheetham et al 2003; Clark and Cheetham 2002) and Xunantunich (Strelow and LeCount 2001), Kanocha at Blackman Eddy (Garber et. al. 2002), and the Early Ah Pam Complex in the Lake Yaxha Region (Rice 1979). The material at Holmul and the other sites listed above may form part of a larger ceramic sphere during the years 1100-850 BC in the Maya lowlands. Aside from the sites above, local manifestations of Pre-Mamom pottery has been found at sites in other regions of the Maya area and encompasses the complexes of Xe at Altar de Sacrificios (Adams 1971), Real at Seibal (Sabloff 1975), the Swasey complex at Cuello originally defined by Pring (1977b) and later split into Swasey and Bladen by Kosakowsky (1987), Bolay at Colha (Valdez 1987), and most recently a potential Pre-Mamom complex in the northern Maya lowlands resembling characteristics of southern lowland Maya complexes (Andrews et. al. 2008).

Work on ceramic material predating the Mamom ceramic sphere at sites in the Central Peten and Belize Valley area is relatively recent. Cheetham (2005: 27) notes that Pre-Mamom ceramic sphere markers were not identified in archaeological collections earlier due to: 1) a lack of comparable archaeological datasets until the present time, 2) the prevailing notion among

Maya ceramicists that Pre-Mamom ceramic complexes at lowland Maya sites were essentially unique to one another or “dissimilar entities”, and 3) the idea that these dissimilarities were the result of potters coming into the Maya area in multiple migrations of non-indigenous groups of people at different times in the Early Middle Preclassic period. The proliferation of archaeological projects in the Maya lowlands over the past twenty years, especially those with theoretical and methodological focus on the Preclassic period, has led to a much larger database of Preclassic ceramics, and in turn, Pre-Mamom material. While many ceramicists have begun to recognize and define Pre-Mamom material in their respective collections, there still exists a potential debate about the nature or existence of a pure Pre-Mamom ceramic complex at many sites (see Ball and Taschek 2003: 182-193). Specifically, Ball and Taschek cite the frequent presence of later Mamom or even Chicanel complex material mixed in with deposits of Pre-Mamom material at many sites, and allude to the assumption that Pre-Mamom ceramic material may comprise a sub-complex of serving ware within the larger Mamom complex. There is a similar, although not identical problem, with the material from the Holmul Region discussed below.

Based upon radiocarbon dates associated with Ixim/Late Eb material from the site of Cival, we have a relatively clear date for the second half of the Pre-Mamom complex. Bone collagen associated with Burial 33 found sealed beneath a collapsed chultun in a northern plaza of Cival produced an uncalibrated date of 2670 $\pm$ 40 BP with a calibrated 1-sigma range of 895-840 BC and a 2-sigma range of 900-790 BC. A probable date for the deposit would be 800-850BC. In association with the burial was an excellent example of a Guitarra Incised: Variety Unspecified dish with incurving wall form, datable stylistically to the Ixim/Late Eb complex. A scattering of K’awil/Early Eb material was found within this deposit of almost exclusively

Ixim/Late Eb material. The association of the Ixim/Late Eb whole vessel with the burial, the bone collagen date of ~850 BC, and the small amount of eroded K'awil/Early Eb material found within the almost exclusive Ixim/Late Eb chultun deposit above, allows us to assume that the K'awil/Early Eb complex occurred earlier than the Ixim/Late Eb complex. We approximate the complex appeared around 1000 BC and gave way to the Ixim/Late Eb complex by 850 BC. We use carbon dates associated with this type of material from neighboring sites to anchor the beginning of the complex (see Cheetham 1995, 1996, 2005, n.d; Cheetham et al 2003; Clark and Cheetham 2002; Garber et. al. 2002; Healy and Awe 1995). However, we also have the problem that K'awil/Early Eb material has yet to be found in isolation within the Holmul Region. It is always found in association with ceramics from potentially later complexes: either in Ixim/Late Eb, Yax Te/Mamom, or even Itzamkanak/Chicanel. Furthermore, because I have yet to perform a more intensive modal analysis on utilitarian ware from the Pre-Mamom contexts in the Holmul Region, I cannot yet define a fully functional utilitarian assemblage associated with the K'awil/Early Eb complex. Therefore, at this time I cannot completely rule out the possibility of the serving ware represented by K'awil/Early Eb as a specialized sub-complex of the Ixim/Late Eb complex. However, I strongly believe that further analysis will rule out this possibility as it has begun to do so at other neighboring sites (ibid).

In terms of production, many K'awil/Early Eb complex paste, form, and surface finishing modes are similar to Ixim/Late Eb modes. Paste modes common between the two complexes include one specific recipe comprised of a fine or medium-fine yellow paste with crushed volcanic inclusions. This paste is most often found in serving ware. Vessel forms include rounded or slightly incurving bowls with direct rim and rounded lip, outcurving or outflaring dishes with wide horizontally everted rims, and jars with narrow, vertical necks.

Commonalties in surface finishing include the application of thin, flakey slips to vessel interiors and exteriors in red and cream color. These similarities make it impossible to distinguish between red and cream rim and body sherds belonging to the K'awil/Early Eb and Ixim/Late Eb complexes on surface characteristics alone. Related to this problem is that specific types appear to cross-cut complexes. This more frequently occurs with the unslipped ceramics belonging to both the serving and utilitarian traditions. Calam Buff ceramics with their highly distinguished bolstered rims appear in large quantities in contexts with high frequencies of both K'awil/Early Eb and Ixim/Late Eb ceramics. Similarly, unslipped jar forms are virtually indistinguishable between the two complexes at this point in the analysis. However, further modal work on these utilitarian ceramics will revise initial findings.

Despite these similarities between paste, form, and finishing modes of the K'awil/Early Eb and Ixim/Late Eb complexes, strong differences do exist between decoration modes of ceramics belonging to the two complexes. The red slip of K'awil/Early Eb material often tends toward purple, while Ixim/Late Eb material displays a more red color. The most dramatic difference in surface decoration concerns type and composition of incised design. K'awil/Early Eb material incision is most often fine-line and post-slip occurring on the exterior vessel walls of rounded bowls and the wide everted rims of flaring dishes. Composition consists of abstract early pan-Mesoamerican elements or symbols such as the “music bracket”, “cleft head”, “shark’s tooth”, and “bouncing line” (see Cheetham et. al. 2003: Figures 3.5 and 3.6). These designs appear on red, black, and cream ceramics. In Ixim/Late Eb ceramics, fine-line post-slip incision is abandoned completely in favor of pre-slip groove-incision. Wide, smooth, incision appears on the exterior rim of incurving dishes and interior rim of wide, gradually everted dishes. Groove-incision is present almost exclusively on red-slipped vessels. Fine-line incision continues on

some black, cream, and red slipped vessels, but it is exclusively pre-slip. It is the type and composition of the fine-line post-slip incision of the K'awil/Early Eb ceramics that most closely identifies this type of material with contemporaneous material found at other sites in the Maya lowlands (see Cheetham and Clark 2002).

In conjunction with the differences noted above, stratigraphic context and frequencies of K'awil/Early Eb material seem to warrant the presence of a tentative early Pre-Mamom ceramic complex in the Holmul Region. While K'awil/Early Eb material is relatively rare in the region (1696 sherds, all from 2005 project excavations, were included in this study), when material with K'awil/Early Eb modes is found in archaeological contexts, these contexts are usually the lowest or first construction phases of a building or platform (Estrada-Belli 2006a; Neivens de Estrada 2006). Furthermore, although K'awil/Early Eb material has yet to be found in isolation, the frequencies usually indicate either an apogee or tapering-off from preceding and proceeding complexes: for example, K'awil/Early Eb material is found in relatively large quantities in archaeological context HOL.T.63.20 associated with the first potential platform of Building B, Group II at Holmul. However, this context also contains a small amount of Ixim/Late Eb and Itzamkanak/Chicanel complex sherds. Similarly, a small number of eroded K'awil/Early Eb sherds do appear in many other contexts at the site of Cival dating firmly to the Late Middle Preclassic period. Again, the data show us that much more work is needed before we can firmly define and date the K'awil/Early Eb complex in the Holmul Region.

Numerous attempts have been made to integrate newly defined Pre-Mamom ceramic material of the Central Peten and Belize Valley into the existing type-variety classification system of the Maya lowlands (Adams 1971; Culbert n.d.; Laporte and Fialko 1993; Cheetham et al 2003; Sabloff 1985; Valdez 1987). Cheetham (Cheetham et. al. 2003: Figure 4) provides the

most recent and explicit approach and it is his scheme that I will follow in describing the potential Pre-Mamom ceramics of the Holmul Region. Cheetham has divided Pre-Mamom pottery into 2 wares (Coarse Ware and Dull Ware), 9 groups, and 36 types. Presence or absence of specific groups and types found in the Holmul Region is reflected in the list and descriptions below.

### **UAXACTUN UNSLIPPED WARE**

#### Unnamed Unslipped Group

Unnamed Unslipped: Jars

Unnamed Unslipped Impressed: Tecomates

#### Calam Group

Calam Buff: Variety Unspecified

Aac Red on Buff: Variety Unspecified

### **BELIZE VALLEY DULL WARE**

#### Uck Group

Uck Red: Variety Unspecified

Kitam Incised: Variety Unspecified

#### Cocoyol Group

Cocoyol Cream: Variety Unspecified

#### Chi Group

Chi Black: Variety Unspecified

Chi Black Incised: Variety Unspecified

Variegated Group

Variegated: Variety Unspecified

Variegated Incised: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Unnamed Unslipped Group

#### Unnamed Unslipped: Variety Unspecified

*Sample:* 13 rims, 62 total, 86% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Smoothed, unslipped vessel surfaces, 2) coarse to medium yellow or buff paste with carbonate inclusions, 3) small jars with short outcurving necks.

*Paste, firing, and temper:* Coarse to medium yellow (10YR7/4) or buff (10YR8/2) paste with carbonate inclusions. Firing cores are relatively infrequent.

*Surface finish and decoration:* Surfaces can be well-smoothed or roughly smoothed. Vessel exteriors and interiors are not slipped. Vessels surfaces take on the color of their fired paste – a (10YR7/4) to buff (10YR8/2) or gray (10YR6/2) color. Fire clouds are not frequent. On composite incensario forms, there can appear “cut-outs” of simple geometric elements such as a cross

*Form:* 1) Small jar with low or short outcurving neck, base forms are unknown, but may have been round, 2) unknown composite incensario forms, possibly “pot-stand” forms or tall cylindrical bases and bowl atop, or bowls with tall annular bases.

*Intrasite locations and contexts:* Unslipped sherds of the K’awil/Early Eb complex are relatively rare at Holmul, possibly owing to their similarity to forms of the later Middle and Late Preclassic complexes. When they are found, unslipped sherds are associated with K’awil/Early Eb deposits

in Building B, Group II at Holmul and various contexts at Cival. Sherds are always mixed with other Middle or Late Preclassic material.

*Intersite locations and contexts:* The unslipped material may be similar to the Canhel Unslipped type established by Culbert (n.d.) at Tikal as well as Sikiya Unslipped established by Cheetham (n.d.) at Cahal Pech. Cheetham (n.d.) and Laporte and Fialko (1993:53-69) report Canhel Unslipped from problematical deposits 6, 12, and 13 in the Mundo Perdido area of Tikal.

*Comment:* The “Unnammed Unslipped” designation is, obviously, a temporary yet necessary classification for unslipped ceramic material of K’awil/Early Eb complex in the Holmul Region. There is simply not enough diagnostic material from well-stratified contexts to warrant the classification of this type at the time – much less a detailed description. Once more contexts containing this type of ceramic have been discovered, I will be able to compile a list of paste variants, forms, and surface features. I will also be able to compare and contrast it to other unslipped types of the period such as Canhel Unslipped found in the Central Peten and Sikiya Unslipped from sites in the Belize Valley. At this point one aspect of the type is distinguishable from later unslipped types, jars are small and display a characteristic low or short outflaring neck.

*Illustration:* --

### **Unnamed Unslipped Impressed: Variety Unspecified**

*Sample:* 11 rims, 12 total, 14% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Smoothed, unslipped surfaces, 2) markedly incurving bowl or tecomate forms, 3) exterior thickened or folded rims on tecomate forms, 4) a single row of impression in the form of fingernail impressions or small circular impressions just below the rim on exterior vessel surfaces

*Paste, firing, and temper:* Paste is coarse with carbonate inclusions including crystal calcite and yellow (10YR7/4) to gray (10YR6/2) in color. Firing cores are not frequent as are fire-clouds on vessel exteriors.

*Surface finish and decoration:* Vessel exteriors are well-smoothed and unslipped. Surfaces are gray (10YR6/2). A single row of impression in the form of fingernail impressions or small circular impressions appears just below the rim on exterior vessel surfaces

*Form:* Forms are relatively restricted to markedly incurving bowl forms. Rims can either be bolstered, folded, or direct. No bases could be distinguished from the collection.

*Intrasite locations and contexts:* Unnamed Unslipped Impressed types are found in potentially mixed Pre-Mamom deposits at the sites of Holmul (Building B, Group II) and Cival. The type may cross-cut time periods, as it was found in an almost exclusive Ixim/Late Eb deposit at the site of Cival (CIV.T.29.110).

*Intersite locations and contexts:* The Unnamed Unslipped Impressed type is similar to Baldizon Punctated originally defined by Adams at Altar de Sacrificios (1971:46, ill. 1i, n; 2a, n). Adams places Baldizon in his Xe Complex at Altar, the Pre-Mamom equivalent to K'awil/Early Eb. Baldizon is also found at Seibal where Sabloff places it in his own Pre-Mamom complex equivalent of Real (Sabloff 1975:48). Foias (1996:279-282) places Baldizon in the Faisan Complex, her Chicanel Complex equivalent in the Petexbatun Region. There Baldizon is generally found in jar forms with impressions applied in a wavy line pattern on vessel exteriors

near the shoulder break. While decorative mode may be similar, none of these varieties of Baldizon display the same vessel form as that of the ceramics in the Holmul Region. Unlike Baldizon which can appear as jars, bowls with round sides, and composite dishes in other areas, the Unslipped Unnamed Impressed type in the Holmul Region is found exclusively in tecomate form. In this case, form and decoration are more similar to what Laporte and Fialko (1993: Figure 32) classify as Canhel Unslipped from Problematical Deposits 6 and 13 at Mundo Perdido, Tikal, also of Pre-Mamom date.

*Comment:* As with the case of Unnamed Unslipped material above, I am reticent to name this unslipped impressed type until more examples have been found from archaeological contexts in the Holmul Region that show good stratigraphic integrity. Only after we have increased the sample size and compared this type to the Canhel and Baldizon varieties found at other sites in the lowlands and dating to similar time periods, will I be able to define the type accurately.

*Illustration:* 5.1a-b

## **Calam Group**

### **Calam Buff: Variety Unspecified**

*Sample:* 128 rims, 335 total, 90% of group

*Whole Vessels:*

*Established:* Culbert (n.d.) at Tikal.

*Principal identifying modes:* 1) Buff or yellow surfaces produced by application of a light cream wash or polishing, 2) dish or bowl forms with flaring or vertical walls, exterior bolstered rim, and flat base.

*Paste, firing, and temper:* Two major paste variants have been identified at this time. The first is fine with volcanic inclusions and yellow (10YR7/4) to buff (10YR8/2) in color. This paste is relatively compact. The second variant is medium textured with rounded gray calcite and less rounded crystal calcite inclusions. This variant is less compact and more porous. Color is buff (10YR8/2, 10YR8/3). Because intensive analysis has not yet been performed on this material, I cannot correlate pastes with specific forms at this time. Firing cores are almost non-existent.

*Surface finish and decoration:* Interior and exterior surfaces are usually very well smoothed and polished. In many cases, it is difficult to determine if a light buff or cream wash was applied to vessel surfaces or if the surfaces were merely well smoothed and polished. The more porous carbonate pastes do seem to correlate with cream wash (10YR8/1) exteriors at this time, but no intensive quantifiable analysis has been performed.

*Form:* Form is rather consistent and varies within one shape type, a bowl or dish with vertical or flaring sides and bolstered rim. The most characteristic aspect of Calam material in the Holmul Region is an exterior bolster or thickened rim.

*Intrasite locations and contexts:* Calam Buff can be found in mixed deposits of both K'awil/Early Eb and Ixim/Late Eb material at the sites of Holmul (Building B, Group II) and Cival.

*Intersite locations and contexts:* Culbert's (n.d.) description of Calam Buff from University of Pennsylvania excavations is very similar to the Calam material at Holmul and so are illustrated forms from PD 1 at Tikal (Culbert 1993: Figure 117 a, b, c, d). Laporte and Fialko (1993:55) report similar material from problematical deposits 6, 12, and 13 in the Mundo Perdido Complex at Tikal as does Cheetham (n.d.). Cheetham (n.d.) also reports seeing the type in Lake Yaxha-

Sacnab collections (see Rice 1979: Figure 5j). Calam material appears to be absent in Belize Valley and northern Belize area sites.

*Comment:* Calam Buff may have been a unique Central Peten utilitarian tradition of pottery. Its form, surface, and occasionally paste modes are very similar across sites in the Central Peten. It is not reported in Belize Valley and northern Belizean sites. Like the Unnamed Unslipped Impressed type resembling Baldizon Impressed, Calam Buff may crosscut ceramic complexes in the Holmul Region. It has been found in large quantities in both primarily K'awil/Early Eb and Ixim/Late Eb deposits from the sites of Holmul and Cival. As a typological note, if cream wash is present on Calam Buff material this would compromise its inclusion in Uaxactun Unslipped Ware.

*Illustration:* --

### **Aac Red-on-Buff: Variety Unspecified**

*Sample:* 28 rims, 37 total, 10% of group

*Whole Vessels:*

*Established:* Culbert (n.d.) at Tikal.

*Principal identifying modes:* 1) Small bowls with flaring walls and bolstered or folded rim, 2) well-smoothed buff colored surfaces, 3) a single band of red paint on the bolstered rim.

*Paste, firing, and temper:* Paste is similar to first variant of Calam Buff in that it is fine with volcanic inclusions and yellow (10YR7/4) to buff (10YR8/2). This paste is also relatively compact. Firing clouds are rare to non-existent.

*Surface finish and decoration:* Surface finish and color is identical to that of Calam Buff.

Vessel exteriors and interiors are well-smoothed and in some cases relatively well-polished. A

single band of thin red paint or wash (7.5R3/8) is applied to the exterior bolstered or folded rim. The band of red paint is the only characteristic that distinguished Aac Red-on-Black from Calam Buff. Therefore, all Aac body sherds are classified in the greater Calam Group total.

*Form:* Form is relatively restricted to one type, a bowl with flaring walls, exterior bolstered or folded rim, and flat base. Size can vary from medium with relatively thick walls to small with thinner or finer walls.

*Intrasite locations and contexts:* Aac Red-on-Black has been found in contexts containing K'awil/Early Eb and Ixim/Late Eb sherds at the sites of Holmul and Cival

*Intersite locations and contexts:* Aac Red-on-Black has been discovered in University of Pennsylvania excavations at Tikal (Culbert n.d.) and problematical deposits 6, 12, and 13 also at Tikal (Cheetham n.d.; Laporte and Fialko 1993:55). Cheetham (n.d.) believes it is present in the Yaxha-Sacnab collections (see Rice 1979: Figure 5f, i)

*Comment:* Unlike Calam Buff, Aac Red-on-Black may be more restricted to contexts containing greater amounts of potential K'awil/Early Eb material. It is rarely found in abundance in association with Ixim/Late Eb material in contexts with stratigraphic integrity. In 2007, another variety of Aac Red-on-Black or perhaps another type belonging to the Calam Group was discovered found in association with K'awil/Early Eb sherds at both Holmul and Cival. The type is identical to Aac in form, but has a surface decoration of red on black as opposed to red on buff. Potters may have created an oxygen reducing environment when firing otherwise Aac type material causing the buff areas to become a smudged black. Further analysis will determine whether this type of material warrants the creation of a new type in the Calam Group or simply a new Variety of Aac Red-on-Black.

*Illustration:* --

## **BELIZE VALLEY DULL WARE**

### **Uck Group**

#### **Uck Red: Variety Unspecified**

*Sample:* 139 rims, 693 total, 79% of group

*Whole Vessels:*

*Established:* Cheetham (n.d.) at Cahal Pech.

*Principal identifying modes:* 1) Thin red slip, 2) dull or low gloss finish, 3) bowls with round sides, 4) jars with vertical necks, 5) fine yellow paste with volcanic inclusions.

*Paste, firing, and temper:* There are a number of paste variants in the Uck Red type. The most diagnostic is fine textured with volcanic inclusions and yellow (10YR7/4, 10YR7/6) in color.

Other paste variants are carbonate and mixed carbonate/volcanic. Both contain crystal calcite as opposed to gray or white calcite. No sherd temper has been seen in Uck Red pastes. Firing cores are rare in the volcanic pastes, but do occur in the carbonate paste forms.

*Surface finish and decoration:* Vessel surfaces are well smoothed and polished to a low shine.

Slip is red (10R4/8, 7.5R3/8), thin, and can easily erode especially on the volcanic paste forms.

Fire clouds on the surface can be frequent leading to much color mottling and the need to create a Variegated ceramic group to avoid lumping these sherds with Uck Red, Chi Black, or incorrectly classifying them as Boolay Brown.

*Form:* 1) Small round-sided bowls with direct rim and rounded lip, 2) small dishes with flaring walls, direct rim, and rounded lip, 3) markedly incurved bowls with direct rim and rounded lip, 4) jars with vertical neck, direct rim, and rounded lip, and 5) possible mushroom stand.

*Intrasite locations and contexts:* Uck Red has been found in association with K'awil/Early Eb and Ixim/Late Eb material at the sites of Holmul and Cival.

*Intersite locations and contexts:* Uck Red was first identified by Jaime Awe (1992:226-232) in his Cahal Pech excavations where he initially classified it as Consejo Red. Cheetham (see Cheetham 2005; Cheetham et. al. 2003) later redefined the type as Uck Red after carefully comparing it to Consejo Red from sites in northern Belize (e.g., Kowsakowsky 1987:15-16). Uck Red can also be distinguished from Pre-Mamom red ceramics of the Pasion River Region such as Abelino Red (see Adams 1971:20 and Sabloff 1975:48-19). The type does resemble what Culbert (n.d.:14-15) classifies as Joventud Red of the Eb Complex at Tikal. From his description, Culbert's Joventud Red: Yellow Paste Variety appears extremely similar to the Uck Red found in the Holmul Region – especially in its lack of “waxy” textured slip (n.d. 14). Cheetham (n.d.) believes it is present in the Yaxha-Sacnab collections (see Rice 1979: Figure 4d, q-r)

*Comment:* Uck Red may be the earliest monochrome red pottery in the Holmul Region. It is seemingly identical to Uck Red from the Belize Valley and possibly Joventud Red from Tikal. However, I prefer to use the Belize Valley type name to avoid confusion with the date of K'awil/Early Eb and later Middle Preclassic complexes. Reds from sites in the Belize Valley, Tikal, and the Holmul Region share similarities in surface modes in that red slips are thin and have a tendency to flake easily, the surfaces are polished to a low shine and are not extremely glossy, and all these reds do not exhibit the characteristic waxy texture of later Joventud Reds of the lowlands or even Abelino Red of the Pasion Region. Therefore, I prefer not to conflate these reds with those of later Joventud group material.

*Illustration:* 5.1c

### **Kitam Incised: Variety Unspecified**

*Sample:* 88 rims, 184 total, 21% of group

*Whole Vessels:*

*Established:* Cheetham (n.d.) at Cahal Pech.

*Principal identifying modes:* 1) Thin red slip, 2) low polish or dull surface finish, 3) fine post-slip incision in the form of “supernatural” motifs, 4) round-sided bowls, 5) dishes with wide-everted rims

*Paste, firing, and temper:* Paste variants are similar to Uck Red described above. The most diagnostic is fine textured with volcanic inclusions and yellow (10YR7/4, 10YR7/6) in color. Other paste variants are carbonate and mixed carbonate/volcanic. Both contain crystal calcite as opposed to gray or white calcite. Firing cores are rare in the volcanic pastes, but do occur in the carbonate paste forms.

*Surface finish and decoration:* Surface finish is identical to Uck Red (10R4/8, 7.5R3/8) with the addition of post-slip fine-line incision in the form of “supernatural” motifs identified by Cheetham (2005:33, Figures 3.5 and 3.6) as “music brackets”, “shark’s teeth”, “bouncing lines”, “clefts”, “flame-eyebrows”, “lightening”, and “avian serpents”. The location of incision depends on the form of the vessel: on wide-everted dishes incision appears on the wide-everted rim and/or on the interior base, on round-sided bowls incision appears on vessel exteriors. Some round or incurved bowl forms display only a single line of incision directly below the rim. On jars, incision appears on the shoulder break and/or on vessel bodies.

*Form:* 1) One of the most common forms is a dish with wide-everted rim and flat base, 2) the second most common form is a simple round-sided bowl with direct rim and round lip, and 3) markedly incurved bowl with direct rim and round lip

*Intrasite locations and contexts:* Kitam Incised is the most remarkable type of K'awil/Early Eb material and easily identifiable in mixed K'awil/Early Eb and Ixim/Late Eb deposits at the sites of Holmul and Cival.

*Intersite locations and contexts:* Kitam Incised was first identified by Awe (1992:226-227, Figures 56, 57) at Cahal Pech where he named the type "Chitam Zone-Incised". Cheetham (2005; Cheetham et. al. 2003) later changed the name to Kitam Incised. Like Uck Red, it bears little direct resemblance in form and surface to incised red types of northern Belize (e.g., Backlanding Incised of the Swasey Complex at Cuello [Kosakowsky 1987:17-18]) and the Pasion River Region (e.g., Pico de Oro Incised at Seibal and Altar [Adams 1971:42; Sabloff 1975:49-52]). Based on Culbert's (n.d.:16) description, the Guitarra Incised of his Eb Phase at Tikal from University of Pennsylvania excavations may be similar to the Holmul material. Laporte and Fialko (1993: Figure 31) report finding this type of material in their Mundo Perdido excavations at Tikal, but using Culbert's terminology they refer to it as Guitarra Incised. Noted above in reference to Uck red, I prefer to use the Belize Valley type name to avoid confusion with the date of K'awil/Early Eb and later Middle Preclassic complexes. Furthermore, I believe the incision technology and composition are so markedly different from later Guitarra material and at the same time similar to Belize Valley material that I believe the Cunil Sphere type names should be used. Smith (1955: Figures 70a, 64 and 77a, 4) and Ricketson (Ricketson and Ricketson 1937: Figures 149 f, g and 159 a, b, and c) may have also discovered Pre-Mamom red-incised material at the site of Uaxactun. Cheetham (n.d.) believes it is present in the Yaxha-Sacnab collections (see Rice 1979: Figure 4dd-ee)

*Comment:* Noted above, Kitam Incised is the most remarkable ceramic of the K'awil/Early Eb material. The characteristic fine-line incision makes it easily recognizable even if the thin slip

has been completely eroded away. Because these designs occur during the same time period (~1000-800 BC) and have been recorded on ceramics found in sites on the south coast of Guatemala (see Love's Melendrez White [2002: Figures 48e2, 50f] Melendrez Black [2002: Figures 54b, 56e, 62f, 62j], Cuca Red-on-Buff [2002: Figures 68c, e1, e3] and Ramirez Fine-White [2002: Figures 78-80]) through the Pasion River Region, the Central Peten, Belize Valley, and northern Belize this has led Cheetham (2005:27) to call this a "horizon style". The current date of these types of ceramics is still under question in the Holmul Region, but the ceramics do seem to fit the pattern of the period. However, I object to the use of the term "horizon style" or "horizon marker". This term as it was originally defined by Gifford (1976) requires a short time span for commonly occurring ceramic attributes to appear across a wide spatial distance. This two hundred year span is much longer than what Gifford originally intended and does not fall within the definition of a true horizon style. It more accurately shows a slow adoption of the technologies associated with these ceramics between the various ceramic sub-regions of Mesoamerica and at most may be considered part of a larger ceramic sphere.

*Illustration:* 5.2, 5.3, 5.4

## **Cocoyol Group**

### **Cocoyol Cream**

*Sample:* 17 rims, 96 total, 100% of group

*Whole Vessels:*

*Established:* Awe (1992:231) at Cahal Pech.

*Principal identifying modes:* 1) Thin pearl cream slip, 2) small flaring walled bowl forms with thin walls.

*Paste, firing, and temper:* Paste is fine with volcanic inclusions and yellow (10YR7/4, 10YR7/6) to buff (10YR8/2) in color. Paste resembles that of the non-carbonate Calam Buff variant. Fire cores are rare.

*Surface finish and decoration:* Surfaces are well-smoothed and polished. A thin, yet noticeable, pearl cream slip (10YR8/1) is present on vessel surfaces. Fire clouds are rare.

*Form:* Only one form has been identified to date and that is a small flaring walled bowl or dish. Rims can be direct or bolstered/folded on the exterior. Bases are flat.

*Intrasite locations and contexts:* The type has been found in association with mixed K'awil/Early Eb and Ixim/Late Eb contexts at Holmul and Cival.

*Intersite locations and contexts:* Cocoyol Cream has been positively identified at Cahal Pech by Awe (1992:231). The pearl cream slip may be similar to Huetche White of Seibal (Sabloff 1975:53-55) and Altar de Sacrificios (Adams 1971:25). Cheetham (n.d.) believes it is present in the Yaxha-Sacnab collections (see Rice 1979: Figure 4a-c)

*Comment:* Cocoyol Cream is very rare in the Holmul Region, perhaps owing to the easily eroded slip. The group may include an incised variety, but due to the easily eroded nature of the slip, I cannot attribute weathered incised sherds to this type on form and incision alone.

*Illustration:* --

## **Chi Group**

### **Chi Black**

*Sample:* 25 rims, 100 total, 89% of group

*Whole Vessels:*

*Established:* Cheetham (n.d.) at Cahal Pech.

*Principal identifying modes:* 1) Black smudged surfaces, 2) markedly incurving bowls or tecomates, 3) jars with vertical necks

*Paste, firing, and temper:* Paste is compact and can be carbonate or volcanic based. It is usually fine-textured and gray (10YR5/2) in color. Firing cores are not uncommon.

*Surface finish and decoration:* Surfaces are well-smoothed and sometimes polished. Black color can be the result of either actual slip (rare) or simply by firing the ceramics in an atmosphere conducive to smudging. This results in an uneven black color on vessel surfaces.

*Form:* 1) Markedly incurving bowls (tecomates) with direct rim and round lip, 2) jars with vertical necks, direct rim, and round lip

*Intrasite locations and contexts:* Chi can be found in the same mixed K'awil/Early Eb and Ixim/Late Eb contexts at the sites of Cival and Holmul.

*Intersite locations and contexts:* Chi Black is the black variant of Pre-Mamom pottery in the Holmul Region. It has been reported at Cahal Pech (Cheetham n.d.) and according to his description, Culbert (n.d.: 17-18) discovered it at Tikal, but places it in the Chunhinta type. Laporte and Fialko (1993: Figure 29) do the same. As with Uck Red and Kitam Incised above, I find significant enough differences in technology (specifically surface finish) to place this material within its own type.

*Illustration:* --

**Chi Black: Incised Variety**

*Sample:* 5 rims, 12 total, 11% of group

*Whole Vessels:*

*Established:* Cheetham et. al. (n.d.) at Cahal Pech.

*Principal identifying modes:* 1) Black smudged surfaces, 2) fine-line post-slip incision in simple bands or “supernatural” motifs, 3) markedly incurving bowls or tecomates, 4) round-sided bowls, 5) dishes with flaring sides.

*Paste, firing, and temper:* Paste is identical to Chi Black. Paste is compact and can be carbonate or volcanic based. It is usually fine-textured and gray (10YR5/2) in color. Firing cores are not uncommon.

*Surface finish and decoration:* Surfaces are identical to Chi Black. Surfaces are well-smoothed and sometimes polished. Black color can be the result of either actual slip (rare) or simply by firing the ceramics in an atmosphere conducive to smudging. This results in an uneven black color on vessel surfaces. Mottling is also frequent possibly leading to misclassification. Fine-line post-slip incision appears on vessel exteriors in different areas depending on form. Motifs include simple bands, “clefts”, and “avian serpents”.

*Form:* 1) Markedly incurving bowls or tecomates with direct rim and rounded lip, 2) round-sided bowls with direct rim and rounded lip, 3) dishes with flaring sides, direct or bolstered/folded rim, and rounded lip sometimes with single line of incision or notch running circumference of the diameter.

*Intrasite locations and contexts:* Mixed K'awil/Early Eb and Ixim/Late Eb deposits at the sites of Holmul and Cival.

*Intersite locations and contexts:* Chi Black: Incised Variety has been discovered at Cahal Pech (Cheetham et. al. n.d.). Cheetham (n.d.) believes it is present in the Yaxha-Sacnab collections (see Rice 1979: Figure 4cc). Chi Black: Incised Variety is contemporaneous with Chompipe Incised from the Pasion River Region (Adams 1971:42), but does not truly share similar forms, design motifs, or paste characteristics. Cheetham (n.d.:84-87) identifies it in collections from Problematical Deposit 12 at Tikal.

*Comment:* Chi Black: Incised Variety is extremely rare in the Holmul Region. It is so rare I often wonder if it is not a true classificatory category and merely Kitam Incised sherds that have been fireclouded. Only further excavation will solve the problem.

*Illustration:* 5.5a

## **Variegated Group**

### **Variegated: Variety Unspecified**

*Sample:* 23 rims, 127 total, 90% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) vessels can take any form including serving ware and slipped jars

*Paste, firing, and temper:* Paste can be fine to medium textured, volcanic or carbonate, and color varies from yellow (10YR7/4) to gray (10YR5/2). Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display mottled brown or variegated (7.5YR4/4) surface color.

*Form:* Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in any context with K'awil/Early Eb and Ixim/Late Eb material in the sites of Holmul and Cival.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Uck Red, Cocoyol Cream, or Chi Black. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps later after I have performed a more intensive paste and form analysis on Pre-Mamom material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun. I do not think the sherds are actually slipped brown and belonging to the Boolay Brown group established by Culbert (n.d.: 21) at Tikal. Boolay Brown is an actual ceramic type with specific form and paste modes. I prefer not to use it as a “dumping” category for variegated sherds.

*Illustration:* --

### **Variegated Incised: Variety Unspecified**

*Sample:* 4 rims, 14 total, 10% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) post-slip fine line incision in the form of “supernatural” motifs, 3) vessels can take any form including serving ware and slipped jars

*Paste, firing, and temper:* Paste can be fine to medium textured, volcanic or carbonate, and color varies from yellow (10YR7/4) to gray (10YR5/2). Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display a mottled brown or variegated (7.5YR4/4) surface color. Post-slip fine-line incision appears on vessel surfaces in the form of “supernatural” motifs identified by Cheetham (2005:33, Figures 3.5 and 3.6) as “music brackets”, “shark’s teeth”, “bouncing lines”, “clefts”, “flame-eyebrows”, “lightening”, and “avian serpents”. The location of incision depends on the form of the vessel: on wide-everted dishes incision appears on the wide-everted rim and/or on the interior base, on round-sided bowls incision appears on vessel exteriors. Some round or incurved bowl forms display only a single line of incision directly below the rim. On jars incision appears on the shoulder break and jar body.

Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in any context with K’awil/Early Eb and Ixim/Late Eb material in the sites of Holmul and Cival.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Kitam or Chi Black: Incised Variety. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps later after I have performed a more intensive paste and form analysis on Pre-Mamom material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun. I do not think the sherds are actually slipped brown and belonging to the Bechh Incised type established by Culbert (n.d.: 22) at Tikal. Bechh Incised is an actual ceramic type with specific form and paste modes. I prefer not to use it as a “dumping” category for variegated sherds.

*Illustration:* 5.5b

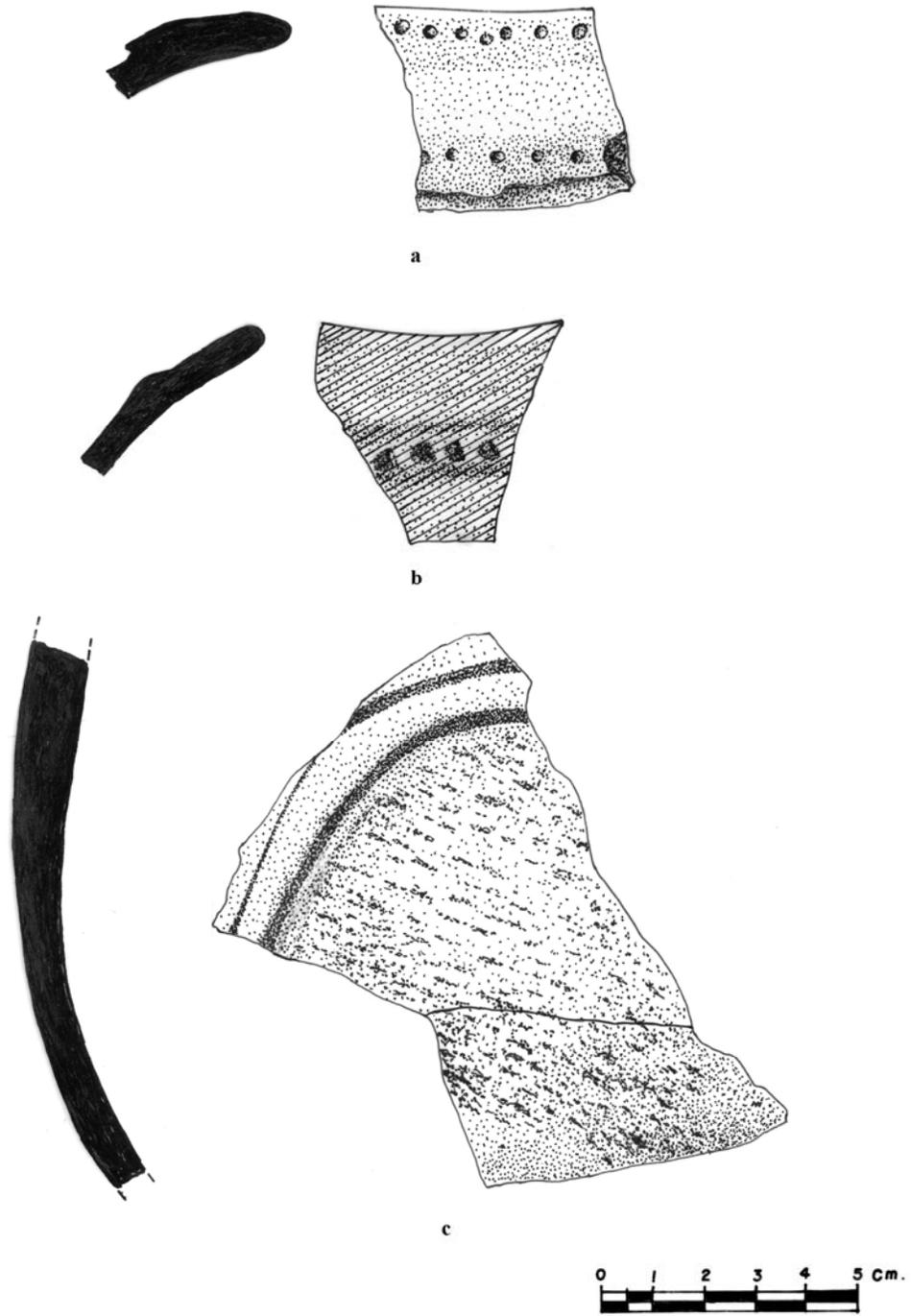
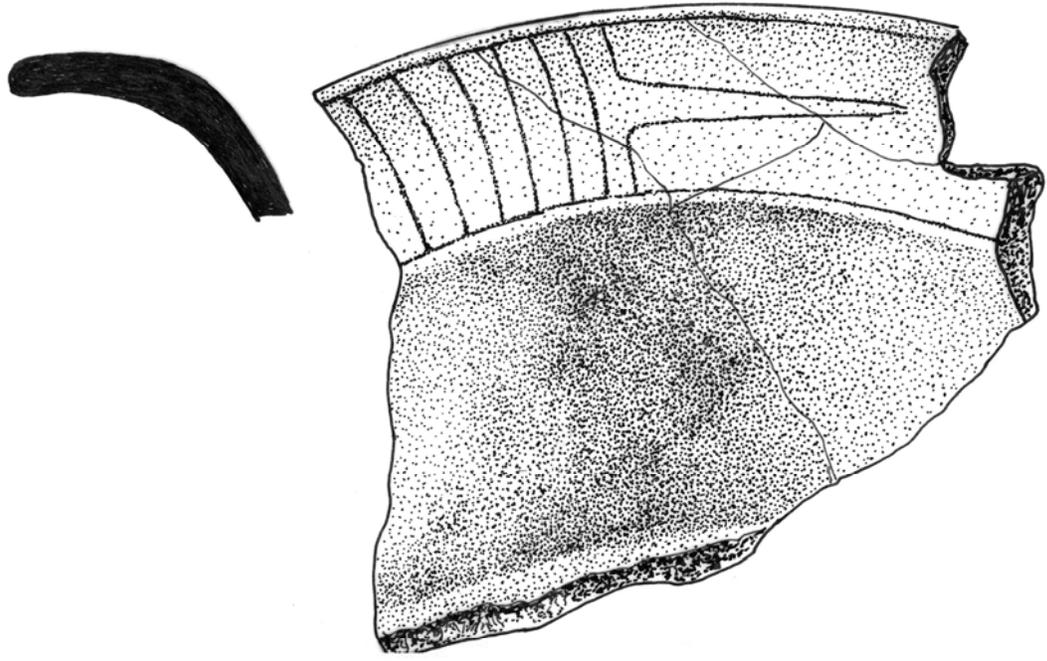
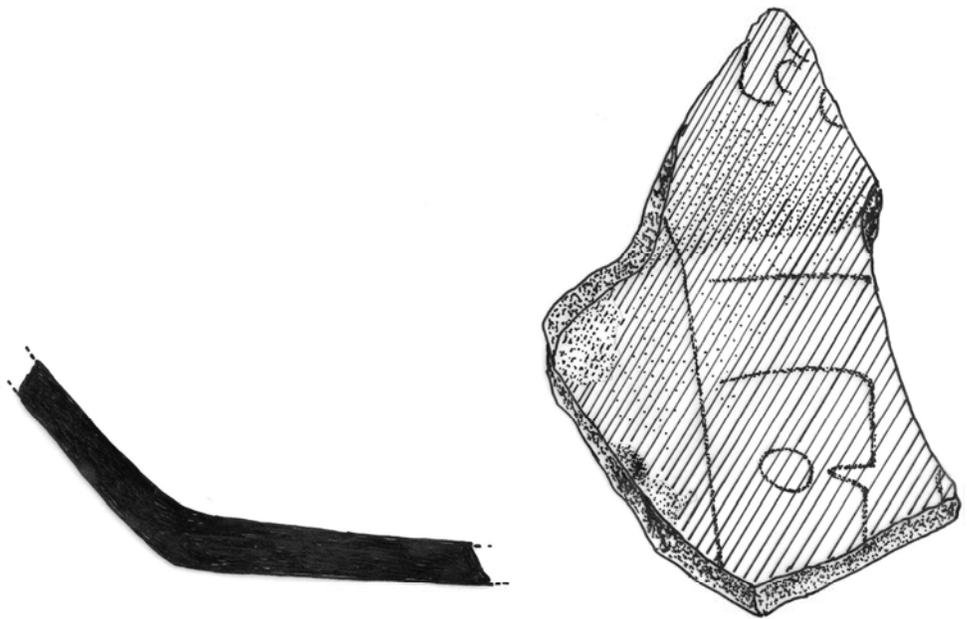


Figure 5.1 K'awil/Early Eb complex ceramics (a-b, Unnamed Unslipped Impressed; c, eroded, possible Uck Group, mushroom stand)



a



b



Figure 5.2 K'awil/Early Eb complex ceramics (a-b, Kitam Incised: Variety Unspecified)

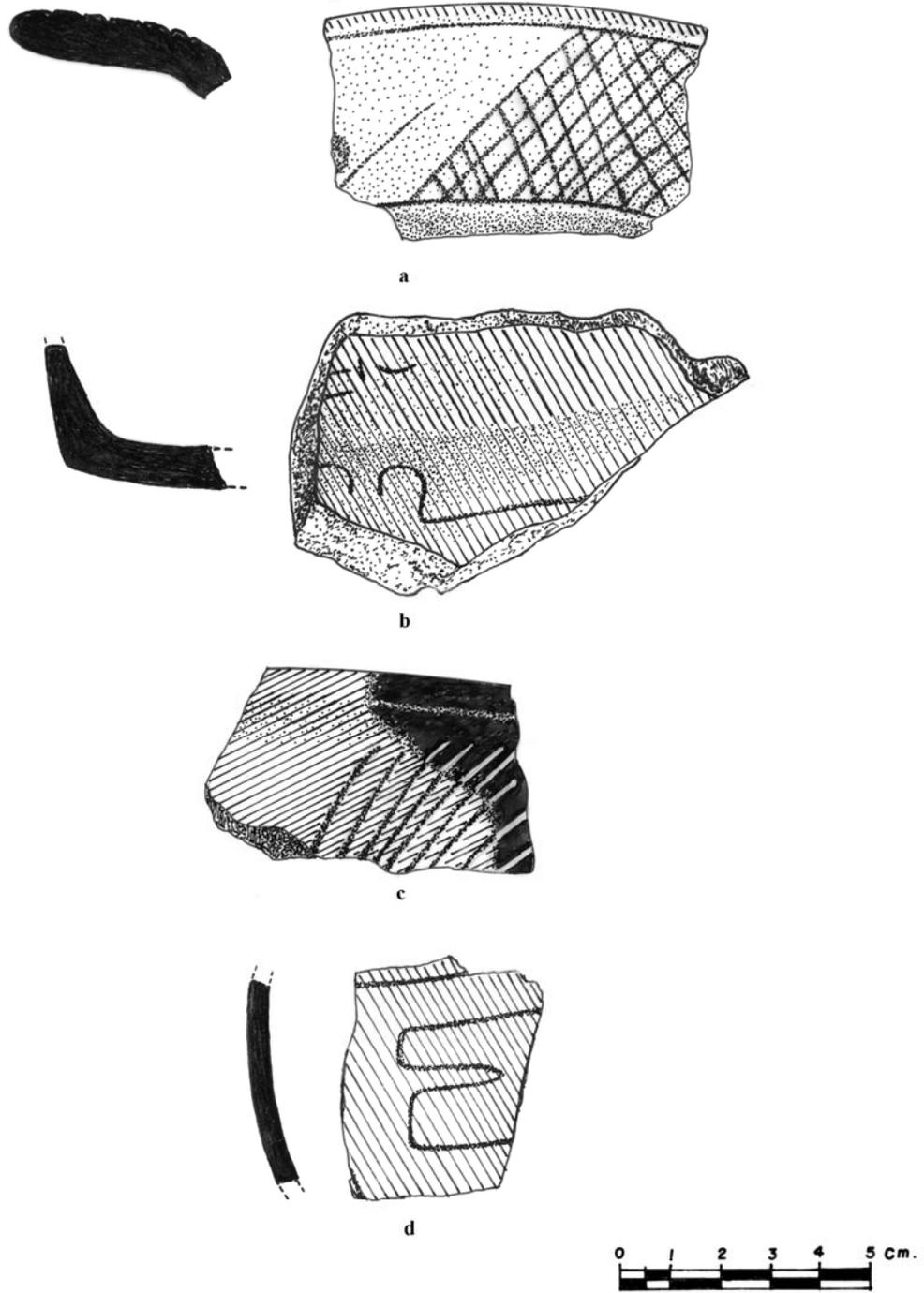


Figure 5.3 K'awil/Early Eb complex ceramics (a-d, Kitam Incised: Variety Unspecified)

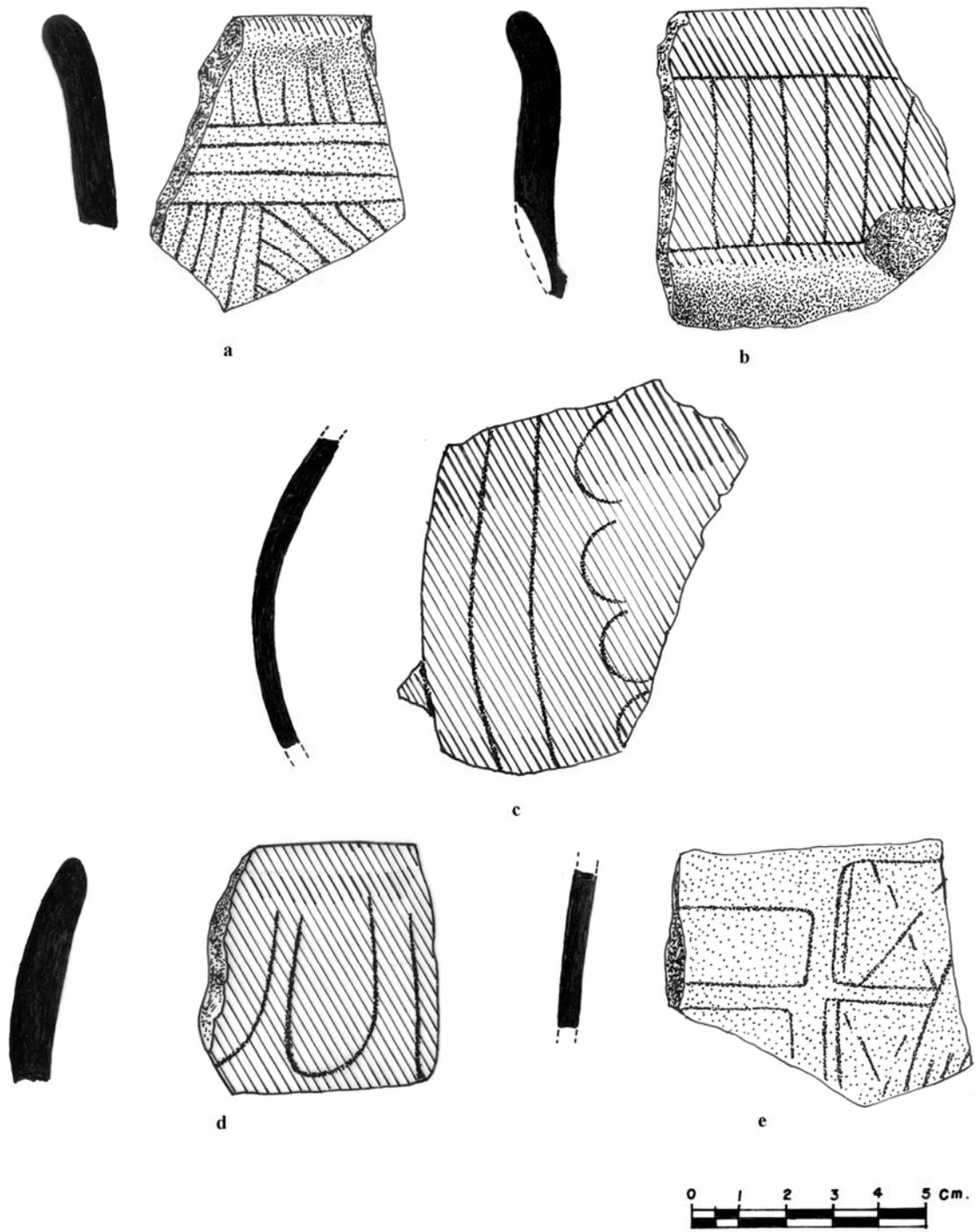
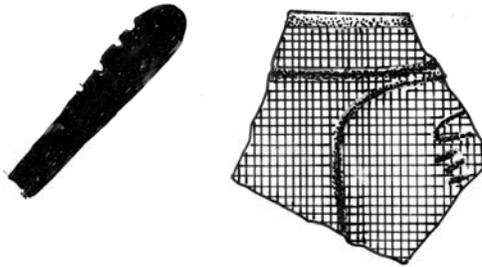


Figure 5.4 K'awil/Early Eb complex ceramics (a-e, Kitam Incised: Variety Unspecified)



a



b

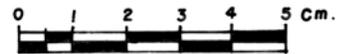


Figure 5.5 K'awil/Early Eb complex ceramics (a, Chi Incised: Variety Unspecified; b, Variegated Incised)

## **IXIM/LATE EB COMPLEX: MIDDLE MIDDLE PRECLASSIC PERIOD**

Ceramic material of the Ixim/Late Eb complex corresponds to the middle of the Middle Preclassic period. It is difficult to equate the Ixim/Late Eb complex to a specific ceramic sphere in the larger lowlands. Aside from Tikal, few sites have yet to yield such a split between complexes during the early and middle Middle Preclassic periods. Although we have different typological and chronological problems with the Ixim/Late Eb complex in the Holmul Region (to be discussed shortly), we do see a relatively strong split between the K'awil/Early Eb and Ixim/Late Eb complexes somewhere in the middle of the Middle Preclassic period.

Radiocarbon dates from two reliable deposits anchor the complex relatively strongly between 850 BC and 600 BC. The first date was discussed in the previous section and comes from bone collagen associated with Burial 33 found sealed beneath a collapsed chultun in a northern plaza of Cival (Estrada-Belli 2008:44). This collagen produced an uncalibrated date of 2670 $\pm$ 40 BP with a calibrated 1-sigma range of 895-840 BC and a 2-sigma range of 900-790 BC. A probable date for the deposit would be 800-850BC. In association with the burial was an excellent example of a Guitarra Incised: Variety Unspecified dish with incurving wall, datable stylistically to the Ixim/Late Eb complex. The second date potentially anchors the end of the Ixim/Late Eb complex and beginning of the Yax Te/Mamom complex. This date comes from Cival cache 4 located in the E-Group plaza of Cival (Estrada-Belli 2006b; Estrada-Belli, Bauer, Morgan, and Chavez 2003). Here a cruciform cache was discovered with five pots all stylistically datable to the Yax Te/Mamom complex. The vessels included three Chunhinta Black jars, one Joventud Red jar, and one Deprecio Incised jar. Charcoal found within the plaster floor that sealed the cache returned an uncalibrated date of 2520 $\pm$ 40 BP with a 1-sigma range of 790-760 BC or 680-550 BC and a 2-sigma range of 800-520 BC (Estrada-Belli

2008:44, 2006b:63). The date of deposition possibly occurred somewhere between 680-600 BC. Ceramics from the Ixim/Late Eb complex are found in large, almost exclusive or pure, contexts at the site of Cival. They are also found in smaller quantities in fill contexts at the sites of Holmul, La Sufricaya, and K'o mixed with Late Preclassic material. To date, the total complex numbers some 7631 sherds and 6 whole vessels.

Modally, Ixim/Late Eb ceramics resemble K'awil/Early Eb ceramics in terms of paste and surface treatment. However, in terms of form and surface decoration Ixim/Late Eb material is more closely related to Yax Te/Mamom material. Major paste variants of Ixim/Late Eb material are all but identical to K'awil/Early Eb material. The most common variant among serving ware is the fine volcanic tempered yellow variant found in the Uck Group of K'awil/Early Eb complex ceramics. Slips on Ixim/Late Eb are thin and flakey much like that on the K'awil/Early Eb material as well. However, mentioned in the previous section, major design modes change dramatically during the Ixim/Late Eb complex. Specifically, fine-line post-slip incision of pan-Mesoamerican motifs is abandoned in favor of wide, pre-slip grooving. Chamfering also begins to appear as does horizontal fluting. Furthermore, vessel forms change and more closely resemble those of the Yax Te/Mamom complex ceramics in the region. Specifically, wide everted rim dishes with sharp rim breaks give way to more gradually wide everted rim dishes with smooth rim breaks. In fact, most of the assemblage is composed of what I consider prototypes for the more well-known examples of Mamom diagnostic markers found at sites with occupation in the Late Middle Preclassic period in the rest of the lowlands. These types include Guitarra Incised, Muxanal Red-on-Cream, Desvario Chamfered, and Centenario Fluted. In the type descriptions that follow, I actually call these types by their Mamom complex equivalent names. However, I leave the variety unspecified because I think that while they share

enough modes to warrant their inclusion in the larger types, I do not feel they are similar enough to the variety-name material to classify them as such. Further investigation will allow me to study the material more and decide upon specific variety names.

Mentioned in the first paragraph of the introduction to this section, the Ixim/Late Eb complex does present us with some chronological and typological problems. At many sites in the Holmul Region archaeologists have discovered Ixim/Late Eb ceramics in association with Itzamkanak/Chicanel material with no Yax Te/Mamom material present. In fact, at this point in time Yax Te/Mamom material displaying modes so common to the Mamom complex in much of the rest of the lowlands (namely, waxy slip and specific types such as Guitarra Incised: Guitarra Variety, Desvario Chamfered: Desvario Variety, Muxanal Red-on-Cream: Muxanal Variety, Deprecio Incised: Deprecio Variety, and Centenarrio Fluted: Centenarrio Variety) is so extremely rare in the Holmul Region it leads me to question the probability that this type of material constitutes a true ceramic complex. That is, it may be possible that the Ixim/Late Eb complex transforms subtly into the Yax Te/Mamom complex mainly through form and decoration modes with paste and slip modes remaining relatively constant. This would explain the Ixim/Late Eb paste variants and flakey glossy slip on the five jars recovered from the Cival 4 cache – all of which display Yax Te/Mamom forms, and the Deprecio Incised jar which displays Yax Te/Mamom decorative modes (e.g., a return to fine-line incision with common Deprecio jar motifs). This possibility is strengthened by the presence of large amounts of Savanna Orange Group material in many Ixim/Late Eb contexts at Cival. These contexts also sometimes contain small examples of Jocote Orange-Brown ceramics. Ceramics of the Savanna Orange group are firmly dated to the Late Middle Preclassic period or Late Jenny Creek facet at Barton Ramie (Gifford 1976:73-77), while Jocote Orange-Brown can occur in either the early or late facet of

Jenny Creek (Gifford 1976:63-67). In conclusion, it may be possible that the Ixim/Late Eb complex continues through to the beginning of the Itzamkanak/Chicanel complex when there is a stark break in all ceramic production modes. This would mean that the few true Yax Te/Mamom sherds in the Holmul Region could be part of a small, but competing, production system during the Late Middle Preclassic period (600-350 BC). Only future excavations and analysis will be able to determine this.

### **UAXACTUN UNSLIPPED WARE**

#### Achiotes Ceramic Group

Achiotes Unslipped: Variety Unspecified

#### Jocote Ceramic Group

Jocote Orange-Brown: Variety Unspecified

Chacchinic Red on Orange-Brown: Variety Unspecified

### **FLORES WAXY WARE**

#### Joventud Ceramic Group

Joventud Red: Variety Unspecified

Guitarra Incised: Variety Unspecified

Desvario Chamfered: Variety Unspecified

#### Pital Ceramic Group

Muxanal Red on Cream: Variety Unspecified

Muxanal Incised: Variety Unspecified

Chunhinta Ceramic Group

Chunhinta Black: Variety Unspecified

Deprecio Incised: Variety Unspecified

Centenario Fluted: Variety Unspecified

Variegated Ceramic Group

Variegated: Variety Unspecified

Variegated Incised: Variety Unspecified

**MARS ORANGE WARE**

Savanna Orange: Variety Unspecified

Reforma Incised: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Achiotes Ceramic Group

#### Achiotes Unslipped: Variety Unspecified

*Sample:* 173 rims, 988 total, 100% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:154,170)

*Principal identifying modes:* 1) Unslipped surface, 2) coarse tempered paste, and 3) small globular short neck jars.

*Paste, firing, and temper:* Coarse to medium textured. Paste is gray (7.5YR4/2). Carbonate based with large crystal calcite inclusions. Firing cores can occur.

*Surface finish and decoration:* Smoothed and unslipped vessel exteriors and interiors. Surfaces are roughly color of paste (7.5YR5/2, 7.5YR4/2).

*Form:* 1) Small short-neck outcurved rim jars 2) large everted rim jar, 3) possible lid (very rare – only one example)

*Intrasite locations and contexts:* At this point in the analysis Achiotes Unslipped is relatively indistinguishable from any other Preclassic unslipped type (e.g. Paila Unslipped). Because of this, all Preclassic unslipped pottery will preliminarily be classified as Achiotes. Therefore, Achiotes Unslipped is found wherever Late Middle Preclassic and Late Preclassic sherds are encountered. Achiotes Unslipped appears in largest quantities in Cival excavations and contexts from Building B, Group II at Holmul.

*Intersite locations and contexts:* Achiotes Unslipped appears at Uaxactun (Smith and Gifford 1966: 154), Barton Ramie (Gifford 1976:108), Altar de Sacrificios (Adams 1971:18), Becan (Ball 1977:8), Seibal (Sabloff 1975:46), the Valle de Dolores (Laporte et al 1993:65-66), El Mirador (Forsyth 1989:49), Tikal (Culbert 1993: Figures 6b-c, 8a 1, 11a 2, 121d; n.d.), and the Petexbatun Region (Foias 1996:271-275).

*Illustration:* 5.6a-j

## **Jocote Ceramic Group**

### **Jocote Orange-Brown: Variety Unspecified**

*Sample:* 1 rim, 98 total, 92% of group

*Whole Vessels:*

*Established:* Willey, Bullard, Glass, and Gifford at Barton Ramie (Willey et al 1965)

*Principal identifying modes:* 1) Unslipped orange-brown surface, 2) small globular, short neck jars, 3) markedly incurved bowl form, and 4) appliqué impressed filet on vessel exterior.

*Paste, firing, and temper:* Relatively fine to medium textured. Paste is yellow (10YR7/5, 10YR6/8) appearing “orange-brown”. Carbonate based paste with small crystal calcite and white inclusions.

*Surface finish and decoration:* Unslipped vessel exteriors and interiors. Paste fires gray to orange-brown (10YR7/5, 10YR6/8). Thin impressed, often “winding”, appliqué filet on vessel exterior.

*Form:* 1) Small short neck jars with thin walls, 2) thin-walled markedly incurved bowl, 3) medium sized incurving bowl.

*Intrasite locations and contexts:* Various contexts in the site of Cival and also in Middle Preclassic contexts at Holmul, specifically Building B, Group II sub-structure excavations.

*Intersite locations and contexts:* Jocote Orange-Brown appears at Barton Ramie (Gifford 1976: 63-68) and the Belize Valley area (Ball and Taschek 2003).

*Illustration:* --

### **Chacchinic Red on Orange-Brown: Variety Unspecified**

*Sample:* 1 rim, 4 total, 8% of group

*Whole Vessels:*

*Established:* Gifford at Barton Ramie (1976: 68).

*Principal identifying modes:* 1) Red-orange wash or thin slip applied to upper portions of vessel exteriors, 2) thin impressed appliqué fillet, and 3) small incurving bowl or tecomate form.

*Paste, firing, and temper:* Fine to medium textured orange-yellow (10YR7/5, 10YR6/8) paste with carbonate inclusions.

*Surface finish and decoration:* Same finish as Jocote Orange-Brown. A thin winding appliqué fillet decorates the exterior vessel surface. Fillet is impressed with tiny vertical slits. Above the fillet appears a thin orange-red (2.5YR4/8) wash which continues over the lip. Below the fillet fired paste is a relatively bright orange-brown.

*Form:* The one rim sherd in the present collection is of a small round-sided bowl with relatively thin walls.

*Intrasite locations and contexts:* Found at the site of Cival.

*Intersite locations and contexts:* Chacchinic Red on Orange-Brown also appears at Barton Ramie (Gifford 1976:68-69) and in the general Belize Valley area (Ball and Taschek 2003)

*Comment:* This type should not actually be classified as Uaxacatun Unslipped Ware because of the presence of a red slip or wash (see Gifford 1976). This inconsistency is a problem of the larger previous misapplication of type-variety classification in its early stages and will be rectified as the Holmul Region analysis progresses.

*Illustration:* 5.6k

## **FLORES WAXY WARE**

### **Joventud Ceramic Group**

#### **Joventud Red: Variety Unspecified**

*Sample:* 593 rims, 2674 total, 83% of group

*Whole Vessels:* SF# CT.08.49.02.01.02

*Established:* Smith and Gifford at Uaxactun (1966:158, 170).

*Principal identifying modes:* 1) Matte finish, 2) red slip, 3) fine yellow volcanic based paste 4) round-sided bowls, 5) jars with vertical neck.

*Paste, firing, and temper:* Major paste variant is identical to Uck Red pastes of the K'awil/Early Eb complex. It is a fine textured yellow (10YR7/3, 10YR7/4) paste with volcanic inclusions. Firing cores are present in the sample, but infrequent. This type of paste is associated with a thin flakey red slip and low polish, also similar to Uck Red group ceramics.

*Surface finish and decoration:* Surfaces are well smoothed slipped a bright red (10R4/8) and polished to a dull shine. This surface does not resemble the waxy red-orange surfaces of Joventud red common to other lowland sites at this time.

*Form:* 1) Round-sided bowl, 2) large markedly incurved bowl (tecomate) with bolstered rim, 3) jars with vertical necks, 4) small, thin-walled, bowls with flaring or outcurving sides, direct rim, and rounded lip, 5) gradually wide-everted rim dishes with flat base, 6) recurving bowls with direct rim and rounded lip.

*Intrasite locations and contexts:* Joventud Red is currently found at Cival and in Building B, Group II of Holmul in the 2004-2005 samples. One complete Joventud Red jar was found in cache 4 at Cival (Estrada-Belli 2006b; Estrada-Belli, Bauer, Morgan, and Chavez 2003).

*Intersite locations and contexts:* Joventud Red appears at Uaxactun (Smith and Gifford 1966:158), Tikal (Culbert 1993:13; n.d), Barton Ramie (Gifford 1976:78-79), Altar de Sacrificios (Adams 1971: 20), Becan (Ball 1977: 17-18), El Mirador (Forsyth 1989:13-15), Cuello (Kosakowsky 1987: 42-43), and the Petexbatun Region (Foias 1996:216-219). However, aside from Tikal during the Late Eb complex (Culbert n.d.), surface finish of Joventud at these sites does not resemble that of Joventud in the Holmul Region.

*Illustration:* 5.7a-g, H.15

### **Guitarra Incised: Variety Unspecified**

*Sample:* 410 rims, 500 total, 15% of group

*Whole Vessels:* SF#(CIV.T.28.111)

*Established:* Smith and Gifford at Uaxactun (1966:158, 170).

*Principal identifying modes:* 1) Red to red-orange slip, 2) dull or matte surface treatment, 3) horizontal bands of groove-incision on rim below the lip on vessel exteriors, 4) fine line pre-slip incision in geometric patterns, 6) round-sided bowls, 7) dishes or bowls with gradually wide everted rims.

*Paste, firing, and temper:* The major paste variant is identical to Uck Red pastes of the K'awil/Early Eb complex and Joventud Red: Variety Unspecified above. It is a fine textured yellow (10YR7/3, 10YR7/4) paste with volcanic inclusions. Firing cores are present in the sample, but infrequent. This type of paste is associated with a thin flakey red slip with low polish and groove-incision.

*Surface finish and decoration:* Surfaces are well smoothed, covered with a thin flakey red (10R4/8) slip, and polished to a low shine. Incision takes the form of circumferential bands of groove-incised lines below the rim on closed forms and one or two bands encircling gradually wide-everted rims.

*Form:* 1) Incurving rim dishes or plates with direct rim, round or square lip, and slightly concave base, 2) round-sided bowls with direct rim and rounded lip, 3) markedly incurved bowls with direct rim and rounded lip 4) gradually wide-everted rim dishes with rounded lip and flat base, 5) jars with vertical neck, direct rim, and rounded lip.

*Intrasite locations and contexts:* Rim sherds of Guitarra are easily identifiable and come from excavations at Cival, Holmul, La Sufricaya, and K'o.

*Intersite locations and contexts:* Guitarra Incised appears at Uaxactun (Smith and Gifford 1966:170), Altar de Sacrificios (Adams 1971: 42), Seibal (Sabloff 1975:62, 65-66), Becan (Ball 1977:82), Cuello (Kosakowsky 1987:43-45), El Mirador (Forsyth 1989:15-16), Tikal (Culbert 1993:13; n.d), and the Petexbatun Region (Foias 1996:219-223). Guitarra Incised at Tikal, as described by Culbert (n.d.) for his Eb Phase, resembles the Holmul unnamed variety the most.

*Illustration:* 5.7h-k, 5.8a-b

### **Desvario Chamfered: Variety Unspecified**

*Sample:* 43 rims, 52 total, 2% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:157, 170)

*Principal identifying modes:* 1) Red slip, 2) Chamfered exterior walls, 3) bowls or dishes with flaring walls, 4) bowls or dishes with incurving walls.

*Paste, firing, and temper:* As with Joventud and Guitarra Incised, the major paste variant is identical to Uck Red. It is a fine textured yellow (10YR7/3, 10YR7/4) paste with volcanic inclusions. Firing cores are present in the sample, but infrequent. This type of paste correlates with a thin flakey (10R4/8) red slip with low polish.

*Surface finish and decoration:* As with Joventud Red and Guitarra Incised found in the Holmul Region, surfaces are well smoothed, covered in a thin flakey red (10R4/8) slip, and polished to a low shine. Chamfering appears on exterior walls near the rim on bowls or vases with incurving walls and all the way down the sides on bowls or dishes with flaring walls.

*Form:* 1) Bowls/vases or even vases with incurving walls, direct rim, and rounded lip, 2) bowls/dishes with flaring walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* Desvario Chamfered occurs more commonly in Cival contexts, but single sherds have also been found in Holmul and K'o site excavations.

*Intersite locations and contexts:* Desvario Chamfered has been reported at Uaxacatun (Smith 1955: Figure 14b, 7-11), El Mirador (Forsyth 1989:16, Figures 4, K-O), Seibal (Sabloff 1975:62 Figures 77-78), and the Petexbatun Region (Foias 1996:224-226). Like Joventud Red discussed above, surface finish of Desvario at these sites does not resemble that of Joventud in the Holmul Region.

*Illustration:* --

## **Pital Ceramic Group**

### **Muxanal Red-on-Cream: Variety Unspecified**

*Sample:* 95 rims, 136 total, 36% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:160, 170).

*Principal identifying modes:* 1) Red colored slip on vessel interiors and buff colored exteriors or vice versa, 2) dichrome effect created by single band of red slip on and below lip on vessel exterior or interior, 3) bowls with flaring walls and direct or everted rims.

*Paste, firing, and temper:* The major paste variant is identical to Uck Red pastes of the K'awil/Early Eb complex and Joventud group ceramics. It is a fine textured yellow (10YR7/3, 10YR7/4) paste with volcanic inclusions. Firing cores are present in the sample, but infrequent. This type of paste correlates with a thin flakey red slip with low polish or simple unslipped buff colored surfaces.

*Surface finish and decoration:* Interior and exterior surfaces are well-smoothed. Next a thin flakey red slip (10R4/8) is applied to either the interior or exterior of the vessel. The other side is left unslipped creating a cream or buff color. The slipped surface is polished to a low gloss or dull shine. This type of surface correlates with the fine-textured volcanic yellow paste variant. The interior color may extend over the lip and slightly down exterior rims.

*Form:* 1) Bowls with flaring sides, direct or gradually everted rim, and rounded lip, and flat base, 2) round-sided bowls with direct rim and rounded lip, 3) rare "cuspidor" forms.

*Intrasite locations and contexts:* With the exception of three sherds found at the site of Holmul, Muxanal Red-on-Cream is found exclusively at Cival.

*Intersite locations and contexts:* Muxanal Red on Cream appears at Uaxacatun (Smith and Gifford 1966:170), Altar de Sacrificios (Adams 1971:27), El Mirador (Forsyth 1989:18-19), Yaxha-Sacnab (Rice 1979:22), Calakmul (Dominguez-Carrasco 1994:27), and the Petexbatun Region (Foias 1996:244-246). It is placed in the Muxanal ceramic group at Becan (Ball 1977:48) and Cuello (Kosakowsky 1987:49-51).

*Comment:* The type described here as Muxanal Red-on-Cream may actually be classified as some variety of Ixim/Late Eb complex Joventud after further analysis. The problem here is that actual cream slip is not being used on these types of vessels. The dichrome effect is instead created by red slip over a buff surface. The same effect is created potentially later on in the Yax Te/Mamom complex by waxy red slips over waxy cream slips or interiors slipped red and exteriors slipped cream. Because these style modes are so similar, I am more comfortable placing the type of ceramics discussed above in the Muxanal type and not Joventud. Noted in the introduction to this chapter, this type of ceramic may represent a prototype of the Muxanal Red-on-Cream of the later Yax Te/Mamom complex.

*Illustration:* 5.8e-i, 1

### **Muxanal Red-on-Cream Incised: Variety Unspecified**

*Sample:* 11 rims, 18 total, 4% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Red colored slip on vessel interiors and buff unslipped exteriors or vice versa, 2) dichrome effect created by single band of red slip on and below lip on vessel exterior, 3) preslip groove-incision or fine line incision on vessel rim and lip, 4) bowls with flaring walls and direct or everted rims.

*Paste, firing, and temper:* Muxanal Incised exhibits paste modes identical to non-incised Muxanal. The major paste variant is identical to Uck Red pastes of the K'awil/Early Eb complex and ceramics of the Joventud group. The major variant is a fine textured yellow (10YR7/4, 10YR 7/3) paste with volcanic inclusions. Firing cores are present in the sample, but infrequent. This type of paste correlates with a thin flakey red slip with low polish or simple unslipped buff colored surfaces. Incision on these sherds takes the form of groove-incision.

*Surface finish and decoration:* Surface finish is identical to Muxanal described above, with the addition of groove-incision on vessel exteriors. Interior and exterior surfaces are well-smoothed. Next a thin flakey red slip (10R4/8) is applied to either the interior or exterior of the vessel. The other side is left unslipped. The slipped surface is polished to a low gloss or dull shine. Incision on these sherds takes the form of pre-slip groove-incision and varies in placement dependent on vessel form. On incurving wall dishes or plates, incision appears as one or two circumferential bands just below the rim on vessel exteriors. On gradually wide-everted dishes, it appears as single or double bands on the everted rim of vessel interiors. The interior color may extend over the lip and slightly down exterior rims.

*Form:* Groove-incised vessels with fine-textured volcanic yellow pastes are found only in the following forms: 1) dishes or plates with incurving walls, direct rim, and either rounded or squared lip, 2) bowls or dishes with gradually wide-everted rim, and rounded lip, and 3) bowls with rounded sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* Muxanal Red-on-Cream Incised is found exclusively at Cival.

*Intersite locations and contexts:* Muxanal Red on Cream incised is rather rare in the lowlands.

Ball (1977:83) classifies it as Loche Incised-dichrome: Loche Variety at Becan. However, form modes are nothing like the Holmul material. Foias (1996:248-250) describes an incised Muxanal type in the Petexbatun Region, but leaves the types name unclassified due to the small sample.

Form and surface modes are not similar to the Holmul material here either.

*Comment:* Similar to the discussion above concerning Muxanal Red-on-Cream, the type described here as Muxanal Red-on-Cream Incised may actually be classified as some variety of Ixim/Late Eb complex Guitarra after further analysis. The problem here is that actual cream slip is not being used on these types of vessels. The dichrome effect is instead created by red slip over a buff surface. The same effect is created potentially later on in the Yax Te/Mamom complex by waxy red slips over waxy cream slips or interiors slipped red and exteriors slipped cream (or vice-versa). Because these style modes are so similar, I am more comfortable placing the type of ceramics discussed above in the Muxanal Incised type and not Guitarra. Noted in the introduction to this chapter, this type of ceramic may represent a prototype of the Muxanal Red-on-Cream Incised of the later Yax Te/Mamom complex.

*Illustration:* 5.8j-k

## **Chunhinta Ceramic Group**

### **Chunhinta Black: Variety Unspecified**

*Sample:* 130 rims, 866 bodies, 84% of group

*Whole Vessels:* SF# CT.08.47.02.01.02, SF# CT.08.48.02.01.02, SF# CT.08.59.02.02.02

*Established:* Smith and Gifford at Uaxactun (1966:156, 170).

*Principal identifying modes:* 1) Black fading to gray slip, 2) carbonate temper with crystal calcite, 3) teardrop and globular shaped jars with restricted short necks or vertical necks, 4) bowls with incurved sides.

*Paste, firing, and temper:* Other paste variants probably exist, but an intensive analysis has yet to be performed on Chunhinta Black. The major paste variant is medium to fine textured and carbonate based with many crystal calcite inclusions. Color is gray (10YR4/1) to black.

*Surface finish and decoration:* Surfaces are well-smoothed and highly polished. Slip is thick and varies from gray to deep black.

*Form:* 1) Teardrop and globular jars with restricted short necks or vertical necks, 2) bowls or vases with incurving or insloping sides, 3) bowls with outcurving sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* Chunhinta Black ceramics are most commonly found at the site of Cival, but a handful of sherds have been found at La Sufricaya and K'o. Three Chunhinta vessels were found in association with a Middle Preclassic cache in the E-Group plaza at Cival (context number CT08.46) (Estrada-Belli, Bauer, Morgan, and Chavez 2003).

*Intersite locations and contexts:* Chunhinta Black appears at Uaxactun (1966:170), Barton Ramie (Gifford 1976:82-83), Tikal (Culbert 1993:13; n.d), Altar de Sacrificios (Adams 1971:24), Seibal (Sabloff 1975: 69), Becan (Ball 1977:30), Cuello (Kosakowsky 1987:47), and El Mirador (Forsyth 1989:16-18).

*Illustration:* H.16

### **Deprecio Incised: Variety Unspecified**

*Sample:* 48 rims, 117 bodies, 11% of group

*Whole Vessels:* SF# CT.08.50.02.01.02

*Established:* Smith and Gifford at Uaxactun (1966:157, 170).

*Principal identifying modes:* 1) Black fading to gray slip, 2) post fire fine line incision usually occurring in horizontal parallel lines or geometric shapes on vessel exteriors, 3) globular or teardrop shaped jars with restricted short necks, 4) bowls or vases with incurved or insloping thin walls.

*Paste, firing, and temper:* Identical to Chunhinta Black. Other paste variants probably exist, but an intensive analysis has yet to be performed on Chunhinta Black. The major paste variant is medium to fine textured and carbonate based with many crystal calcite inclusions. Color is gray (10YR4/1) to black.

*Surface finish and decoration:* Same as Chunhinta Black with the inclusion of fine line pre-slip incision. Location of incision varies with form and can be found as simple horizontal parallel lines just below the lip on bowl exteriors or as geometric patterns on both exterior bowl walls and shoulder breaks on jars. Jars can also display vertical bands of geometric incision running down vessel exteriors.

*Form:* 1) Globular jars with vertical, chamfered, neck, direct rim, and round lip, 2) teardrop shaped jars with short incurved neck, direct rim and rounded lip, 3) bowls or vases with incurved or insloping thin walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* With the exception of one rim sherd at La Sufricaya, Deprecio is currently found exclusively at Cival. One Deprecio Incised jar was found in association with

Cache 4 in the E Group Plaza (context number CT08.46) (Estrada-Belli, Bauer, Morgan, and Chavez 2003).

*Intersite locations and contexts:* Deprecio Incised also appears at Uaxactun (Smith and Gifford 1966:170), Barton Ramie (Gifford 1976:83), Altar de Sacrificios (Adams 1971:43), Seibal (Sabloff 1975:69-70), Becan (Ball 1977:82), Cuello (Kosakowsky 1987:47-48), El Mirador (Forsyth 1989:18), and Calakmul (Dominguez-Carrasco 1994:25).

*Illustration:* 5.9a-b, H.42

### **Centenario Fluted: Variety Unspecified**

*Sample:* 35 rims, 49 total, 5% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:156, 170).

*Principal identifying modes:* 1) Black fading to gray slip, 2) horizontal fluting, 3) bowls or vases with markedly incurved walls.

*Paste, firing, and temper:* Same as Chunhinta Black. The major paste variant is medium to fine textured and carbonate based with many crystal calcite inclusions. Color is gray (10YR4/1) to black.

*Surface finish and decoration:* Same as Chunhinta Black with the inclusion of horizontal fluting and occasional fine line post fire incision in the form of horizontal parallel lines immediately below each horizontal flute.

*Form:* 1) Bowl or vase with markedly incurving walls, direct rim, and rounded lip, 2) bowl with round sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* As rare as Centenario appears to be in the Holmul Region, it can be found at three of the four major sites in the area: most frequently at Cival, but also at La Sufricaya and K'o.

*Intersite locations and contexts:* Centenario Fluted also appears at Uaxactun (Smith and Gifford 1966: 156, 170), Altar de Sacrificios (Adams 1971: 48), Seibal (Sabloff 1975: 70), and the Petexbatun Region (Foias 1996:256-257).

*Illustration:* 5.9c

## **Variegated Group**

### **Variegated: Variety Unspecified**

*Sample:* 93 rims, 683 total, 89% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) vessels can take any form including serving ware and slipped jars.

*Paste, firing, and temper:* Paste can be fine to medium textured, volcanic or carbonate, and color varies from yellow to gray. Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display a mottled brown or variegated (7.5YR4/4) surface color.

*Form:* Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in many contexts with Mamom material throughout the Holmul Region.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Joventud Red or Chunhinta Black. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps later after I have performed a more intensive paste and form analysis on Mamom material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun.

*Illustration:* --

### **Variegated Incised: Variety Unspecified**

*Sample:* 7 rims, 82 total, 11% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) pre-slip fine line incision, 3) vessels can take any form including serving ware and slipped jars

*Paste, firing, and temper:* Paste can be fine to medium textured, volcanic or carbonate, and color varies from yellow to gray. Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display a mottled brown or variegated (7.5YR4/4) surface color. Post-slip fine-line incision appears on

vessel surfaces in the form of simple bands or geometric patterns. The location of incision depends on the form of the vessel.

*Form:* Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in many contexts with Mamom material throughout the Holmul Region.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Guitarra or Deprecio Black. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps later after I have performed a more intensive paste and form analysis on Mamom material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun.

*Illustration:* --

## **MARS ORANGE WARE**

### **Savanna Ceramic Group**

#### **Savanna Orange: Variety Unspecified**

*Sample:* 152 rims, 1008 total, 85% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:162, 170)

*Principal identifying modes:* 1) Fine bright orange paste with few inclusions, 2) occasional red or cream slip, and 3) small bowls or dishes.

*Paste, firing, and temper:* Two potential variants of Savanna Orange pastes may exist in the present sample. The first is a fine to very fine-textured with little or no volcanic inclusions. Color is bright orange (5YR5/8, 5YR6/8) with no firing core. The second is also fine, but with many more inclusions (some rather large), mostly volcanic with an occasional piece of calcite. Color is also bright orange (5YR5/8, 5YR6/8) with no firing core.

*Surface finish and decoration:* Surfaces are well-smoothed and highly polished (on preserved examples). Surfaces are usually eroded, but sometimes a lustrous “waxy” well-preserved red (10R4/8) or cream slip is present.

*Form:* 1) Bowls or dishes with thin slightly flaring walls, direct or slightly everted rims, and rounded lip, 2) some small spouts have been recovered indicating possible jar or pitcher forms.

*Intrasite locations and contexts:* Savanna Orange is found throughout the Holmul Region at Cival, Ko, Holmul, and La Sufricaya.

*Intersite locations and contexts:* Mars Orange Ware is found in greatest quantities in northeastern Guatemala and the adjacent Belize River Valley. Savanna Orange also appears at Uaxactun (Smith and Gifford 1966:167), Barton Ramie (Gifford 1976:73-76), Altar de Sacrificios (Adams 1971:80), and Seibal (Sabloff 1975:74)

*Comment:* While Savanna Orange begins to appear in the Late Middle Preclassic, it is also found in large quantities in contexts that date to the Late Preclassic or Itzamkanak/Chicanal ceramic complex in the Holmul Region. These examples, however, are usually eroded and indicate that they may have been produced and used within the earlier Ixim/Late Eb or Yax Te/Mamom complexes. The two paste variants are interesting. Both variants are identified in the Savanna

Orange from Barton Ramie (Gifford 1976:73-75) and my indicate Savanna was imported into the area, but does not rule out local production. Ball and Taschek (2003) have found similar paste variants, also with red slip, at sites in the neighboring Belize Valley. They note the forms are similar to Joventud Red and, therefore, place these fine-paste variants into the Joventud Group, classifying these sherds as Yesoso Orange paste ware.

*Illustration:* 5.9d-g

### **Reforma Incised: Variety Unspecified**

*Sample:* 88 rims, 174 total, 15% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:161, 170).

*Principal identifying modes:* Same as Savanna Orange with the addition of fine line or groove incision on vessel exterior.

*Paste, firing, and temper:* Same as Savanna Orange. Two potential variants of Reforma Incised pastes may exist in the present sample. The first is a fine to very fine-textured with little no volcanic inclusions. Color is bright orange (5YR5/8, 5YR6/8) with no firing core. The second is also fine, but with many more inclusions (some rather large), mostly volcanic with an occasional piece of calcite. Color is also bright orange (5YR5/8, 5YR6/8) with no firing core.

*Surface finish and decoration:* Vessel exteriors are smoothed and burnished sometimes to a relatively high shine. Fine line and groove incision create horizontal bands and geometric shaped patterns on vessel exteriors. On well-preserved examples, red-orange slip is still visible.

*Form:* Same as Savanna Orange with one additional form. 1) Bowls or dishes with thin slightly flaring walls, direct or slightly everted rims, and rounded lip, 2) some small spouts have been

recovered indicating possible jar or pitcher forms, 3) addition of bowls with composite walls displaying incurving walls with sharp medial angle, rim is direct, and lip rounded.

*Intrasite locations and contexts:* Reforma is almost as ubiquitous as Savanna and has been found mostly at Cival, but also K'o and La Sufricaya.

*Intersite locations and contexts:* Distribution of Reforma Incised unsurprisingly corresponds to distribution of Savanna Orange. It appears at Uaxacatun (Smith and Gifford 1966:161), Barton Ramie (Gifford 1976:75-77), and Seibal (1975:74).

Illustration: 5.9h-j

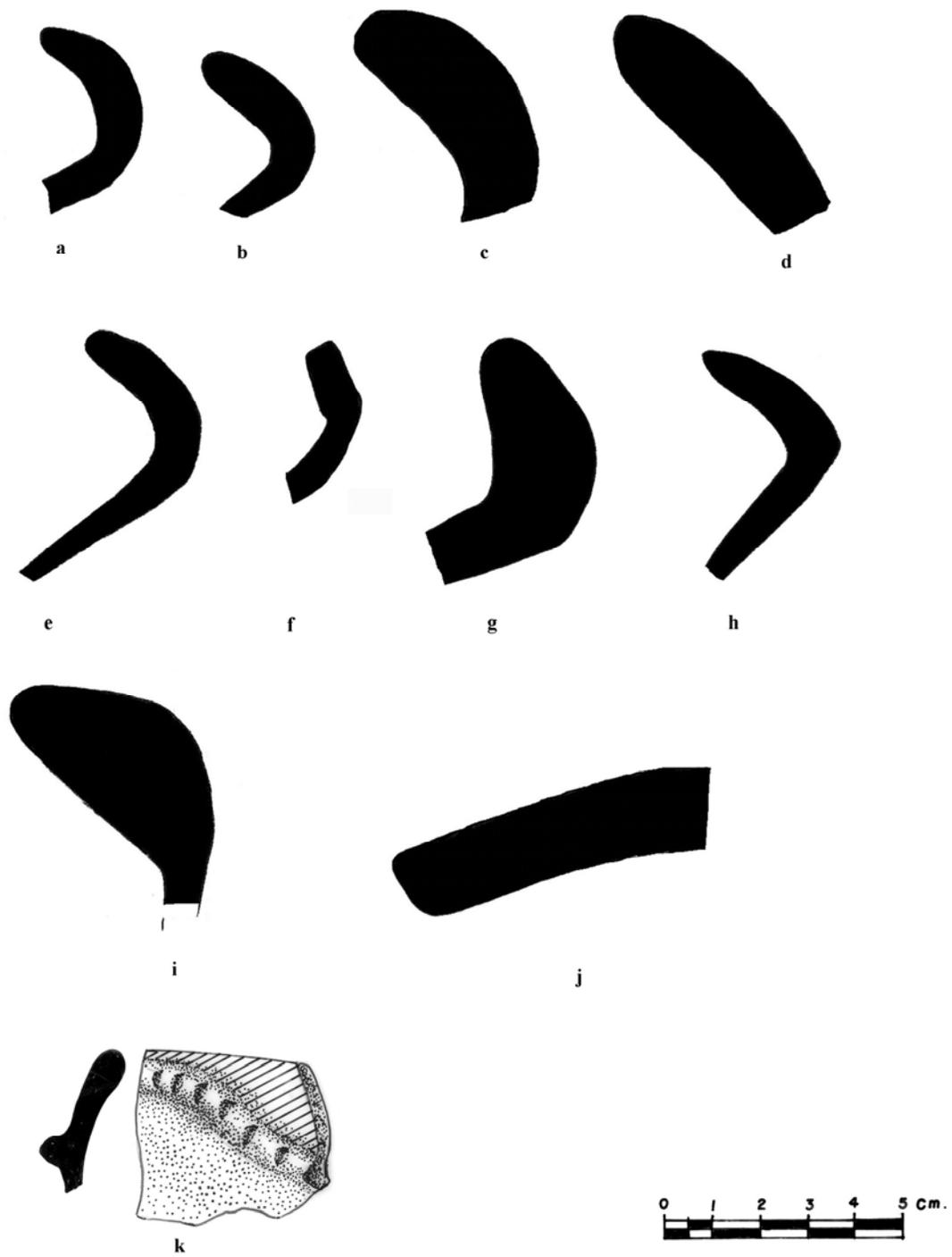


Figure 5.6 Ixim/Late Eb complex ceramics (a-j, Achiotes Unslipped: Variety Unspecified; k, Chacchinic Red on Orange-Brown: Variety Unspecified)

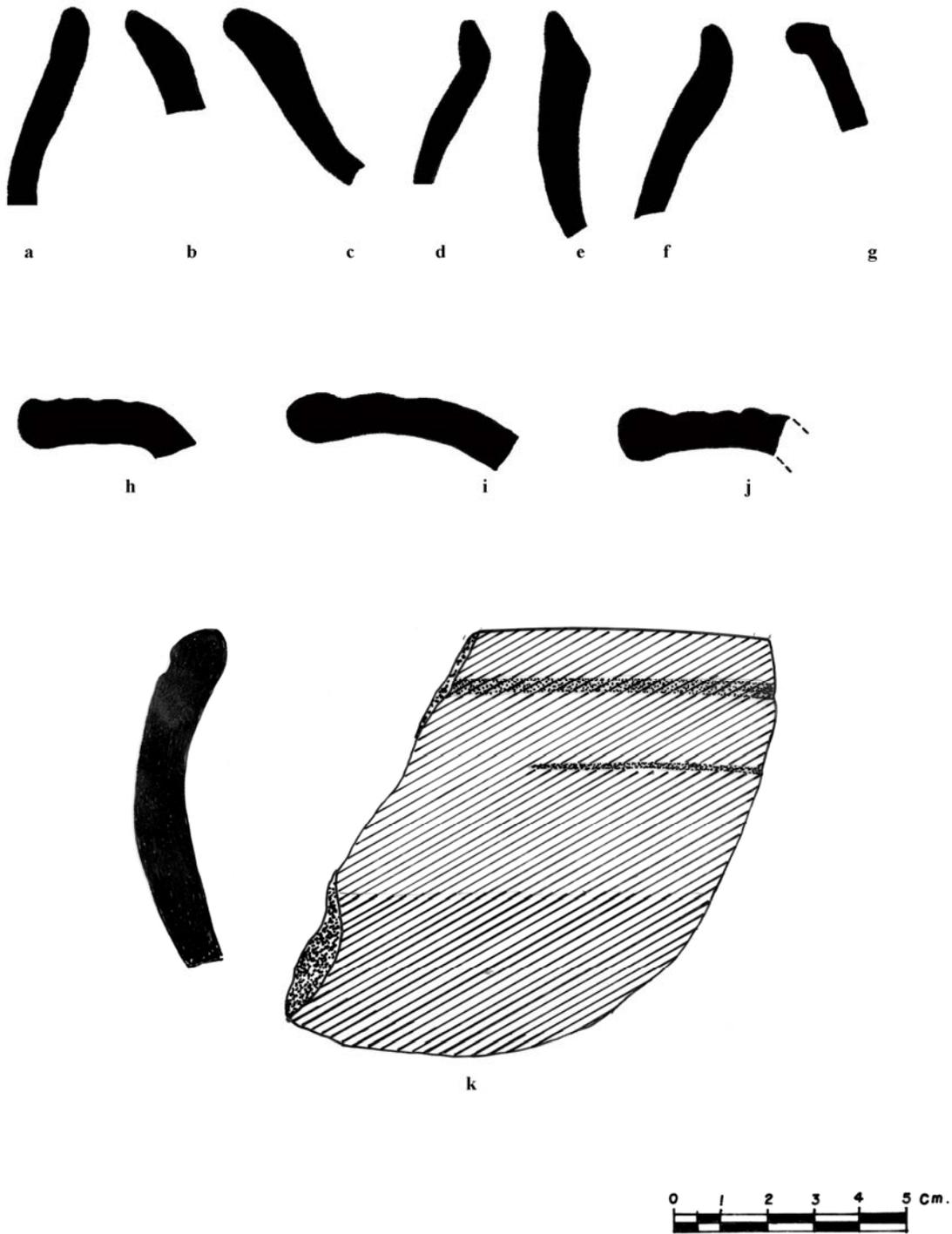


Figure 5.7 Ixim/Late Eb complex ceramics (a-g, Joventud Red: Variety Unspecified; h-k, Guitarra Incised: Variety Unspecified)

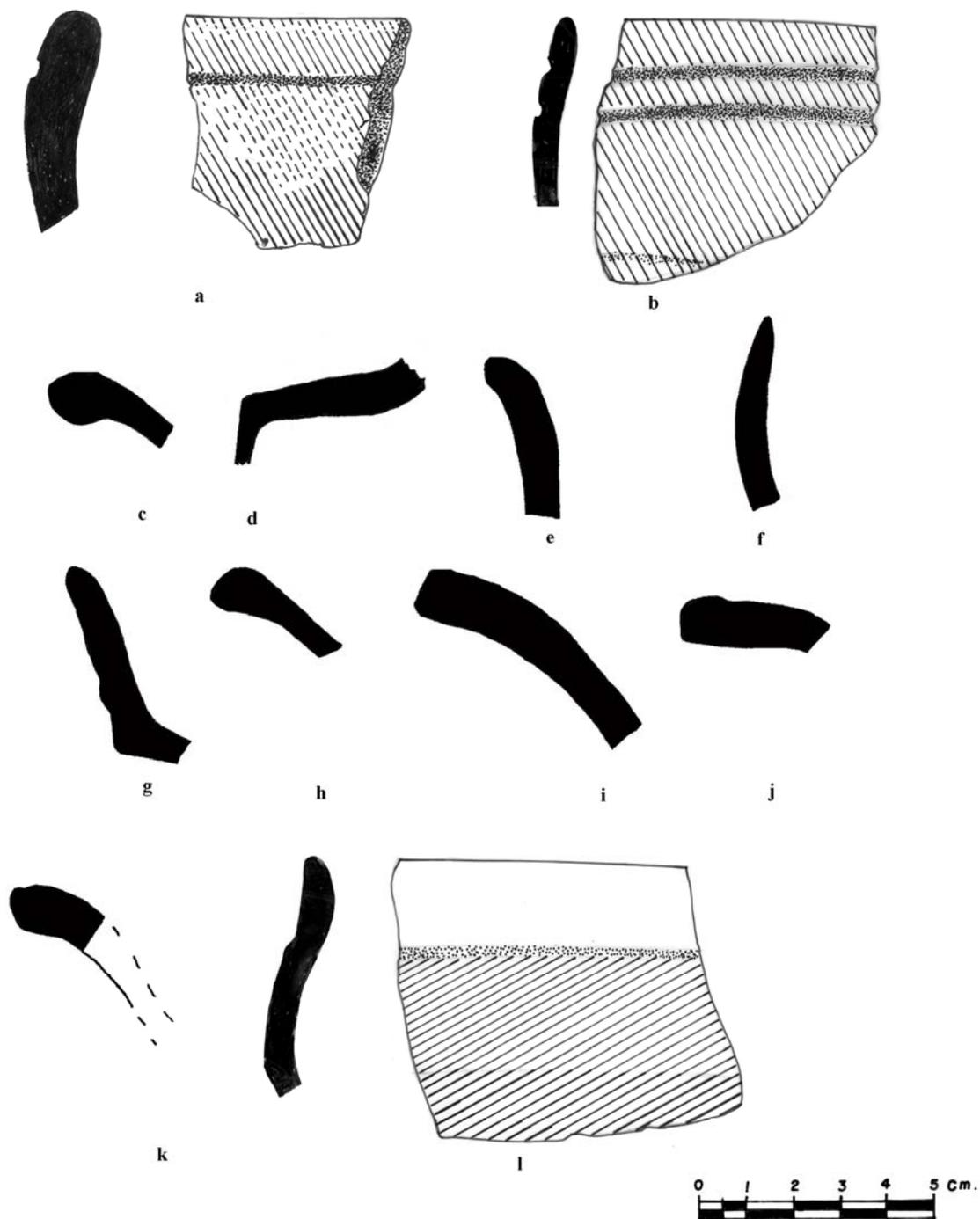


Figure 5.8 Ixim/Late Eb complex ceramics (a-b, Guitarra Incised: Variety Unspecified; c-d, Pital Cream: Variety Unspecified; e-i, l, Muxanal Red on Cream: Variety Unspecified; j-k, Muxanal Red on Cream Incised: Variety Unspecified)



Figure 5.9 Ixim/Late Eb complex ceramics (a-b, Deprecio Incised: Variety Unspecified; c, Centenarrio Fluted: Variety Unspecified; d-g, Savanna Orange: Variety Unspecified; h-j, Reforma Incised: Variety Unspecified)

## **YAX TE/MAMOM: LATE MIDDLE PRECLASSIC PERIOD**

Ceramic material of the Yax Te/Mamom complex in the Holmul Region is chronologically and stylistically equivalent to ceramic material of the larger Mamom ceramic sphere of the Late Middle Preclassic period in the Maya lowlands. Three radiocarbon dates anchor the Yax Te/Mamom complex. The first was discussed in the previous section and comes from Cival cache 4 located in the E-Group plaza of Cival (Estrada-Belli 2006b; Estrada-Belli, Bauer, Morgan, and Chavez 2003). Here a cruciform cache was discovered with five pots all stylistically datable to the Yax Te/Mamom complex. The vessels included three Chunhinta Black jars, one Joventud red jar, and one Deprecio Incised jar. Charcoal found within the plaster floor that sealed the cache returned an uncalibrated date of 2520 $\pm$ 40 BP with a 1-sigma range of 790-760 BC or 680-550 BC and a 2-sigma range of 800–520 BC (Estrada-Belli 2008:44, 2006b:63). The date of deposition possibly occurred somewhere between 680-600 BC. The complex gives way to the Itzamkanak/Chicanel complex sometime after 350 BC as a large deposit of Itzamkanak/Chicanel material was found in association with fill covering the mask of substructure 1 of Building B, Group II at Holmul. Here, a piece of charcoal embedded within the mask was used to date its construction. The charcoal returned an uncalibrated date of 2300 $\pm$ 40 BP with a 1-sigma range of 400-340 BC leading to a probable construction date of 350 BC (Estrada-Belli 2008:15). Finally, one more carbon date, this time embedded in the stucco of northern mask 1 of the Phase 4 construction of Structure 1 atop Group I at Cival produced an uncalibrated date of 2170 $\pm$ 40 BP with a 1-sigma range of 260-160 BC and 2-sigma range of 360-90 BC leading to a probable construction event around 200-100 BC (Estrada-Belli 2006b:65). This mask was also sealed by an almost exclusive deposit of Itzamkanak/Chicanel ceramics. Therefore we know the Yax Te/Mamom complex must have disappeared sometime

around 350-300 BC. These dates compare well to other sites in the Maya lowlands (Adams 1971; Culbert 1993; Forsyth 1989; Gifford 1976; Kosakowsky 1987; Smith 1955).

Yax Te/Mamom complex material represents a stark break in production modes between the succeeding K'awil/Early Eb and Ixim/Late complexes in certain types. These types include Joventud Red, Guitarra Incised, Muxanal Red-on-Cream, and Muxanal Red-on-Cream Incised. New types of the Yax Te/Mamom complex include Pital Cream, Paso Danto Incised and Tierra Mojada Resist. Paste modes change dramatically in the types mentioned above in that there is a shift away from the use of volcanic tempered clays to paste recipes based principally on carbonate inclusions and often sherd or grog. Surface finish also changes dramatically in that there is a shift away from the thin, flakey, glossy slips of the Ixim/Late Eb types to a thick waxy slip more common to Mamom material at sites in other areas of the lowlands. Decorative modes also change once again, especially incision, in there appears to be a shift away from pre-slip groove-incision toward preslip fine-line incision. This occurs on the Guitarra Incised and Muxanal Red-on-Cream Incised varieties. Finally, form modes change gradually once again. Specifically, the rims on bowls or dishes with gradually wide everted rims become slightly smaller and more varied – beginning to resemble the multiple manifestations of everted rim forms of Sierra Red during the succeeding Itzamkanak/Chicanel complex.

Noted in the earlier discussion of Ixim/Late Eb complex material, Yax Te/Mamom is problematic in that the types of ceramics that constitute this complex are very rare in the Holmul Region. Also, it is often the case that archaeologists have discovered deposits of Ixim/Late Eb material stratigraphically below or mixed in small quantities with succeeding Itzamkanak/Chicanel material – all of this with no sign of Yax Te/Mamom material. This has led me to formulate two contradicting opinions about Yax Te/Mamom complex material. The

first is that the complex exists only at certain sites during the years 600-350 BC and therefore is not found in every context dating to this time in the Holmul Region. The second is that there is not an actual Yax Te/Mamom complex in the Holmul Region. Instead, the waxy grog tempered ceramics that I am now classifying as Yax Te/Mamom material may have been part of a competing production system during the Late Middle Preclassic period. That is, ceramics of the Ixim/Late Eb complex may carry over into the Late Middle Preclassic and change gradually up until the Itzamkanak/Chicanel complex begins somewhere around 350 BC. The Itzamkanak/Chicanel complex clearly has its origins in the material of the Yax Te/Mamom complex (discussed in the next section of this chapter) and may have been chosen by Holmul Region potters to carry on through the Late Preclassic period. Again, only further excavation and ceramic analysis in the area will lead me to support more strongly one opinion over the other. Because the sample is so small and poorly defined at this time, there are no strong counts associated with Yax Te/Mamom complex material. As a general note, some types and varieties from the Ixim/Late Eb complex carry over into the Yax Te/Mamom complex and are listed below although their type descriptions are not included here, but in the previous section.

## **UAXACTUN UNSLIPPED WARE**

### Achiotes Ceramic Group

Achiotes Unslipped: Variety Unspecified

### Jocote Ceramic Group

Jocote Orange-Brown: Variety Unspecified

Chacchinic Red on Orange-Brown: Variety Unspecified

## **FLORES WAXY WARE**

### Joventud Ceramic Group

Joventud Red: Variety Unspecified

Joventud Red: Joventud Variety

Guitarra Incised: Variety Unspecified

Guitarra Incised: Guitarra Variety

Desvario Chamfered: Variety Unspecified

### Tierra Mojada Group

Tierra Mojada Resist: Tierra Mojada Variety

### Pital Ceramic Group

Pital Cream: Pital Variety

Paso Danto Incised: Paso Danto Variety

Muxanal Red on Cream: Variety Unspecified

Muxanal Red on Cream: Muxanal Variety

Muxanal Incised: Variety Unspecified

Muxanal Incised: Muxanal Incised Variety

### Chunhinta Ceramic Group

Chunhinta Black: Variety Unspecified

Deprecio Incised: Variety Unspecified

Centenario Fluted: Variety Unspecified

### Variegated Ceramic Group

Variegated: Variety Unspecified

Variegated Incised: Variety Unspecified

**MARS ORANGE WARE**

Savanna Orange: Variety Unspecified

Reforma Incised: Variety Unspecified

## **FLORES WAXY WARE**

### **Joventud Ceramic Group**

#### **Joventud Red: Joventud Variety**

*Sample:*

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:158, 170).

*Principal identifying modes:* 1) Lustrous waxy finish, 2) red slip, 3) calcite and grog based paste  
4) bowls or dishes with everted rims, 5) bowls with flaring or outcurving sides.

*Paste, firing, and temper:* The major paste variant is more similar to Late Preclassic period Sierra Red. These pastes cluster around yellow (10YR6/4) and are carbonate based with various inclusions: including crystal calcite, sherd, shell, and burnt organics. Firing cores are frequent. This type of paste correlates to a thick waxy orange-red slip.

*Surface finish and decoration:* Surfaces are well smoothed, slipped an orange red (2.5YR5/8) and polished to a lustrous “waxy” shine.

*Form:* 1) Round-sided bowl, 2) large markedly incurved bowl (tecomate) with bolstered rim, 3) jars with vertical necks, 4) small, thin-walled, bowls with flaring or outcurving sides, direct rim, and rounded lip, 5) everted rim dishes with flat base, 6) recurving bowls with direct rim and rounded lip.

*Intrasite locations and contexts:* Joventud Red: Joventud Variety is currently found at Cival and in Building B, Group II of Holmul in the 2004-2005 samples. Joventud Variety also appears in small quantities at Holmul, La Sufricaya, and K'o.

*Intersite locations and contexts:* Joventud Red: joventud Variety appears at Uaxactun (Smith and Gifford 1966:158), Tikal (Culbert 1993:13; n.d), Barton Ramie (Gifford 1976:78-79), Altar de Sacrificios (Adams 1971: 20), Becan (Ball 1977: 17-18), El Mirador (Forsyth 1989:13-15), Cuello (Kosakowsky 1987: 42-43), and the Petexbatun Region (Foias 1996:216-219).

*Illustration:* ----

### **Guitarra Incised: Guitarra Variety**

*Sample:*

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:158, 170).

*Principal identifying modes:* 1) Red to red-orange slip, 2) lustrous waxy surface treatment, 3) fine line pre-slip incision in geometric patterns, 4) dishes or bowls with gradually wide everted rims.

*Paste, firing, and temper:* The major paste variant is more similar to Late Preclassic period Sierra Red. These pastes cluster around yellow (10YR6/4) and are carbonate based with various inclusions: including crystal calcite, sherd, shell, and burnt organics. Firing cores are frequent. This type of paste correlates to a thick waxy orange-red slip.

*Surface finish and decoration:* Surfaces are well smoothed, slipped an orange-red (2.5YR5/8) and polished to a lustrous “waxy” shine. Fine-line pre-slip incision of cross-hatching or other geometric designs appears on incurving rim bowls or slightly everted-rim dishes.

*Form:* 1) Incurving rim dishes or plates with direct rim, round lip, and flat base, 2) round-sided bowls with direct rim and rounded lip, 3) markedly incurved bowls with direct rim and rounded

lip 4) everted rim dishes with rounded lip and flat base, 5) jars with vertical neck, direct rim, and rounded lip.

*Intrasite locations and contexts:* Rim sherds of Guitarra are easily identifiable and come from excavations at Cival, Holmul, La Sufricaya, and K'o.

*Intersite locations and contexts:* Guitarra Incised: Guitarra Variety appears at Uaxactun (Smith and Gifford 1966:170), Altar de Sacrificios (Adams 1971: 42), Seibal (Sabloff 1975:62, 65-66), Becan (Ball 1977:82), Cuello (Kosakowsky 1987:43-45), El Mirador (Forsyth 1989:15-16), Tikal (Culbert 1993:13; n.d), and the Petexbatun Region (Foias 1996:219-223).

*Illustration:* ----

## **Tierra Mojada Ceramic Group**

### **Tierra Mojada Resist: Tierra Mojada Variety**

*Sample:* 8 rims, 10 total, 100% of group

*Whole Vessels:*

*Established:* Sabloff (1975:71-73) at Seibal

*Principal identifying modes:* 1) Orange-red slip with cream or yellow-brown resist splotches, 2) bowls with flaring walls.

*Paste, firing, and temper:* Paste is similar to Joventud Red: Joventud Variety. Texture is medium with mixed carbonate (crystal calcite, white calcite), sherd, and burnt organic inclusions. Color is yellow (10YR6/4).

*Surface finish and decoration:* Vessel surfaces are smoothed and slipped an orange-red (2.5YR5/8). Patches or streaks of cream or yellow (10YR7/6) slip appear from the resist

process. These patches more than likely represent a cream underslip is present. Tierra Mojada sherds are highly polished and have the characteristic waxy feel of later Preclassic ceramics.

*Form:* Tierra Mojada sherds appear in only one form, bowls or dishes with flaring walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* Tierra Mojada appears exclusively at contexts in Cival.

*Intersite locations and contexts:* Tierra Mojada resist is another strong marker of the Late Middle Preclassic Mamom ceramic sphere in the lowlands and can be found at Uaxactun (personal observation, IDAEH ceramoteca), Tikal in the form of Ahchab Red-on-Buff (Culbert n.d.), Nakbe (Forsyth 1993:39), Altar de Sacrificios (personal observation, IDAEH ceramoteca), and Seibal (Sabloff 1975:71-73, Figures 109-115).

*Comment:* Tierra Mojada Resist shares many similarities with paste, form, and surface modes of the uncommon varieties of the Joventud Group. It is possible that Tierra Mojada was also part of that underrepresented second tradition of ceramic manufacture during the Late Middle Preclassic period at Cival.

*Illustration:* --

## **Pital Ceramic Group**

### **Pital Cream: Variety Unspecified**

*Sample:* 89 rims, 214 total, 56% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:161, 170).

*Principal identifying modes:* 1) Lustrous waxy surface finish, 2) thick cream slip, 3) bowls or dishes with flaring walls and either direct or gradually everted rim.

*Paste, firing, and temper:* Medium to fine textured paste. Carbonate based paste with crystal calcite, sherd, and burnt organic inclusions. Paste color is a light yellow (10YR7/4), buff (10YR8/3), or even pink (5YR7/4). Firing cores are uncommon, but are present.

*Surface finish and decoration:* Vessel surfaces are well-smoothed and polished. Slip is thick and usually a strong white (10YR8/1) color. Crackling or crazing of slip is common. Fire clouds are also common.

*Form:* 1) Dishes and bowls with flaring walls, direct rim, and rounded lip, 2) bowls or dishes with flaring walls, gradually everted rim, and rounded lip, 3) possible mushroom stand.

*Intrasite locations and contexts:* With the exception of one body sherd at K'o, Pital cream is found exclusively in excavation contexts at Cival.

*Intersite locations and contexts:* Pital Cream is found at Uaxactun (Smith and Gifford 1966:170), Barton Ramie (Gifford 1976:81), Altar de Sacrificios (Adams 1971:25), Seibal (Sabloff 1975:62, 66-67), Becan (1977:36), Cuello (Kosakowsky 1987:48-49), El Mirador (Forsyth 1989), and the Petexbatun Region (Foias 1996:236-238)

*Comment:* Production modes of Pital are much more similar to the larger lowland modes found in the lesser frequent potential varieties of Joventud Group ceramics than the older Cival I modes. The choice of carbonate based pastes with sherd temper and the waxy surface finish make this type a precursor to the later Flor Cream of the Cival III Complex. Differences between Flor and Pital are slight and involve variations in form (Pital Cream forms are smaller flaring walled bowls and dishes while Flor Cream forms are larger bowls often with wider

everted rims and bead lips), paste (Pital is the only type to be made from a characteristic pink paste) and surface finish (Pital cream slip is much whiter than the more yellow Flor Cream).

*Illustration:* 5.8c-d

### **Paso Danto Incised: Paso Danto Variety**

*Sample:* 9 rims, 14 total, 4% of group

*Whole Vessels:*

*Established:* Smith and Gifford (1966:160-161, 170) at Uaxactun.

*Principal identifying modes:* 1) Thick white cream slip, 2) lustrous waxy vessel surfaces, 3) pre-slip fine line incision, 4) bowls or dishes with everted rims

*Paste, firing, and temper:* Paste is identical to Pital Cream. Medium to fine textured paste.

Carbonate based paste with crystal calcite, sherd, and burnt organic inclusions. Paste color is a light yellow (10YR7/4), buff (10YR8/3), or even pink (5YR7/4). Firing cores are uncommon, but are present.

*Surface finish and decoration:* Surface decoration is identical to Pital Cream with the addition of pre-slip fine line incision on wide-everted rims. Vessel surfaces are well-smoothed and polished.

Slip is thick and usually a strong white color (10YR8/1). Crackling or crazing of slip is common. Fire clouds are also common. Incision takes the form of line or double-line breaks and simple geometric patterns created by one or two lines.

*Form:* 1) Bowls or dishes with flaring walls and everted or wide-everted rims, rounded lips sometimes with beads, 2) bowl with rounded sides, direct rim, and rounded lip (very rare, only one example).

*Intrasite locations and contexts:* Found exclusively from contexts at Cival.

*Intersite locations and contexts:* Paso Danto is another strong marker of the Mamom Sphere in the lowlands and can be found at Uaxactun (Smith 1955: Figures 69c 11 and 77a 7), Seibal (Sabloff 1975:67), El Mirador (Forsyth 1989:19), Nakbe (Forsyth 1993), Becan (Ball 1977:83), and Barton Ramie (Gifford 1976:81-82).

*Illustration:* --

### **Muxanal Red-on-Cream: Muxanal Variety**

*Sample:*

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:160, 170).

*Principal identifying modes:* 1) Red colored slip on vessel exteriors and cream colored slip on vessel interiors or vice versa, 2) dichrome effect created by single band of cream or red slip on and below lip on vessel exterior, 3) bowls with flaring walls and direct or everted rims.

*Paste, firing, and temper:* The major paste variant is similar to Joventud Red: Joventud Variety. These pastes cluster around yellow (10YR 6/4) and are carbonate based with various inclusions: including crystal calcite, sherd, shell, and burnt organics. Firing cores are frequent. This type of paste correlates to a thick waxy red slip and thick waxy cream slip, both highly polished.

*Surface finish and decoration:* Unlike Muxanal Red-on-Cream: Variety Unspecified surface decoration here consists of two actual red and cream slips. Exteriors are one color whereas interiors are another – or vice versa. The interior color may extend over the lip and slightly down exterior rims. Slips are thick and waxy and polished to a high shine. Cream (10YR8/1) slip may be applied first and a red slip is applied over it.

*Form:* 1) Bowls with flaring sides, direct or gradually everted rim, and rounded lip, and flat base, 2) round-sided bowls with direct rim and rounded lip, 3) rare “cuspidor” forms.

*Intrasite locations and contexts:* With the exception of three sherds found at the site of Holmul, Muxanal Red-on-Cream is found exclusively at Cival.

*Intersite locations and contexts:* Muxanal Red on Cream appears at Uaxacatun (Smith and Gifford 1966:170), Altar de Sacrificios (Adams 1971:27), El Mirador (Forsyth 1989:18-19), Yaxha-Sacnab (Rice 1979:22), Calakmul (Dominguez-Carrasco 1994:27), and the Petexbatun Region (Foias 1996:244-246). It is placed in the Muxanal ceramic group at Becan (Ball 1977:48) and Cuello (Kosakowsky 1987:49-51).

*Illustration:* 5.8e-i, 1

### **Muxanal Red-on-Cream Incised: Muxanal Incised Variety**

*Sample:*

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Red colored slip on vessel exteriors and cream colored slip on vessel interiors or vice versa, 2) dichrome effect created by single band of cream or red slip on and below lip on vessel exterior, 3) fine line incision on vessel rim and lip, 4) bowls with flaring walls and direct or everted rims.

*Paste, firing, and temper:* The major paste variant is similar to Joventud Red: Joventud Variety. These pastes cluster around yellow (10YR 6/4) and are carbonate based with various inclusions: including crystal calcite, sherd, shell, and burnt organics. Firing cores are frequent. This type of paste correlates to a thick waxy red slip and thick waxy cream slip, both highly polished.

*Surface finish and decoration:* Unlike Muxanal Red-on-Cream: Variety Unspecified surface decoration here consists of two actual red and cream slips. Exteriors are one color whereas interiors are another – or vice versa. The interior color may extend over the lip and slightly down exterior rims. Slips are thick and waxy and polished to a high shine. Cream (10YR8/1) slip may be applied first and a red slip is applied over it. Incision on this variety of Muxanal Incised is fine-line and pre-slip. It usually appears on the rim of gradually wide-everted or slightly everted rim dishes. It also occurs mostly in bands, but can be seen in double-line-break patterns as well.

*Form:* Fine-line incised vessels with carbonate pastes appear in the following forms: 1) bowls with flaring sides, direct or gradually everted rim, and rounded lip.

*Intrasite locations and contexts:* Muxanal Red-on-Cream Incised is found exclusively at Cival.

*Intersite locations and contexts:* Muxanal Red on Cream incised is rather rare in the lowlands.

Ball (1977:83) classifies it as Loche Incised-dichrome: Loche Variety at Becan. However, form modes are nothing like the Holmul material. Foias (1996:248-250) describes an incised Muxanal type in the Petexbatun Region, but leaves the types name unclassified due to the small sample.

Form and surface modes are not similar to the Holmul material here either.

*Illustration:*

## **ITZAMKANAK/CHICANEL COMPLEX: LATE PRECLASSIC PERIOD**

The Itzamkanak/Chicanel complex is part of the larger Late Preclassic ceramic sphere in the Maya lowlands originally classified as Chicanel by Smith (1955) at Uaxactun. At other larger intensively investigated sites in the Maya lowlands, Late Preclassic complexes associated with the Chicanel sphere date between 300 BC and AD 300 (Adams 1971; Culbert 1993; Foias 1996; Fosyth 1989; Kosakowsky 1987; Robertson-Freidel 1980; Sabloff 1975; Smith 1955). Noted in the previous chapter two radiocarbon dates anchor the relative beginnings of the Itzamkanak/Chicanel complex. One date comes from a piece of charcoal embedded within the stucco mask on the Phase 1 substructure of Building B, Group II at Holmul. The charcoal returned an uncalibrated date of 2300 $\pm$ 40 BP with a 1-sigma range of 400-340 BC leading to a probable construction date of 350 BC (Estrada-Belli 2008:15). Another carbon date, this time embedded in the stucco of northern mask 1 of the Phase 4 construction of Structure 1 atop Group I at Cival produced an uncalibrated date of 2170 $\pm$ 40 BP with a 1-sigma range of 260-160 BC and 2-sigma range of 360-90 BC leading to a probable construction event around 200-100 BC (Estrada-Belli 2006b:65). This mask was also sealed by an almost exclusive deposit of Itzamkanak/Chicanel ceramics. Another important architectural or historical markers associated with Itzamkanak/Chicanel material includes Cival Stela 2 which was stylistically dated to 300-200 BC (Estrada-Belli, Grube, Wolf, Gardella, and Guerra-Librero 2003).

Based on ceramic modes, some ceramicists have successfully managed to break this larger Late Preclassic Complex into smaller segments (see Culbert n.d., 1993; Robertson-Freidel 1980). Unfortunately, at this point in the analysis a lack of time and reliable stratigraphic deposits have prevented me from creating accurate definable phases within the larger Late Preclassic Complex in the Holmul Region. Therefore, ceramics exhibiting modes common to

Late Preclassic ceramics elsewhere in the lowlands date to somewhere within the fairly long six hundred year time span of 350 BC – AD 250 when K'ahk/Tzakol 1 complex ceramics begin to appear. Itzamkanak/Chicanel material is found at every site in the Holmul Region and is possibly evidence of an occupation increase during this time. The total amount of Late Preclassic material analyzed for the purposes of this study is 22,798 sherds and 8 whole vessels.

In many ways ceramic modes of the Itzamkanak/Chicanel complex represent a continuation of those present in the rare, but easily identifiable, Yax Te/Mamom complex material. Slipped ceramics show clear resemblance to contemporaneous material in other areas of the lowlands and embody all of the characteristics of Paso Caballo Waxy Ware. The older tradition of K'wail/Early Eb and Ixim/Late Eb marked by volcanic tempered pastes, incurving bowl forms, a low gloss surface finish, and thin flakey slips is completely abandoned in the Itzamkanak/Chicanel complex. Volcanic tempered pastes become almost non-existent. Carbonate based pastes with crystal calcite, sherd, and burnt organic inclusions predominate. Form classes multiply dramatically within serving wares, and unslipped jars become more frequent. Slips are thick and polished to a high shine. They also exhibit that characteristic greasy or waxy feel of Paso Caballo Waxy Ware. These modes obviously grow out of those associated with the less frequent Yax Te/Mamom complex material. Whether these changes in production patterns were related to larger pan-lowland changes in political, economic, social, or even religious phenomena is currently unknown.

## **UAXACATUN UNSLIPPED WARE**

### Achiotes Ceramic Group

Achiotes Unslipped: Variety Unspecified

Achiotes Unslipped: Unnamed Scratched Variety

Sapote Striated: Variety Unspecified

## **PASO CABALLO WAXY WARE**

### Sierra Ceramic Group

Sierra Red: Sierra Variety

Laguna Verde Incised: Variety Unspecified

Laguna Verde Incised: Groove-Incised Variety

Altamira Fluted: Variety Unspecified

Society Hall: Variety Unspecified

### Polvero Ceramic Group

Polvero Black: Variety Unspecified

Lechugal Incised: Variety Unspecified

### Boxcay Ceramic Group

Boxcay Brown: Variety Unspecified

### Flor Ceramic Group

Flor Cream: Variety Unspecified

Accordion Incised: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Achiotes Ceramic Group

#### Achiotes Unslipped: Variety Unspecified

*Sample:* 586 rims, 3880 total, 74% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:154, 170)

*Principal identifying modes:* 1) Unslipped surface, 2) coarse tempered paste, and 3) small globular short neck jars.

*Paste, firing, and temper:* Coarse to medium textured. Paste is yellow (10YR6/4) or gray (10YR5/1). Carbonate based with large crystal calcite inclusions. Firing cores can occur.

*Surface finish and decoration:* Smoothed and unslipped vessel exteriors and interiors. Color is similar to paste color: mostly gray (10YR5/1).

*Form:* 1) Small short-neck outcurved rim jars 2) large everted rim jar, 3) possible lid (very rare – only one example), 4) strap handles are common on jar forms

*Intrasite locations and contexts:* At this point in the analysis Achiotes Unslipped is relatively indistinguishable from any other Preclassic unslipped type (e.g. Paila Unslipped). Because of this, all Preclassic unslipped pottery will preliminarily be classified as Achiotes. Therefore, Achiotes Unslipped is found wherever Late Middle Preclassic and Late Preclassic sherds are encountered. Achiotes Unslipped appears in largest quantities in Cival excavations and contexts from Building B, Group II at Holmul.

*Intersite locations and contexts:* Achiotes Unslipped appears at Uaxactun (Smith and Gifford 1966: 154), Barton Ramie (Gifford 1976:108), Altar de Sacrificios (Adams 1971:18), Becan (Ball 1977:8), Seibal (Sabloff 1975:46), the Valle de Dolores (Laporte et al 1993:65-66), El Mirador (Forsyth 1989:49), Tikal (Culbert n.d.), and the Petexbatun Region (Foias 1996:271-275).

*Illustration:* 5.6a-j

### **Achiotes Unslipped: Scratched Variety**

*Sample:* 5 rims, 149 total, 3% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Unslipped surface, 2) coarse tempered paste, 3) small globular short neck jars, 4) small strap handles, 5) poorly executed vertical lines of scratching on vessel exteriors.

*Paste, firing, and temper:* Same as Achiotes Unslipped. Coarse to medium textured. Paste is yellow (10Y6/4), gray (10YR4/1), or pink (5YR6/3). Carbonate based with large crystal calcite inclusions. Firing cores can occur.

*Surface finish and decoration:* Same as Achiotes unslipped with the addition of crude long vertical scratch marks beginning at the base of the neck and extending down vessel exteriors.

*Form:* 1) Small short-neck outcurved rim jars 2) large everted rim jar, 3) possible lid (very rare – only one example)

*Intrasite locations and contexts:* Achiotes Unslipped: Scratched Variety appears in largest quantities in Cival excavations, but a handful of sherds appears in contexts from Building B, Group II at Holmul.

*Intersite locations and contexts:* I have not seen mention of this variety of Achiotes in the ceramic literature of the lowlands. It may have been classified as Sapote Striated at many sites and therefore overlooked.

*Comments:* This variety appears in Ixim/Late Eb complex contexts as well as Itzamkanak/Chicanel. It is made on a variety of pastes, but most commonly appears on pink or red pastes with carbonate inclusions: specifically, coarse grains of crystal calcite.

*Illustration:* --

### **Sapote Striated: Variety Unspecified**

*Sample:* 21 rims, 1186 bodies, 23% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:162, 170)

*Principal identifying modes:* 1) short neck globular jars, 2) unslipped surfaces with fine to medium striation on vessel exteriors.

*Paste, firing, and temper:* Paste is coarse to medium textured with coarse crystal calcite inclusions. Two colors of this variant exist, one fires to a dark gray (10YR4/1) while the other appears orange (7.5YR6/8). Further analysis will determine if this may be the basis for two varieties of Sapote Striated.

*Surface finish and decoration:* Vessel surfaces are smoothed and remain unslipped and appear the color of pastes: gray (10YR4/1) orange (7.5YR6/8). Striated lines occur in multiple

directions, but more detailed analysis may reveal specific patterns. Lines are relatively thin, shallow, and close together. This is in contrast to later Triunfo jars with their characteristic bold, deep, and more widely separated striations

*Form:* Form class includes relatively small globular jars with short outflaring necks, direct rim, and rounded lip.

*Intrasite locations and contexts:* Sapote Striated is found in many Late Preclassic contexts including Cival, Ko, Holmul, and La Sufricaya.

*Intersite locations and contexts:* Sapote Striated is also found at Uaxactun (Smith and Gifford 1966:162, 170), Barton Ramie (Gifford 1976:105), Altar de Sacrificios (Adams 1971:19), Becan (Ball 1977:10, 13), Seibal (Sabloff 1975:77), El Mirador (Forsyth 1989:46), Tikal (Culbert 1993: 14; n.d.), the Petexbatun Region (Foias 1996:275-279), Cuello (Kosakowsy 1987:56), and Cerros (Robertson-Freidel 1980: 106-112).

*Illustration:* 5.10

## **PASO CABALLO WAXY WARE**

### **Sierra Ceramic Group**

#### **Sierra Red: Sierra Variety**

*Sample:* 2485 rims, 10743 total, 95% of group

*Whole Vessels:* c5641, c5643, c5645, c5651, AMNH 30.0-6525, SF#(CIV.T.30.04),

SF#(CIV.L.06.00), SF#(CAR.STR4.LT.01), SF#(CAR.STR.4.T1), SF# CT.08.22.02.02.01.02,

SF# STP.01.05.02.01

*Established:* Smith and Gifford at Uaxactun (1966:163, 170).

*Principal identifying modes:* 1) Lustrous “waxy” surface treatment, 2) red slip, 3) everted rim bowls and dishes, 4) bowls or dishes with occasional medial flanges.

*Paste, firing, and temper:* Paste varies greatly across the Holmul Region and could point to different production units centered around specific sites. Paste color ranges from red-orange (7.5YR6/8) (at K’o) to gray (10YR5/1), and yellow-brown (10YR7/4) (at Holmul, La Sufricaya, and Cival). Temper is carbonate with large crystalline inclusions, sherd, calcite, occasional burnt organics, shell, and large pieces of quartz.

*Surface finish and decoration:* Surfaces are well smoothed and burnished. Slip is a thick deep red (10R4/8, 2.5YR4/6, 2.5YR4/8) and “waxy”. Fire clouding is extremely common and can produce often three or more colors on the same vessel or even sherd (red, black, and buff). This has often led to what some scholars consider the “misclassification” of Sierra Red to Polvero Black or even Flor Cream (see Demarest 1984: 71-72). For the purposes of this analysis, sherds that were completely variegated or “mottled” were classified as Variegated and not placed in the Sierra, Polvero, or Flor Groups. As a note, the most common form of fire-clouding is a cream or tan color on the bases and lower walls of serving vessels. Slip crackling or crazing is common.

*Form:* Forms vary greatly in the Holmul Region but constitute 8 major classes: 1) bowls or dishes with flaring or outcurving walls, direct or slightly everted rim, and rounded lip, and flat base, 2) bowls with flaring walls, incurving rim, and rounded lip, 3) bowls with round sides, direct rim, and rounded lip, 4) bowls with z-angles, direct rim, and rounded lip, 5) bowls with lateral angles, direct rim, and rounded lip, 6) vases with vertical walls, gradually everted rim, and rounded lip, 7) mushroom composite form, and 8) outcurved short neck jars.

*Intrasite locations and contexts:* Sierra Group ceramics are found at every site in the Holmul Region to date.

*Intersite locations and contexts:* Sierra Red appears at Uaxactun (Smith and Gifford 1966:163), Barton Ramie (Gifford 1976:85-90), Altar de Sacrificios (Adams 1971:21), Becan (Ball 1977:18, 21), Seibal (Sabloff 1975:77-78), El Mirador (Forsyth 1989:21-27), Tikal (Culbert 1993:14; n.d.), the Petexbatun Region (Foias 1996:282-288), Cuello (Kosakowsy 1987:58-62), and Cerros (Robertson-Freidel 1980: 67-84).

*Comment:* Because fire-clouding is so common among Sierra Group sherds, it is possible that this may have been intentional on the part of Late Preclassic potters. The creation of variegated surface colors from differential firing is a tradition that begins in the Middle Preclassic in the Holmul Region and continues through to the Terminal Classic. Differential firing was possibly being used as an experimental technique in the Late Preclassic and could have been a fore-runner to the use of multiple slips or paint in the Classic Period.

Upon further analysis, it may be possible to separate Sierra Red into many different types and varieties: including a red and unslipped type, an impressed type, a dichrome type, and appliqué type. The sample numbers for these potential types is so small, however, I do not wish to either create new types for them or relate them to other well established types from other sites at this time. Future work on the sequence and typology will doubtless let me classify this material.

*Illustration:* 4.6-4.10, 4.24, 5.11, H.2, H.6, H.7, H.28

## **Laguna Verde Incised: Variety Unspecified**

*Sample:* 117 rims, 176 total, 1% total

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:159, 170).

*Principal identifying modes:* Lustrous “waxy” surface treatment, 2) red slip, 3) post-slip or pre-slip fine-line incision on vessel surfaces, 4) bowls or dishes with flaring or outcurving sides and slightly everted rim, 5) bowls with medial flanges.

*Paste, firing, and temper:* Variation is similar to Sierra Red: Sierra Variety. That is, paste color ranges from red-orange (7.5YR6/8) (at K’o) to gray (10YR5/1), and yellow-brown (10YR7/4). Temper is carbonate with large crystalline inclusions, sherd, calcite, occasional burnt organics, shell, and large pieces of quartz.

*Surface finish and decoration:* Well-smoothed and burnished surfaces are covered in a lustrous “waxy” deep red (10R4/8, 2.5YR4/6, 2.5YR4/8) slip. Incision is found on walls or medial flanges of vessel exteriors. Fine line incision can be present in the form of bands of lines or simple geometric designs. Slip crackling or crazing is common.

*Form:* 1) Bowls with flaring sides, medial flange, direct rim, and round lip, 2) bowls with flaring or outcurving sides, everted rim, and rounded lip.

*Intrasite locations and contexts:* While Laguna Verde is relatively rare in the Holmul Region, it can be found at contexts from every major site including Cival, Holmul, La Sufricaya, and K’o.

*Intersite locations and contexts:* Laguna Verde also appears at Uaxactun (Smith and Gifford 1966:170), Barton Ramie (Gifford 1976:91), Altar de Sacrificios (Adams 1971:43), Becan (Ball 1977:83), Seibal (Sabloff 1975:78), El Mirador (Forsyth 1989:27-29), Tikal (Culbert 1993:14; n.d.), the Petexbatun Region (Foias 1996:289-292), and Cuello (Kosakowsy 1987:70).

*Illustration:* 5.12, 5.13, 5.14

**Laguna Verde: Groove-Incised Variety**

*Sample:* 43 rims, 45 total, 0.5% of group

*Whole Vessels:*

*Established:* Sabloff at Seibal (1975:80).

*Principal identifying modes:* 1) Lustrous “waxy” surface finish, 2) red slip, 3) rounded bands of groove incision on everted rims or exterior vessel surfaces, 4) bowls or dishes with everted rims.

*Paste, firing, and temper:* Variation is similar to Sierra Red: Sierra Variety. That is, paste color ranges from red-orange (7.5YR6/8) (at K’o) to gray (10YR5/1), and yellow-brown (10YR7/4).

Temper is carbonate with large crystalline inclusions, sherd, calcite, occasional burnt organics, shell, and large pieces of quartz.

*Surface finish and decoration:* Same deep red (10R4/8, 2.5YR4/6, 2.5YR4/8) “waxy” slip and burnished surfaces as Sierra Red. Incision takes the form of pre-slip circumferential deep, rounded, groove incision on vessel exteriors just below the lip and on wide everted rims. Slip crackling or crazing is common.

*Form:* 1) Bowls with flaring walls, everted rim, and rounded lip, 2) bowls with flaring or outcurving walls, wide-everted rim, and rounded lip.

*Intrasite locations and contexts:* Like Laguna Verde: Variety Unspecified, although this type is relatively rare in the Holmul region is appears in Late Preclassic contexts at Cival, Holmul, La Sufricaya, and K’o.

*Intersite locations and contexts:* Laguna Verde: Groove-Incised Variety can be found at Seibal (Sabloff 1975:80-84), the Petexbatun Region (Foiás 1996:292-294), Cuello (Kosakowsky 1987:69-70), and Cerros (Robertson-Freidel 1980:79).

*Illustration:* 5.15

### **Altamira Fluted: Variety Unspecified**

*Sample:* 17 rims, 57 total, 0.5% of group.

*Whole Vessels:* SF#(HOL.GII.STR.F.L.6.0)

*Established:* Smith and Gifford at Uaxactun (1966:154, 170).

*Principal identifying modes:* 1) Lustrous “waxy” vessel surfaces, 2) deep red slip, 3) horizontal fluting, 4) vertical fluting, 5) vertical pre-slip incision, 6) tall vase forms.

*Paste, firing, and temper:* Variation is similar to Sierra Red: Sierra Variety. That is, paste color ranges from red-orange (7.5YR6/8) (at K’o) to gray (10YR5/1), and yellow-brown (10YR7/4). Temper is carbonate with large crystalline inclusions, sherd, calcite, occasional burnt organics, shell, and large pieces of quartz.

*Surface finish and decoration:* Same deep red (10R4/8, 2.5YR4/6, 2.5YR4/8) “waxy” slip and burnished surfaces as Sierra Red. Decoration takes the form of 1) wide pre-slip vertical fluting, 2) wide pre-slip horizontal fluting, or 3) incised pre-slip vertical incision that resembles fluting – on these forms a horizontal chamfer appears at the rim of the vessel on the exterior. Slip crackling or crazing is common.

*Form:* 1) tall vase with composite sides (e.g., recurving), sometimes a chamfer or medial flange near the rim, everted or direct rim, and rounded lip (these forms have vertical fluting or incision,

2) bowls with flaring sides, direct rim, and rounded lip (this form has horizontal fluting and is very rare).

*Intrasite locations and contexts:* Altamira is found mostly at Cival, but also appears at Holmul, and La Sufricaya.

*Intersite locations and contexts:* Alta Mira Fluted can be found at Uaxactun (Smith and Gifford 1966:170), Barton Ramie (Gifford 1976:90-91), Altar de Sacrificios (Adams 1971:48), Seibal (Sabloff 1975:84), El Mirador (Forsyth 1989:31), Tikal (Culbert 1993: Figures 5a-b, 6c, 9b 2-4), and the Petexbatun Region (Foias 1996:294-296).

*Comment:* Future analysis may reveal the analytical ability to separate the larger type of Altamira into three separate varieties based on type of fluting: varieties would include, 1) wide vertical fluting, 1) wide horizontal fluting, and 3) vertical incision that looks similar to fluting.

*Illustration:* 5.16

### **Society Hall: Variety Unspecified**

*Sample:* 169 rims, 385 total, 3% of group

*Whole Vessels:*

*Established:* Gifford at Barton Ramie (1976:90).

*Principal identifying modes:* 1) “Streaky” red slip, 2) “waxy” surface finish, 3) everted rim bowls or dishes.

*Paste, firing, and temper:* Variation is similar to Sierra Red: Sierra Variety. That is, paste color ranges from red-orange (7.5YR6/8) (at K’o) to gray (10YR5/1), and yellow-brown (10YR7/4).

Temper is carbonate with large crystalline inclusions, sherd, calcite, occasional burnt organics, shell, and large pieces of quartz.

*Surface finish and decoration:* Slip color is identical to Sierra Red (10R4/8, 2.5YR4/6, 2.5YR4/8), however, slip is much thinner and brushed over vessel exteriors to create a “streaky” effect. This effect could be achieved by the application of one layer of thin red slip or two applications of slip, one thicker than the other. Slip crackling or crazing is common.

*Form:* Similar to Sierra Red forms. Forms vary greatly in the Holmul Region but constitute 6 major classes: 1) bowls or dishes with flaring or outcurving walls, direct or slightly everted rim, and rounded lip, and flat base, 2) bowls with flaring walls, incurving rim, and rounded lip, 3) bowls with round sides, direct rim, and rounded lip, 4) vases with vertical walls, gradually everted rim, and rounded lip, and 5) outcurved short neck jars.

*Intrasite locations and contexts:* Society Hall is fairly common and appears in Late Preclassic samples from Cival, Holmul, and K’o.

*Intersite locations and contexts:* Society Hall is mostly found in Belize. It appears at Barton Ramie (Gifford 1976:90), Cerros (Robertson-Freidel 1980:74), and Cuello (Kosakowsky 1987:64-68). But it is also reported at Tikal (Culbert n.d.).

*Comment:* The streaky slip on Society Hall sherds appears to be so intentional I agree with Kosakowsky (1987:64-68) and classify it as its own type. Pending further analysis, it may be possible to separate Society Hall into at least three different varieties: including 1) a type variety, 2) a stamped impressed variety, and 3) an incised variety. However, the latter two varieties are so rare (one sherd of each), that I prefer to leave them unclassified at this time.

*Illustration:* 5.17, 5.18

## **Flor Ceramic Group**

### **Flor Cream: Variety Unspecified**

*Sample:* 99 rims, 301 total, 96% of group

*Whole Vessels:* c5649

*Established:* Smith and Gifford at Uaxactun (1966:158, 170).

*Principal identifying modes:* 1) Lustrous “waxy” highly burnished vessel surfaces, 2) thick cream slip, 3) buff colored paste, 4) bowls with flaring walls and everted rim, 5) jars with short outcurving necks.

*Paste, firing, and temper:* Paste is medium textured and carbonate based with crystal calcite, sherd, and sometimes burnt organic inclusions. Color is buff (10YR7/3) or yellow (10YR7/4).

Firing cores are infrequent, but present in some samples.

*Surface finish and decoration:* Vessel surfaces are smoothed and highly polished. Slip is “waxy”, evenly applied, and thick. Cream slip can vary from white (10YR8/1) to yellow (10YR8/3) or tan (7.5YR5/5). Fire clouds are frequent on vessel exteriors.

*Form:* 1) Bowls with outflaring sides, everted rim, and rounded lip sometimes with beads, 2) bowls with outflaring sides, wide-everted rim, and rounded lip, 3) jars with short outcurving neck, direct rim, and rounded lip.

*Intrasite locations and contexts:* Flor Cream is relatively rare in the Holmul Region compared to Sierra and Polvero, but can be found at every site in the region.

*Intersite locations and contexts:* Flor Cream appears at Uaxactun (Smith and Gifford 1966: 170), Barton Ramie (Gifford 1976:95-96), Altar de Sacrificios (Adams 1971:28), Seibal (Sabloff

1975:94, 96), Cuello (Kosakowsky 1987:78-79), El Mirador (Forsyth 1989:39-43), Tikal (Culbert 1993:13; n.d.), and the Petexbatun Region (Foias 1996:303-308).

*Illustration:* 5.19a-g

### **Accordion Incised: Variety Unspecified**

*Sample:* 8 rims, 11 total, 4% total

*Whole Vessels:* c5660

*Established:* Smith and Gifford at Uaxactun (1966:154, 170).

*Principal identifying modes:* 1) Lustrous “waxy” highly burnished vessel surfaces, 2) thick cream slip, 3) pre-slip or post-slip fine-line incision, 4) buff colored paste, 5) bowls with flaring walls and everted rim.

*Paste, firing, and temper:* Paste is medium textured and carbonate based with crystal calcite, sherd, and sometimes burnt organic inclusions. Color is buff (10YR7/3) or yellow (10YR7/4).

Firing cores are infrequent, but present in some samples.

*Surface finish and decoration:* Lustrous highly burnished vessel surfaces with thick cream (10YR8/1), yellow (10YR8/3), or tan (7.5YR5/5) slip. Incised lines can be pre or post slip. If incision is executed after slipping, buff colored paste shows through. Incision occurs in circumferential bands on wide everted rim bowls or dishes.

*Form:* Bowls or dishes with flaring walls, everted or wide-everted rim, and rounded lip.

*Intrasite locations and contexts:* Accordion Incised is extremely rare in the Holmul Region. However, it does appear in small quantities at every site with the most appearing at Cival.

*Intersite locations and contexts:* Accordion Incised is also rare throughout the lowlands in the Late Preclassic, but it can be found at Uaxactun (Smith and Gifford 1966:170), Barton Ramie (Gifford 1976:84-95), and the Petexbatun Region (Foias 1996:309-311)

*Illustration:* 4.16, 5.19h

## **Polvero Ceramic Group**

### **Polvero Black: Variety Unspecified**

*Sample:* 411 rims, 3026 total, 97% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:162, 170).

*Principal identifying modes:* 1) Lustrous “waxy” vessel surfaces, 2) deep black slip, 3) round sided bowls, 4) bowls or dishes with z-angles, 5) jars with short outcurving necks.

*Paste, firing, and temper:* Paste is medium textured usually with many crystal calcite inclusions. Occasionally sherd temper is added to the paste. Color is gray (10YR4/1) or black.

*Surface finish and decoration:* On unrestricted forms, vessel interiors and exteriors are highly polished with a deep waxy black slip. Color is usually quite consistent.

*Form:* 1) bowls with round or slightly flaring walls, direct rim, and either rounded or pinched lip, 2) bowls with z-angles, direct rim, and rounded lip, 3) jars with short outcurved necks, direct rim, rounded lip. Slip crackling or crazing is common.

*Intrasite locations and contexts:* Polvero Black ceramics appear at every site in the region including the main four of Cival, La Sufricaya, K’o, and Holmul.

*Intersite locations and contexts:* Polvero Black is as ubiquitous as Sierra Red in the Maya area and appears at Uaxactun (Smith and Gifford 1966:161,170), Barton Ramie (Gifford 1976:96-99), Altar de Sacrificios (Adams 1971:24), Seibal (Sabloff 1975:87), El Mirador (Forsyth 1989:36-38), Tikal (Culbert 1993:14; n.d.), (Kosakowsky 1987:76-78), and the Petexbatun Region (Foias 1996:317-320).

*Illustration:* 5.20a-1

### **Lechugal Incised: Variety Unspecified**

*Sample:* 18 rims, 75 total, 2.5%

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:159, 170).

*Principal identifying modes:* 1) Lustrous “waxy” vessel surfaces, 2) deep black slip, 3) pre-slip incision, sometimes very deep, 4) bowls with z-angles, 5) bowls with medial flanges.

*Paste, firing, and temper:* Paste is medium textured usually with many crystal calcite inclusions. Occasionally sherd temper is added to the paste. Color is gray (10YR4/1) or black.

*Surface finish and decoration:* Surfaces are highly burnished and a waxy black slip is applied to vessel interiors and exteriors on unrestricted forms. Fine line or deep gauging incision is executed both pre-slip and post-slip. Incision usually appears as vertical slashes on medial flanges, but can take the form of deeply gauged bands of “zig-zags” on vessel exteriors of z-angle bowls or other geometric designs.

*Form:* 1) Bowls with flaring walls, medial flange, direct rim, and rounded lip, and 2) bowls with flaring walls, z-angle, direct rim, and rounded lip.

*Intrasite locations and contexts:* Lechugal Incised is relatively rare in the Holmul Region, but it does appear at every site – in largest quantities at Cival.

*Intersite locations and contexts:* Lechugal Incised is also found at Uaxactun (Smith and Gifford 1966:159, 170), Barton Ramie (Gifford 1976:99), Altar de Sacrificios (Adams 1971:43), Cuello (Kosakowsky 1987:78), El Mirador (Forsyth 1989:38-39), Tikal (Culbert 1993:14; n.d.), and the Petexbatun Region (Foias 1996:320-324).

*Illustration:* 5.21

### **Polvero Black Impressed: Variety Unspecified**

*Sample:* 5 rims, 14 total, 0.5% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Lustrous “waxy” vessel surfaces, 2) deep black slip, 3) jars with short outcurving necks, 4) row of impressions encircling base of rim at shoulder-break.

*Paste, firing, and temper:* Paste is medium textured usually with many crystal calcite inclusions. Occasionally sherd temper is added to the paste. Color is gray (10YR4/1) or black.

*Surface finish and decoration:* Vessel exteriors are highly polished with a deep waxy black slip. Color is usually quite consistent. A single row of impressions or punctations encircles the neck at the shoulder break.

*Form:* 1) jars with short outcurved necks, direct rim, and rounded lip.

*Intrasite locations and contexts:* Polvero Black Impressed is rather rare and appears in extremely small frequencies at Cival and Holmul.

*Intersite locations and contexts:* Polvero Black Impressed has not been named a separate type at other sites. However, Gifford (1976: figure 40q) includes it as an unspecified variety of Polvero at Barton Ramie.

*Comment:* Because the impressions only appear on the rim at the shoulder break, body sherds of this type are indistinguishable from those belonging to undecorated Polvero jars.

*Illustration:* 5.20m-o

## **Boxcay Ceramic Group**

### **Boxcay Brown: Variety Unspecified**

*Sample:* 2 rims, 4 total, 100% of group

*Whole Vessels:* SF# CIV.T.22.12.02.01

*Established:* Culbert (1979) at Tikal.

*Principal identifying modes:* 1) Lustrous “waxy” vessel surfaces, 2) consistent brown slip, 3) composite vase form with recurving wall.

*Paste, firing, and temper:* Paste is medium textured and carbonate based with crystal calcite, sherd, and some burnt organic inclusions. Color is yellow (10YR7/4). Firing cores are not present in this sample.

*Surface finish and decoration:* Vessel surfaces are smoothed and well-polished. Slip is a consistent light brown (7.5YR4/4) and not an uneven mottled or variegated. Crackling or slip crazing is common.

*Form:* 1) Vase with composite recurving walls, outcurving neck, direct rim, and rounded lip.

*Intrasite locations and contexts:* Boxcay is extremely rare in the Holmul Region, and only occurs at one burial context below a midden at Cival.

*Intersite locations and contexts:* Tikal (Culbert 1979, 1993:13, n.d.) and Valle de Dolores (Laporte et al 1993:74).

*Comment:* It could be argued that Boxcay is simply a residual type category. Sherds placed in the Boxcay type could only be “misfired” or fire-clouded sherds from Sierra, Polvero, or Flor vessels. However, with the discovery of an even-fired brown Boxcay vessel from a Late Preclassic burial at Cival in 2005, it is more than likely that brown vessels were created intentionally by Holmul Region potters. Not all variegated sherds are Boxcay Brown, however, and further analysis must be performed in order to record potential form and paste modes of this type.

*Illustration:* --

## **Variegated Group**

### **Variegated: Variety Unspecified**

*Sample:* 288 rims, 2675 total, 98% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) vessels can take any form including serving ware and slipped jars.

*Paste, firing, and temper:* Paste is medium textured, carbonate, and color varies from yellow to gray. Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display a mottled brown or variegated (7.5YR4/4) surface color.

*Form:* Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in many contexts with Itzamkanak/Chicanel material throughout the Holmul Region.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Sierra Red, Flor Cream, or Polvero Black. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps after I have performed a more intensive paste and form analysis on Itzamkanak/Chicanel material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun. As a note, I prefer not to place these sherds within the Boxcay Brown Type – as this is an actual type with specific modes established by Culbert (n.d) at Tikal.

*Illustration:* --

### **Variegated Incised: Variety Unspecified**

*Sample:* 9 rims, 41 total, 2% of group

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Variegated or mottled surface color, 2) pre-slip fine line incision, 3) vessels can take any form including serving ware and slipped jars

*Paste, firing, and temper:* Paste is medium textured, carbonate, and color varies from yellow to gray. Firing cores are frequent and vessels surfaces always show signs of fire-clouding.

*Surface finish and decoration:* Vessel surfaces are well smoothed, polished, and display a mottled brown or variegated (7.5YR4/4) surface color. Pre-slip fine-line incision appears on vessel surfaces in the form of simple bands. The location of incision depends on the form of the vessel.

*Form:* Vessel forms vary widely and can take any serving ware shape or slipped jar form.

*Intrasite locations and contexts:* Variegated sherds are found in many contexts with Itzamkanak/Chicanel material throughout the Holmul Region.

*Intersite locations and contexts:* n/a

*Comment:* This is not an actual ceramic group. It is more of a temporary classificatory category for all those sherds that cannot be positively identified as Laguna Verde, Accordion, or Lechugal. Instead of arbitrarily lumping variegated sherds with particular ceramic groups and potentially distorting frequency counts, I prefer to count these sherds separately. Perhaps later after I have performed a more intensive paste and form analysis on Itzamkanak/Chicanel material I will be able to classify these sherds using those ceramic attributes. Until then, I prefer to keep them separated like Smith (1955) did at Uaxactun. As a note, I prefer not to place these sherds with the Xtacab Incised Type – as this is an actual type with specific modes established by Culbert (n.d.) at Tikal.

*Illustration:* --

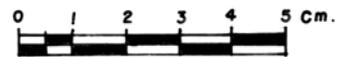
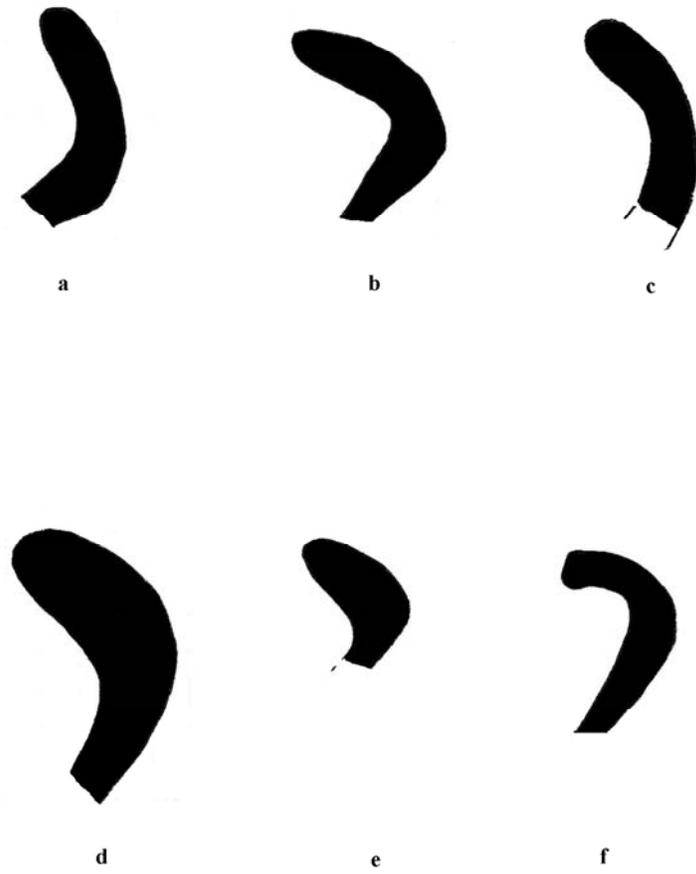


Figure 5.10 Itzamkanak/Chicanel complex ceramics (a-f, Sapote Striated: Variety Unspecified)



Figure 5.11 Itzamkanak/Chicanel complex ceramics (a-aa, Sierra Red: Sierra Variety)

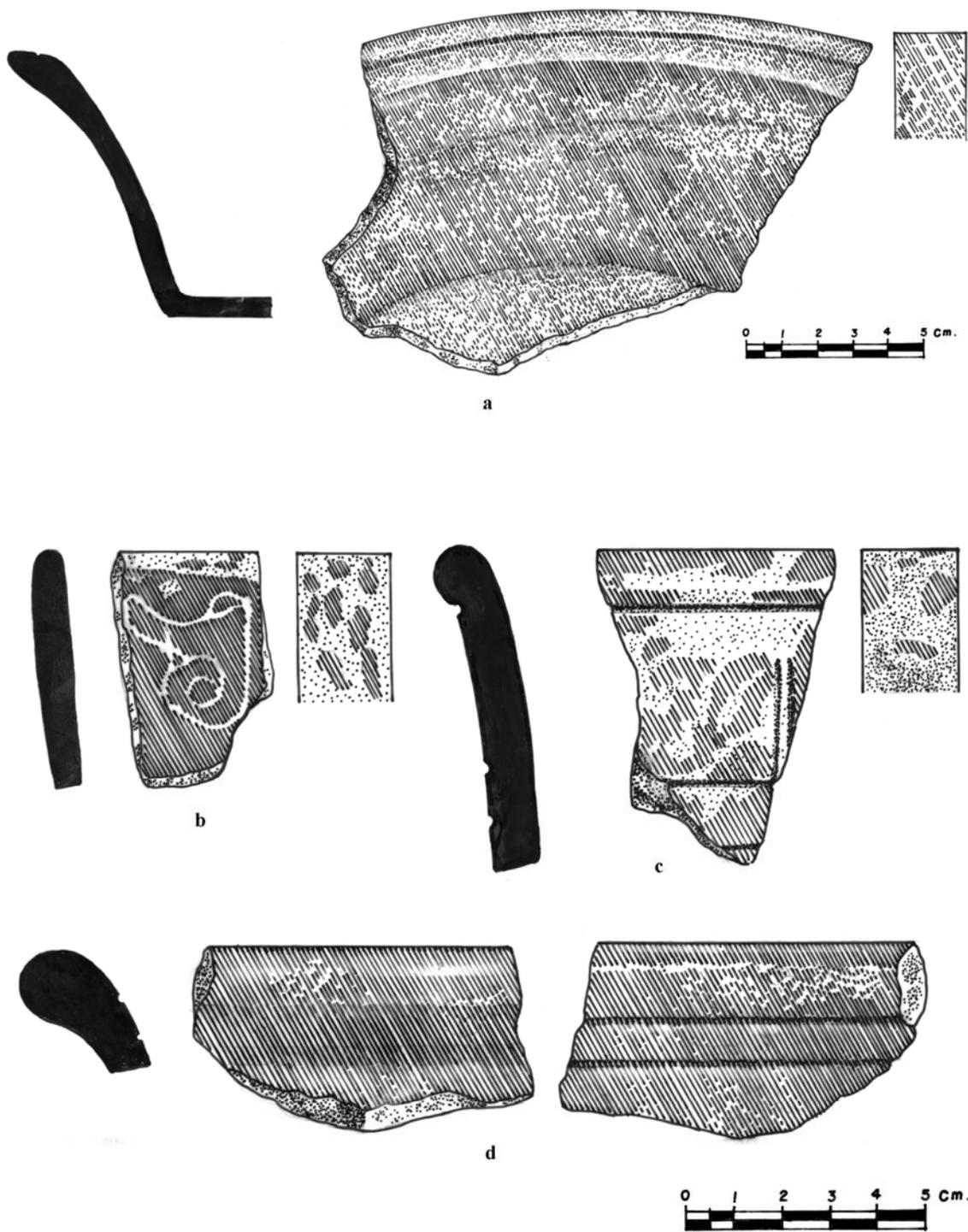


Figure 5.12 Itzamkanak/Chicanel complex ceramics (a-d, Laguna Verde Incised: Laguna Verde Variety)

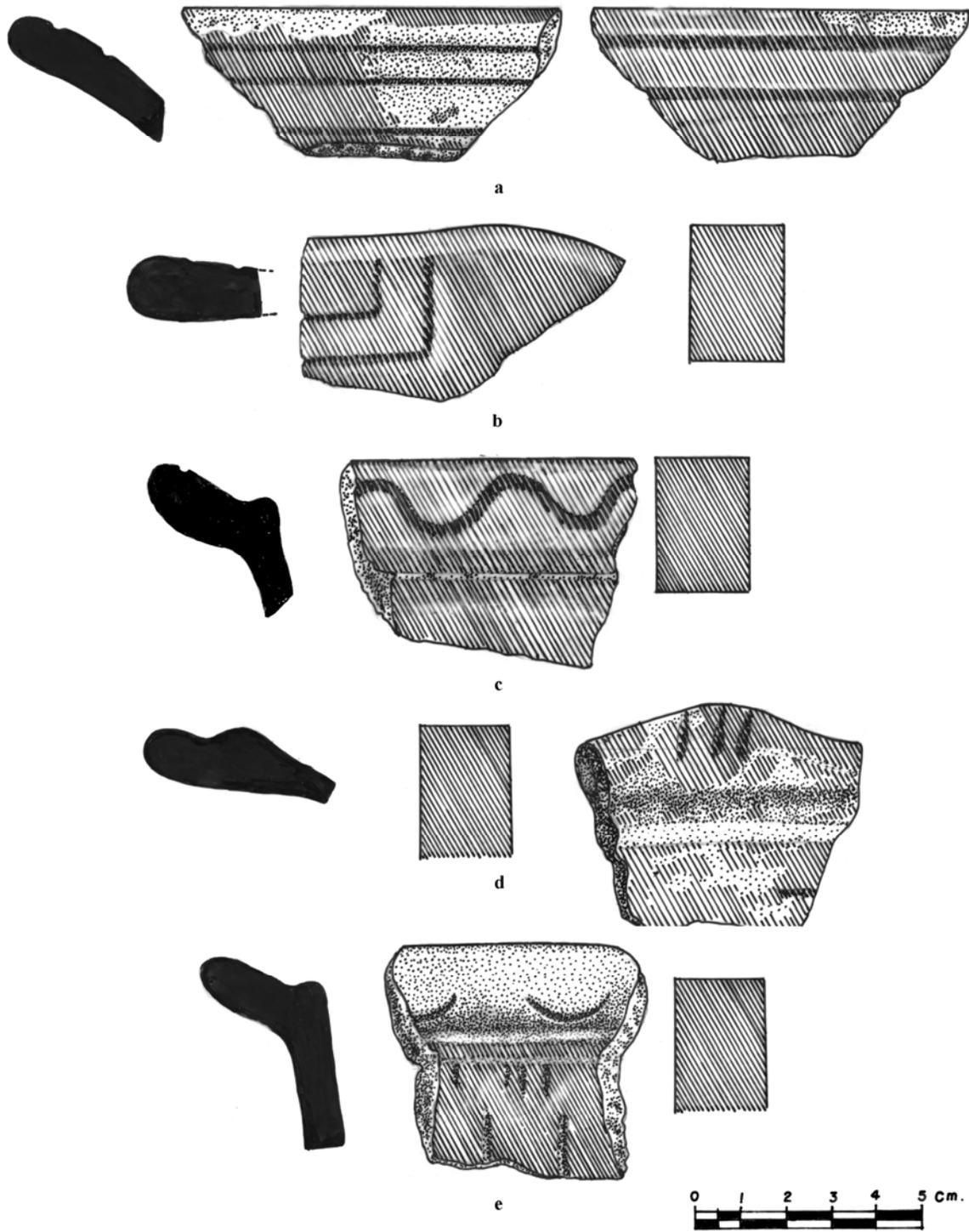


Figure 5.13 Itzamkanak/Chicanel complex ceramics (a-e, Laguna Verde Incised: Laguna Verde Variety)

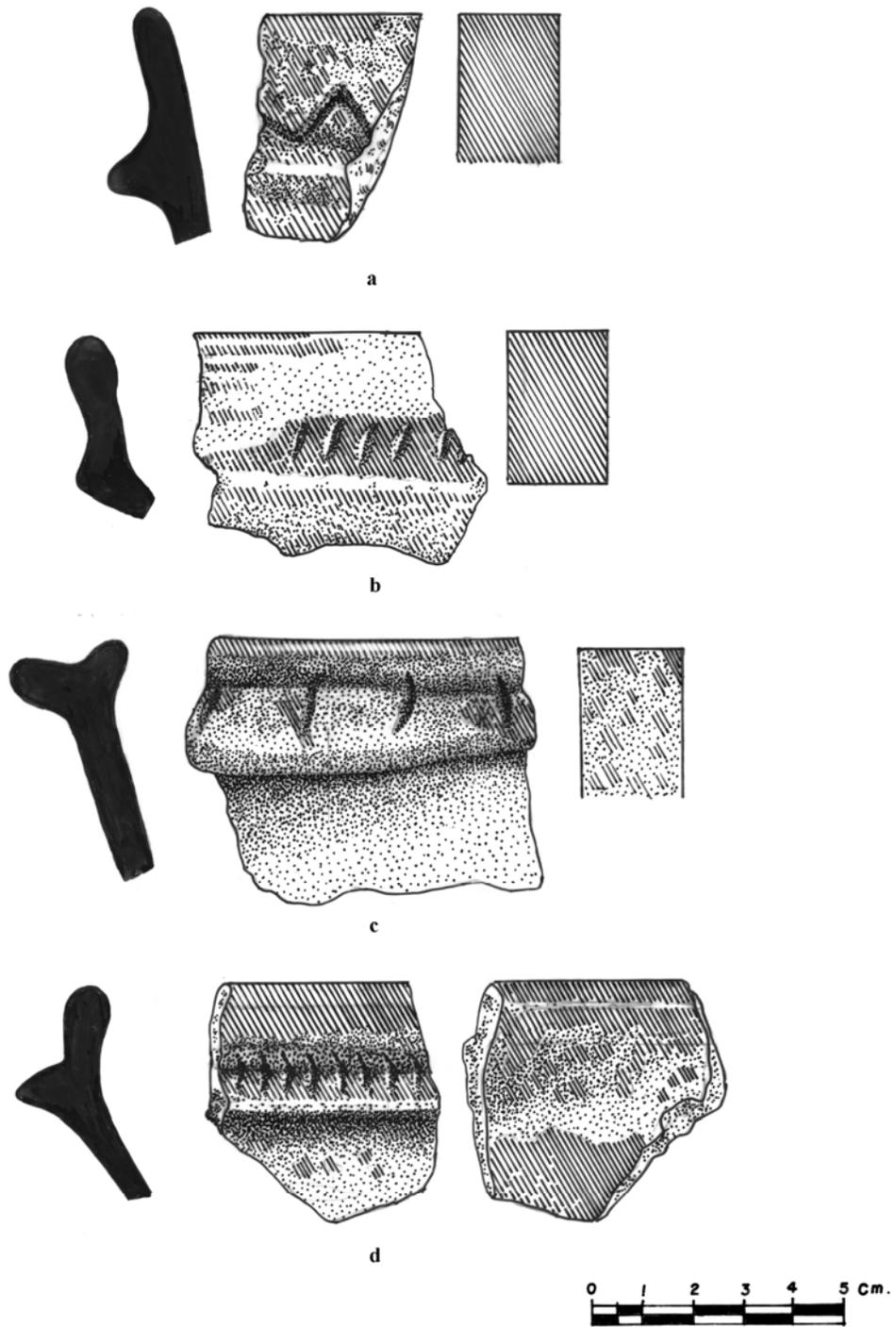


Figure 5.14 Itzamkanak/Chicanel complex ceramics (a-d, Laguna Verde Incised: Laguna Verde Variety)

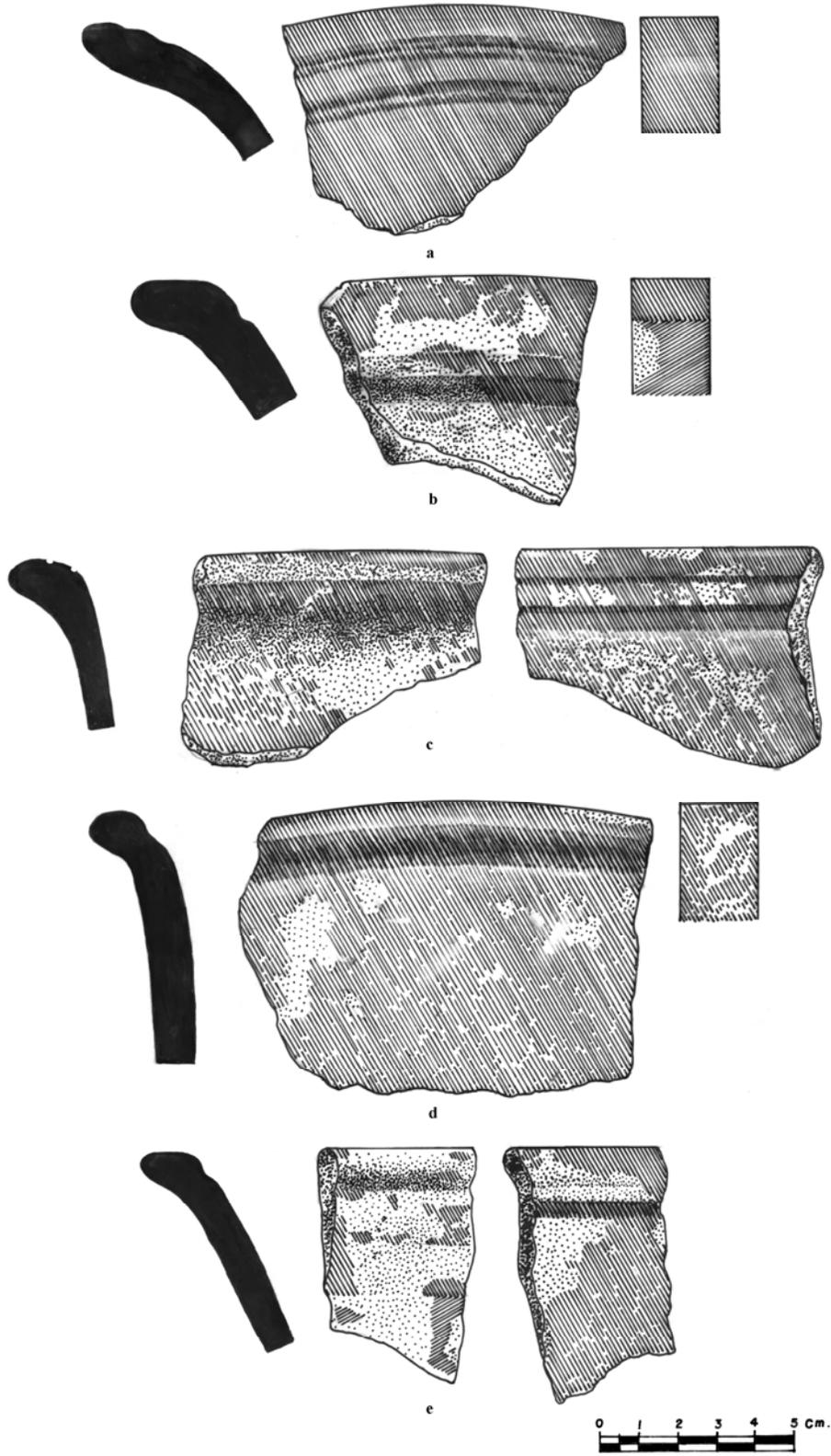


Figure 5.15 Itzamkanak/Chicanel complex ceramics (a-e, Laguna Verde Incised: Groove-Incised Variety)



Figure 5.16 Itzamkanak/Chicanel complex ceramics (a-d, Altamira Fluted: Variety Unspecified)



Figure 5.17 Itzamkanak/Chicanel complex ceramics (a-e, Society Hall: Variety Unspecified)

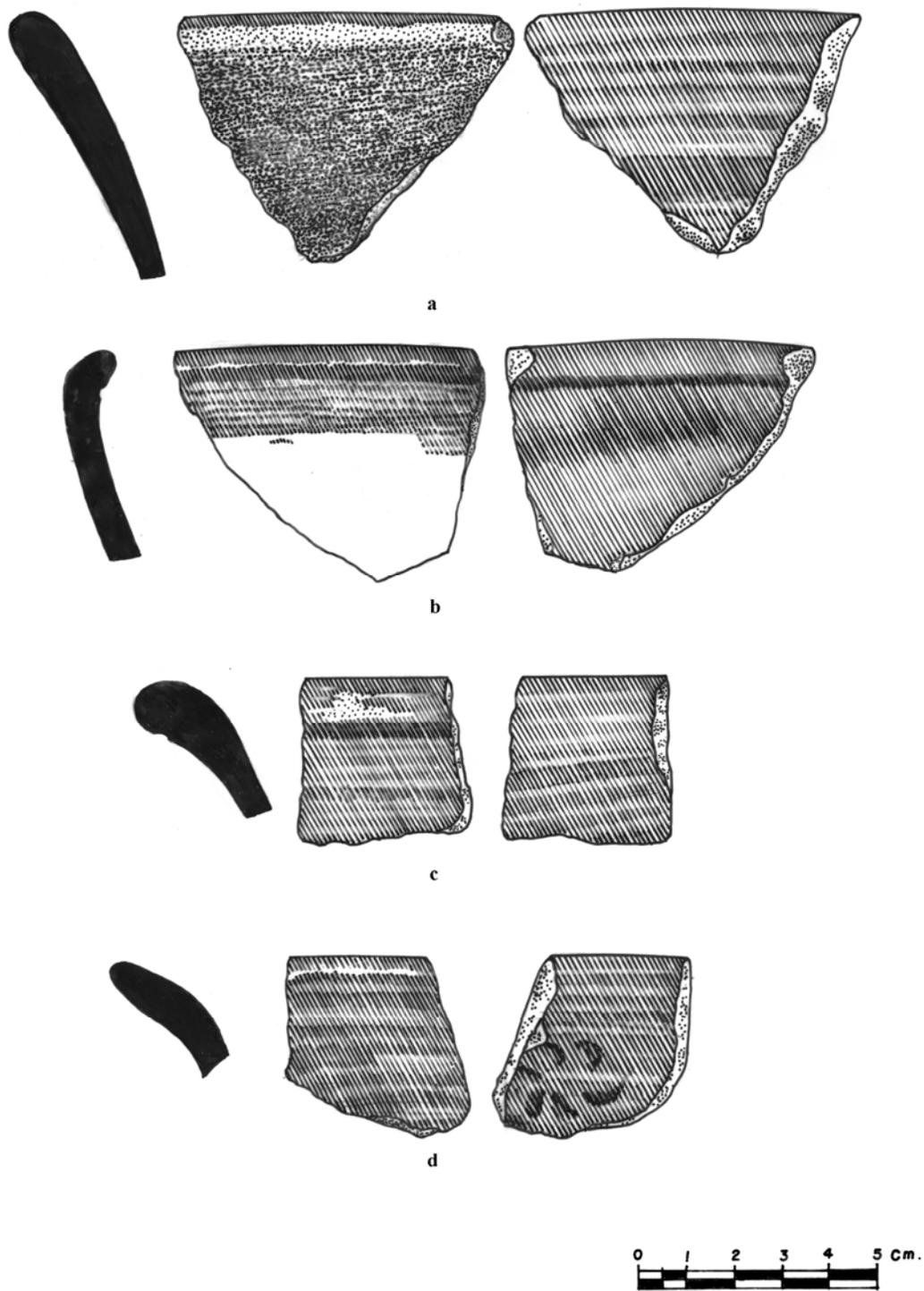


Figure 5.18 Itzamkanak/Chicanel complex ceramics (a-b Society Hall and Unslipped: Variety Unspecified; c, Society Hall Incised: Variety Unspecified; d, Society Hall Impressed: Variety Unspecified)

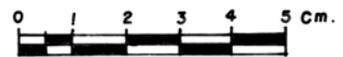
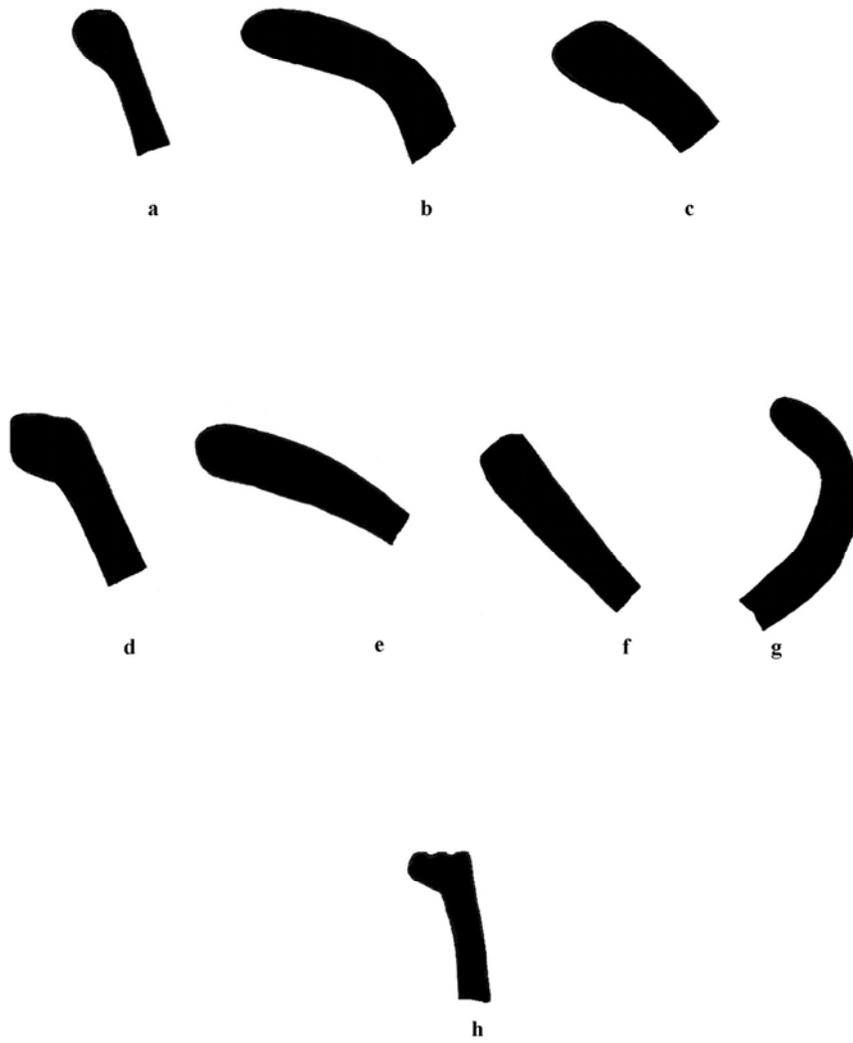


Figure 5.19 Itzamkanak/Chicanel complex ceramics (a-g, Flor Cream: Variety Unspecified; h, Accordion Incised: Variety Unspecified)



Figure 5.20 Itzamkanak/Chicanel complex ceramics (a-l, Polvero Black: Variety Unspecified; m-o, Polvero Impressed: Variety Unspecified)

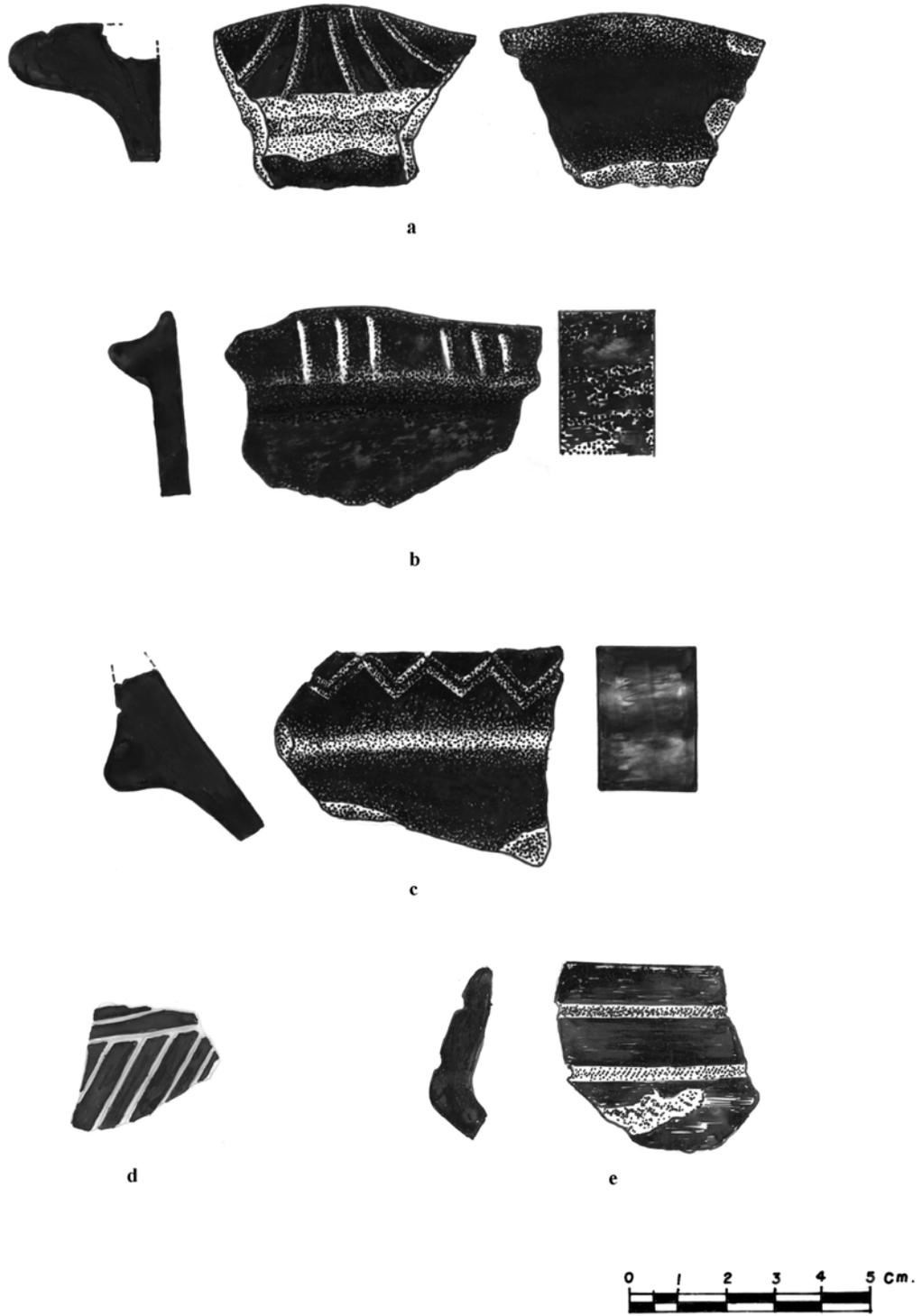


Figure 5.21 Itzamkanak/Chicanel complex ceramics (a-e, Lechugal Incised: Variety Unspecified)

## **WAYAAB SUB-COMPLEX: TERMINAL PRECLASSIC PERIOD**

Excavations within the Holmul Region have yet to yield a complete Terminal Preclassic complex that is markedly different from the preceding Late Preclassic complex. While Terminal Preclassic ceramics do appear in the Holmul Region after AD 150, this pottery is relatively restricted to ritual contexts at certain sites. Noted in Chapter 1, this pattern of distribution fits well with the distribution of what have been called phase 2 Terminal Preclassic ceramic markers in other sites throughout the Maya lowlands from 150-400 AD (Brady et al 1998). During this time Late Preclassic types continue to be manufactured and distributed throughout the Holmul Region. Therefore, in the present analysis Terminal Preclassic pottery comprises a sub-complex within the larger Late Preclassic complex. One Wayaab sub-complex vessel of the Ixcario Orange Polychrome: Variety Unspecified type was found in association with a Terminal Preclassic period burial previously undiscovered by Merwin in his original excavations in Building B, Group II (Neivens 2005). A sample of bone collagen from a rib bone associated with Burial 10 of Building B Group II at Holmul returned an uncalibrated date of 1840 $\pm$ 40 BP with a 1-sigma range of AD 120-230, a 2-sigma range of AD 80-250 and a probable deposition date of AD 150 (Estrada-Belli 2006c:4).

Common modes of Terminal Preclassic pottery in the Holmul Region are: 1) “mammiform”, cylindrical, or bulbous shaped hollow tetrapod supports, 2) glossy surface treatment, 3) orange slip, 4) black on orange paint, and 5) true polychrome painting on an orange slipped surface. Whole vessels displaying these modes are found exclusively in the vaulted tombs of Building B, Group II at Holmul (Merwin and Vaillant 1932). Terminal Preclassic polychrome and orange gloss sherds have also been found in the tombs and structure fill of Building B Group II as well as at construction fill from Cival and La Surfricaya.

As I discussed in chapter 1, the nature of the Terminal Preclassic period has been debated for many years in lowland Maya archaeology. Building on Willey's definition of the "Protoclassic Period" (Willey 1977), authors of recent syntheses of the Terminal Preclassic period have argued that the term "Protoclassic" was being used to define 1) a phase in Maya cultural development, 2) a term referring to sets of specific traits of certain ceramic assemblages, and 3) a chronological time period in Maya prehistory (Brady et al 1998; Pring 2000). The authors believe that the multi-definitional use of the term added a great deal of confusion to the debate over Protoclassic pottery, chronology, and possible cultural significance. They therefore urge that the term Protoclassic only be used when referring to a particular ceramic stage occurring between 75 BC and 400 AD and that the word "protoclassic" (not "Proto-Classic" or "Protoclassic") be used to avoid confusion with earlier uses.

Brady and colleagues (1998) argue that the years between 75 BC and 400 AD were a time of increasing ceramic experimentation. Contrary to previous theories, the authors argue that this period of ceramic and cultural development was no more transitional than any other in Maya prehistory. They cite evidence that this larger stage of ceramic development can further be divided into two phases: Early (75 BC-150AD) and Late (150-400AD). Each phase is characterized by specific sets of ceramic attributes. In brief, the first phase witnessed the introduction of matte-finish orange-brown wares and the second phase saw the introduction of bright orange gloss ware. The authors note that Phase I modes were not necessarily replaced by Phase II modes, only that specific "protoclassic" modes (like tetrapod mammiform supports) were dropped from ceramic inventories by 400 AD.

The authors urge ceramicists to refrain from classifying "protoclassic" material in subjective terms of "waxy" vs. "glossy" surface treatment and instead to classify material based

on presence or absence of a cream underslip or highly polished preslip vessel surface. In this way, the authors attempt to classify “protoclassic” ceramic material based on the existing type-variety format and analysis of measurable, quantifiable, technological differences.

Finally, although the authors cite evidence that the distribution of “protoclassic” ceramic markers throughout the lowlands is now larger than it was previously, this distribution still does not warrant the creation of a “protoclassic ceramic horizon”. Not only do many lowland sites legitimately lack “protoclassic” markers, but those sites that contain the material do so in limited distribution (for example at Uaxactun [Smith 1955], Tikal [Culbert 1993; Laporte and Fialko 1995], Altar de Sacrificios [Adams 1971]; Naj Tunich Cave [Brady 1989], El Mirador [Forsyth 1989], Barton Ramie [Gifford 1976; Willey et. al. 1961], and K’axob [Berry et al 2004]).

I generally agree with the authors’ opinions about the nature of ceramic production and distribution during the period between the Late Preclassic and Early Classic periods. However, unlike Brady and colleagues (1998), I believe that well documented socio-political and culture-material changes in the lowlands occurring during the years 75 BC – AD 250 warrant the creation of a Terminal Preclassic time period. Furthermore, I discourage the use of the term “Protoclassic” in all its manifestations. It is my opinion that this term has become so loaded with archaeological baggage that I propose dropping it altogether. For the purpose of the present work, ceramic material belonging to the sub-complex of pottery defined by specific surface modes and dating to Brady and colleagues’ (1998) second half of Terminal Preclassic time frame will be referred to as Terminal Preclassic period pottery and at times more specifically as Wayaab sub-complex pottery.

The relatively restricted distribution of this Terminal Preclassic orange gloss material to burials and caches at many lowland sites suggests that the material was part of a feasting, gifting,

ritual, or funerary sub-complex (Brady et al 1998, Pring 2000, Kosakowsky 2001). Another explanation of the presence and function of Terminal Preclassic material was put forth by Kathryn Reese-Taylor and Debra Walker (2002). They believe Terminal Preclassic ceramic markers, specifically Ixcario Orange polychrome, signaled the creation of a new political economy and the rise to power of Terminal Late Preclassic Period polities in the long wake of political upheaval caused by the fall of El Mirador and the disruption of trade routes controlled by a pan Mesoamerican Mirador alliance. In this view, the function of Terminal Preclassic ceramic types such as Ixcario Orange Polychrome was most likely to cement alliances between burgeoning trade capitals. Walker and Reese-Taylor recently hypothesized that not only could Terminal Preclassic polychromes have been used for alliance building, but that specific polychrome designs could represent symbols associated with rising Terminal Late Preclassic lineages (Walker et. al. 2006). I will return to these larger political economy based explanations of the function and meaning of Terminal Preclassic orange ceramics in the concluding chapter of the dissertation.

For now, the distribution, frequency, and technological and stylistic characteristics of Terminal Preclassic material in the Holmul Region support the notion that this was a rare and potentially restricted social valuable associated with ritual contexts.

## **PETEN GLOSS WARE**

Aguila Orange Group

Aguila Orange: Variety Unspecified

Ixcario Group

Ixcario Orange Polychrome

## PETEN GLOSS WARE

### Aguila Ceramic Group

Aguila Orange: Variety Unspecified

*Established:* n/a

*Sample:* 3 rims, 3, total, n/a

*Whole Vessels:* c5647, c5648

*Principal identifying modes:* 1) Orange slip, 2) cream underslip or highly polished preslip surface, 3) bowls with z-angle bowls, 4) tetrapod supports.

*Paste, firing, and temper:* Paste is medium to fine textured. Inclusions can include crushed volcanics with slivers of mica, or even sherd, but are more generally carbonate-based with well rounded, medium-fine, gray calcite inclusions. Paste color is relatively consistent and remains buff (10YR8/3, 2.5YR7/3) or light brown (10YR6/3) throughout the sample.

*Surface finish and decoration:* Well smoothed and polished vessel surfaces. Surfaces were either highly polished prior to slip application or a thin cream underslip was applied before orange slip.

Chipped or eroded orange slip sometimes reveals burnished/cream slipped under-surface.

Surface color is a rather brilliant orange (5YR5/8, 5YR6/8, 2.5YR5/8)

*Form:* 1) Plates with flaring walls, slightly everted rim, rounded lip, flat base, and four large supports, 2) bowls with outcurving sides, direct rim, rounded lip, convex base, and four large hollow supports. Some hollow mammiform supports have been found mixed in fill contexts, but whether these sherds belong to Aguila monochrome types or Ixcario Polychromes is impossible to tell.

*Intrasite locations and contexts:* Aguila Orange pottery of the Terminal Preclassic subcomplex is found almost exclusively in fill contexts of Building B Group II. An occasional sherd is encountered in Terminal Preclassic contexts at K'o, La Sufricaya, and Cival.

*Intersite locations and contexts:* Aguila Orange material dating to the Terminal Preclassic period can be found at Naj Tunich Cave in Guatemala where Brady (1989) classifies it as Aguila Orange: La Compuerta Variety.

*Comment:* Because of the excellent preservation of cave ceramics, Brady (1989) is able to distinguish Aguila Orange material from orange ceramics belonging to the dull or matte finish Aguacate Group of Holmul Orange Ware previously established by Gifford (1976:129-137) at Barton Ramie and belonging to the Floral Park ceramic sphere. Noted above, Brady and colleagues (1998) distinguish Aguila Orange of the Terminal Preclassic period from Aguacate Orange through the presence of a thin cream underslip or light colored paste which has been polished to a high shine. Brady and colleagues (1998) also note specific form (e.g., large bulbous mammiform supports in Aguila material and smaller supports in Aguacate) and surface (Aguila Orange material has a thick orange slip that is highly polished while Aguacate displays a thin slip and remains dull) modes that distinguish the two types of material. In his previous analysis of pottery from Room 8, the Room 8 Vault, and Room 9 of Building B, Group II at Holmul, Pring (2000) classifies the orange pottery as Aguila group material. He notes that the combination of high polish and lack of distinct pink Aguacate paste on these vessels factored greatly into his classification. Unlike Brady and colleagues (1998), however, I have found no evidence of cream underslip.

What sets Wayaab sub-complex Aguila Orange apart from K'ahk 1-2/Tzakol 1-2 Aguila is its form. Wayaab Aguila is only found in relatively rare forms, primarily a plate with large

hollow supports, or bowl with tetrapod mammiform supports. Simple flaring bowls, z-angle, rounded z-angle, and basal flange bowls are more characteristic of K'ahk 1-2/Tzakol 1-2 ceramics. Because of this, Aguila Orange of the Wayaab sub-complex is extremely rare in the Holmul Region.

*Illustration:* 5.14, 5.18, 5.22

## **Ixcanrio Group**

### **Ixcanrio Orange Polychrome: Ixcanrio Variety**

*Sample:* 6 rims, 12 total, 75% of group

*Whole Vessels:* c5646, c5659

*Established:* Smith and Gifford (1966:158) at Uaxactun.

*Principal identifying modes:* 1) Glossy surface treatment resulting from cream underslip or highly polished preslip vessel surfaces, 2) polychrome painting over orange slip, 3) design motifs include dotted lines, step frets, circumferential bands and other geometric patterns, 4) bowls with tetrapod supports.

*Paste, firing, and temper:* Paste color varies from buff (10YR8/3) to yellow (10YR7/3). Primary inclusions also vary, with the majority of pastes being carbonate with medium to fine grained inclusions. Three major paste variants have been identified to date: including, 1) yellow (10YR7/3), medium-fine, with well rounded gray calcite inclusions, 2) yellow (10YR7/3), medium-fine, with sherd and crystal calcite inclusions (this paste is more similar to Late Preclassic pastes of Sierra Red material), and 3) yellow (10YR7/3), fine, with volcanic ash and muscovite inclusions.

*Surface finish and decoration:* Vessel surfaces are highly polished. No evidence of cream underslip was found on the sherds used in this study. However, signs of underslipped appeared on the surface of vessels in the Peabody Museum. Polychrome painting is executed over an orange slip surface with color within the range of variation for other Terminal Preclassic orange gloss ware (5YR5/8, 5YR6/8, 2.5YR5/8). Designs include red (10R4/8) or black horizontal circumferential bands, dotted lines, step frets, mat patterns, and other geometric shapes.

*Form:* Bowls with outcurving walls, direct rim, rounded lip, convex base, and hollow tetrapod supports (mammiform, cylindrical, or bulbous).

*Intrasite locations and contexts:* Whole Ixcanrio vessels are only found in vaulted tombs of Building B, Group II (Merwin and Vaillant 1932, Neivens 2003). Only a handful of sherds can be found in fill at Holmul.

*Intersite locations and contexts:* Whole Ixcanrio polychromes have been found in largest quantities at Barton Ramie (Gifford 1976: 143-145), Naj Tunich (Brady 1989), Nohmul, Mountain Cow, and Chetumal (Pring 2000). See Pring 2000 for a comprehensive listing for distributions of Ixcanrio and other Terminal Preclassic markers.

*Comment:* Smith and Gifford place Ixcanrio within Holmul Orange Ware and the Aguacate Orange Ceramic Group (1966: 158). However, Ixcanrio clearly displays the glossy surface treatment characteristic of other Orange Gloss wares in the Holmul Region. Vessels from the tombs in Building B, Group II would be classified as Ixcanrio and Pring even notes their glossy appearance in his descriptions (see Pring 2000). Forsyth at El Mirador (1989:57) similarly places Ixcanrio in the Aguila Ceramic Group of Peten Gloss Ware as does Laporte et al in the Valle de Dolores (1993:87). Because of their polychrome decoration, I believe they should be placed in their own ceramic group and have done so in this analysis.

*Illustration:* 5.15, 5.17, 5.21b-e

**Ixcario Orange Polychrome: Turnbull Variety**

*Sample:* 1 rim, 1 total, 6% of group

*Whole Vessels:* c5656

*Established:* Pring (1977b) in northern Belize.

*Principal identifying modes:* 1) Glossy surface treatment resulting from cream underslip or highly polished preslip vessel surfaces, 2) polychrome painting over orange slip, 3) design motifs include vertical parallel squiggly lines, and 4) bowl with annular base.

*Paste, firing, and temper:* Unknown

*Surface finish and decoration:* Vessel surfaces are highly polished. Glossy surface treatment could result from application of a cream underslip or highly polished preslip surface.

Polychrome painting is executed over an orange slip surface with color within the range of variation for other Terminal Preclassic orange gloss ware (5YR5/8, 5YR6/8, 2.5YR5/8).

Designs include red (10R4/8) or black horizontal circumferential rim band and characteristic groups of vertical parallel squiggly black lines.

*Form:* Bowl with rounded walls, direct rim, rounded lip, and annular base.

*Intrasite locations and contexts:* Only one whole Ixcario: Turnbull Variety vessel has been found at Holmul. This is Vessel 1 of Room 9 in Building B, Group II (Merwin and Vaillant 1932, Neivens 2003). No sherds have been found yet in the Holmul Region.

*Intersite locations and contexts:* Ixcario: Turnbull Variety has been found at Nohmul (Pring 2000:82-84, 87). Culbert (1993: Figure 139, b1) classifies a tetrapod bowl with similar design and form modes, but only black-on-orange decoration, as Sacluc Black-on-Orange: Xux Variety.

*Comment:* Because of its extreme scarcity in the Holmul Region and more common occurrence at sites in northern Belize (Pring 1977b), it is more than likely that this variety of Ixcanrio is an import into the area, possibly from Belize.

*Illustration:* 5.12

### **Ixcanrio Orange Polychrome: Variety Unspecified**

*Sample:* 3 rims, 3 total, 19% of group

*Whole Vessels:* c5650, c5657, SF# HOL.T.41.10.02.01

*Established:* n/a

*Principal identifying modes:* 1) Glossy surface treatment resulting from cream underslip or highly polished preslip vessel surfaces, 2) polychrome painting over orange slip, 3) design motifs include complicated abstract or conventionalized objects, 4) bowls with tetrapod supports.

*Paste, firing, and temper:* Paste color varies from buff (10YR8/3) to yellow (10YR7/3). All three samples were whole vessels and no paste sections could be cut. From the surface, pastes appear generally medium to fine textured and buff to yellow. Both Hammond (1984:10), Pring (2000:51-52), and myself have noticed the presence of sherd temper visible from the surface of Peabody vessel c5650 (Vessel 10 from the Room 8 Vault of Building B, Group II). It is possible these vessels are as varied in paste composition as Ixcanrio: Ixcanrio Variety.

*Surface finish and decoration:* Vessel surfaces are highly polished and orange (5YR5/8, 5YR6/8, 2.5YR5/8). Glossy surface treatment could result from same process of cream underslip or highly polished preslip surfaces as exemplified in other Aguila Group ceramics described above. One of the characteristics that places these unspecified vessels apart from Ixcanrio Variety is the cream or buff (10YR8/2) background panels on which main design composition is applied.

Also, main designs consist of more complex abstract or even conventionalized themes: such as the macaw on c5657, the serpent motif on c5650, and the weave or mat pattern on SF#

HOL.T.41.10.02.01. These are not the simple geometric patterns of Ixcanrio: Ixcanrio Variety.

*Form:* Bowls with outcurving walls, direct rim, rounded lip, convex base, and hollow tetrapod supports (mammiform, cylindrical, or bulbous).

*Intrasite locations and contexts:* Whole Ixcanrio: Unspecified Variety vessels are only found in vaulted tombs of Building B, Group II (Merwin and Vaillant 1932) and in a burial cyst also found in Building B, Group II (Neivens 2004). One sherd was also found associated within this same excavations.

*Intersite locations and contexts:* Similar varieties may appear at Naj Tunich (Brady 1989) and Chetumal (Pring 2000).

*Comment:* These varieties of Ixcanrio appear to be slightly better-executed than the Ixcanrio: Ixcanrio Variety examples. Forms are tighter with straighter lines and designs are more complex, both in composition and technology. Because these are all whole vessels, it is impossible to get a better look at paste characteristics without partially destroying them. Hopefully, more sherds of this type of material will be found.

*Illustration:* 5.13, 5.18, 5.22, H.40

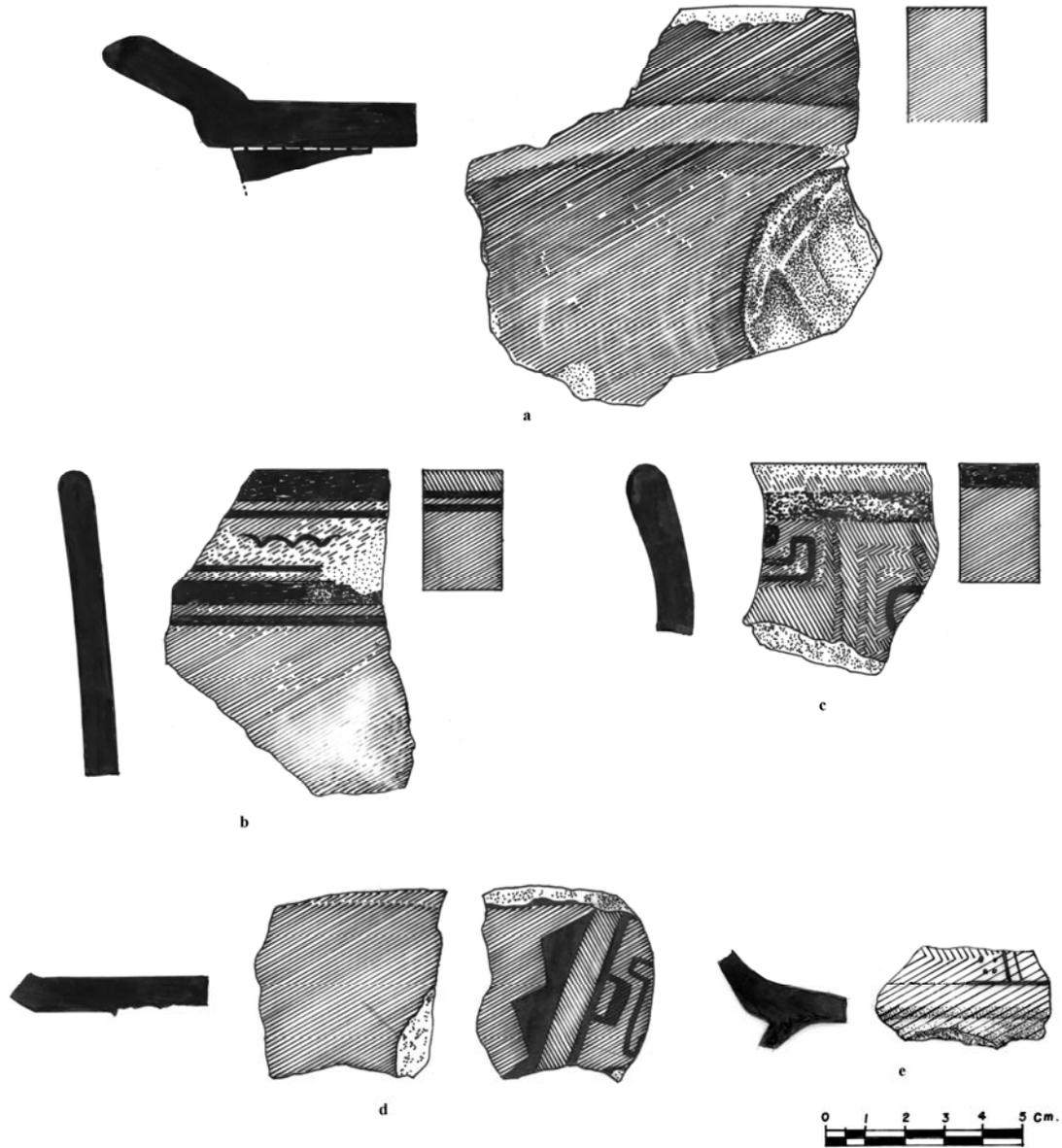


Figure 5.22 Wayaab sub-complex ceramics (a, Aguila Orange: Variety Unspecified; b-e, Ixcantio Orange Polychrome: Ixcantio Variety)

## **K'AHK 1-3/TZAKOL 1-3 COMPLEXES**

Ceramics from the K'ahk 1-3/Tzakol 1-3 complexes represent material from the larger lowland Early Classic or Tzakol Spheres (Smith 1955). The larger Early Classic complex is subdivided here into three potentially separate complexes. However, noted in the previous chapter, these complexes are not yet fully defined in the Holmul Region. Upon further analysis, these potential complexes may be better defined as sub-complexes with division based on the introduction and replacement of specific types and modes of fine ware, with utilitarian production remaining relatively constant. There are no radiocarbon dates associated with ceramics from these potential complexes. Dating was based on the analysis of paste, form, and decorative modes. These modes were compared to potentially contemporaneous material recovered from excavations at other well-studied lowland sites (e.g, Uaxactun, Tikal, Barton Ramie, El Mirador, sites in the Petexbatun Region, Seibal, Altar de Sacrificios, and Becan). K'ahk 1/Tzakol 1 material shares form and surface modes in common with material from Smith's (1955) Tzakol 1 Complex at Uaxactun which would place production and distribution between AD 250 and 350. K'ahk 2/Tzakol 2 ceramics display form and surface modes similar to both Smith's Tzakol 2 Complex as well as Culbert's (n.d.; 1993) Manik 2 at Tikal placing it between AD 350 and 450. Finally, K'ahk 3/Tzakol 3 ceramics share modes in common with Smith's (1955) Tzakol 3 Complex and Culbert's (n.d.; 1993) Manik 3 Complex placing it between AD 450 and 550. K'ahk 1-3/Tzakol 1-3 types and varieties are defined here collectively. The sample consisted of 12,551 sherds and 88 whole or partial vessels (including those housed in the Peabody Museum). K'ahk 1-3/Tzakol 1-3 material can be found in varying quantities at all the sites in the Holmul Region.

### *K'ahk 1/Tzakol 1 Complex*

K'ahk 1/Tzakol 1 material represents a major shift in production modes from the preceding Itzamkanak/Chicanel complex. Serving ware of the K'ahk 1/Tzakol 1 complex was distinct from preceding Sierra, Polvero, and Flor material in its carbonate-based pastes lacking any trace of sherd temper. Forms were also distinct and tended to cluster around bowls with flaring walls or bowls with composite walls and either a z-angle, rounded z-angle, or basal flange treatment. The K'ahk 1/Tzakol 1 complex also witnessed the introduction of the ring base and annular base. Surface decoration of serving ware contrasted sharply with Paso Caballo Waxy Ware material with the introduction of orange slip and glossy (non waxy) surface treatment, possibly as a result of the use of different clays which fired lighter and did not create a waxy texture when polished. Also related to surface treatment and decoration, polychrome painting becomes much more frequent during the K'ahk 1/Tzakol 1 complex as does gouge-incision on vessels of the Balanza group. However, some modes did not completely disappear until the K'ahk 2/Tzakol 2 complex: namely, tetrapod supports. At least two vessels from Building B, Group II and dating to the K'ahk 1-2/Tzakol 1-2 complexes share this mode – showing evidence that there was some continuity in complexes. Because most of the K'ahk 1/Tzakol 1 material analyzed in the present study comes from elite contexts (mostly burials and monumental construction in site epicenters), the sample is biased in favor of serving ware. No utilitarian ware has been accurately associated with the potential K'ahk 1/Tzakol 1 Complex.

Finally, there is a distinct possibility that K'ahk 1/Tzakol 1 serving ware overlaps with Sierra material. Burials in Building B, Group II and specific contexts at the sites of K'o and La Sufricaya may suggest Sierra material was still being produced in the K'ahk 1/Tzakol 1 complex. However, the integrity of these contexts is somewhat compromised. Noted in the previous

chapter, tombs in Building B were disturbed on numerous occasions, leading to the possibility that the Sierra, Actuncan, and Aguila vessels in the Room 8 Vault may not be contemporaneous, but simply stored together and placed in the tomb at different times. Furthermore, the archaeological contexts where K'ahk 1/Tzakol 1 and Itzamkanak/Chicanel material are found associated together are all construction fill and cannot be relied upon to reconstruct the ceramic sequence accurately.

Serving ware with modes that are most similar to K'ahk 1/Tzakol 1 complex material is found at Uaxactun during the Tzakol 1 Complex (Smith 1955) and Tikal during Manik 1 (Culbert n.d.; 1993). The polychrome pottery, specifically Actuncan Orange Polychrome, may have represented another kind of interregional ceramic social valuable. It may have been the continuation of a trend began in the Terminal Preclassic which consisted of the production and strategic distribution of Ixcanrio Orange Polychromes. In fact, Walker and colleagues (2006) suggest Actuncan polychromes were one of many types of polychrome pottery whose networks of distribution may be linked to certain political centers during the initiation of the Early Classic period in the lowlands. This model, based on traditional prestige goods models (see Frankenstein and Rowlands 1978; Freidman and Rowlands 1977), also explains why this type of material is found at so few sites – these pots only appear in the archaeological record if elites were involved in the network in which they circulated. However, discussed in Chapter 2, this model does not explain the function and creation of value in these polychrome vessels – both of which may have been tied closely to elite diacritical feasting events.

### *K'ahk 2/Tzakol 2 Complex*

K'ahk 2/Tzakol 2 complex ceramics show strong continuity with K'ahk 1/Tzakol 1 complex material. Carbonate based pastes, especially those including crystal calcite and gray calcite inclusions continue to dominate serving ware samples. In terms of form, basal flange bowls become larger during the K'ahk 2/Tzakol 2 complex, both within polychrome and monochrome ceramic groups. Bowls and jars with “gutter” spouts become common, as do lidded vessels. Orange slip is still the major mode in monochrome serving ware decoration. Polychrome painting becomes more complex. Incised black ware of the Lucha Incised type becomes more frequent and may have constituted another distinct network of ceramic social valuables. Specific K'ahk 1/Tzakol 1 modes diminish in frequency (such as the rounded z-angle form), while new modes are added to the ceramic inventory, such as volcanic tempered pastes, especially within the Dos Arroyos Polychrome and Balanza Black groups. New types also appear, such as Cladero Buff Polychrome.

K'ahk 2/Tzakol 2 complex material is most similar to Tzakol 2 Complex material at Uaxcatun (Smith 1955) and Manik 2 material at Tikal (Culbert n.d.; 1993). Vessels from Burials 10 and 22 at Tikal share many modes in common with K'ahk 2/Tzakol 2 material: specifically polychromes, with their large forms, lids with effigy handles, and painted serpent motifs. Similar material can be found at Tikal in the Mundo Perdido Complex (Laporte and Fialko 1995). I believe that material dating to the Tzakol 2 ceramic sphere and found at these three sites represents local lowland innovation and evolution before the influence of Mexicanized forms and surface decoration in the succeeding Tzakol 3 ceramic sphere. Whether or not these innovations come from outside the Maya lowlands is still a matter of debate (see Braswell 2003). However,

what is clear is that major production changes occur in the ceramic inventory of Holmul Region ceramics during the K'ahk 3/Tzakol 3 Complex.

### *K'ahk 3/Tzakol 3 Complex*

K'ahk 3/Tzakol 3 complex material represents a shift in production modes from the preceding K'ahk 2/Tzakol 2 complex. The most dramatic changes occur in paste and form modes. The major paste variant of Aguila and Dos Arroyos group ceramics is tempered with volcanic tuff and in some cases mica. However, loaded crystal calcite variants still predominate in the Balanza group. A number of form modes characteristic of K'ahk 2/Tzakol 2 complex serving ware also disappear: namely, bowls with thick flaring walls, as well as tall annular bases. Basal flange bowls become smaller and more open with some beginning to resemble Late Classic tripod plates with smaller basal flanges or ridges. Round-sided bowls also become more frequent during the K'ahk 3/Tzakol 3 complex as do jars with short vertical necks. K'ahk 3/Tzakol 3 also witnesses high frequencies of cylinder vessels or vases, sometimes with supports. Polychrome painting continues in the Dos Arroyos and Caldero traditions. However, surface treatment changes in that slips seem to become thinner and flakey, and surfaces less highly polished. Gouge-incision and simple fine-line incision becomes extremely popular on black forms and results in a higher frequency of Urita Gouged-Incised and Lucha material in many elite K'ahk 3/Tzakol 3 contexts. Firing technology may have also changed from the preceding period. Many vessels of the Aguila and Balanza groups show extreme color mottling and signs of rootlet marks. This contrasts with earlier K'ahk 1-2/Tzakol 1-2 material which were relatively consistent in color and lacked rootlets. Despite these changes, it is important to note that these are variations within established ceramic making traditions. New groups do not appear

until the beginning of the Late Classic period. Finally, it is during the K'ahk 3/Tzakol 3 complex that we begin to see a complete set of utilitarian ware vessels including storage and cooking jars.

K'ahk 3/Tzakol 3 material is contemporaneous with Tzakol 3 Complex ceramics from Uaxactun (Smith 1955) and Manik 3 ceramics from Tikal (Culbert n.d., 1993; Laporte et. al. 1992). Ceramics at these sites are marked by similar changes in ceramic form and surface modes. The Tzakol 3 ceramic sphere dates approximately from AD 450 – 600. This is the period after the initial arrival of political and ideological influence from highland Mexican into the lowlands around AD 378. This influence was most likely centered in Tikal where it was first recorded (see Stuart 2000) and spread quickly through the surrounding lowlands.

Epigraphic and archaeological evidence support the idea that this influence reached the Holmul Region sometime in the late 4<sup>th</sup> century AD. Murals in Structure 1 at La Sufricaya references the “arrival” date of AD 378 at Tikal. In fact, it is in Structure 1 at La Sufricaya that the majority of K'ahk 3/Tzakol 3 material was recovered, including a bucket with everted rim, vertical walls, flat base, and slab tripod supports. The vessel was produced from a local volcanic-based paste recipe. The vessel is slipped black and displays one gouged-incised design that repeats three times. The design consists of a trilobed motif typically associated in Teotihuacan iconography with human hearts over three large drop motifs. The composition and style is similar to that associated with the site of Teotihuacan. This indicates either direct contact with outsiders or at least the local adoption of certain aspects of foreign ideology. K'ahk 3/Tzakol 3 ceramics, and possibly political and ideological influence, were heavily centered at the site of La Sufricaya and K'o. Meanwhile, Building B, Group II is filled in and covered at Holmul possibly by AD 500. Small sections of Cival were occupied during the K'ahk 2/Tzakol

2 complex, but no strong evidence has been found for occupation during the K'ahk 3/Tzakol 3 complex to date.

### **UAXACTUN UNSLIPPED WARE**

#### Quintal Ceramic Group

Quintal Unslipped: Variety Unspecified

Triunfo Striated: Variety Unspecified

#### Unnamed Unslipped Group

Unnamed Unslipped: Censerware

### **PETEN GLOSS WARE**

#### Aguila Ceramic Group

Aguila Orange: Variety Unspecified

Pita Incised: Variety Unspecified

Nitan Composite: Variety Unspecified

Aguila Orange: Buff and Polished Variety

Aguila Orange: Buff and Polished Incised Variety

#### Dos Hermanos Ceramic Group

Dos Hermanos Red: Variety Unspecified

#### Balanza Ceramic Group

Balanza Black: Variety Unspecified

Lucha Incised: Variety Unspecified

Urita Gouged-Incised

Positas Modeled: Variety Unspecified

Actuncan Ceramic Group

Actuncan Orange Polychrome: Variety Unspecified

Boleto Black-on-Orange: Variety Unspecified

Dos Arroyos Ceramic Group

Dos Arroyos Orange Polychrome: Variety Unspecified

Caldero Buff Polychrome: Variety Unspecified

Japon Ceramic Group

Japon Resist: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Quintal Ceramic Group

#### Quintal Unslipped: Variety Unspecified

*Sample:* 348 rims, 2330 total, 48% of group

*Whole Vessels:* c5575, SF#----

*Established:* Smith and Gifford at Uaxactun (1966:161, 171).

*Principal identifying modes:* 1) Smoothed unslipped vessel surfaces, 2) large jar forms with vertical necks and bolstered rim.

*Paste, firing, and temper:* Paste texture is course with large crystal calcite inclusions. Color is gray (10YR5/1) to buff/pink (5YR6/4) with no examples of firing cores.

*Surface finish and decoration:* Surfaces are smoothed and left unslipped. Color is gray (10YR5/1) to buff/pink (5YR6/4).

*Form:* 1) Large jars with vertical neck, direct or exterior bolstered rims, 2) large flaring walled forms with direct rim and squared lip – these forms might be very large bowls, comales, or possibly lids.

*Intrasite locations and contexts:* Quintal is found at every major site in the Holmul Region, but most frequently at La Sufricaya and K'o.

*Intersite locations and contexts:* Quintal Unslipped can be found at Uaxactun (Smith and Gifford 1966:161), Seibal (Sabloff 1975:101), El Mirador (Forsyth 1989: 73-75), Tikal (Culbert 1993:14; n.d.), and the Petexbatun Region (Foias 1996:368-372). Gifford at Barton Ramie discovered an unslipped equivalent, but named it Hewlett Bank Unslipped (Gifford 1976:190).

*Illustration:* 4.32, 5.23, H.22

**Triunfo Striated: Variety Unspecified**

*Sample:* 39 rims, 2513 total, 52% of group

*Whole Vessels:* c5574

*Established:* Smith and Gifford at Uaxactun (1966:163, 171).

*Principal identifying modes:* 1) Unslipped and smoothed vessel surfaces, 2) deep to medium striations on vessel exteriors often continuing up to lip on exterior rim, 3) large jar forms with vertical neck and notched lip.

*Paste, firing, and temper:* Paste is medium to coarse with large crystal calcite inclusions - very similar to Quintal Unslipped. Paste color is gray (10YR5/1) to buff/pink (5YR6/4).

*Surface finish and decoration:* Smoothed vessel exteriors with medium to deep striation.

Striations often continue all the way up the neck to the lip on vessel exteriors and interiors.

Striations on the body are applied diagonally and frequently cross one another. Striations on the neck are strictly horizontal. Color is gray (10YR5/1) to buff/pink (5YR6/4).

*Form:* Large jars with vertical neck, direct rim, and notched or interior beveled lip.

*Intrasite locations and contexts:* Triunfo is found in largest quantities at La Sufricaya, but can also be found in smaller quantities at K'o and in very small quantities at Holmul.

*Intersite locations and contexts:* Triunfo can also be found at Uaxactun (Smith and Gifford 1966:163), Altar de Sacrificios (Adams 1971:19), Seibal (Sabloff 1975:101-102), El Mirador (Forsyth 1989: 73), Tikal (Culbert 1993:15; n.d.), and the Petexbatun Region (Foias 1996:375-379). Gifford at Barton Ramie discovered an unslipped striated equivalent, but named it Mopan Striated (Gifford 1976:183-190). The Holmul type of Triunfo is very similar to Mopan striated.

Both types share the characteristic of striations continuing up the exterior rim of the vessel and the unique notched lip.

*Comment:* Smith and Gifford (1966:163, 171) originally placed Triunfo within its own group at Uaxactun. In the Holmul Region, Triunfo paste and form modes are so consistent with Quintal Unslipped ceramics that I have chosen to place Triunfo in the Quintal group. It is likely these two types of pottery were produced within the same larger unslipped ceramic tradition.

*Illustration:* 4.31, 5.24

## **Unnamed Unslipped Group**

### **Unnamed Unslipped: Censerware**

*Sample:* 64 rims, 191 total, 100% of group

*Whole Vessels:* SF#(ST.17.24), SF# ST.17.25.01.03, SF# ST.17.25.01.04, SF# ST.17.12.01

*Established:* n/a

*Principal identifying modes:* 1) Smoothed unslipped vessel surfaces, 2) white volcanic tempered paste, 3) appliqué objects and impression, 4) small bowls with flaring walls, 5) unconventional forms.

*Paste, firing, and temper:* The paste of the Unnamed Unslipped: Censerware Variety is what sets this type of pottery apart from pottery of the Quintal group. Paste is fine-textured with volcanic inclusions. The color is extremely light, almost white (10YR8/2). Firing cores are not found.

*Surface finish and decoration:* Surfaces are very well smoothed and left unslipped. Appliqué objects can be applied to create various designs including winding impressed filets, buttons, and

hollow cylinders. Impression appears on cone-shaped forms, possibly applied to make the vessel look like a corn cob. Color is light gray or white (10YR8/2).

*Form:* Vessels are generally fragmented, but two form classes can be distinguished: 1) small bowls with flaring walls, direct rim, squared lip, and flat base, and 2) unconventional composite forms such as tall hollow cylinders (e.g., lacking a base) sometimes with braided handles.

*Intrasite locations and contexts:* Censerware is found almost exclusively at La Sufricaya, but can be found in the form of a single sherd both at Holmul and Cival.

*Intersite locations and contexts:* This specific type of Early Classic censerware has not been documented well at other lowland sites, but resembles Candelario Appliqué from Uaxactun (Smith and Gifford 1966:155, 171) and even Hoya Punctated, also found at Uaxactun (Smith and Gifford 1966:158, 171).

*Comment:* Noted above, censerware was placed in its own Unnamed Unslipped group because pastes, form, and surface finish resemble nothing of ceramics in the Quintal group. What truly sets the Unnamed Unslipped group apart is the consistent use of volcanic temper as well as its creamy white or gray paste. This leads me to believe that censerware ceramic production comprised a separate tradition of unslipped pottery manufacture. Design is also very interesting and leads to stylistic similarities of ceramics at La Sufricaya and Uaxactun. One piece in particular could indicate some kind of Mexican ideological influence. Pieces of a corncob censer were discovered in excavations of Structure 1 at La Sufricaya. While corncob censers have been found at other lowlands sites (Smith 1955 fig 17 b 9), they are quite rare. Censers of this shape were also found in Teotihuacan (Rattray 2001: figures 100, 134, 135). This could indicate that censerware may have comprised part of the K'ahk 3/Tzakol 3 complex rather than the earlier K'ahk 1-2/Tzakol 1-2.

*Illustration: 5.25*

## **PETEN GLOSS WARE**

### **Aguila Ceramic Group**

#### **Aguila Orange: Variety Unspecified**

*Sample:* 926 rims, 5386 total, 93% of group

*Whole Vessels:* c5434, c5442, c5427, c5431, c5593, c5683, c5658, c5622, c5623, c5626, c5627, SF# SUF.STR.2.LT.01, SF#(ST.17.24), SF#(ST.08.05.01), SF# HM.LT.01.00.02.05, SF# ST.17.25.01.01

*Established:* Smith and Gifford at Uaxactun (1966:154, 171)

*Principal identifying modes:* 1) Orange slip, 2) gloss surface finish, 3) bowls with basal flanges, z-angles, and rounded z-angles, 4) jars with short vertical neck.

*Paste, firing, and temper:* Three major paste variants exist in the Aguila Orange group and may correlate to complexes, form, and surface treatment. The first paste variant is medium textured and almost exclusively loaded with well-rounded gray calcite grains. Color is buff (10YR8/3). This variant is found in bowls of the K'ahk 1-2/Tzakol 1-2 Complexes. Forms are always thick walled bowls with either flaring or composite sides. Composite bowls display some kind of basal treatment such as a z-angle, rounded z-angle, or basal flange. Slip on these vessels is a thick orange and highly polished. The second variant is fine textured with volcanic temper, sometimes including mica. Color is also yellow (10YR7/4, 10YR7/3). This type of paste is correlated with K'ahk 3/Tzakol 3 complex ceramics. Forms are thin walled vessels including

bowls with flaring sides, bowls with flaring sides and basal flanges, and round-sided bowls. Slip is a thin red-orange that remains dull and not highly polished. The third paste variant is medium textured with crystal calcite inclusions and also yellow in color. This variant is found mostly in jar forms and crosscuts the three Early Classic Complexes.

*Surface finish and decoration:* Surface finish, like paste composition above, can also be separated into a number of variants. The first appears in K'ahk 1-2/Tzakol 1-2 complex material. Surfaces are well-smoothed before a thick orange (2.5YR5/8, 5YR5/8, 5YR6/8) slip is applied. Vessel surfaces are highly polished and often show signs of polishing marks. The second variant appears in Aguila Orange of the K'ahk 3/Tzakol 3 complex. Vessel surfaces are very well smoothed and a thin coat of orange-red (10R4/8, 2.5YR4/8) slip is applied. Polish is less brilliant and dull. Fire-clouding on Aguila ceramics with this type of finish is very common. Surfaces can be extremely mottled appearing, in some cases, a consistent brown. Rootlet marks are also very characteristic of this type of surface treatment.

*Forms:* 1) Bowls with flaring sides, direct rim, rounded lip, and falt base, 2) bowls with composite sides, z-angle, rounded z-angle, or basal flange, direct rim, and rounded lip, 3) bowls with composite sides, basal flange, direct rim, and squared lip, 4) bowls with round sides, direct rim, and squared or rounded lip, 5) jars with short vertical neck, direct rim, and rounded lip, 6) and one rare form of a large bucket with vertical walls, wide everted rim, and rounded lip.

*Intrasite locations and contexts:* The two potential varieties of Aguila Orange (K'ahk 1-2/Tzakol 1-2 and K'ahk 3/Tzakol 3) are found in varying quantities at different sites. The carbonate paste variety is found in greatest quantity in Building B, Group II, Holmul, with a handful of sherds appearing in Cival, K'o, and La Sufricaya. The volcanic paste variant is found in largest

quantities at La Sufricaya Structure 1 and in much smaller quantities at one Early Classic context in Cival.

*Intersite locations and contexts:* Aguila can be found at Uaxactun (Smith and Gifford 1966:154, 171), El Mirador (Forsyth 1989: 60-66), Tikal (Culbert n.d.), Altar de Sacrificios (Adams 1971:26-27), and the Petexbatun Region (Foias 1996:380-387). Gifford reports small frequencies at Barton Ramie (Gifford 1976:182).

*Comment:* Noted in the description above, it may eventually be possible to separate Aguila Orange into two varieties – one early and one late – based on paste, form, and surface modes. The first variety is made from a medium textured buff carbonate paste. This variety is produced during the K'ahk 1-2/Tzakol 1-2 Complexes. Forms are always thick walled bowls with either flaring or composite sides. Composite bowls display some kind of basal treatment such as a z-angle, rounded z-angle, or basal flange. Slip on these vessels is a thick orange and highly polished. The second variety is made from a fine textured yellow paste with volcanic temper, sometimes including mica. This type of Aguila is correlated with K'ahk 3/Tzakol 3 complex ceramics. Forms are thin walled vessels including bowls with flaring sides, bowls with flaring sides and basal flanges, and round-sided bowls. Slip is a thin red-orange that remains dull and not highly polished.

Because it is the dominant monochrome serving ware of the Early Classic, Aguila Orange ceramics may eventually be split into more types and varieties based on surface decoration: potential separation includes a fluted type, an appliqué type, and a modeled type. However, samples are so small at this time that I would prefer to wait to create more types and varieties until I have had a chance to increase the sample size.

Finally, it also interesting to note the general lack of Dos Arroyos Orange polychrome in contexts associated with the Early Classic and the abundance of Aguila Orange. Because of this I am led to believe that Aguila was the dominant serving ware of elites in the Early Classic Period in the Holmul Region. Polychrome pottery may have been a social valuable that only circulated among high status individuals during the Early Classic. This is unlike the Late Classic period when many social classes had access to polychrome material.

*Illustration:* 4.20, 4.25, 4.41, 4.44, 4.48, 4.51, 4.57, 5.26, 5.27, 5.28

### **Pita Incised: Variety Unspecified**

*Sample:* 77 rims, 157 total, 3% of group

*Whole Vessels:* c5432

*Established:* Smith and Gifford at Uaxactun (1966:161, 171)

*Principal identifying modes:* 1) Orange slip identical to Aguila, 2) post slip, and in some case, post-fire, fine-line incision, 3) bowls with basal flanges.

*Paste, firing, and temper:* Paste variants are the same as Aguila Orange above. The first is medium textured and almost exclusively loaded with well-rounded gray calcite grains. Color is buff (10YR8/3). This variant is found in bowls of the K'ahk 1-2/Tzakol 1-2 complexes. Forms are always thick walled, and can be bowls with round sides and annular base. Slip on these vessels is a thick orange and highly polished. The second variant is fine textured with volcanic temper, sometimes including mica. Color is also yellow (10YR7/3, 10YR7/4). This type of paste is correlated with K'ahk 3/Tzakol 3 complex ceramics. Forms are thin walled vessels including bowls with flaring sides and basal flanges, and round-sided bowls. Slip is a thin red-orange that remains dull and not highly polished.

*Surface finish and decoration:* Variants are the same as Aguila Orange and can be separated into two variants. The first appears in K'ahk 1-2/Tzakol 1-2 complex material. Surfaces are well-smoothed before a thick orange (2.5YR5/8, 5YR5/8, 5YR6/8) slip is applied. Vessel surfaces are highly polished and often show signs of polishing marks. The second variant appears in Aguila Orange of the K'ahk 3/Tzakol 3 complex. Vessel surfaces are very well smoothed and a thin coat of orange-red (10R4/8, 2.5YR4/8) slip is applied. Polish is less brilliant and dull. Fire-clouding on Aguila ceramics with this type of finish is very common. Surfaces can be extremely mottled appearing, in some cases, a consistent brown. Rootlet marks are also very characteristic of this type of surface treatment. Pita is different from Aguila because of the addition of fine-line post-slip and sometimes post-fire incision on flanges and rims. Designs are simple circumferential bands sometimes in pairs just below the lip on rims. Incising often takes the form of bands and vertical slash marks on basal flanges. Incision can be relatively fine or even quite crude.

*Form:* 1) Bowls with composite sides, basal flange, direct rim, squared or rounded lip and ring base, 2) bowls with round sides, direct rim, and rounded lip, 3) and one rare instance of a large deep cylinder or bucket with vertical wall, flat base and possibly slab supports (only base sherd remains).

*Intrasite locations and contexts:* Pita is found at La Sufricaya and a small housemound excavated in 2005 at Cival.

*Intersite locations and contexts:* Pita Incised can be found at Uaxactun (Smith and Gifford 1966:161, 171), Barton Ramie (Gifford 1976:182-183), Becan (Ball 1977:85), and El Mirador (Forsyth 1989: 66-67). Finally, Foias (1996:389-392) compares an orange slip incised ceramic from the Petexbatun Region to Buj Incised from Altar de Sacrificios (Adams 1971:43-44).

*Illustration:* 4.49, 5.29

**Nitan Composite: Variety Unspecified**

*Sample:* 123 rims, 151 total, 3% of group

*Whole Vessels:* c5429, c5520, c5521, c5624, c5625, SF#(ST.17.39), SF#(SUF.STR.2.LT.01), SF#(SUF.L.08.01), SF#(SUF.L.08.01), SF# ST.08.05.02.01

*Established:* Forsyth (1983:73) at Edzna.

*Principal identifying modes:* 1) Orange slip on interior and partial exterior, 2) dull or low gloss surface finish, 3) volcanic based paste, 4) bowls with flaring or round sided walls.

*Paste, firing, and temper:* Paste is similar to the later variant of Aguila Orange. Paste is fine textured yellow (10YR7/3, 10YR7/4, 2.5Y7/2) with volcanic inclusions. Firing cores are non-existent in the present sample.

*Surface finish and decoration:* Interiors of vessels are slipped a thin flakey orange-red (2.5YR5/8). The slip continues up to the lip of the vessel interior and may continue onto the exterior vessel rim and slightly down the wall. The remainder of the vessel exterior is left unslipped. The unslipped portion of vessel exterior displays rough smoothing or raking marks. These marks can sometimes look like formal striations, but more often than not they appear quite light.

*Form:* Vessel forms are relatively consistent: 1) bowls, of varying size, with flaring sides, direct rim, and squared lip, 2) bowls with round sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* Nitan Composite is relatively common in the Holmul Region and appears in Early Classic contexts at all the major sites including Holmul, Cival, La Sufricaya, and K'o.

*Intersite locations and contexts:* Nitan Composite appears at Edzna (Forsyth 1983:73), El Mirador (Forsyth 1989:67), Calakmul (Dominguez-Carrasco 1994:57), and the Petexbatun Region (Foias 1996:387-389).

*Comment:* Nitan Composite appears to crosscut complexes in the Early Classic period. It is found as whole vessels in K'ahk 2-3/Tzakol 2-3 complex deposits in Building B, Group II at Holmul as well as firm K'ahk 3/Tzakol 3 contexts at La Sufricaya.

*Illustration:* 4.46, 4.59, 4.60, 5.30, H.3

### **Aguila Orange: Buff and Polished Variety**

*Sample:* 40 rims, 96 bodies, 0.5% of group

*Whole Vessels:* c5426, SF#(ST.08.08.01)

*Established:* n/a

*Principal identifying modes:* 1) Combination of orange slip and highly polished buff surfaces, 2) volcanic tempered paste, 3) bowls with composite walls and basal flange, 4) bowls with round sides.

*Paste, firing, and temper:* Paste is similar to the late variant of Aguila Orange. Paste is fine textured, yellow (10R7/3, 10YR7/4, 2.5Y7/2), with volcanic inclusions.

*Surface finish and decoration:* Surfaces are very well smoothed. An orange-red (2.5YR5/8) slip is applied to vessel interiors, vessel exterior, or the lip and rim only. All other surfaces remain unslipped. Slipped and unslipped surfaces are then highly polished. It is also possible that what I have classified as unslipped surfaces are actually slipped with a light cream slip – this might actually be the case. Fire-clouding is common as are rootlet marks.

*Form:* 1) Bowls with composite walls, basal flange, direct rim, rounded or squared lip, and ring base, 2) bowls with round sides, direct rim, and rounded or squared lip.

*Intrasite locations and contexts:* Aguila Orange: Buff and Polished Variety is found as a whole vessel in Room 1, Building B, Group II at Holmul. It is found in largest frequencies at La Sufricaya.

*Intersite locations and contexts:* This type has not been defined at other well investigated lowland Maya sites to date.

*Comment:* Like Nitán Composite, this type appears to crosscut Early Classic complexes in the Holmul Region. It appears in the K'ahk 2-3/Tzakol 2-3 context burial in Room 1 Building B, Group II at Holmul as well as well-defined K'ahk 3/Tzakol 3 contexts at La Sufricaya.

*Illustration:* 4.43, 5.31

### **Aguila Orange: Buff and Polished Incised Variety**

*Sample:* 7 rims, 12 total, 0.5% of group

*Whole Vessels:* SF# SLT.01.04.02.01

*Established:* n/a

*Principal identifying modes:* 1) Combination of orange slip and highly polished buff surfaces, 2) fine-line post slip incision, 3) volcanic tempered paste, 4) bowls with composite walls, basal flange, direct rim, rounded or squared lip, and ring base, 5) bowls with round sides.

*Paste, firing, and temper:* Paste is identical to Aguila Orange: Buff and Polished Variety and similar to the late variant of Aguila Orange. Paste is fine textured, yellow or buff (10R7/3, 10YR7/4, 2.5Y7/2), with volcanic inclusions.

*Surface finish and decoration:* Surfaces are very well smoothed. An orange-red (2.5YR5/8) slip is applied to vessel interiors, vessel exterior, or the lip and rim only. All other surfaces remain unslipped. Slipped and unslipped surfaces are then highly polished. It is also possible that what I have classified as unslipped surfaces are actually slipped with a light cream slip – this might actually be the case. Fire-clouding is common as are rootlet marks. Incision appears on the rim or basal flange in the form of simple horizontal bands or vertical slash marks.

*Form:* 1) Bowls with composite walls, basal flange, direct rim, rounded or squared lip, and ring base, 2) bowls with round sides, direct rim, and rounded or squared lip, and 3) one rare bucket form with vertical walls and flat base.

*Intrasite locations and contexts:* Aguila Orange: Buff and Polished Incised Variety is found at La Sufricaya.

*Intersite locations and contexts:* This type has not been defined at other well investigated lowland Maya sites to date.

Illustration: --

## **Dos Hermanos Ceramic Group**

### **Dos Hermanos: Variety Unspecified**

*Sample:* 6 rims, 16 total, 100% of group

*Whole Vessels:* c5573, SF# ST.08.35.02.01

*Established:* Smith and Gifford (1966:154) at Uaxactun.

*Principal identifying modes:* 1) Red slip, 2) bowls with composite sides, basal flange, and ring base.

*Paste, firing, and temper:* Paste can be one of two variants. The first is medium to fine textured with crystal calcite inclusions. Color is yellow (10YR7/4) or buff (10YR8/2). The second is similar to Aguila group ceramics with volcanic inclusions. Paste is fine textured with volcanic inclusions and yellow (10R7/3, 10YR7/4, 2.5Y7/2).

*Surface finish and decoration:* Surfaces are well smoothed and slipped red (10R4/8) (or slipped orange and fired to red). Surfaces can be highly polished or remain slightly dull. Black fire-clouding is frequent.

*Form:* Forms are restricted to bowls with composite walls, basal flange, direct rim, rounded or squared lip, and ring base.

*Intrasite locations and contexts:* Dos Hermanos is found as a whole vessel in Building B, Group II at Holmul and as sherds in Structure 1 of La Sufricaya.

*Intersite locations and contexts:* Dos Hermanos Red appears at Uaxactun (Smith and Gifford 1966:154), El Mirador (Forsyth 1989:66), and Barton Ramie (Gifford 1976:160-161).

*Comment:* It is possible that the volcanic paste variant of Dos Hermanos red may simply be late Aguila Orange sherds where slip is more red than orange. The carbonate based paste examples could represent actual Dos Hermanos type sherds.

*Illustration:* 4.30, 5.32a, H.1

## **Balanza Ceramic Group**

### **Balanza Black: Variety Unspecified**

*Sample:* 255 rims, 1634 total, 86% of group

*Whole Vessels:* c5428, c5436, c5437, c5438, c5439, c5443, c5476, c5479, c5525, SF#  
SUF.L8.01.04.01, SF#(KOL.LT.01)

*Established:* Smith and Gifford at Uaxactun (1966:154-155, 171).

*Principal identifying modes:* 1) Black slip, 2) highly polished vessel surfaces, 3) bowls with composite sides and basal flange, 3) cylinders with vertical walls, 4) spouted vessels, 5) occasional scutate lids.

*Paste, firing, and temper:* Balanza Black in the Holmul Region may have three paste variants. The first is medium to fine textured with many crystal calcite inclusions. Color is gray (10R5/1) to black. The second paste is also medium to fine textured with many small crystal calcite inclusions, but color is pinkish (5YR4/4) brown. The third variant is fine textured with volcanic inclusions and gray to buff (10YR6/1) in color.

*Surface finish and decoration:* Highly polished vessel surfaces. Two types of slip treatment crosscut the paste groups described above. One treatment is a deep even coat of black on vessel interiors and exteriors. The second type of surface finish involves the application of a thin slip that fires to black, but more often remains mottled or gray. Occasionally “screwhead” or “coffee bean” appliqué appear on vessel exteriors. Screwheads usually appear on vessel exteriors near the base of cylinder tripods.

*Form:* 1) Bowls with composite walls, basal flange, direct rim, rounded lip, and ring base, 2) cylinders with vertical walls, direct rim, rounded or pinched lip, flat base, and occasional slab

tripod vessels, 3) bowls with round sides, direct rim, rounded lip, and flat or round base, 4) jars with short vertical neck, direct rim, and rounded lip, 5) spouts, 6) scutate lids.

*Intrasite locations and contexts:* Balanza black is found at every major site in the region.

However, it is more common in its incised type of Lucha Incised.

*Intersite locations and contexts:* Balanza Black appears at Uaxactun (Smith and Gifford 1966:154-155, 171), Barton Ramie (Gifford 1976:161-164), Altar de Sacrificios (Adams 1971: 24), Seibal (Sabloff 1975:107-108), Becan (Ball 1977:33), El Mirador (Forsyth 1989:71-73), Tikal (Culbert 1993:13; n.d) and in the Petexbatun Region (Foias 1996:396-199).

*Comment:* One black jar rim could be identified as Mount Maloney of the Pine Ridge Carbonate Ceramic Group. Mount Maloney was established at Barton Ramie by Gifford (1976: 243). This one sherd has the characteristic drag marks and possible thin black slip that Gifford mentions as a principal identifying attribute.

*Illustration:* 4.37, 4.39, 4.45, 4.53, 4.54, 4.58, 4.63, 5.33, 5.35f-g, H.12

### **Lucha Incised: Variety Unspecified**

*Sample:* 116 rims, 221 total, 12% of group

*Whole Vessels:* c5441, c5572, c5577, c5578, c5630, AMNH 30.0-6527, SF# ST.08.52.01, SF# ST.08.08.02.01, SF# ST.08.55.02.01, SF#(KOL.LT.01), SF# KLT.01.04.02.01

*Established:* Smith and Gifford at Uaxactun (1966:159, 171).

*Principal identifying modes:* 1) Black slip, 2) gloss surface finish, 3) post-slip fine-line incision, 4) bowls with composite sides, basal flange, direct rim, rounded or squared lip, and ring base, 5) cylinders with vertical walls, direct rim, rounded lip, 6) bowls with round sides, direct rim, and rounded or pinched lip, 7) scutate lids.

*Paste, firing, and temper:* Same three variants as described above for Balanza Black. The first is medium to fine textured with many crystal calcite inclusions. Color is gray (10YR5/1) to black. The second paste is also medium to fine textured with many small crystal calcite inclusions, but color is pinkish brown (5YR4/4). The third variant is fine textured with volcanic inclusions and gray to buff (10YR6/1) in color.

*Surface finish and decoration:* Same two surface decoration variants as described above for Balanza Black. One treatment is a deep even coat of black on vessel interiors and exteriors. The second type of surface finish involves the application of a thin slip that fires to black, but more often remains mottled or gray. Post-slip fine-line incision appears in the form of horizontal circumferential lines on basal flanges and rims, more complicated geometric or naturalistic patterns on lids, and small vertical slashes on basal flanges. Incision can range from excellent to extremely poor in quality.

*Form:* 1) Bowls with composite sides, basal flange, direct rim, rounded or squared lip, and ring base, 2) cylinders with vertical walls, direct rim, rounded lip, 3) bowls with round sides, direct rim, and rounded or pinched lip, 4) scutate lids.

*Intrasite locations and contexts:* Lucha Incised is found in greatest quantities at La Sufricaya, but is also found in Holmul, Cival, and K'o.

*Intersite locations and contexts:* Lucha Incised can be found at Uaxactun (Smith and Gifford 1966:159), Tikal (Culbert 1993:14; n.d), Barton Ramie (Gifford 1976:164-166), Altar de Sacrificios (Adams 1971: 43), Seibal (Sabloff 1975:110-112), Becan (Ball 1977:85), El Mirador (Forsyth 1989:73), and in the Petexbatun Region (1996:400-403).

*Illustration:* 4.26, 4.29, 4.34, 4.35, 4.47, 4.56, 5.34, 5.35, H.8, H.9, H.10, H.13, H.14

## **Urita Gouged-Incised**

*Sample:* 10 rims, 32 total, 1.5% of group

*Whole Vessels:* c5579, c5631, SF#(SUT.05.09)

*Established:* Smith and Gifford (1966:164, 171).

*Principal identifying modes:* 1) Black slip, 2) pre-slip gouge-incision in the form of geometric, conventionalized, naturalistic, and glyphic elements, 4) cylinders with vertical walls, and 5) bowls with round sides.

*Paste, firing, and temper:* Paste is similar to first two variants of Balanza Black. The first is medium to fine textured with many crystal calcite inclusions. Color is gray (10YR5/1) to black. The second paste is also medium to fine textured with many small crystal calcite inclusions, but color is pinkish brown (5YR4/4).

*Surface finish and decoration:* Surface treatment is similar to the two variants within Balanza Black. One treatment is a deep even coat of black on vessel interiors and exteriors. The second type of surface finish involves the application of a thin slip that fires to black, but more often remains mottled or gray. Gouge-incision is performed pre-slip and takes the form of geometric, naturalistic, conventionalized, or glyphic elements. Sometime negative areas are filled with purple paint or pigment. Occasionally “screwhead” or “coffee bean” appliqué appear on vessel exteriors. Screwheads usually appear on vessel exteriors near the base of cylinder tripods.

*Form:* 1) Cylinders with vertical walls, direct rim, rounded lip, and flat base sometime with supports, and 2) bowls with round sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* Urita Gouged-Incised is found exclusively in La Sufricaya collections.

*Intersite locations and contexts:* Urita Gouged-Incised appears at Uaxactun (Smith and Gifford 1966:164, 171), Tikal (Culbert 1993:15; n.d.), Seibal (Sabloff 1975:11), Altar de Sacrificios (Adams 1971:52), and the Petexbatun Region (Foias 1996:406-408)

*Comment:* Urita Gouged-Incised appears to be a relatively late type in the Early Classic period. It is found mostly in association with K'ahk 3/Tzakol 3 contexts at La Sufricaya.

*Illustration:* 4.27, 4.36, 5.36, 5.37, 5.28a-b, H.11

**Positas Modeled: Variety Unspecified**

*Sample:* 0 rims, 10 total, 0.5% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:161,171)

*Principal identifying modes:* 1) Black slip, 2) small modeled effigy figures, 3) cross-hatching incision.

*Paste, firing, and temper:* Paste is fine textured with many small crystal calcite inclusions. Color is gray (10YR5/1).

*Surface finish and decoration:* Exterior surface covered in black slip. Pre-slip incised cross-hatching decoration on the exterior covers the few pieces of material that exist. Appliqué filets also appear on some sherds.

*Form:* While this type is extremely rare, a number of small, modeled body fragments have been recovered. Among them is an arm, shoulder, and possibly part of a head.

*Intrasite locations and contexts:* This type only appears in the potential ritual filling episode of La Sufricaya Structure 1.

*Intersite locations and contexts:* Positas appears at Uaxactun (Smith and Gifford 1966:161, 171) and at Tikal (Culbert 1993:14; n.d).

*Comment:* Because this type is extremely rare in the lowlands and only seems to have connections with Uaxacatun at this time, it may indicate some kind of important trade or ritual relationship between the Holmul Region and Uaxacatun in the Early Classic Period.

*Illustration:* 5.38c

## **Actuncan Ceramic Group**

### **Actuncan Orange Polychrome: Variety Unspecified**

*Sample:* 21 rims, 25 total, 71% of group

*Whole Vessels:* c5644, SF# HM.LT.01.00.02.05

*Established:* Smith and Gifford at Uaxactun (1966:154, 171).

*Principal identifying modes:* 1) Orange slip, 2) highly polished vessel surfaces, 3) red and black paint on orange background, 4) designs include simple geometric patterns and dotted lines, 5) bowls with composite sides, basal flange, and ring bases.

*Paste, firing, and temper:* Paste varies greatly but is usually fine to medium textured. Inclusions can include crystal calcite and volcanic temper. Paste color ranges from yellow (7.5YR6/4, 10YR7/3) to buff (10YR8/3) in color.

*Surface finish and decoration:* Interior and exterior surfaces are well-smoothed and highly polished. A cream underslip is applied before the application of orange (5YR5/8, 2.5YR5/8) slip, which acts as a background for painting. Red (10R4/8) and black horizontal circumferential

bands are painted on or just below the lip of vessel interiors and exteriors. Exterior design motifs include step-frets and other geometric patterns executed with the use of dotted lines.

*Form:* Bowls with composite sides, basal flange, direct rim, and rounded lip.

*Intrasite locations and contexts:* Actuncan polychromes can be found at La Sufricaya, K'o, Holmul, and even Cival in this sample.

*Intersite locations and contexts:* Actuncan polychrome appears at Uaxactun (Smith and Gifford 1966:154), Barton Ramie (Gifford 1976:170-173), Altar de Sacrificios (Adams 1971:36-37), and is subsumed under Actuncan/Dos Arroyos at Seibal because of poor preservation (Sabloff 1975:105)

*Comment:* At this point in the analysis, Dos Arroyos and Actuncan polychromes are differentiated simply by 1) use of dotted line motifs in exterior vessel painting, 2) slight variation in vessel form (Actuncan lip to flange distances are smaller than Dos Arroyos), and 3) archaeological context (Actuncan appears earlier than Dos Arroyos in the Holmul Region). Actuncan polychromes only appear associated with K'ahk 1/Tzakol 1 complex ceramics.

*Illustration:* 4.23, 5.39, 5.40, H.5

### **Boleto Black-on-Orange**

*Sample:* 8 rims, 10 total, 29% of group

*Whole Vessels:* c5663, c5664, SF# HM.LT.01.00.02.01, SF# HM.LT.01.00.02.02

*Established:* Smith and Gifford (1966:155, 171)

*Principal identifying modes:* 1) Orange slip, 2) simple black painted design in the form of horizontal bands or semi-circles, 3) bowls with composite walls, basal flange, direct rim, rounded lip, and ring base.

*Paste, firing, and temper:* Paste is identical to early Aguila group material. Paste is medium textured with many well-rounded gray calcite inclusions. Color is buff (10YR8/3).

*Surface finish and decoration:* Finish is very similar to early Aguila ceramics. Vessels are well-smoothed. Orange slip is thick and very orange (5YR5/8, 2.5YR5/8) – not red-orange like later slips. Designs appear as simple horizontal bands on the lip, rim, and basal flange. Solid black semi-circles often decorate the flanges. On bowl forms, black design can take the form of squiggly black lines or dotted black lines near on the exterior rim of vessel surfaces. Surfaces are highly polished.

*Form:* 1) Bowl with composite sides, basal flange, direct rim, rounded lip, and ring base, and 2) possible bowl with round side, direct rim, and rounded lip.

*Intrasite locations and contexts:* Boleto Black-on-Orange is found at Holmul, Hamontun, La Sufricaya, and K'o.

*Intersite locations and contexts:* Boleto is found at Uaxactun (Smith and Gifford 1966:155) and Tikal (Culbert:n.d.)

*Illustration:* 4.70, 4.71, 5.41, 5.42, 5.43, 5.44, H.4

## **Dos Arroyos Ceramic Group**

### **Dos Arroyos Orange Polychrome: Variety Unspecified**

*Sample:* 63 rims, 135 total, 73% of group

*Whole Vessels:* c5665, c5477, c5478, c5591, c5592, c5576.1, c5576

*Established:* Smith and Gifford at Uaxactun (1966: 157, 171)

*Principal identifying modes:* 1) Orange slip, 2) high polished gloss surface finish, 3) polychrome red and black painting, 4) bowls with composite sides, basal flange, and ring base.

*Paste, firing, and temper:* Dos Arroyos is made from two types of pastes. The first is fine textured and contains volcanic inclusions. Color is yellow to buff (10YR6/4). Cores are not present. The second is fine or medium textured and carbonate based with many small crystal calcite inclusions. Color is also yellow (7.5YR4/6).

*Surface finish and decoration:* Vessel interior and exterior surfaces are well-smoothed and polished. Orange slip (7.5YR5/8, 7.5YR6/8) is applied as a painting surface or background. Black and red (10R4/8) bands and geometric patterns are painted on the exterior of vessel walls and basal flanges. The interior of vessels occasionally have a band of red or black slip on or below the rim.

*Form:* 1) Bowls with composite sides, basal flange, direct rim, rounded lip, and ring bases.

*Intrasite locations and contexts:* Dos Arroyos polychromes are relatively rare in the Holmul Region, but can be found in La Sufricaya, the burial vaults of Building B, Group II at Holmul (Merwin and Vaillant 1932, Pring 2000), and some fill contexts at Cival.

*Intersite locations and contexts:* Dos Arroyos Orange polychromes are found at Uaxactun (Smith and Gifford 1966:152), Tikal (Culbert 1993:13; n.d), Barton Ramie (Gifford 1976:173-182), Altar de Sacrificios (Adams 1971:37), Seibal (Sabloff 1975:105-107), Becan (Ball 1977:67-68), El Mirador (Forsyth 1989:68-71), and in the Petexbatun Region (Foias 1996:415-418).

*Illustration:* 4.33, 4.38, 4.40, 4.42, 5.45, 5.46, 5.47

### **Caldero Buff Polychrome: Variety Unspecified**

*Sample:* 21 rims, 49 total, 27% of group

*Whole Vessels:* c5524, c5661

*Established:* Smith and Gifford at Uaxactun (1966:155, 171)

*Principal identifying modes:* 1) Highly polished buff paste vessel exteriors and interiors, 2) red and black painted design, 3) bowls with composite sides and basal flange, 4) wide possibly lateral ridge plates.

*Paste, firing, and temper:* Paste is fine to medium with crystal calcite inclusions. Color is buff (10YR8/2) to yellow (2.5Y7/3, 2.5Y7/4).

*Surface finish and decoration:* Vessel surfaces are highly polished creating what looks like a cream underslip (10YR8/3). Circumferential bands and other geometric designs are then applied in red (7.5YR5/8) and black paint to vessel exteriors.

*Form:* Bowls with composite sides, basal flange, direct rim, rounded lip, and ring base. There is one instance of an open lateral ridge plate.

*Intrasite locations and contexts:* Caldero Buff sherds are found at La Sufricaya and whole vessels from Merwin's original excavations were found in Building B, Group II.

*Intersite locations and contexts:* Caldero buff has been noted at Uaxactun (Smith and Gifford 1966:155, 171) Tikal (Culbert 1993:13; n.d.), and Altar de Sacrificios (Adams 1971:37).

*Illustration:* 4.64, 4.68, 5.48, 5.49, 5.32b

## **Japon Ceramic Group**

### **Japon Resist: Variety Unspecified**

*Sample:* 2 rims, 2 total, 100% of group

*Whole Vessels:* c5559, c5560

*Established:* Smith and Gifford at Uaxactun (1966:158, 171)

*Principal identifying modes:* 1) Black resists designs on red slip, 2) cylinder vases with vertical walls and lids.

*Paste, firing, and temper:* Currently unknown. The only examples of Japon Resist in the Holmul region come from Room 2 in Building B, Group II, Holmul. These vessels are stored in the Peabody Museum and paste samples were not able to be taken.

*Surface finish and decoration:* Vessel surfaces are well smoothed. Red slip (2.5YR4/8) serves as the background color for resist design. Wax or another substance which stands up to firing is then applied to create abstract and conventionalized designs. The vessels may have been fired in a reducing atmosphere which creates black smudge-like areas surrounding the resist designs. Vessel surfaces are relatively well polished. Lids are small and trapezoidal with modeled effigy human head handles.

*Form:* Cylinder vases with vertical walls, direct rim, rounded lip, and flat base.

*Intrasite locations and contexts:* Room 2, Building B, Group II, Holmul.

*Intersite locations and contexts:* Uaxactun (Smith and Gifford 1966:158) and Tikal (Culbert 1993:13; n.d.; Laporte et al. 1992: Figure 25).

*Comments:* Concerning Japon Resist at Tikal, Culbert (n.d.) notes that “The type is so rare and so unusual that it seems almost certain that it must have been imported from an unknown

source". Culbert's (n.d.) description is also extremely similar to the Japon Resist examples from Building B, Group II at Holmul. However, vessel forms are slightly different between the two sites. At Tikal forms are cylindrical tripods while at Holmul they lack supports. Also, resist on the Holmul examples seems to be produced by a smudging effect and not necessarily the application of two slips. Similar to what Culbert notes at Tikal, because the examples of Japon Resist at Holmul are whole pots it will be difficult if not impossible to remove a piece for INAA. This may prevent chemical sourcing using that kind of technique which will impede our understanding of where these pots may have been produced.

*Illustration:* 4.65, 4.66

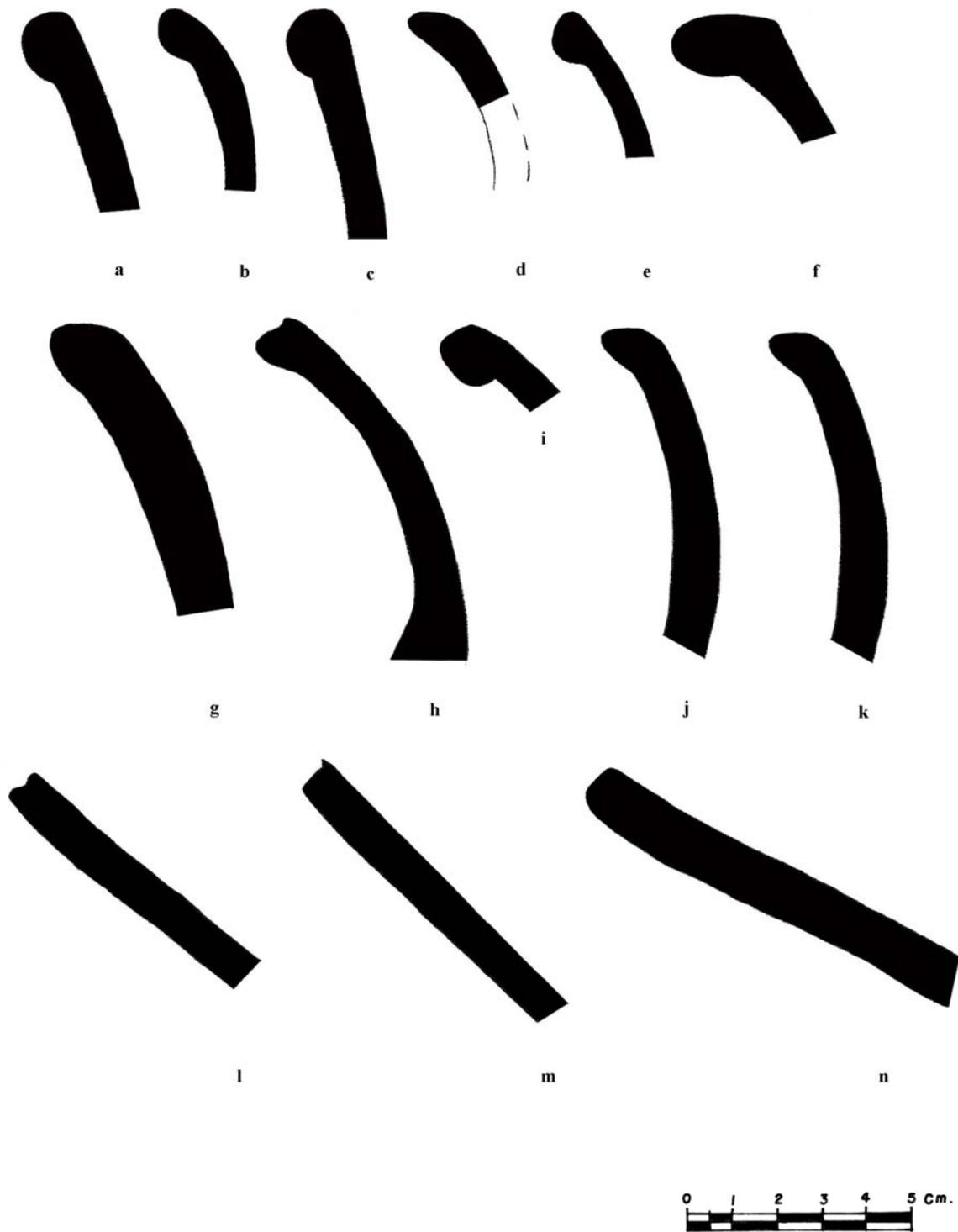


Figure 5.23 K'ahk 1-3/Tzakol 1-3 complex ceramics (a-n, Quintal Unslipped: Variety Unspecified)

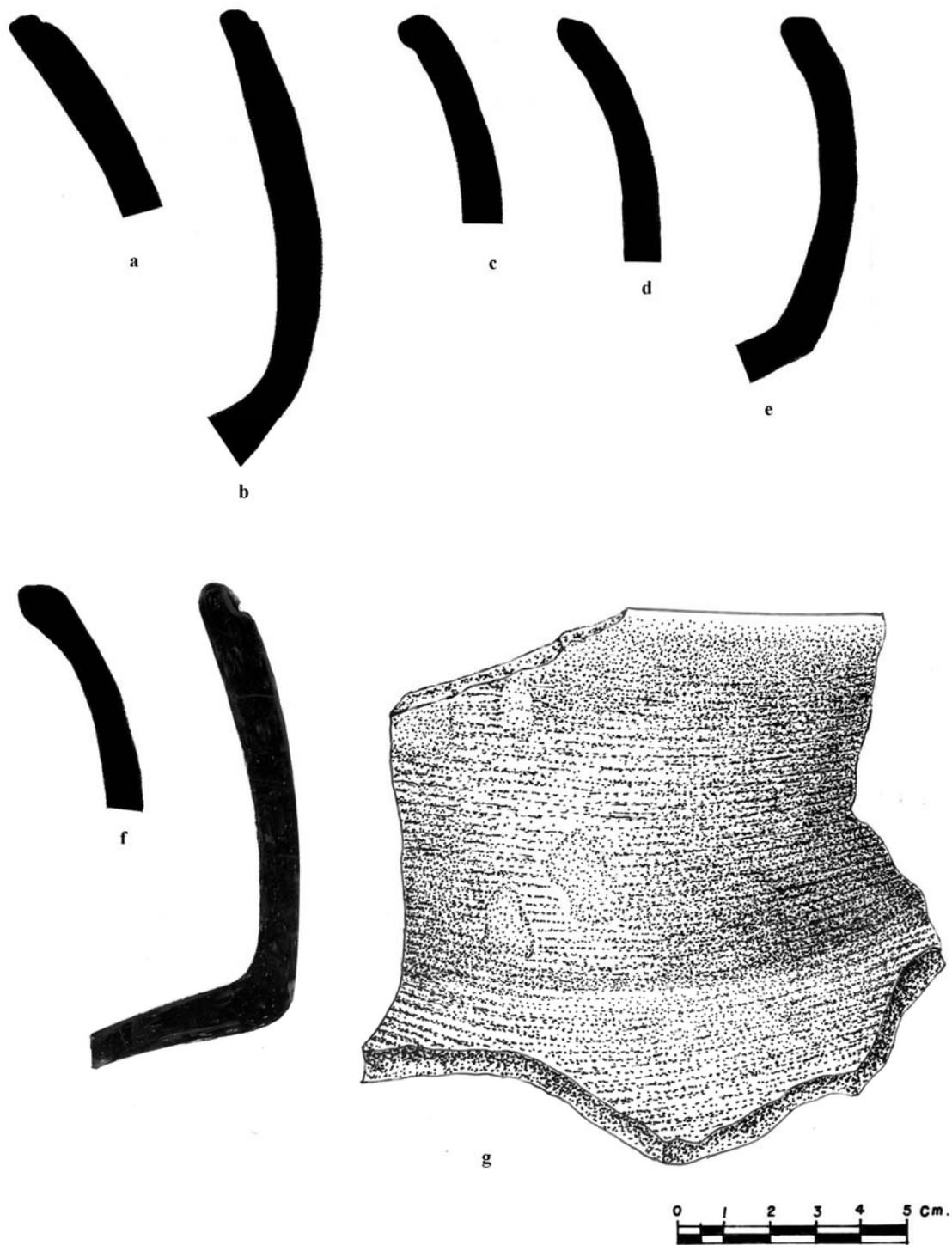
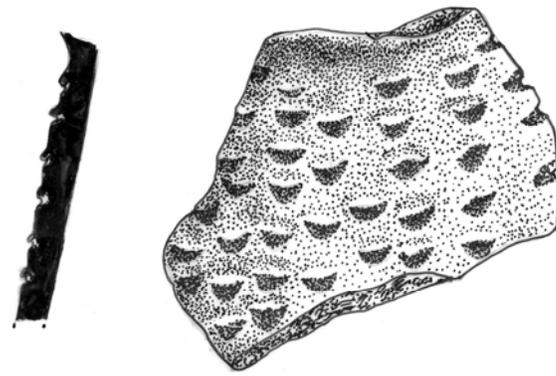
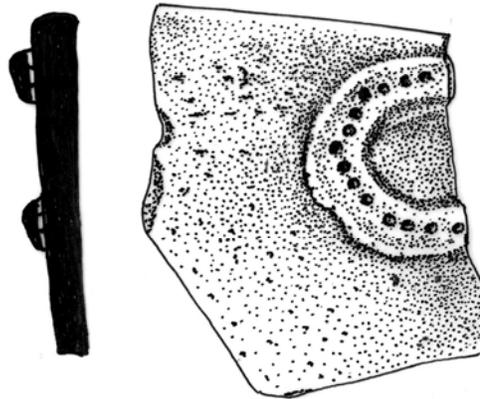


Figure 5.24 K'ahk 1-3/Tzakol 1-3 complex ceramics (a-g, Triunfo Striated: Variety Unspecified)



a



b

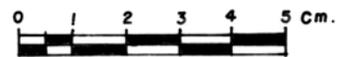


Figure 5.25 K'ahk 1-3/Tzakol 1-3 complex ceramics (a-b, Unnamed Unslipped: Censerware)

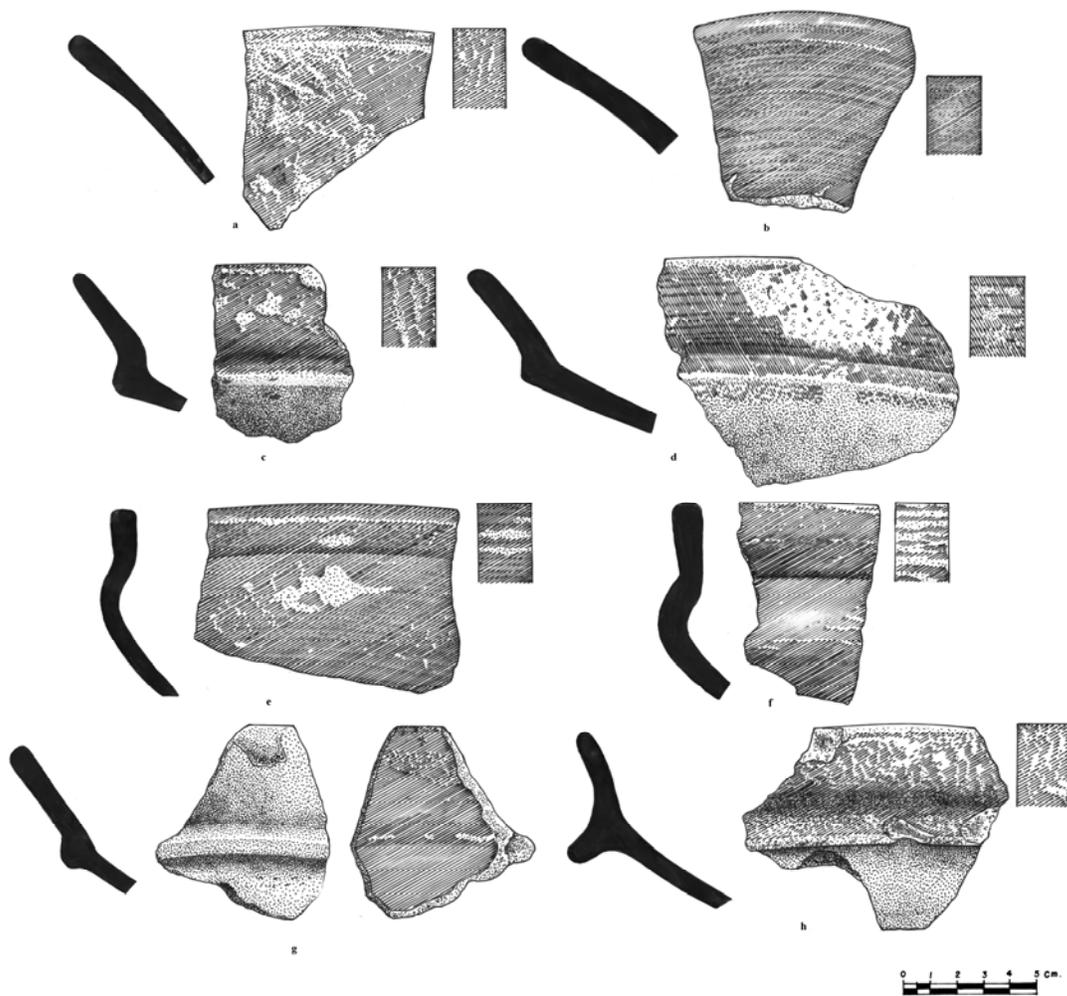


Figure 5.26 K'ahk 1-2/Tzakol 1-2 complex ceramics (a-h, Aguila Orange: Variety Unspecified)

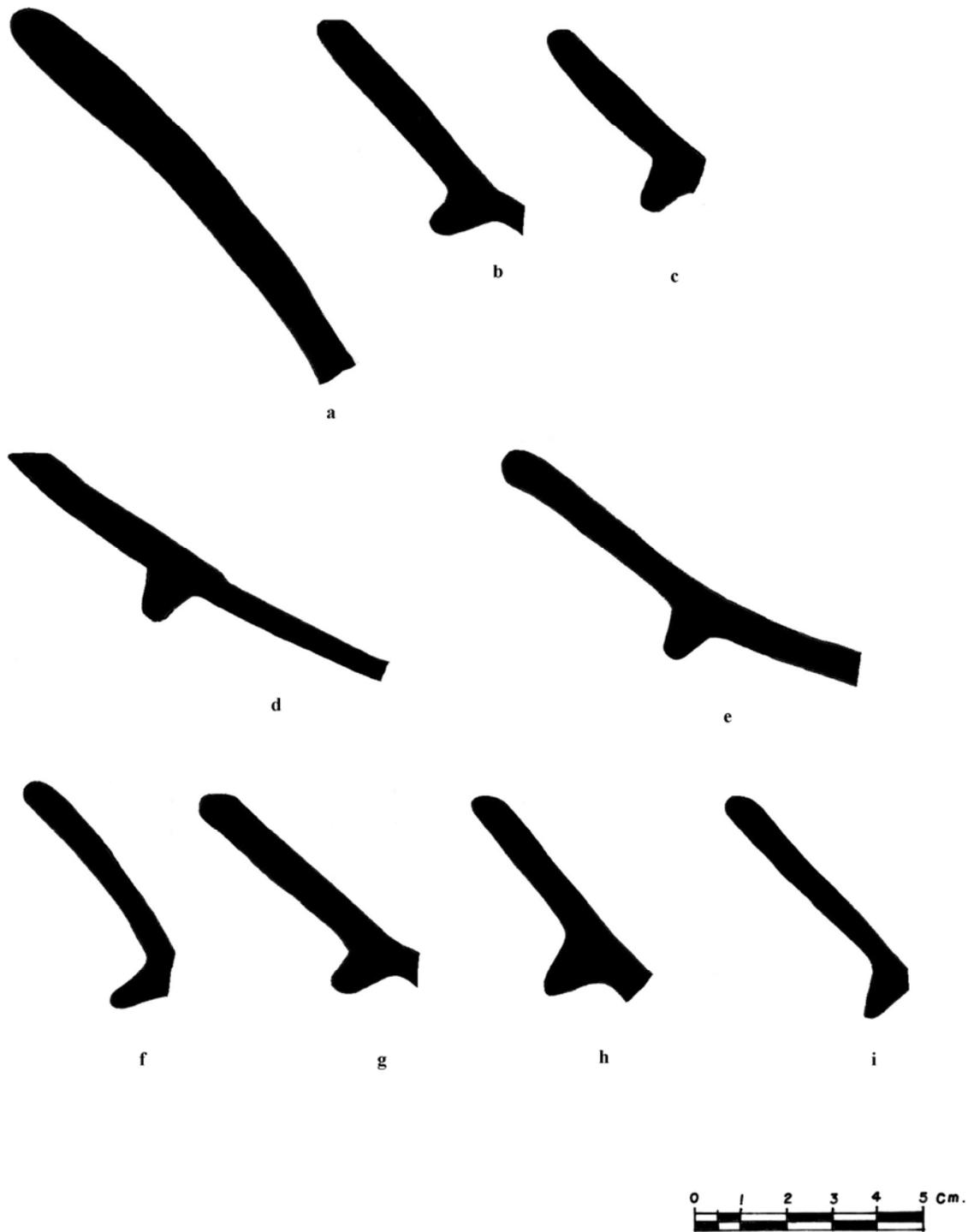


Figure 5.27 K'ahk 3/Tzakol 3 complex ceramics (a-i, Aguila Orange: Variety Unspecified)

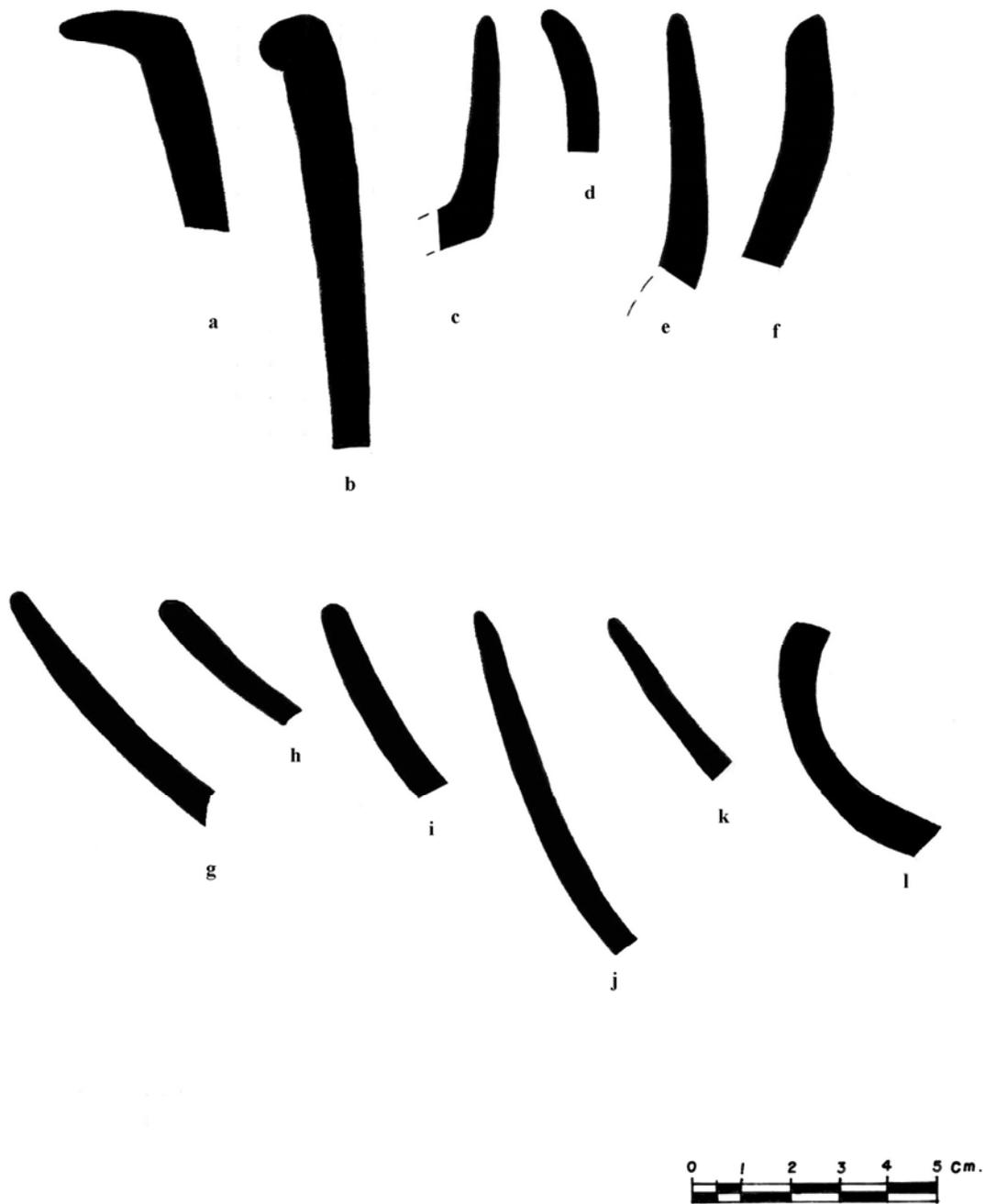


Figure 5.28 K'ahk 3/Tzakol 3 complex ceramics (a-l, Aguila Orange: Variety Unspecified)



Figure 5.29 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-g, Pita Incised: Variety Unspecified)



Figure 5.30 K'ahk 2-3/Tzakol 2-3 complex ceramics (a, Nitan Composite: Variety Unspecified)

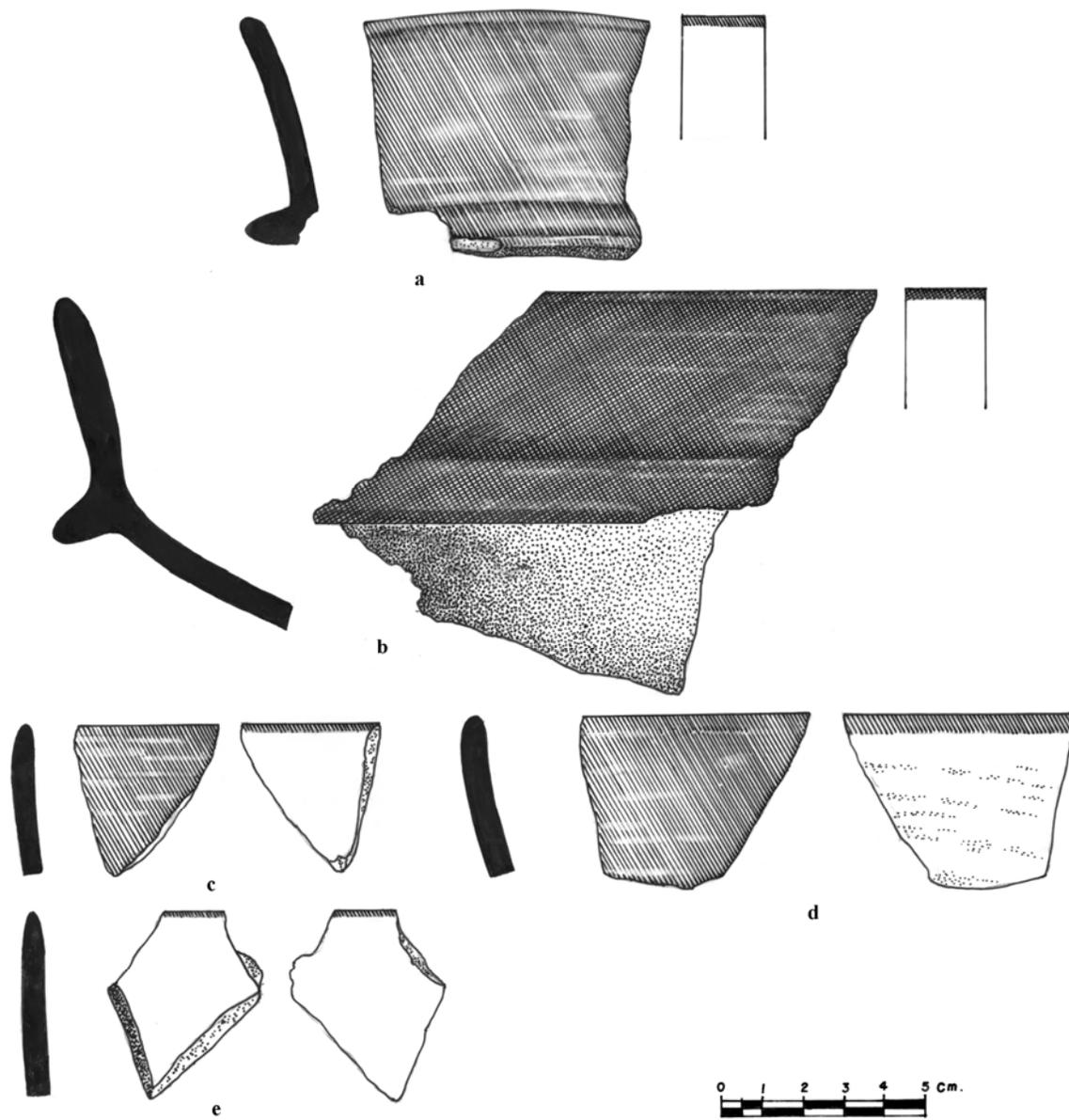


Figure 5.31 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-e, Aguila Orange: Buff and Polished Variety)

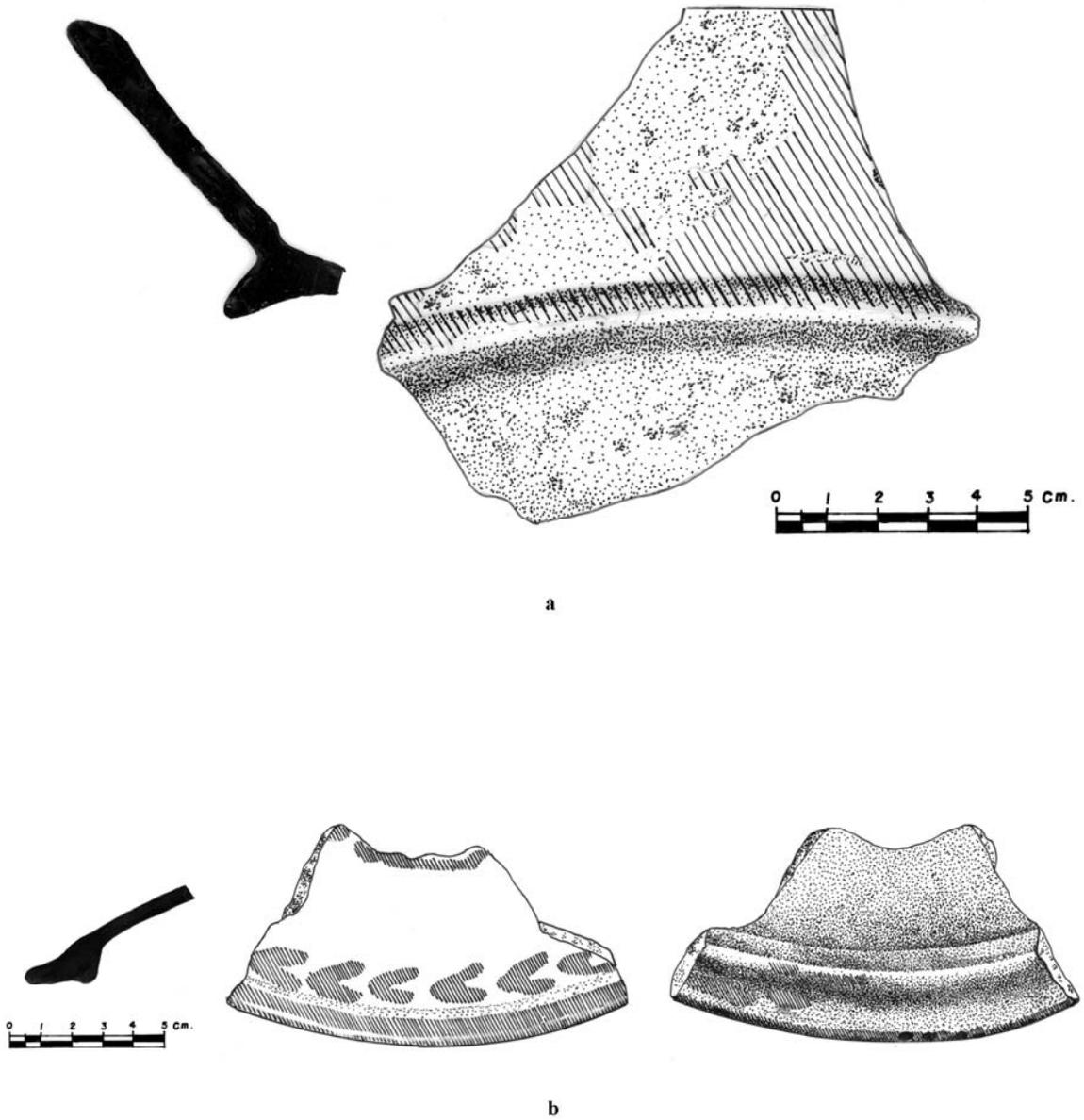


Figure 5.32 K'ahk 1-3/Tzakol 1-3 complex ceramics (a, Dos Hermanos Red: Variety Unspecified; b, Caldero Buff Polychrome: Variety Unspecified)

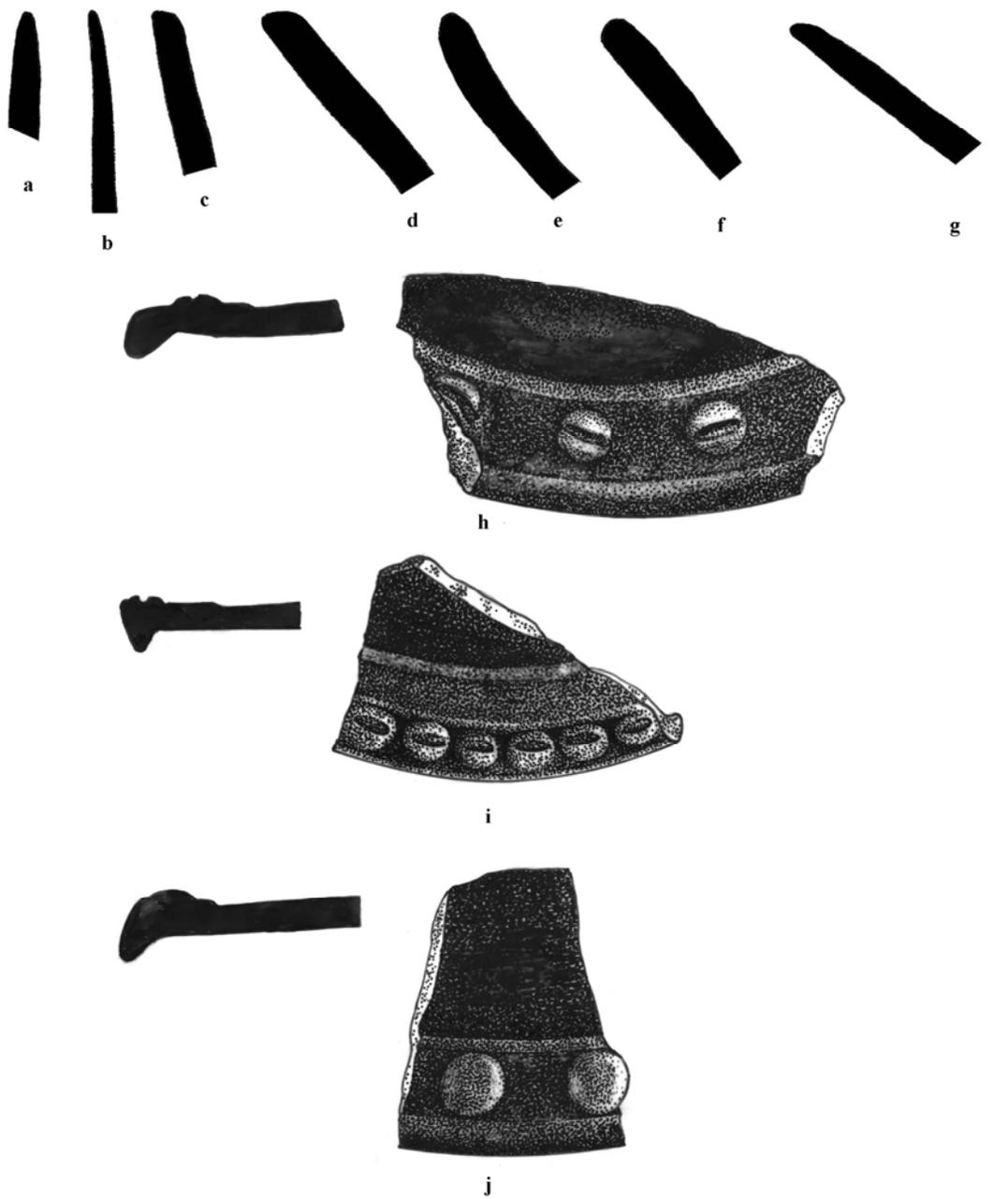


Figure 5.33 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-j, Balanza Black: Variety Unspecified)

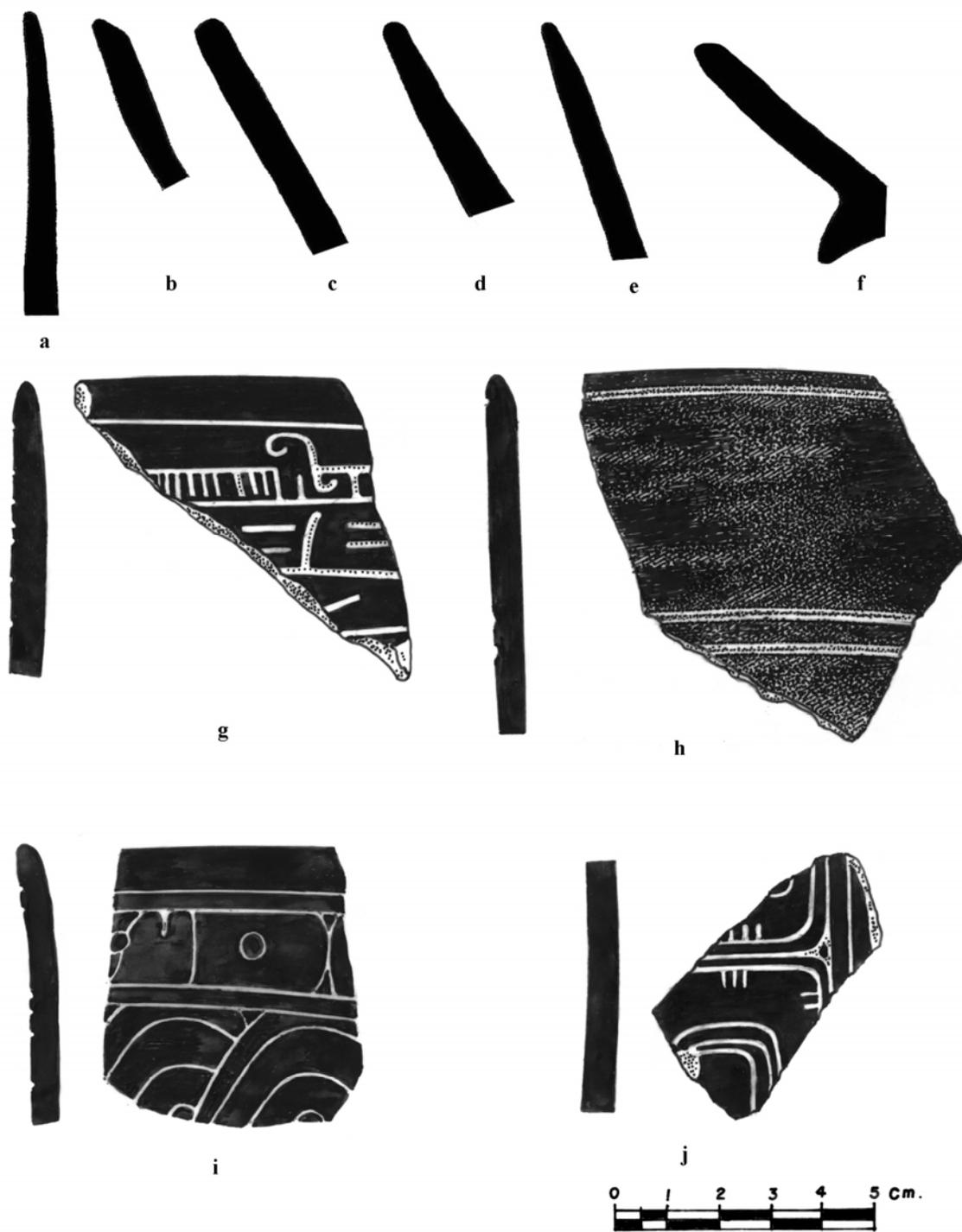


Figure 5.34 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-j, Lucha Incised: Variety Unspecified)

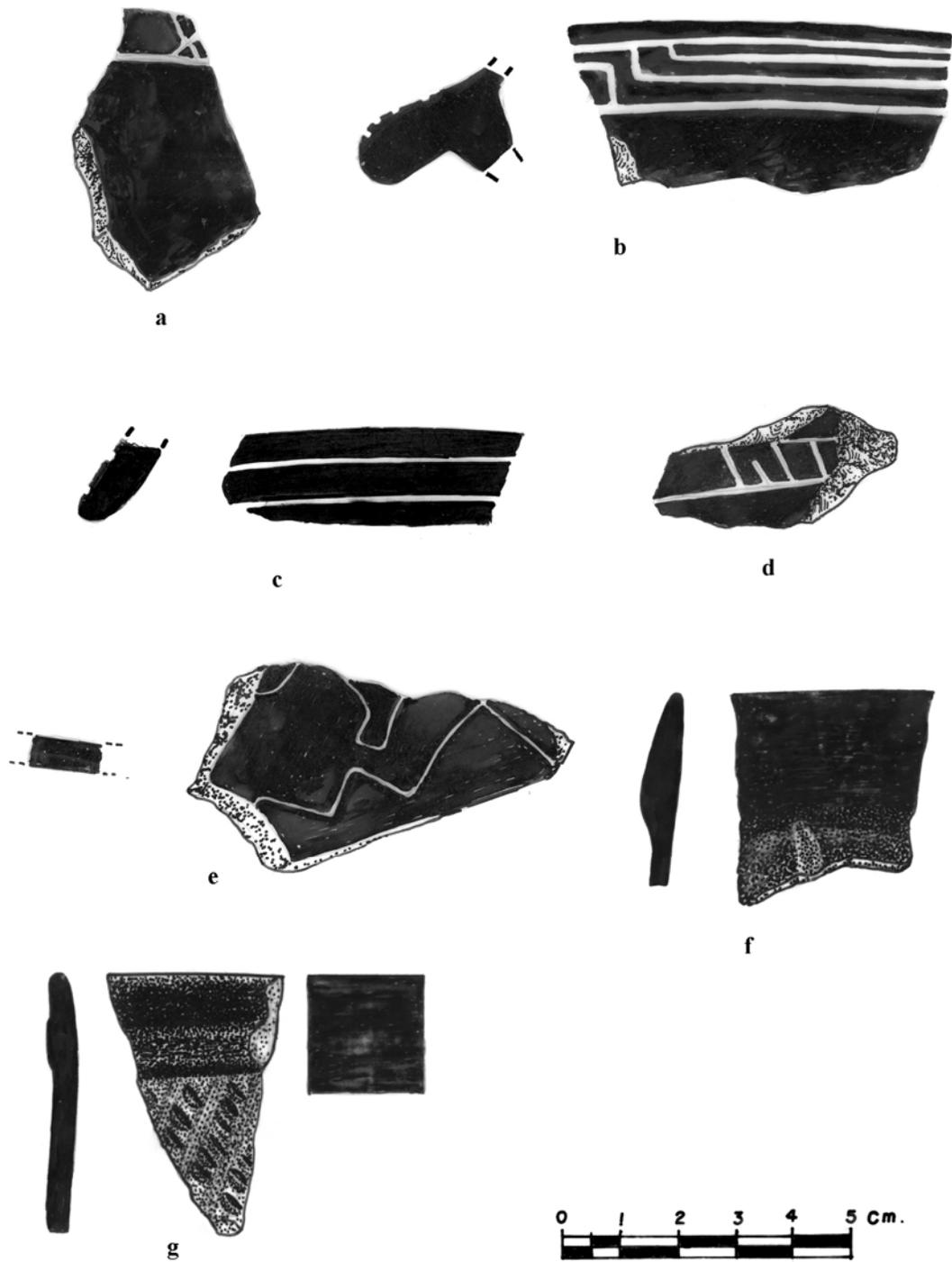
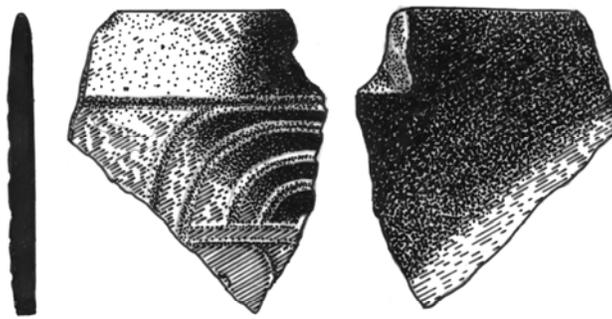


Figure 5.35 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-e, Lucha Incised: Variety Unspecified; f, Balanza Black Fluted: Variety Unspecified; g, Unnamed Balanza Group Impressed)



a



b



c



Figure 5.36 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-c, Urita Gouged-Incised: Variety Unspecified)

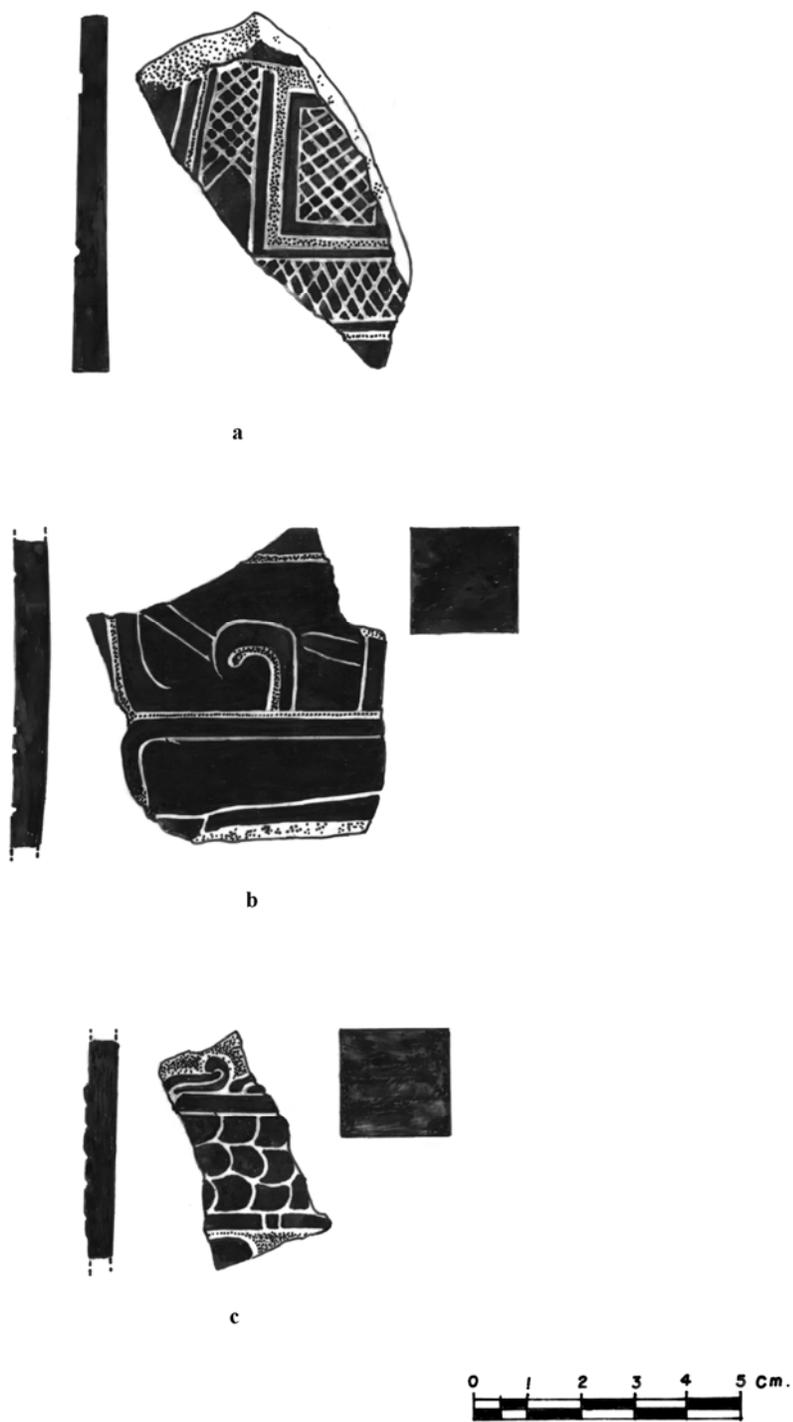


Figure 5.37 K'ahk 2-3/Tzakol 2-3 complex ceramics (Urita Gouged-Incised: Variety Unspecified)

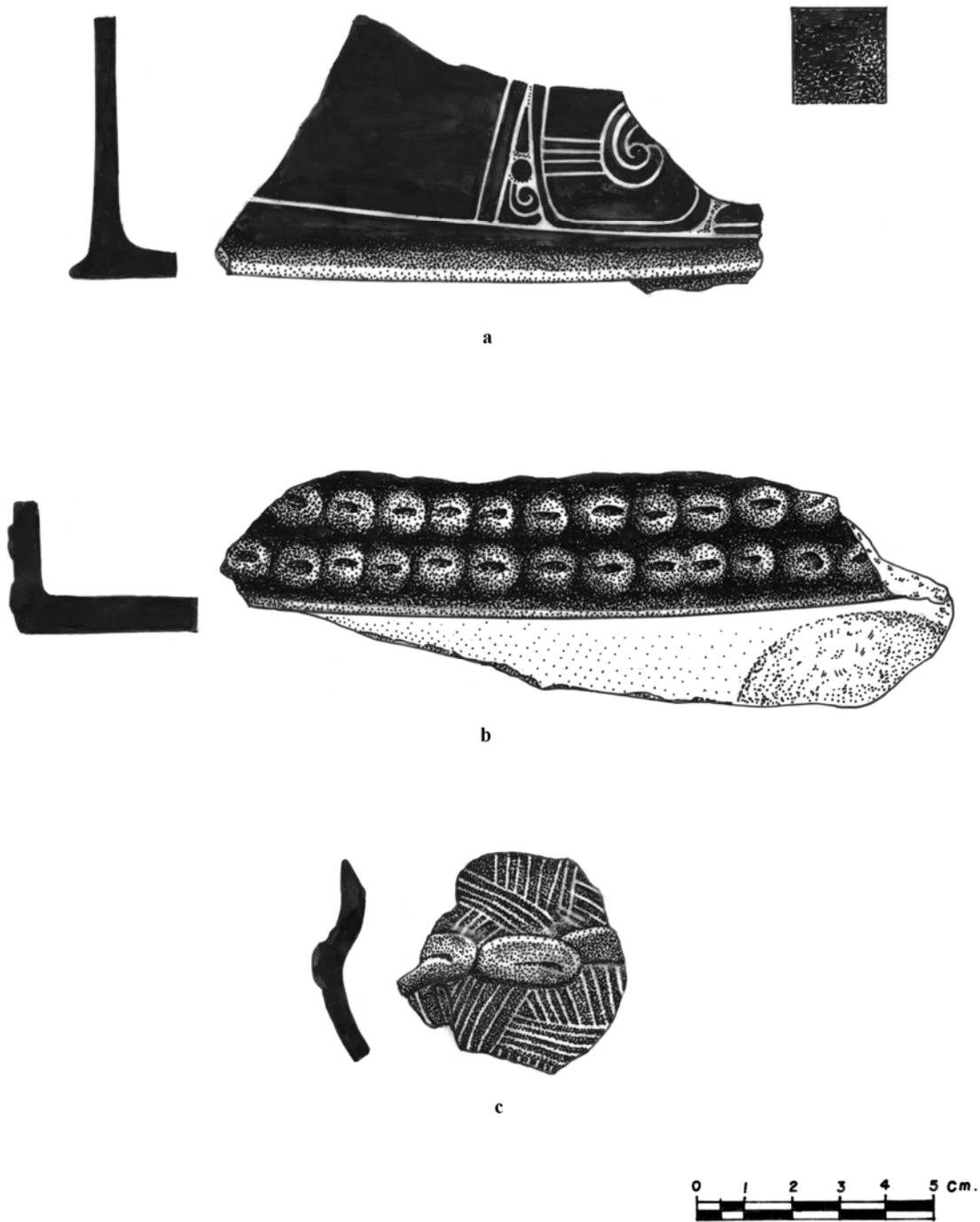
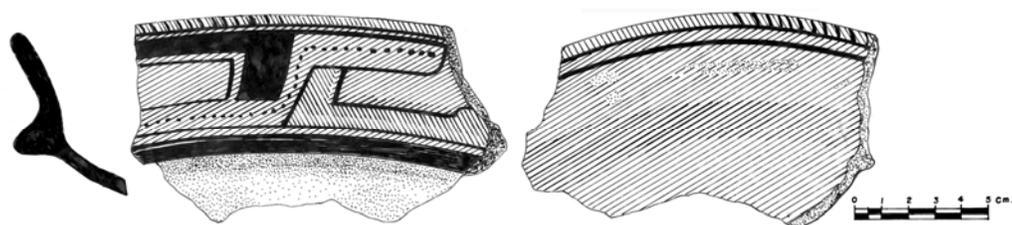
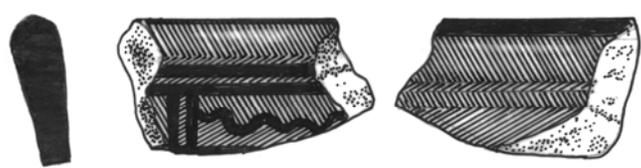


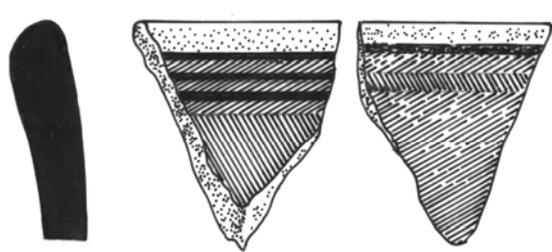
Figure 5.38 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-b, Urita Gouged-Incised: Variety Unspecified; c, Positas Modeled: Variety Unspecified)



a



b



c



d

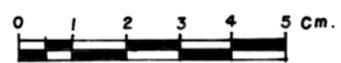


Figure 5.39 K'ahk 1/Tzakol 1 complex ceramics (a-d, Actuncan Orange Polychrome: Variety Unspecified)

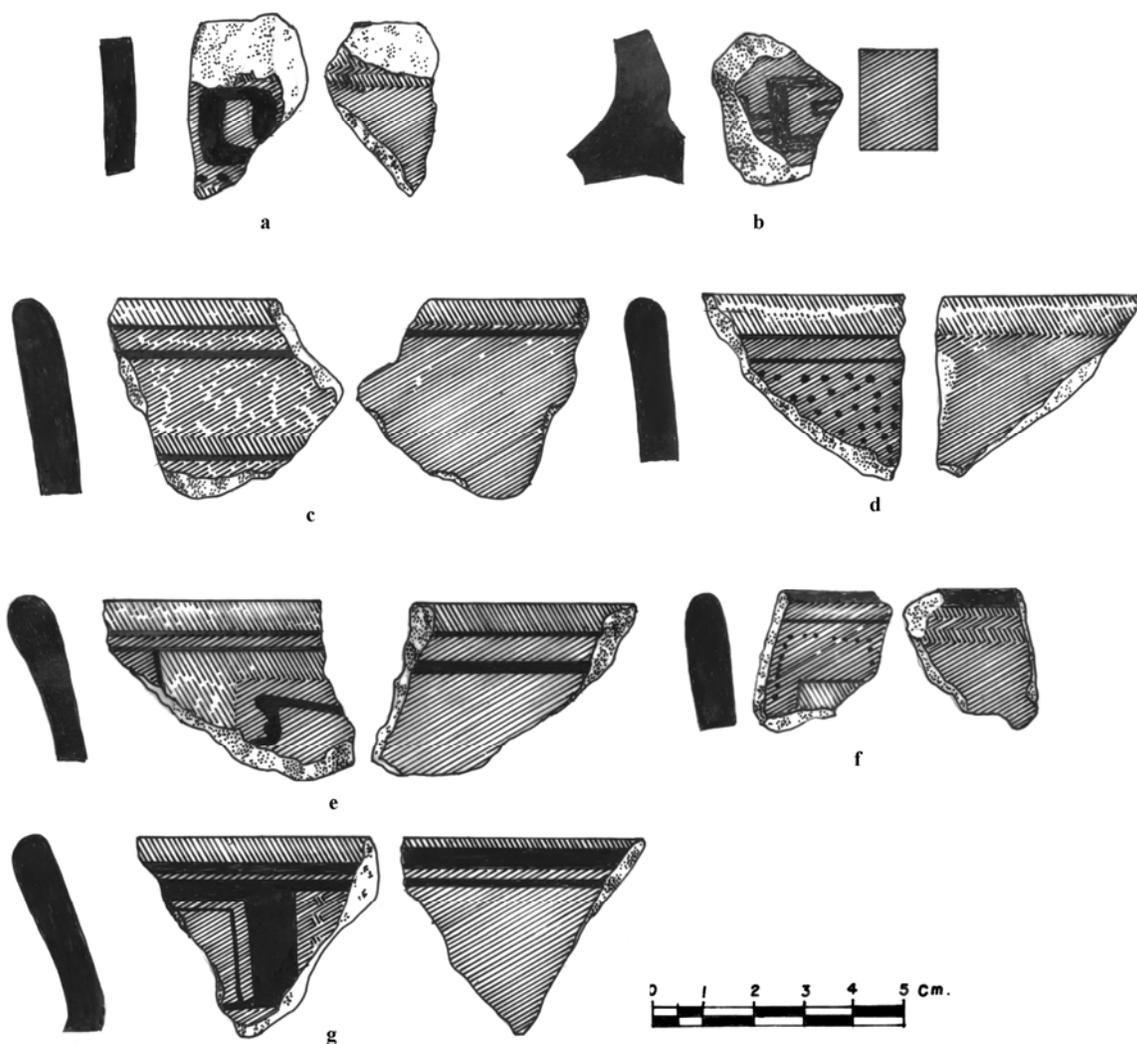


Figure 5.40 K'ahk 1/Tzakol 1 complex ceramics (a-g, Actuncan Orange Polychrome: Variety Unspecified)

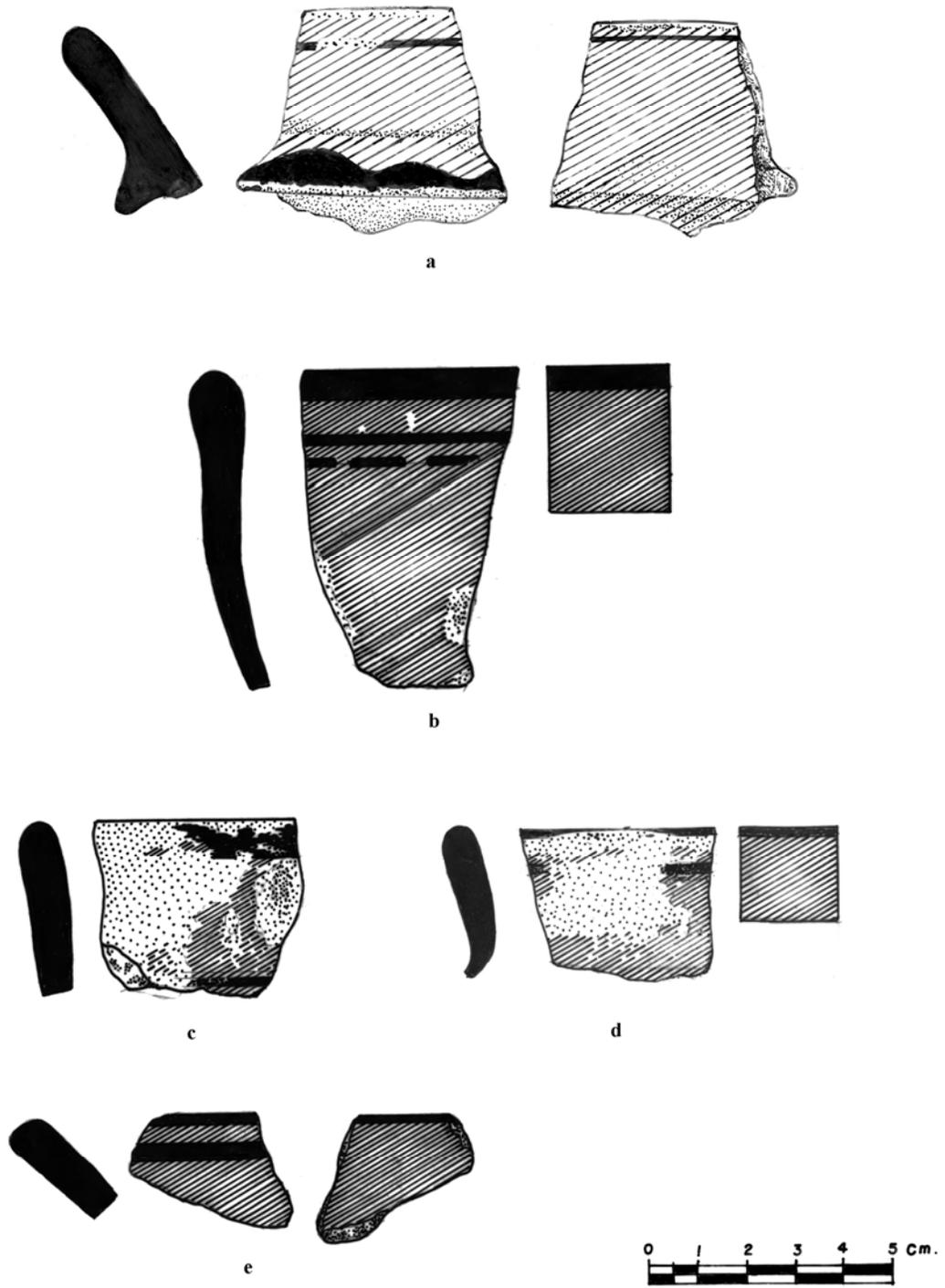


Figure 5.41 K'ahk 1/Tzakol 1 complex ceramics (a-e, Boletó Black-on-Orange: Variety Unspecified)

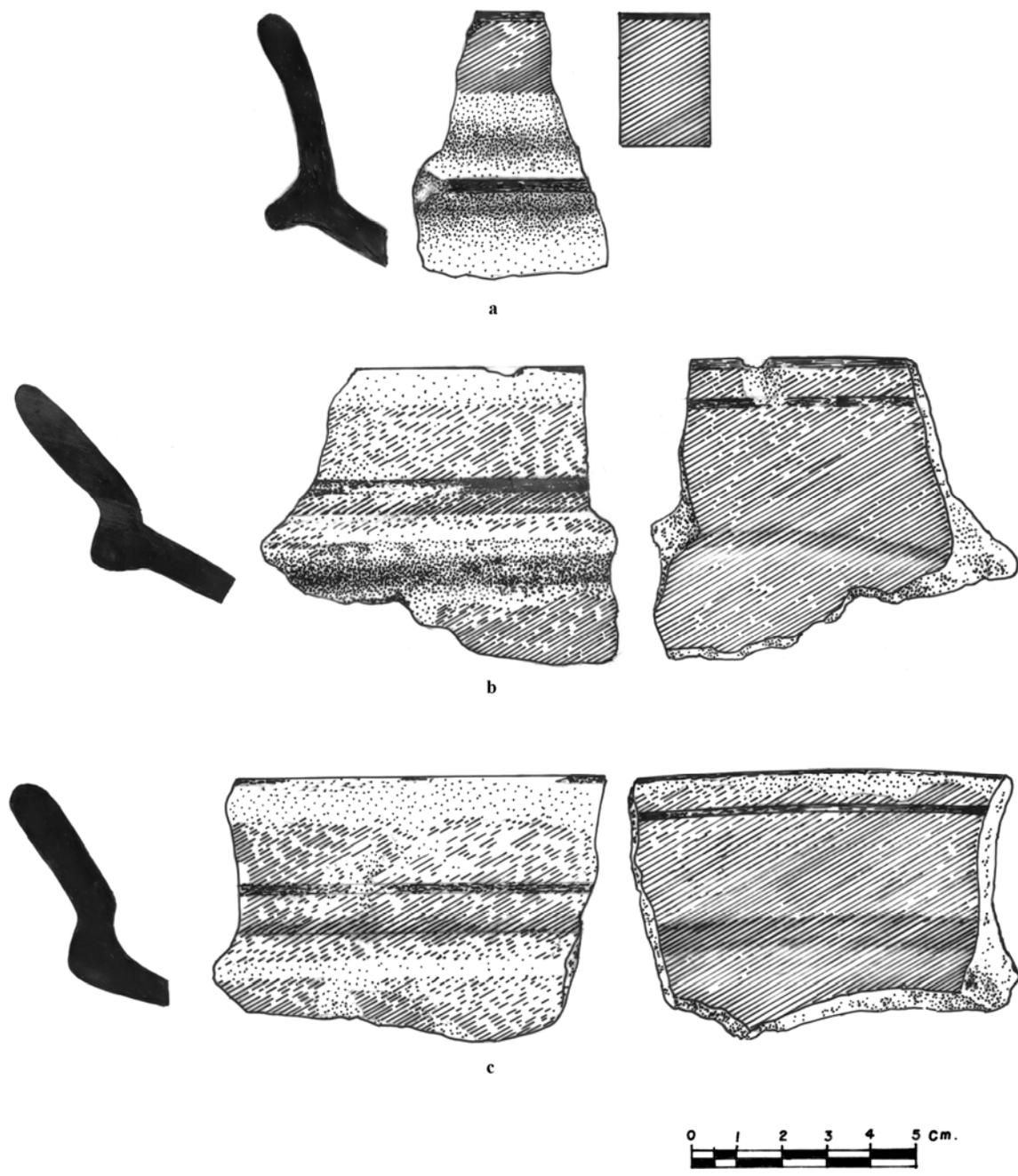


Figure 5.42 K'ahk 1/Tzakol 1 complex ceramics (a-c, Boletó Black-on-Orange: Variety Unspecified)

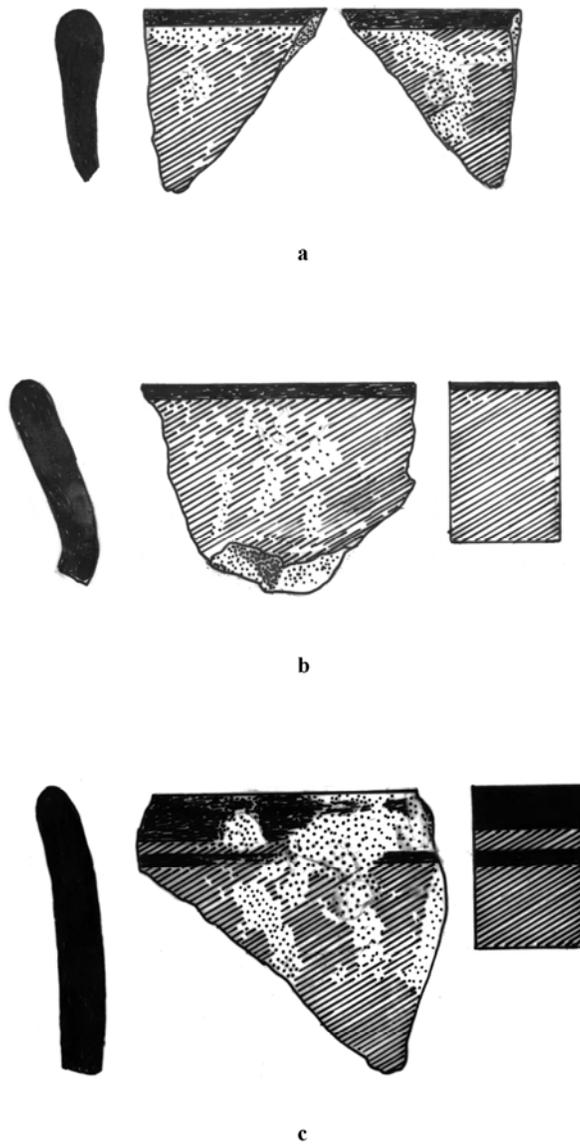


Figure 5.43 K'ahk 1/Tzakol 1 complex ceramics (a-c, Boletó Black-on-Orange: Variety Unspecified)

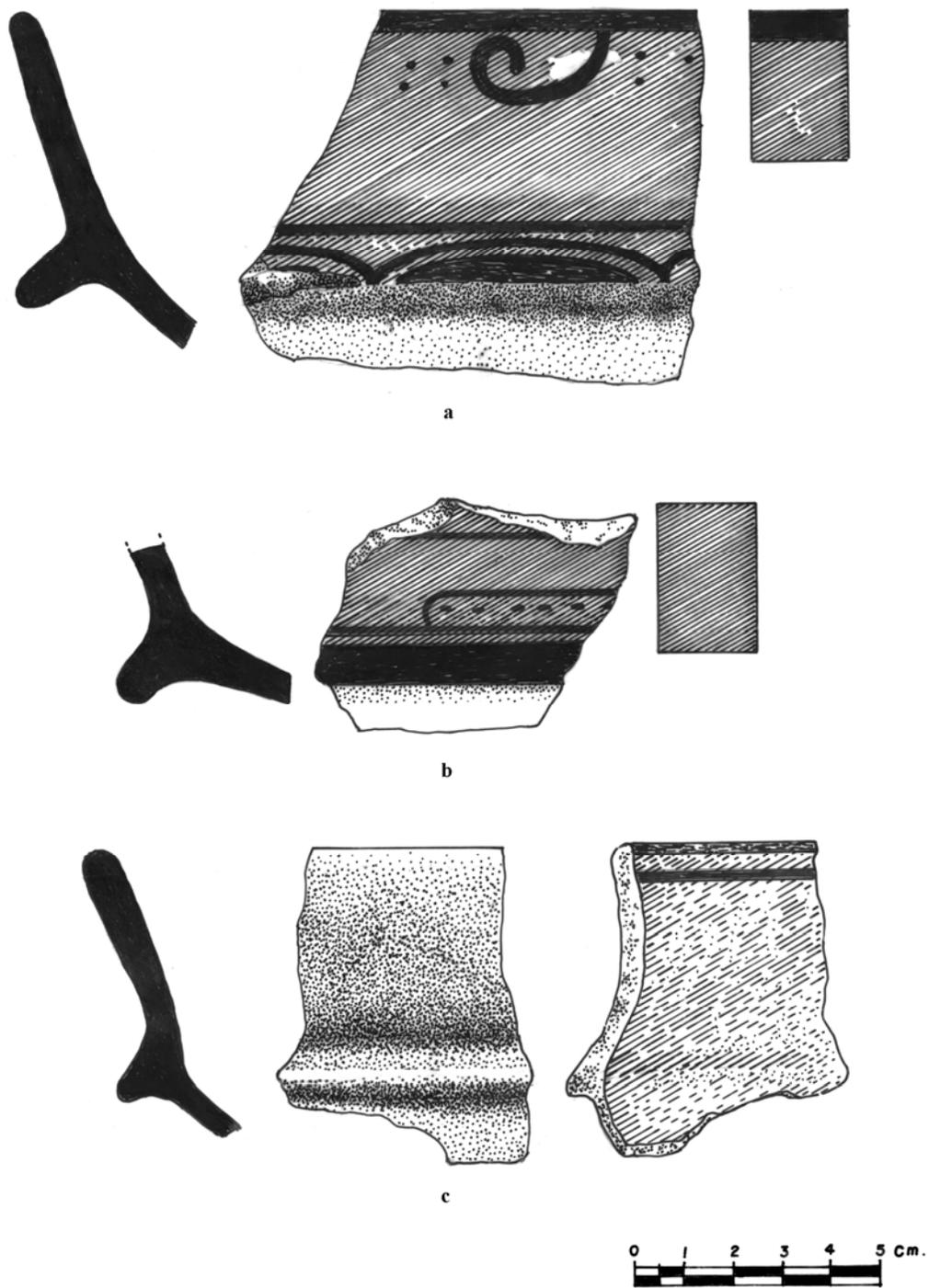
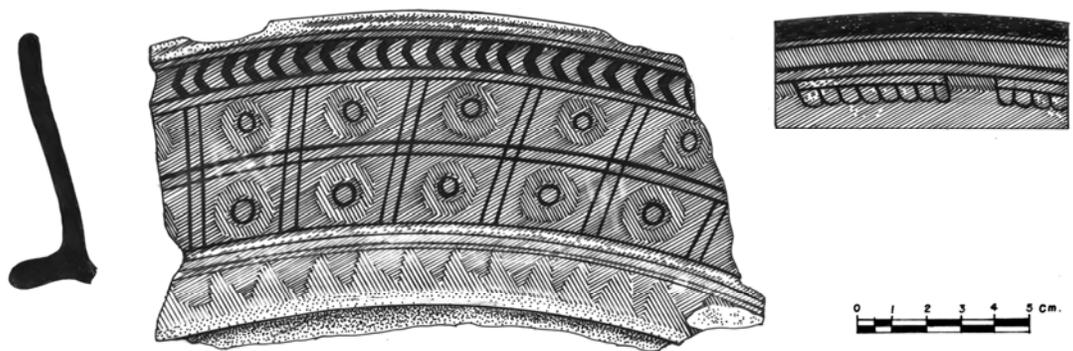


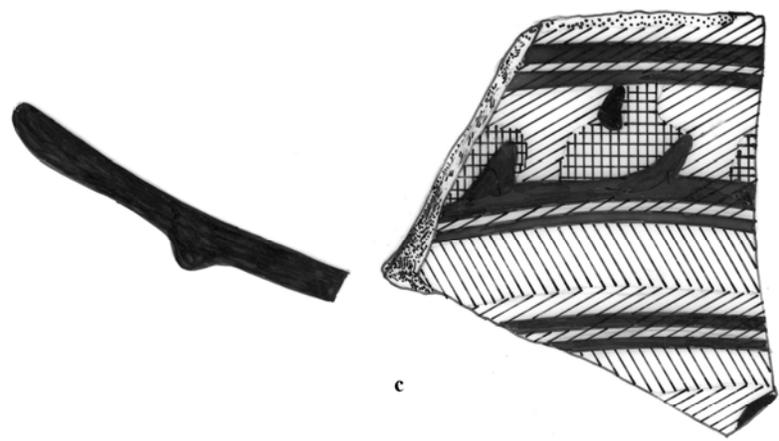
Figure 5.44 K'ahk 1/Tzakol 1 complex ceramics (a-c, Boletó Black-on-Orange: Variety Unspecified)



a



b



c

Figure 5.45 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-c, Dos Arroyos Orange Polychrome: Variety Unspecified)

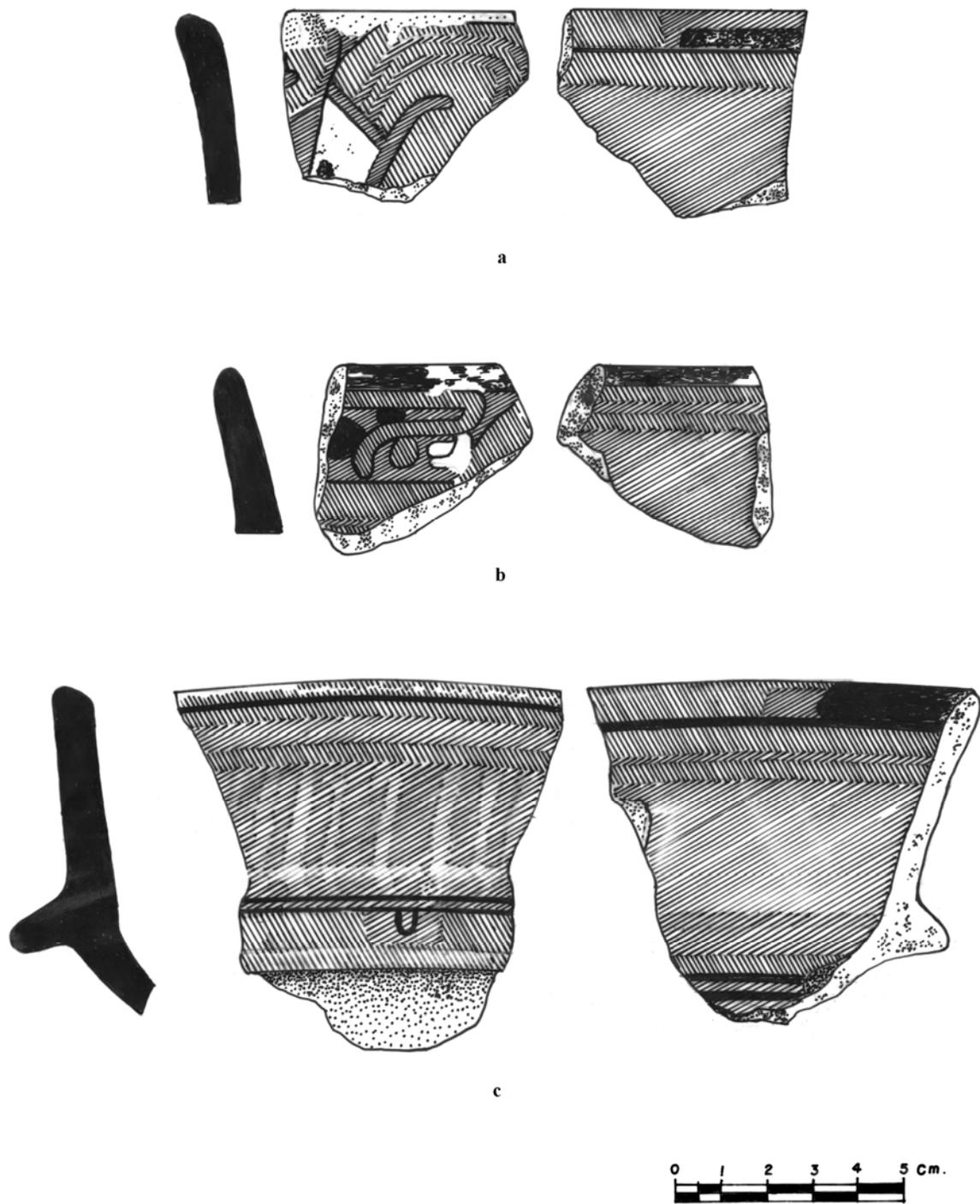


Figure 5.46 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-c, Dos Arroyos Orange Polychrome: Variety Unspecified)

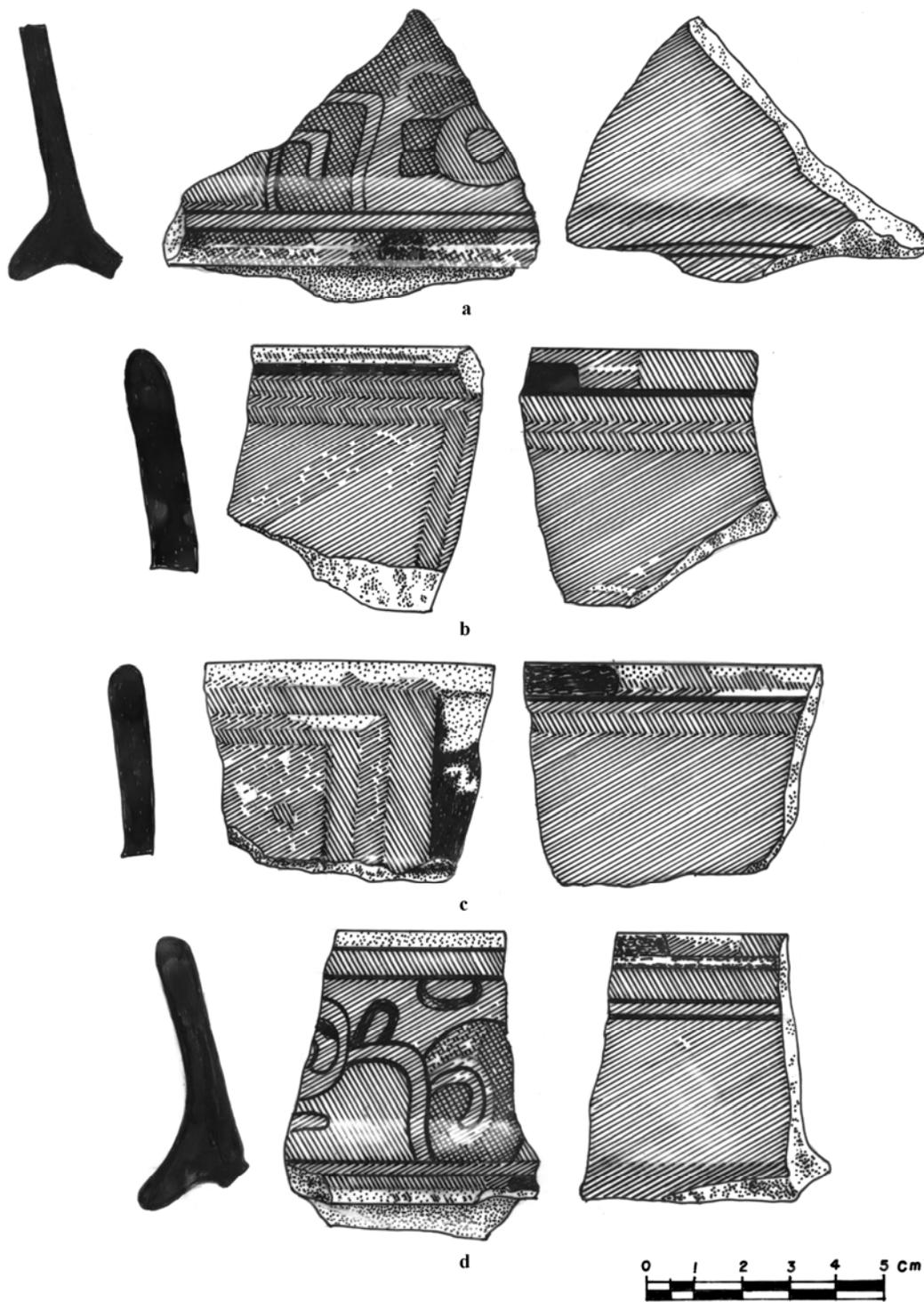


Figure 5.47 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-d, Dos Arroyos Orange Polychrome: Variety Unspecified)

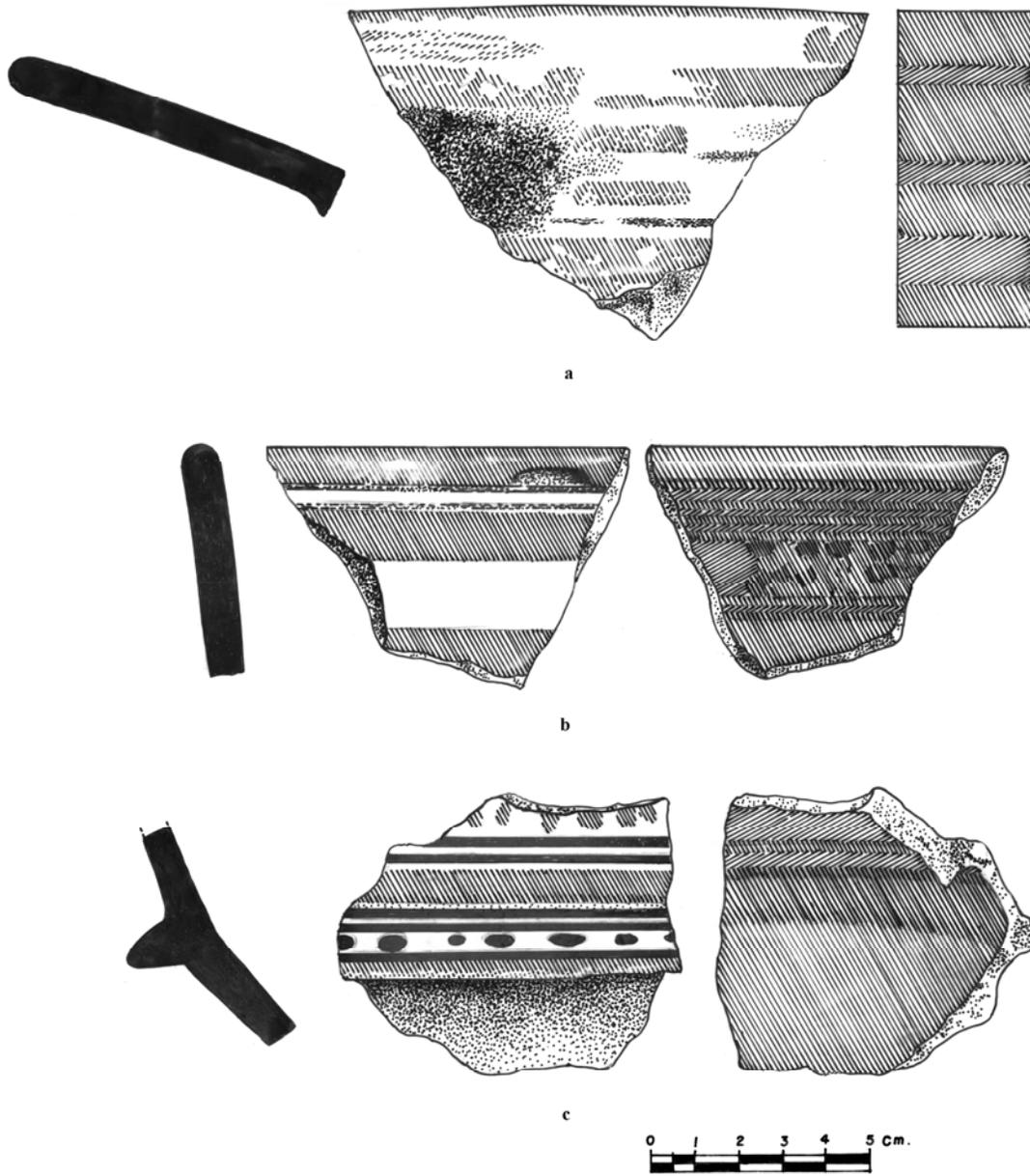


Figure 5.48 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-c, Caldero Buff Polychrome: Variety Unspecified)

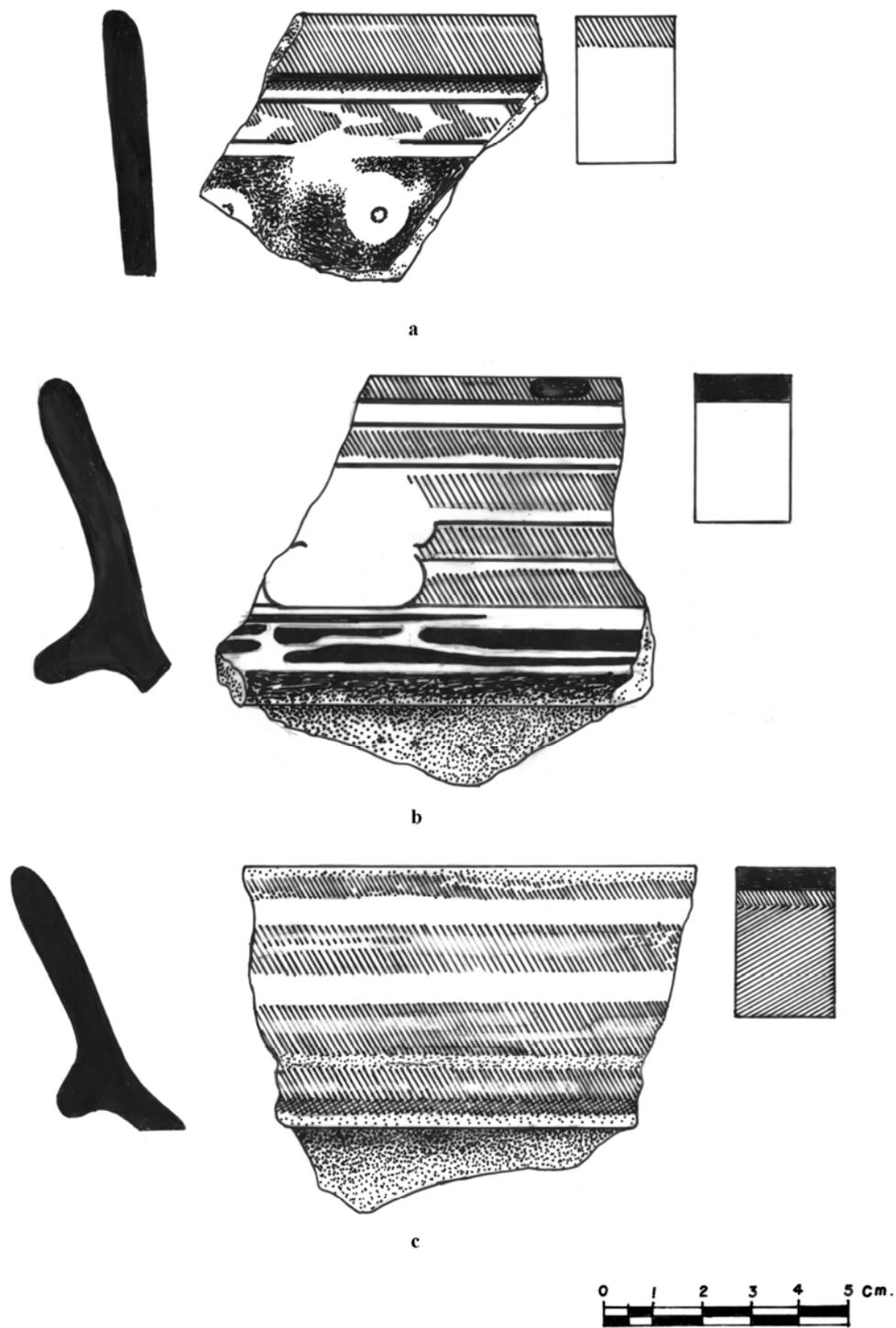


Figure 5.49 K'ahk 2-3/Tzakol 2-3 complex ceramics (a-c, Caldero Buff Polychrome: Variety Unspecified)

## **CHAK/TEPEU 1 AND IK CHUAH/TEPEU 2 COMPLEXES: LATE CLASSIC PERIOD**

Ceramics from the Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complexes represent material from the earlier two thirds of the lowland Late Classic Tepeu Sphere (Smith 1955). The larger Late Classic complex is sub-divided here into two potentially separate complexes. However, noted in the previous chapter, these complexes are not yet fully defined in the Holmul Region. Upon further analysis, these potential complexes may be better defined as sub-complexes with division based on the introduction and replacement of specific types and modes of fine ware, with utilitarian production remaining relatively constant. There are no radiocarbon dates associated with ceramics from these potential complexes. Dating was based on the analysis of paste, form, and decorative modes. These modes were compared to potentially contemporaneous material recovered from excavations at other well-studied lowland sites (e.g. Uaxactun, Tikal, Barton Ramie, El Mirador, sites in the Petexbatun Region, Seibal, Altar de Sacrificios, and Becan). Chak/Tepeu 1 material shares form and surface modes in common with material from Smith's (1955) Tepeu 1 Complex at Uaxactun and Culbert's (n.d.; 1993) Ik Complex which would place production and distribution between AD 600 and 750. Ik Chuah/Tepeu 2 ceramics display form and surface modes similar to both Smith's Tepeu 2 Complex as well as Culbert's (n.d.; 1993) Imix at Tikal placing it between AD 750 and 830. Chak/Tepeu 1 and Ik Chuah/Tepeu 2 material is relatively rare in the sample to date. The sample consisted of only 1556 sherds, mostly fine wares, and 14 whole or partial vessels (including those housed in the Peabody Museum). Chak/Tepeu 1 and Ik Chuah/Tepeu 2 material can be found in very small quantities at Holmul and La Surfricaya and largest quantities in a small residential group within the Holmul epicenter designated "South Group 1 at Holmul". I believe the lack of Chak/Tepeu 1 and Ik Chuah/Tepeu 2 material is related to the nature of our current archaeological sample.

Excavation at the sites of Cival, La Sufricaya, and Holmul have focused on investigating the Preclassic, Early Classic, and Terminal Classic periods respectively to date. Chak/Tepeu 1 and Ik Chuah/Tepeu 2 material doubtless exists in abundance in the Holmul Region, as evidenced in the material recovered from Merwin's original excavations as well as recent excavations at South Group 1 at Holmul, but is now more than likely covered with Terminal Classic occupation – especially at the site of Holmul.

### *Chak/Tepeu 1 Complex*

Chak/Tepeu 1 material represents a shift in production modes from the preceding K'ahk/Tzakol 3 complex. Serving ware of the Chak/Tepeu 1 complex becomes distinct from preceding Aguila, Balanza, and Dos Arroyos material mostly through form and surface decoration. The bowl with composite sides and basal flange of the Early Classic K'ahk 1-3/Tzakol 1-3 complexes gives way to more open plate forms with smaller flanges, convex bases, and in some instance tripod supports. Bowls with round-sides become replaced by tall bowls – almost vase-like forms – with barrel shaped sides. Within utilitarian ware, vertical neck jars are replaced by outcurving neck forms and the bolstered rim disappears. Surface decoration of serving ware contrasts with Aguila material in the abandonment of orange slip in preference for red, as seen in the burgeoning Tinaja group. The number of ceramics belonging to the black slip monochrome tradition declines dramatically – actually to the point of non-existence. However, this may be related to the problem with sampling as noted above. Also related to surface treatment and decoration, polychrome painting becomes much more frequent and complex during the Chak/Tepeu 1 complex. Glyphic elements appear much more frequently on small serving forms such as the barrel shaped bowl noted above.

However, some modes show continuity from K'ahk 3/Tzakol 3 to Chak/Tepeu 1, namely the use of pastes with crystalline calcite in making utilitarian ware and the continued use of volcanic temper in monochrome and decorated serving ware. Chak/Tepeu 1 complex material is found at Uaxactun during the Tepeu 1 Complex (Smith 1955) and Tikal during Ik (Culbert n.d.; 1993). The polychrome pottery, specifically Saxche Orange Polychrome, may have represented another kind of interregional ceramic social valuable – like Ixcanrio, Actuncan, and Dos Arroyos before it.

#### *Ik Chuah/Tepeu 2 Complex*

Ik Chuah/Tepeu 2 complex ceramics show continuity with Chak/Tepeu 1 complex material. Volcanic based pastes continue to dominate serving ware samples, while crystal calcite inclusions are most common in utilitarian ware vessels. In terms of form, open plate forms become larger in size and much more frequent during the Ik Chuah/Tepeu 2 complex. Red slip is still the major mode in monochrome serving ware decoration.

However, Ik Chuah/Tepeu 2 material also displays significant departures from modes used in the previous complex, especially concerning some aspects of form and decoration. The barrel shaped bowl form of Saxche Orange Polychromes is replaced by tall vertical walled vases, deeper bowls with flaring walls, and more frequent round-sided bowls. That is to say, the diversity of polychrome painted forms appears to increase during Ik Chuah/Tepeu 2. Open plates with tripod supports also become more common during this time. In terms of decoration, painting on orange based polychrome material becomes less complex. The finely painted glyphic elements of Chak/Tepeu 1 give way to larger, less well-executed, abstract elements of Palmar Orange Polychromes. The Cabrito cream polychrome tradition is introduced in the

Holmul Region at this time as well. Black pottery continues to be scarce as do design modes such as incision and gauge-incision. However, impressed utilitarian ware frequencies seem to increase, especially within the slipped monochrome tradition, as seen in the introduction of Chinja Impressed: Form A variety. Ik Chuah/Tepeu 2 complex material is most similar to Tepeu 2 complex material at Uaxcatun (Smith 1955) and Imix material at Tikal (Culbert n.d.; 1993). It shares little in common with Late Classic material of neighboring Belize Valley sites (e.g., Barton Ramie). However, this will change dramatically in the succeeding Terminal Classic Kisin/Tepeu 3 complex.

## **UAXACTUN UNSLIPPED WARE**

### Cambio Ceramic Group

Cambio Unslipped: Variety Unspecified

Encanto Striated: Variety Unspecified

## **PETEN GLOSS WARE**

### Tinaja Ceramic Group

Tinaja Red: Variety Unspecified

Chinja Impressed: Form A Variety

### Saxche Ceramic Group

Saxche Orange Polychrome: Variety Unspecified

### Palmar Ceramic Group

Palmar Orange Polychrome: Variety Unspecified

### Zacatel Cream Group

Zacatel Cream Polychrome: Variety Unspecified

Cabrito Cream Polychrome: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Cambio Ceramic Group

#### Cambio Unslipped: Variety Unspecified

*Sample:* 300 rims, 1118 total, 81% of group

*Whole Vessels:* SF# HOL.T.66.02.02.01, SF# SUF.T.11.05.02.01, SF# ----, SF#

HOL.T.28.34.02.08

*Established:* Smith and Gifford at Uaxactun (1966:155, 173)

*Principal identifying modes:* 1) Unslipped surfaces, 2) large jars with outcurving neck, direct rim, and squared lip.

*Paste, firing, and temper:* Paste is coarse textured with many large crystal calcite inclusions.

Color is gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4). Cores are not frequent.

*Surface finish and decoration:* Exterior vessel surfaces are smoothed and remain unslipped.

Surfaces are porous and gritty with paste inclusions often showing through. Fire-clouding can occur on body sherds. Color is similar to paste, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4).

*Form:* Large wide mouth jars with outcurving neck, direct rim, and squared lip.

*Intrasite locations and contexts:* Cambio Unslipped is found in Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complex deposits at South Group 1 at Holmul, La Sufricaya, and Holmul.

*Intersite locations and contexts:* Cambio Unslipped can be found at Uaxactun (Smith and Gifford 1966:155), Altar de Sacrificios (Adams 1971:18), Tikal (Culbert n.d.; 1993:13), Seibal (Sabloff 1975:153-155), El Mirador (Forsyth 1989:114), and in the Petexbatun Region (Foias

1996:435-442). At Barton Ramie Smith classifies unslipped ware as Cayo Unslipped and other types (see Gifford 1976:276).

*Comment:* The main difference between Cambio Unslipped of the Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complexes and Kisin/Tepeu 3 complex is the presence of pie-crust impression on the lip of jar rims on Kisin/Tepeu 3 material. Pie-crust impressions do not occur in Late Classic Chak/Tepeu 1 and Ik Chuah/Tepeu 2 ceramics.

*Illustration:* 5.50, 5.51a-d, H.23

### **Encanto Striated: Variety Unspecified**

*Sample:* 6 rims, 261 total, 19% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:157, 173).

*Principal identifying modes:* 1) Unslipped surfaces, 2) crisscrossing medium to heavy striations on exterior surfaces, 3) large jars with outcurving neck, direct rim, and squared lip

*Paste, firing, and temper:* Same as Cambio Unslipped. Paste is coarse textured with many large crystal calcite inclusions. Color is gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4). Cores are not frequent.

*Surface finish and decoration:* Surface treatment is the same as Cambio Unslipped described above with the addition of medium to deep striations on vessel exteriors. Color is similar to paste, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4).

*Form:* Large wide mouth jars with outcurving necks. Sometimes striation continues up to the lip.

*Intrasite locations and contexts:* Encanto Striated is found in South Group 1 at Holmul, Holmul, and La Sufricaya.

*Intersite locations and contexts:* Encanto Striated can be found at Uaxactun (Smith and Gifford 1966:157), Altar de Sacrificios (Adams 1971:19), Tikal (Culbert n.d.; 1993), Seibal (Sabloff 1975:155-158), Becan (Ball 1977:67-68), El Mirador (Forsyth 1989:114-117), in the Petexbatun Region (Foias 1996:453-457), and is similar to Tu-Tu Camp striated at Barton Ramie (Gifford 1976:273-277).

*Comment:* Currently Encanto Striated is found in Ik Chuah/Tepeu 2 and Kisin/Tepeu 3 complex contexts.

*Illustration:* 5.51e

## **PETEN GLOSS WARE**

### **Tinaja Ceramic Group**

#### **Tinaja Red: Variety Unspecified**

*Sample:* n/a

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:163, 172).

*Principal identifying modes:* 1) Red slip, 2) jars with short vertical necks and everted rim, 3) bowls with round sides, 4) open plates with tripod supports.

*Paste, firing, and temper:* Paste has two variants: 1) fine-textured with mixed calcite and volcanic inclusions (calcite not visible even under magnification, but paste reacts heavily to

HCL), 2) gritty and gray with crystalline calcite inclusions. The fine paste is yellow (10YR7/3) and reserved for finer serving ware. The gritty paste is gray (10YR5/1) or brown-yellow (10YR6/4) and reserved for larger jars and basins as well as less fine serving bowls. Fire clouding is extremely common on jar forms. Firing cores are not common.

*Surface finish and decoration:* On smaller bowls, vessel interiors and exteriors are smoothed. Red-orange slip (2.5YR4/8, 2.5YR4/6) is applied to vessel interiors, over the lip, and about half way down the exterior surface. Plates are slipped entirely with a relatively even red or red-orange slip. Jars are rare, but are slipped an even red.

*Form:* 1) Small round-sided bowls with direct rim and rounded or squared lip, 2) plates with open outflaring walls, convex base, and tripod supports, 3) jars with short vertical necks, everted rim, and rounded lip.

*Intrasite locations and contexts:* Tinaja Red vessels are mostly found at Holmul, but do appear in South Group 1 at Holmul, K'o, and La Sufricaya.

*Intersite locations and contexts:* Tinaja Red appears in Uaxactun (Smith and Gifford 1966:163, 172), Altar de Sacrificios (Adams 1971:23), Tikal (Culbert 1993:15; n.d.), Seibal (Sabloff 1975:158-160), at El Mirador Forsyth classifies it as Tinaja Red: Nanzal Variety (Forsyth 1989:79-86), and in the Petexbatun Region (Foias 1996:468-478).

*Comment:* It is certainly possible that the current description contains more than one variety of Tinaja Red. Pending further analysis, the type will doubtless be subdivided into more types and varieties. Tinaja Red is currently found more frequently in Kisin/Tepeu 3 contexts, but does appear in very small frequencies in Ik Chuah/Tepeu 2 contexts. Frequencies are not available for this type because it crosscuts the Late Classic and Terminal Classic complexes and modes of the Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complex material have not yet been distinguished.

*Illustration:* 5.52, 5.53, H.17, H.41

**Chinja Impressed: Form A**

*Sample:* 71 rims, 80 total, n/a

*Whole Vessels:* SF#(ST.17.12)

*Established:* Type by Smith and Gifford at Uaxactun (1966:156, 172).

*Principal identifying modes:* 1) Large open bowl or “olla” forms, 2) ring of deep fingernail impressions encircling the vessel exterior, 3) red slipped interior running up and over lip and extending down to row of fingernail impressions on exterior.

*Paste, firing, and temper:* Paste is medium textured with many large crystal calcite inclusions. Color is gray (10YR5/1) or brown-yellow (10YR6/4). Firing cores are not common, but do appear.

*Surface finish and decoration:* Vessel interiors and exteriors are well smoothed and polished. A row of deep, gauged fingernail impressions encircles the vessel exterior. The entire interior is slipped red or red-orange (2.5YR4/8, 10R4/8). The slip continues up over the lip and extends down to row of fingernail impressions on vessel exteriors. The remainder of the vessel exterior below the row of impressions is left unslipped.

*Form:* 1) Large open bowls or “ollas” with direct rim and rounded lip.

*Intrasite locations and contexts:* Chinja Form A can be found in largest quantities in South Group 1 at Holmul.

*Intersite locations and contexts:* Chinja Impressed appears at Uaxactun (Smith and Gifford 1966:156, 172), Altar de Sacrificios (Adams 1971:47), Tikal (Culbert n.d.; 1993:13), Seibal (Sabloff 1975:168-171), at El Mirador (Forsyth 1989:86-89), and is remarkably similar to El

Zapote Impressed Form C at Cancuen (Bill 2001). Chinja Impressed is similar to Pascua Impressed (Gifford 1976:178), Gloria Impressed (Gifford 1976:200, 202), and Kaway Impressed (Gifford 1976:239-240) at Barton Ramie.

*Comment:* Chinja appears in Kisin/Tepeu 3 contexts, but form and surface modes are slightly different than the Ik Chuah/Tepeu 2 variety.

*Illustration:* 5.54

## **Saxche Ceramic Group**

### **Saxche Orange Polychrome**

*Sample:* 5 rims, 11 total, 100% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:162-163).

*Principal identifying modes:* 1) Orange slip, 2) red and black painted designs, 3) glossy surface, 4) bowls with round or slightly incurving sides, and 4) open plates with tripod supports.

*Paste, firing, and temper:* Paste is fine to medium textured and can be either carbonate based with white and crystal calcite inclusions, volcanic, or mixed. Color is yellow (10YR7/3) to orange (7.5YR7/6).

*Surface finish and decoration:* Vessel surfaces are well smooth and slipped with a thin cream underslip. Orange slip (7.5YR6/8, 7.5YR6/6) is then applied as the background for painting. Glyphic designs are painted in black and red (10R4/8) – as are fine figural elements. Vessels are well polished.

*Form:* 1) Plates with open flaring walls, direct rim, rounded lip, basal ridge, flat or convex base, and tripod supports, 2) bowls with round or slightly incurving sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* The site of Holmul, specifically residential contexts at South Group 1, contains the most Saxche Orange Polychrome with few pieces in contexts at La Sufricaya.

*Intersite locations and contexts:* Saxche Orange polychrome is common throughout the lowlands during the early part of the Late Classic Period. It appears at Uaxactun (Smith and Gifford 1966:162-163), Tikal (Culbert 1993:14; n.d.), Altar de Sacrificios (Adams 1971:37-38), is grouped with Palmar at Seibal because of poor preservation (Sabloff 1975:123-132), Becan (Ball 1977:71-72), and Barton Ramie (Gifford 1976:205-209).

*Comment:* Saxche is an excellent marker of Chak/Tepeu 1 contexts. Unfortunately, it is an elite serving ware and not very common in the Holmul Region.

*Illustration:* --

## **Palmar Ceramic Group**

### **Palmar Orange Polychrome: Variety Unspecified**

*Sample:* 20 rims, 33 total, 100% of group

*Whole Vessels:* c5709, SF# SLT.01.04.02.02, SF# STP.01.04.01

*Established:* Smith and Gifford at Uaxactun (1966:160, 172).

*Principal identifying modes:* 1) Orange slip, 2) red and black painted designs, 3) glossy surface, 4) open plates with flaring walls, basal ridge or flange, and tripod supports, 5) bowls with round or flaring sides, and 6) cylinders with vertical walls.

*Paste, firing, and temper:* Paste is fine to medium textured and can be either carbonate based with white and crystal calcite inclusions, volcanic, or mixed. Color is yellow (10YR7/3) to orange (7.5YR7/6).

*Surface finish and decoration:* Vessel surfaces are well smooth and slipped with a thin cream underslip. Orange slip (7.5YR6/6, 7.5YR6/8) is then applied as the background for painting. Abstract or conventionalized elements are painted in black and red (10R4/8). Vessels are well polished.

*Form:* 1) Plates with flaring walls, direct rim, rounded lip, basal ridge, flat or convex base, and tripod supports, 2) bowls with outflaring walls, direct rim, rounded lip, and flat base, 3) bowls with round sides, direct rim, and rounded lip, 4) cylinders with vertical walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* The site of Holmul, specifically residential contexts at South Group 1, contains the most Palmar Orange Polychrome. Some pieces are present in contexts at K'o.

*Intersite locations and contexts:* Palmar Orange polychrome is common throughout the lowlands during the Late Classic Period. It appears at Uaxactun (Smith and Gifford 1966:10, 162), Altar de Sacrificios (Adams 1971:37-39), is grouped with Saxche at Seibal because of poor preservation (Sabloff 1975:123-132), Tikal (Culbert 1993:14; n.d.), El Mirador (Forsyth 1989:107-109), Becan (Ball 1977:76) and is grouped with Zacatel in the Petexbatun Region because of poor preservation (Foias 1996:557-573).

*Illustration:* 4.81, 5.55, 5.56, H.18, H.27

## **Zacatel Cream Ceramic Group**

### **Zacatel Cream Polychrome**

*Sample:* 17 rims, 27 total, 49% of group

*Whole Vessels:* c5669, c5670, SF#(HOL.L.3), SF#(SUF.S.00), SF# HOL.T.35.04.01, SF# SUF.17.7.57.06

*Established:* Smith and Gifford at Uaxactun (1966:164, 172)

*Principal identifying modes:* 1) Cream slip, 2) highly polished gloss surfaces, 3) red and black painted designs over cream, 4) cylinders, 5) bowls with flaring or outcurving walls.

*Paste, firing, and temper:* Paste is fine textured with volcanic inclusions. Color is yellow (10YR7/3) to buff (10YR8/2, 2.5Y8/2). Firing cores are uncommon.

*Surface finish and decoration:* Vessel interiors and exteriors are smoothed and polished. Cream slip (10YR8/1, 2.5Y8/1) is applied as a background for painting. Red (10R4/8) and black designs in the form of bands and simple geometric or abstract patterns decorate the exteriors of vessels. Orange slip (7.5YR6/6, 7.5YR6/8) may decorate interiors accompanied by simple horizontal bands of black and red.

*Form:* 1) Cylinders with vertical walls, direct rim, and rounded lip, 2) bowls with flaring or outcurving walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* Zacatel Cream polychromes are found in residential contexts of South Group I at Holmul and La Sufricaya.

*Intersite locations and contexts:* Zacatel Cream Polychromes are found at Uaxactun (Smith and Gifford 1966:10, 164, 172), Tikal (Culbert 1993:15; n.d.), Barton Ramie (Gifford 1976:251), Altar de Sacrificios (Adams 1971:41), El Mirador Forsyth (Forsyth 1989:112), Becan (Ball

1977:78) and is grouped with Palmar in the Petexbatun Region because of poor preservation (Foias 1996:557-573).

*Comment:* Zacatel is present in larger frequencies in Ik Chuah/Tepeu 2 contexts, although it may be present in Chak/Tepeu 1 contexts as well.

*Illustration:* 4.76, 4.77, 5.57, H.31, H.33, H.38

### **Cabrigo Cream Polychrome**

*Sample:* 5 rims, 28 total, 51% of total

*Whole Vessels:* c5666, c5668, c5710

*Established:* Reents (1985) for sites in the northeast Peten region.

*Principal identifying modes:* 1) Cream slip, 2) fine line painting using only red and orange paint with occasional black, 3) human figures and hieroglyphs, 4) cylinders and plates.

*Paste, firing, and temper:* Paste is light buff or light gray (10YR8/2), fine with few fine inclusions. Pastes tend to be volcanic based.

*Surface finish and decoration:* Vessel surfaces are smoothed and polished. A cream slip (10YR8/1, 2.5Y8/1) is applied as a background for painting. Human figures, animals, bands of hieroglyphs and other lifelike designs are often depicted, frequently repeating, around the vessel exteriors. Only orange and red paint (10R4/8, 2.5YR5/8) are used with occasional black.

*Form:* 1) Cylinders with vertical walls, direct rim, and rounded lip, 2) plates with flaring walls, direct rim, rounded lip, flat base, and tripod supports, 3) bowls with flaring or outcurving sides, direct rim, and rounded lip.

*Intrasite locations and contexts:* Whole vessels have been found in burials at the site of Holmul in Ruin X and Building F, Group I (Merwin and Vaillant 1932) and sherds have been found in South Group 1 at Holmul and in surface finds at La Sufricaya.

*Intersite locations and contexts:* This type is relatively rare in the lowlands and represents a local regional ceramic style (Reents-Budet 1994). Cabrito sherds or vessels have been found at Naranjo and Buena Vista del Cayo, Belize (Reents-Budet et. al. 2000).

*Illustration:* 4.73, 4.75, 4.82, 5.58, 5.59, 5.60

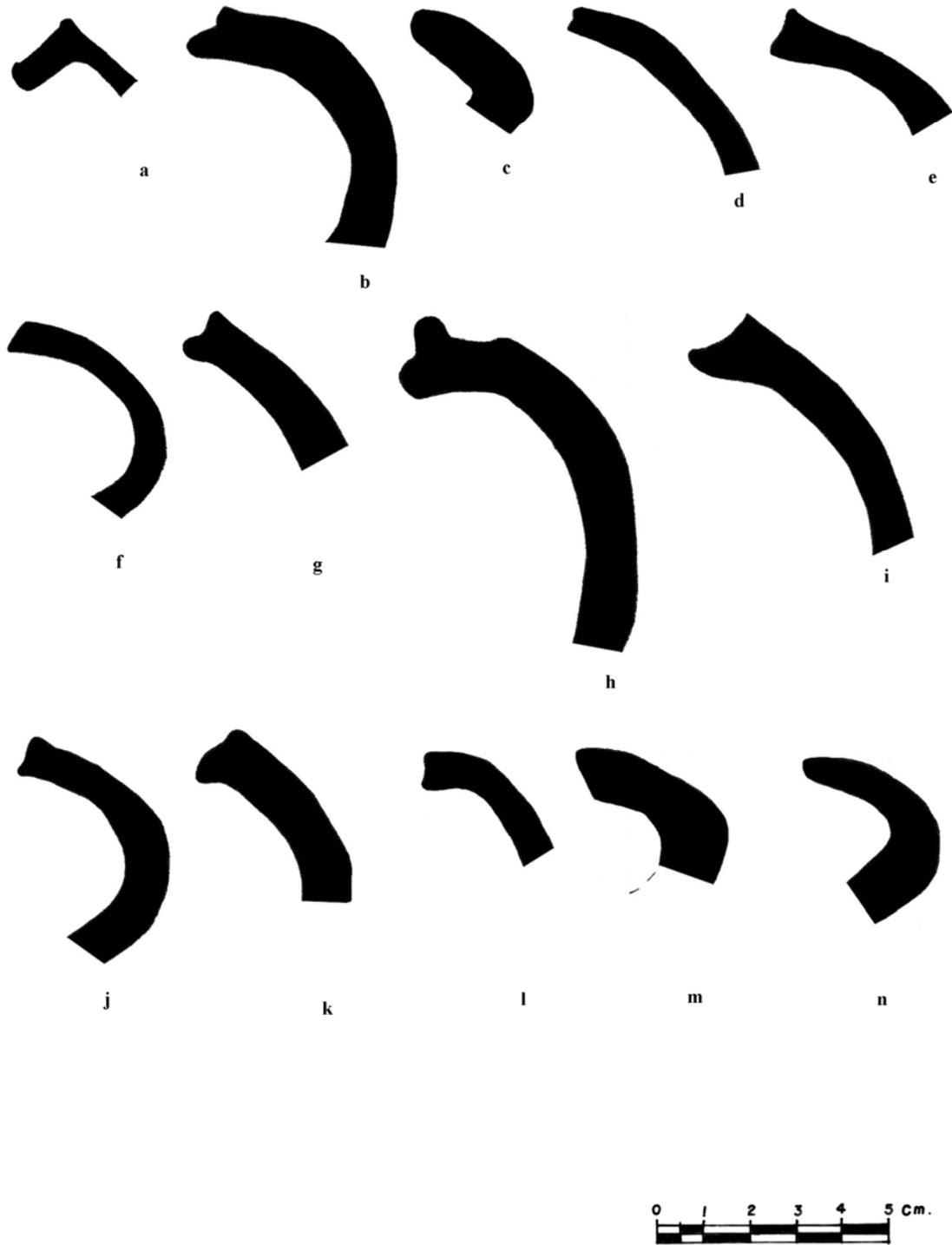


Figure 5.50 Chak/Tepeu 1, Ik-Chuah/Tepeu 2, and Kisin/ Tepeu 3 complex ceramics (a-n, Cambio Unslipped: Variety Unspecified)

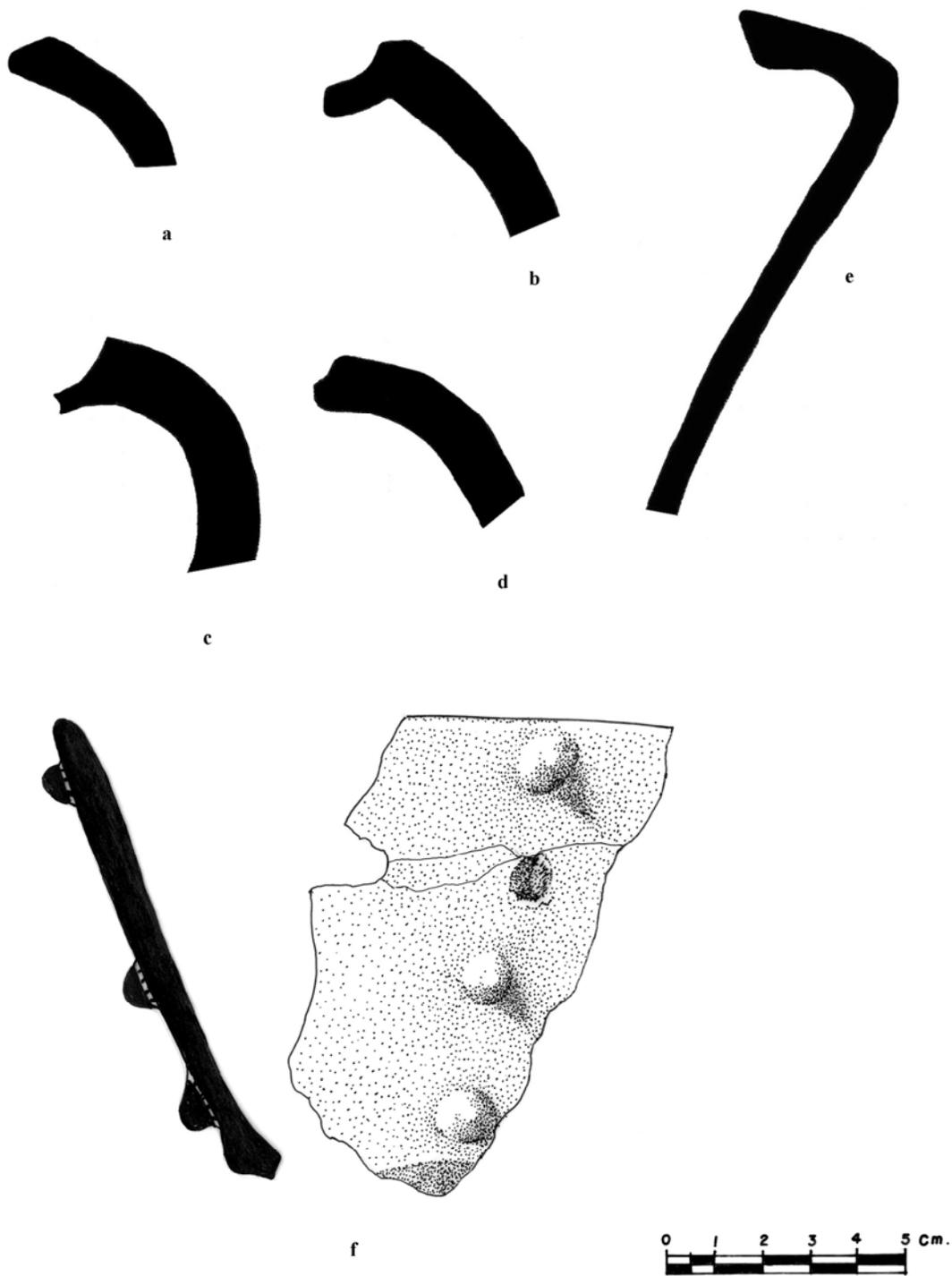


Figure 5.51 Chak/Tepeu 1, Ik-Chuah/Tepeu 2, and Kisin/ Tepeu 3 complex ceramics (a-d, Cambio Unslipped [pie-crust rim]: Variety Unspecified; e, Encanto Striated: Variety Unspecified; f, Miseria Applique: Variety Unspecified)



Figure 5.52 Chak/Tepeu 1, Ik-Chuah/Tepeu 2, and Kisin/ Tepeu 3 complex ceramics (a-p, Tinaja Red: Variety Unspecified)

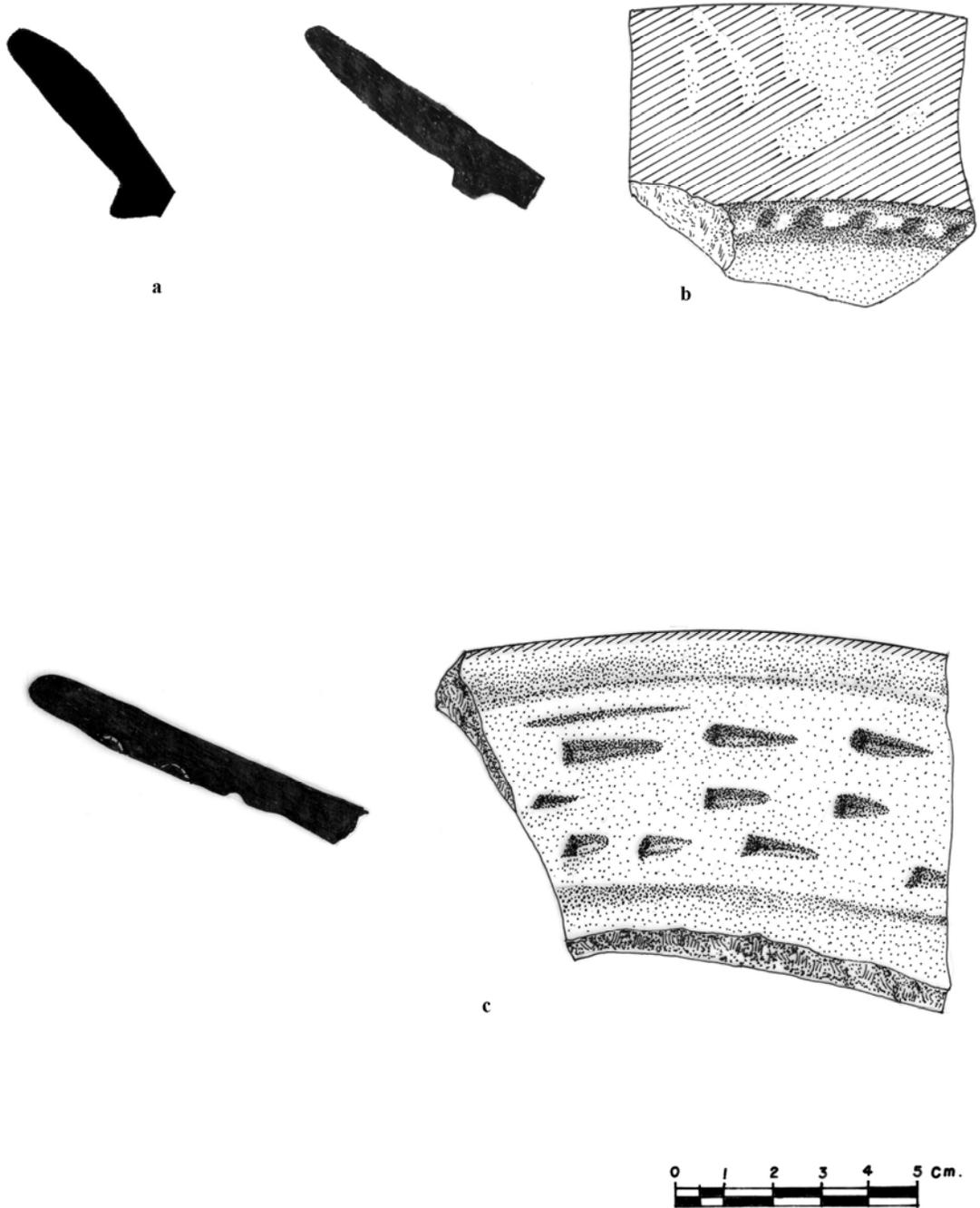


Figure 5.53 Kisin/Tepeu 3 complex ceramics (a-c, Tinaja Red: Variety Unspecified)

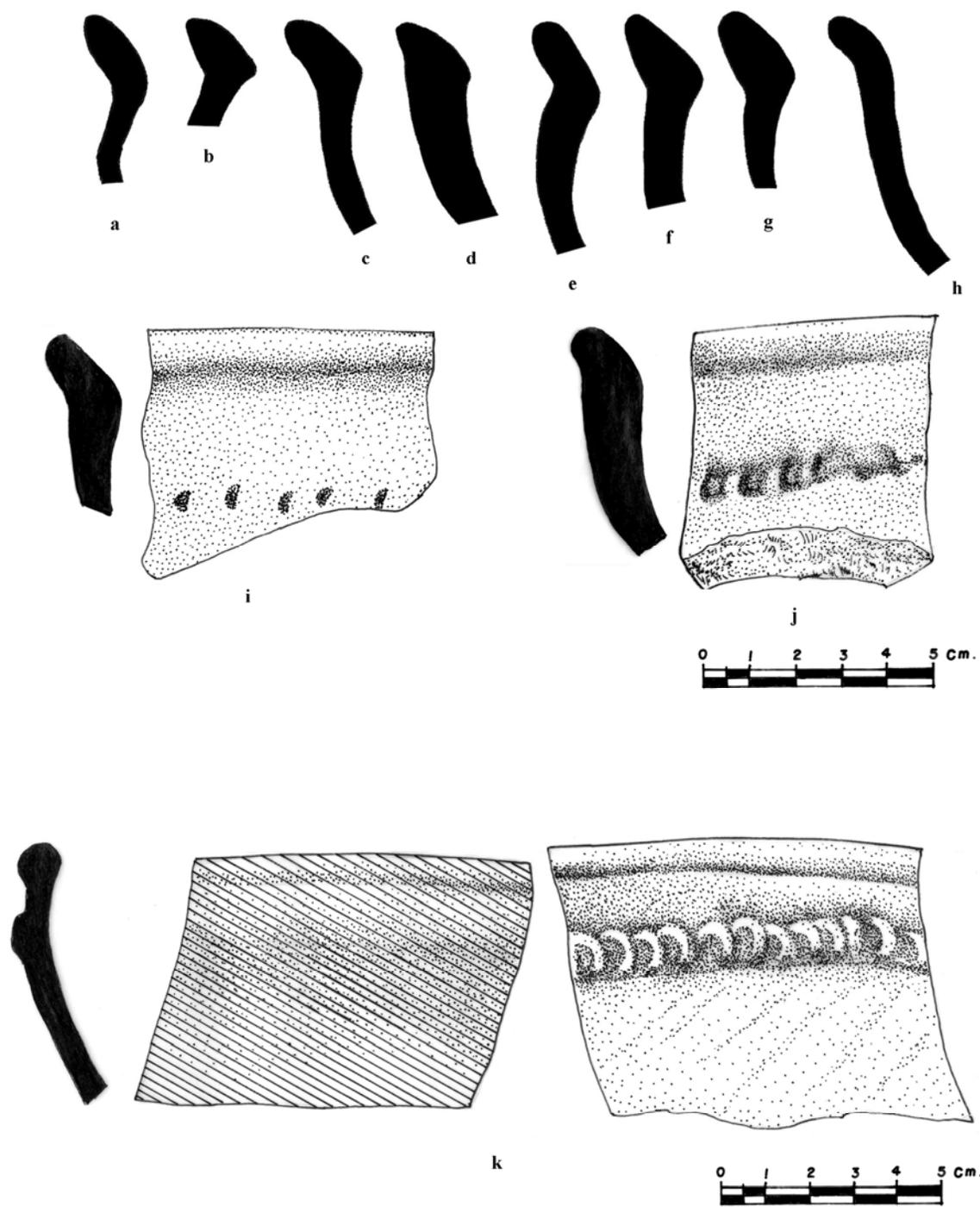


Figure 5.54 Ik-Chauh/Tepeu 2 complex ceramics (a-k, Chinja Impressed Forma A: Variety Unspecified)

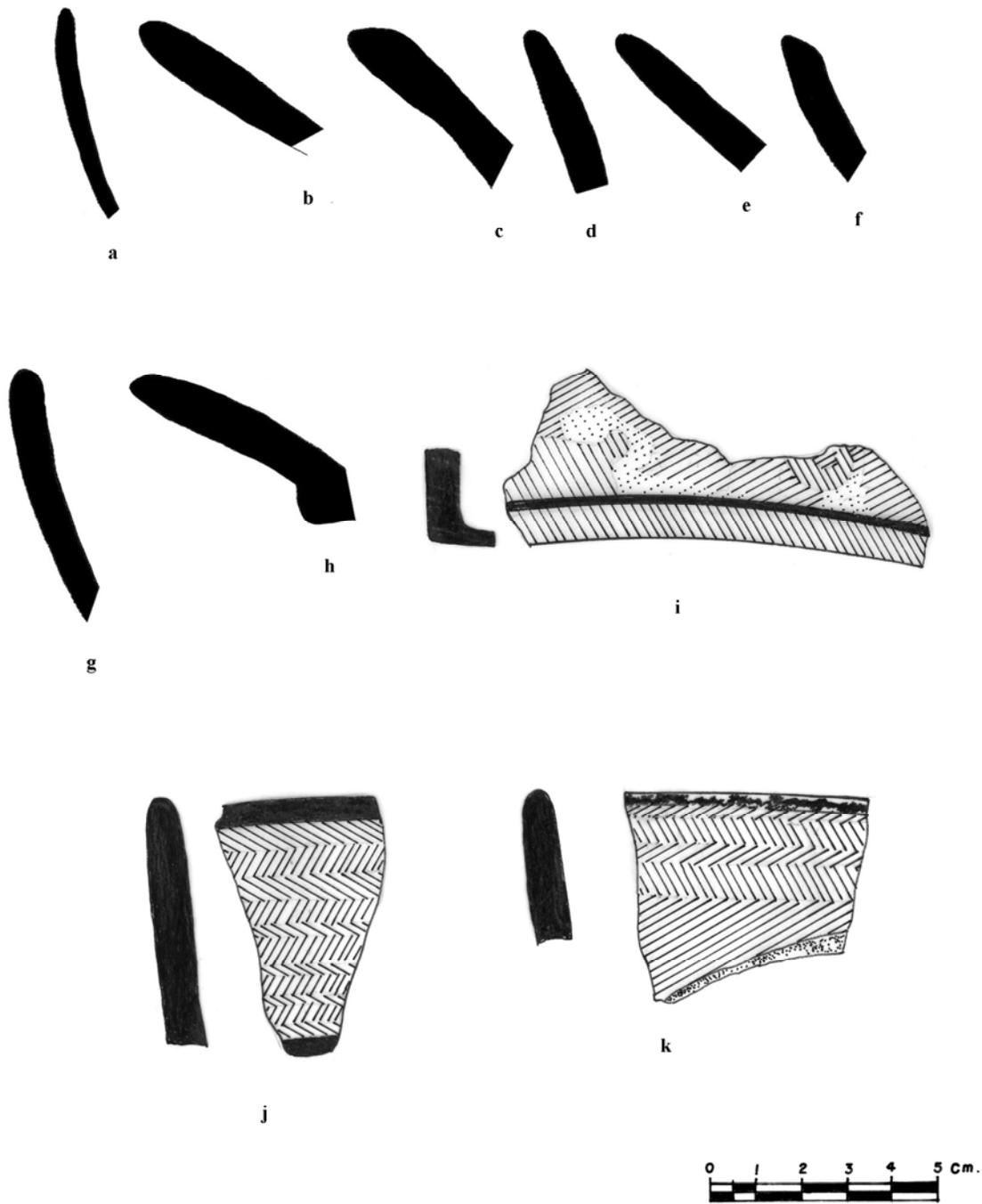
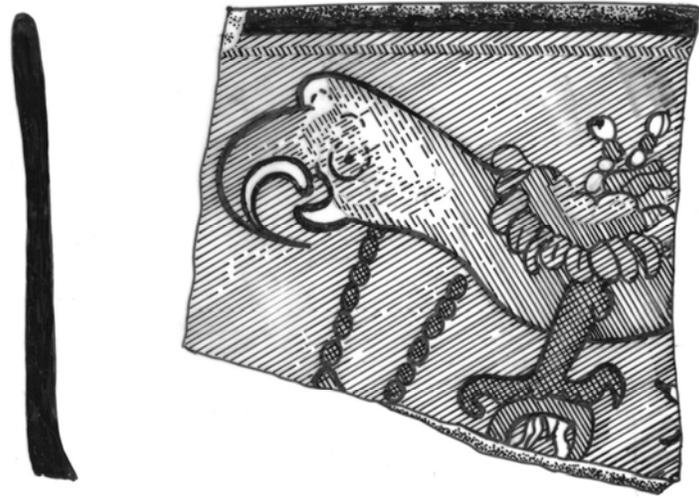
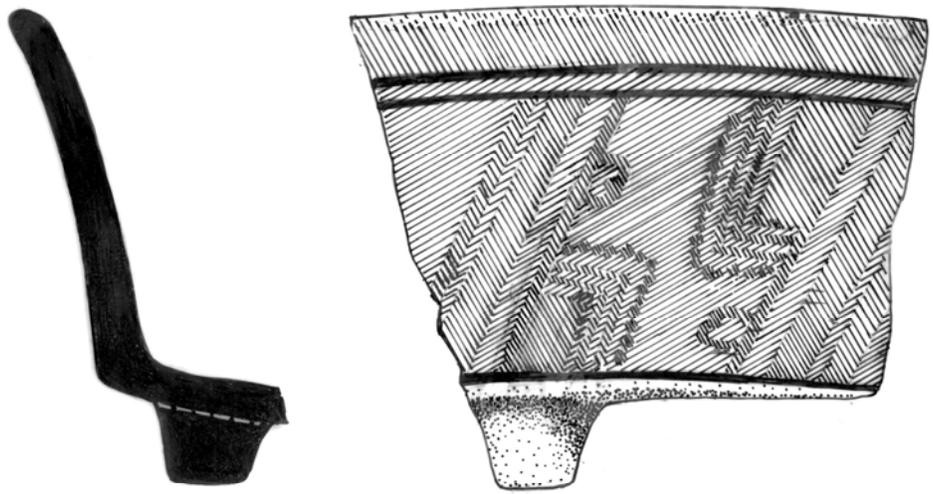


Figure 5.55 Ik-Chauh/Tepeu 2 complex ceramics (a-k, Palmar Orange Polychrome: Variety Unspecified)



a



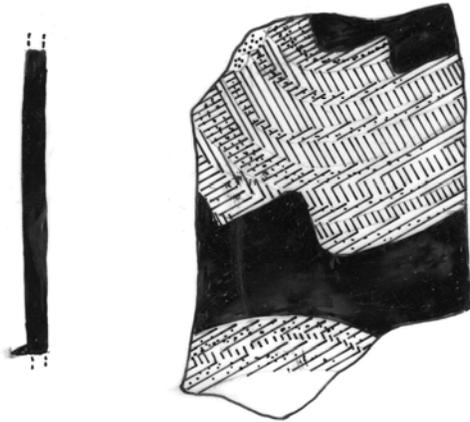
b



Figure 5.56 Ik-Chauh/Tepeu 2 complex ceramics (a-b, Palmar Orange Polychrome: Variety Unspecified)



a



b



Figure 5.57 Ik-Chauh/Tepeu 2 complex ceramics (a-b, Zacatel Cream Polychrome: Variety Unspecified)

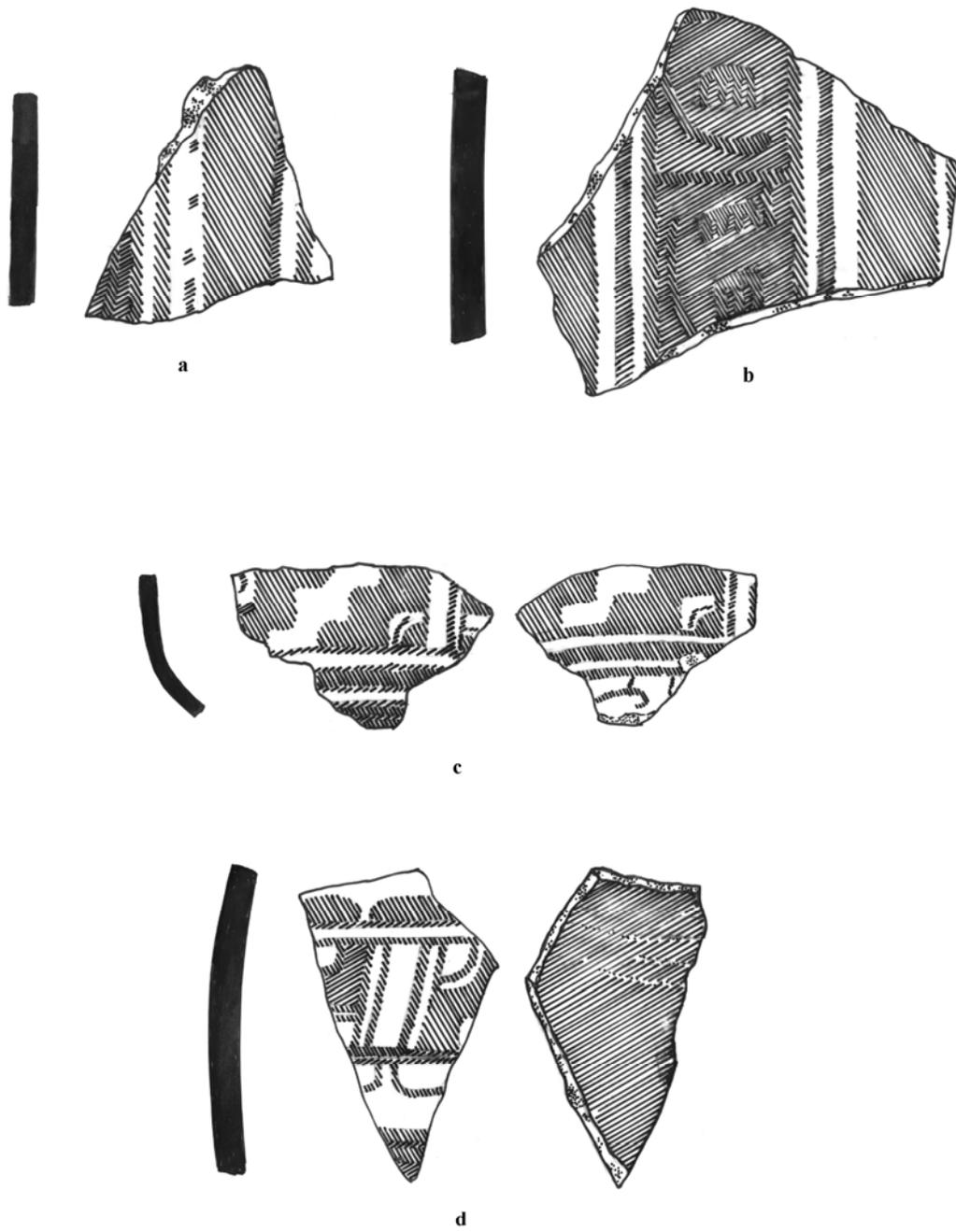


Figure 5.58 Ik-Chauh/Tepeu 2 complex ceramics (a-d, Cabrito Cream Polychrome: Variety Unspecified)

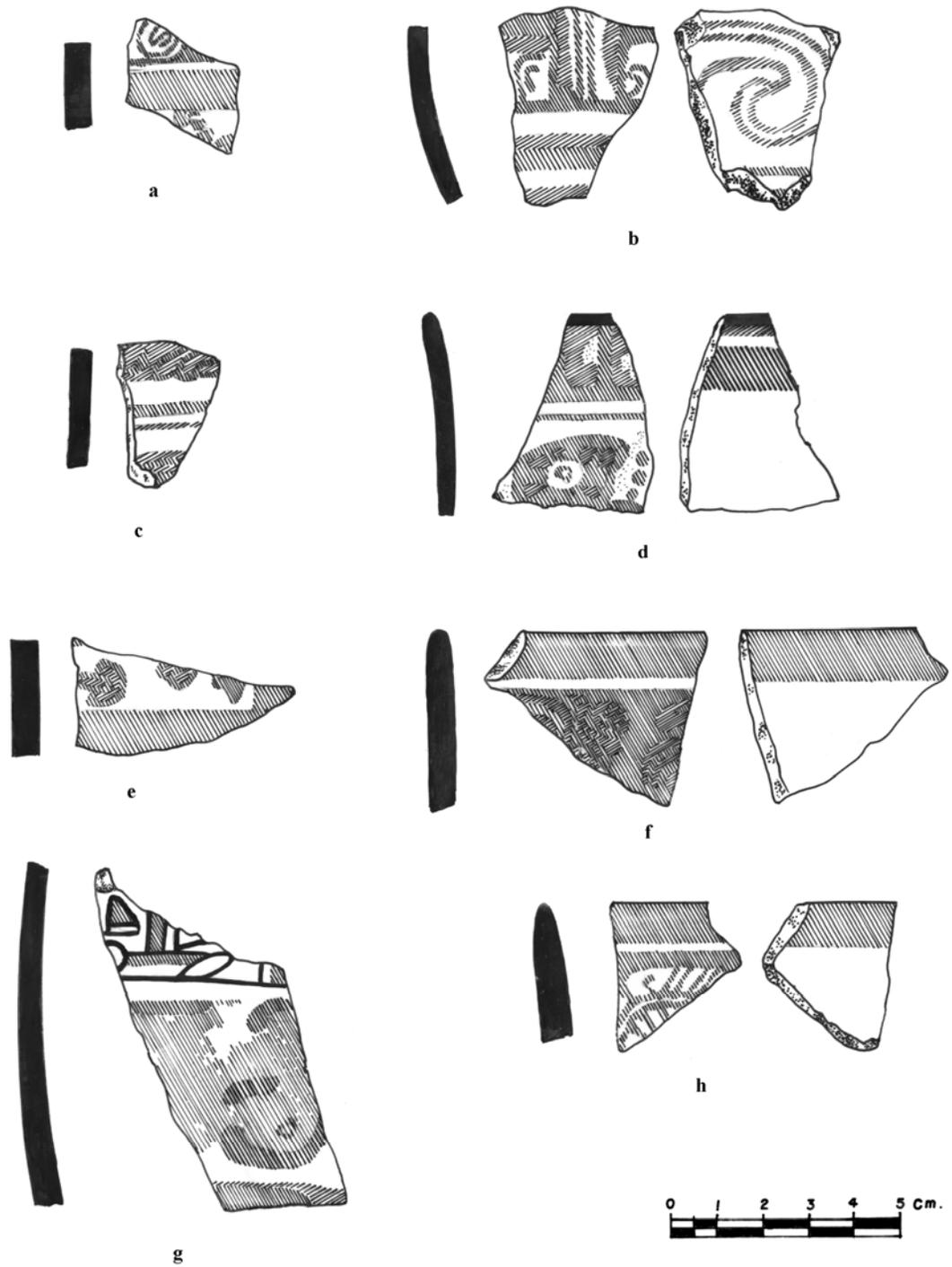


Figure 5.59 Ik-Chauh/Tepeu 2 complex ceramics (a-h, Cabrito Cream Polychrome: Variety Unspecified)

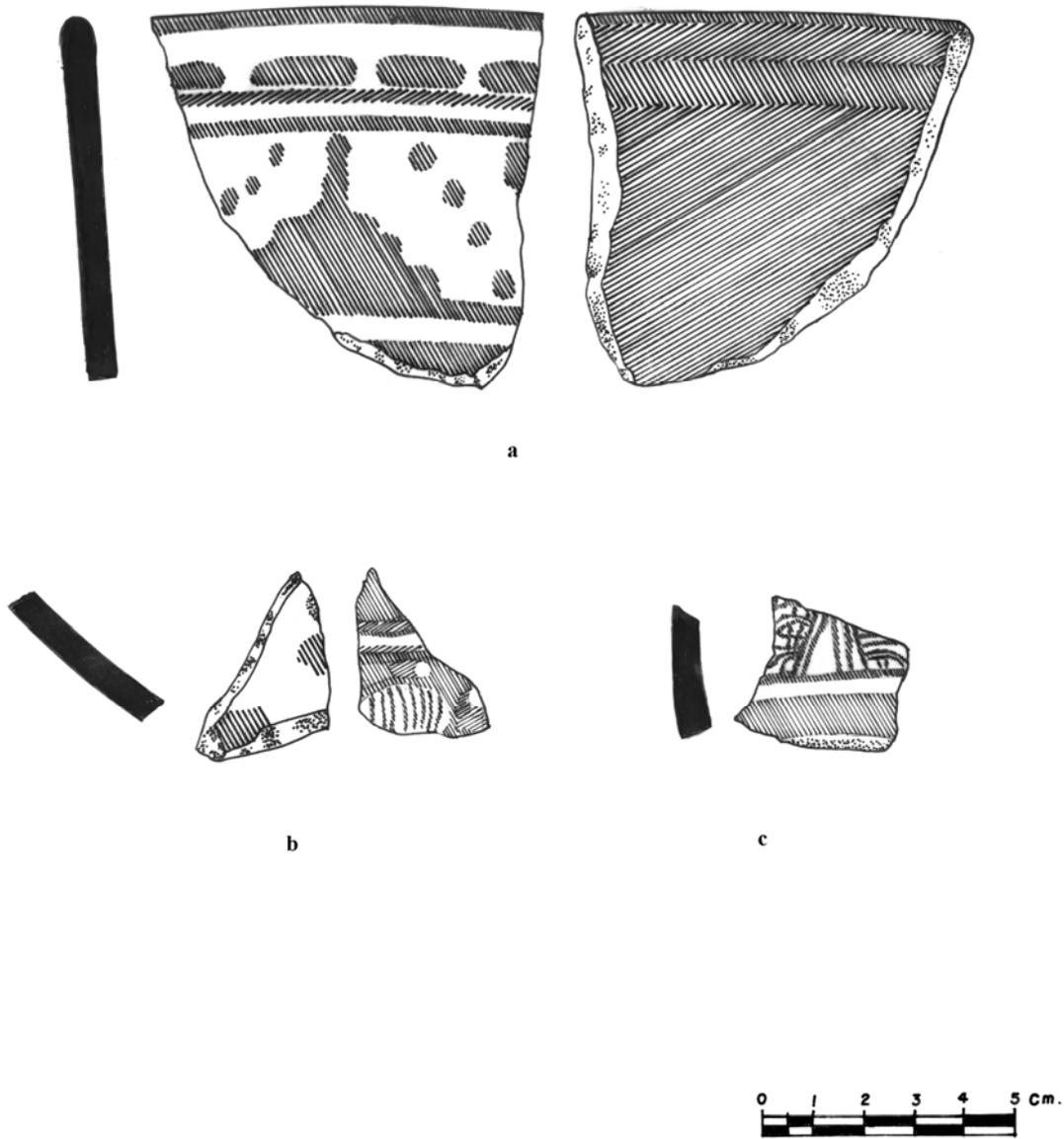


Figure 5.60 Ik-Chauh/Tepeu 2 complex ceramics (a-c, Cabrito Cream Polychrome: Variety Unspecified)

### **KISIN/TEPEU 3 COMPLEX: TERMINAL CLASSIC PERIOD**

Ceramics from the Kisin/Tepeu 3 complex represent material from the final third of the Late Classic Tepeu Sphere (Smith 1955). Unlike the preceding Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complexes, the Kisin/Tepeu 3 complex represents a full assemblage complete with serving ware, utilitarian ware, and foreign imports. However, unfortunately like the preceding complexes, there are no radiocarbon dates associated with the material. Dating was based on the analysis of paste, form, and decorative modes. These modes were compared to potentially contemporaneous material recovered from excavations at other well-studied lowland sites (e.g, Uaxactun, Tikal, Barton Ramie, El Mirador, sites in the Petexbatun Region, Seibal, Altar de Sacrificios, and Becan). Kisin/Tepeu 3 material shares form and surface modes in common with material from Smith's (1955) Tepeu 3 Complex at Uaxactun and Culbert's (n.d.; 1993) Eznab Complex which would place production and distribution between AD 830 and 950. The sample consisted of only 3744 sherds and 32 whole or partial vessels (including those housed in the Peabody Museum). Kisin/Tepeu 3 material can be found in small quantities from surface collections at La Surfricaya and K'o while largest quantities are found in palace structures in Group III at Holmul. As with Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complex material, sampling is most likely to blame for the small quantities of material at this point.

Kisin/Tepeu 3 material represents another shift in production modes from the preceding Ik Chuah/Tepeu 2 complex. Serving ware of the Kisin/Tepeu 2 complex becomes distinct from the preceding Tinaja and Palmar group material through paste, form, and decorative modes. Pastes of Tinaja group serving ware become relatively consistent and cluster around one variant of a fine, mixed calcite and volcanic, orange paste. Pastes for serving ware in general become very fine. The most frequently occurring form in monochrome ceramics is the open plate with

tripod supports. However, smaller forms, such as vertical walled vases continue to be produced. Within utilitarian ware, outcurving neck jars of the Cambio group become distinct from previous Cambio jars with the addition of pie-crust patterns on the rim. Also interesting is that monochrome utilitarian ware of the Tinaja group increases in frequency and diversity of forms: including large bowls (or basins), small round-sided bowls, and jars with outcurving necks sometimes with pie-crust design on the rim. Surface decoration of monochrome serving ware contrasts with Ik Chuah/Tepeu 2 material with the greater frequency of incision and new variation in types of fingernail impression. Polychrome decoration becomes even less complex than in the previous Ik Chuah/Tepeu 2 complex, and also less frequent. Incision and modeled or molded carving become more popular means of surface decoration as evidenced in the introduction of a number of unnamed carved types.

Kisin/Tepeu 3 complex material is most similar to Tepeu 3 Complex material at Uaxcatun (Smith 1955) and Eznab material at Tikal (Culbert n.d.; 1993). Serving ware paste, form, and surface modes share much in common with Terminal Classic material of neighboring Belize Valley sites (e.g., Barton Ramie and Xunantunich. This could reflect shifting political and economic relations between elites in the Holmul Region and those from northeastern and central Peten sites during the Late Classic, to Belize Valley sites during the Terminal Classic.

## **UAXACTUN UNSLIPPED WARE**

### Cambio Ceramic Group

Cambio Unslipped: Variety Unspecified

Encanto Striated: Variety Unspecified

Miseria Applique: Variety Unspecified

Pedregal Modeled: Variety Unspecified

## **PETEN GLOSS WARE**

### Tinaja Ceramic Group

Tinaja Red: Variety Unspecified

Cameron Incised: Variety Unspecified

Chaquiste Impressed: Variety Unspecified

Chinja Impressed: Form B Variety

### Achote Ceramic Group

Achote Black: Variety Unspecified

### Maquina Ceramic Group

Maquina Brown: Variety Unspecified

### Asote Ceramic Group

Asote Orange: Variety Unspecified

## **ALTAR ORANGE WARE**

### Altar Orange Group

Trapiche Incised: Variety Unspecified

## **UNNAMED WARES AND GROUPS**

### Unnamed Painted

Unnamed Polychrome: Variety Unspecified

Unnamed Black-on-Orange: Variety Unspecified

Unnamed Red-on-Cream Carved: Variety Unspecified

Unnamed Modeled and Painted

Imitation Fine Orange

Unnamed Thin Walled Orange

Unnamed Modeled-Carved: Variety Unspecified

## UAXACTUN UNSLIPPED WARE

### Cambio Ceramic Group

#### Cambio Unslipped: Variety Unspecified

*Sample:* 300 rims, 1118 total, 81% of group

*Whole Vessels:* SF# HOL.T.66.02.02.01, SF# SUF.T.11.05.02.01, SF# ----, SF#

HOL.T.28.35.02.08

*Established:* Smith and Gifford at Uaxactun (1966:155, 173)

*Principal identifying modes:* 1) Unslipped surfaces, 2) large jars with outcurving neck, direct rim, and pie-crust lip.

*Paste, firing, and temper:* Paste is coarse textured with many large crystal calcite inclusions.

Color is gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4). Cores are not frequent.

*Surface finish and decoration:* Exterior vessel surfaces are smoothed and remain unslipped.

Surfaces are porous and gritty with paste inclusions often showing through. Fire-clouding can occur on body sherds. Color is similar to paste, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4).

*Form:* 1) Large wide mouth jars with outcurving neck, direct rim, and pie-crust lip, 2) unconventional censerware forms.

*Intrasite locations and contexts:* Cambio Unslipped is found in Kisin/Tepeu 3 Complex deposits at Holmul, K'o, and La Sufricaya.

*Intersite locations and contexts:* Cambio Unslipped can be found at Uaxactun (Smith and Gifford 1966:155), Altar de Sacrificios (Adams 1971:18), Tikal (Culbert n.d.; 1993), Seibal

(Sabloff 1975:153-155), El Mirador (Forsyth 1989:114), and in the Petexbatun Region (Foias 1996:435-442). At Barton Ramie Smith classifies unslipped ware as Cayo Unslipped and other types (see Gifford 1976:276).

*Comment:* The main difference between Cambio Unslipped of the Chak/Tepeu 1 through Ik Chuah/Tepeu 2 complexes and Kisin/Tepeu 3 complex is the presence of pie-crust impression on the lip of jar rims on Kisin/Tepeu 3 material. Pie-crust impressions do not occur in Late Classic Chak/Tepeu 1 and Ik Chuah/Tepeu 2 ceramics.

*Illustration:* 5.50, 5.51a-d, H.5

### **Encanto Striated: Variety Unspecified**

*Sample:* 6 rims, 261 total, 18.5% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:157, 173).

*Principal identifying modes:* 1) Unslipped surfaces, 2) crisscrossing medium to heavy striations on exterior surfaces, 3) large jars with outcurving neck, direct rim, and squared lip

*Paste, firing, and temper:* Same as Cambio Unslipped. Paste is coarse textured with many large crystal calcite inclusions. Color is gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4). Cores are not frequent.

*Surface finish and decoration:* Surface treatment is the same as Cambio Unslipped described above with the addition of medium to deep striations on vessel exteriors. Color is similar to paste, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4).

*Form:* Large wide mouth jars with outcurving necks. Sometimes striation continues up to the lip.

*Intrasite locations and contexts:* Encanto Striated is found in South Group, Holmul, and La Sufricaya.

*Intersite locations and contexts:* Encanto Striated can be found at Uaxactun (Smith and Gifford 1966:157), Altar de Sacrificios (Adams 1971:19), Tikal (Culbert n.d.; 1993), Seibal (Sabloff 1975:155-158), Becan (Ball 1977:67-68), El Mirador (Forsyth 1989:114-117), in the Petexbatun Region (Foias 1996:453-457), and is similar to Tu-Tu Camp striated at Barton Ramie (Gifford 1976:273-277).

*Comment:* Currently Encanto Striated is found in Ik Chuah/Tepeu 2 and Kisin/Tepeu 3 Complex contexts.

*Illustration:* 5.51e

### **Miseria Applique: Variety Unspecified**

*Sample:* 4 rims, 7 total, 0.5% of group

*Whole Vessels:* SF# HOL.LT.15.01.01.02

*Established:* Smith and Gifford at Uaxactun (1966: 159, 173).

*Principal identifying modes:* 1) Unslipped vessel surfaces, 2) censerware, 3) coarse gritty paste, 4) small bowls or composite vessels with appliqué spikes on exterior

*Paste, firing, and temper:* Paste can be same as Cambio Unslipped, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4). Still carbonate with medium to large calcite and crystalline inclusions. Fire clouds occur, but could be due to use not production.

*Surface finish and decoration:* Surface is smoothed but remains unslipped. Applique spikes decorate vessel exteriors. Color is similar to paste, gray (10YR5/1), yellow (10YR7/4), or pink (5YR6/4).

*Form:* 1) Small bowls with flaring sides, direct rim, and rounded lip, 2) “hourglass” shaped vessels, and other composite forms.

*Intrasite locations and contexts:* An excellent example of Miseria Applique comes from South Group. It can also be found at Holmul.

*Intersite locations and contexts:* Miseria Applique appears at Uaxactun (Smith and Gifford 1966:159, 173), Altar de Sacrificios (Adams 1971:53-54), Seibal (Sabloff 1975:174), and in the Petexbatun Region (1996:465-467).

*Illustration:* 5.51f, H.32

## **PETEN GLOSS WARE**

### **Tinaja Ceramic Group**

*Sample:* 238 rims, 1780 total, 92% of group

*Whole Vessels:* SF# ST.18.39.02, SF# ST.17.25.01.02, SF# ST.20.02.01, SF# SUF.T.37.05.02.01, SF# SUF.L.08.01.02.02, SF# HOL.T.35.05.02.01, SF# ST.09.05.02.01, SF#(HOL.L.02), SF#(HOL.L.02)

*Established:* Smith and Gifford at Uaxactun (1966:163, 172).

*Principal identifying modes:* 1) Red slip, 2) jars with outcurving necks and heavy fire-clouding, 3) bowls with round sides, 4) open plates with tripod supports.

*Paste, firing, and temper:* Paste has two variants: 1) fine-textured with mixed calcite and volcanic inclusions (calcite not visible even under magnification, but paste reacts heavily to HCL), 2) gritty and gray with crystalline calcite inclusions. The fine paste is yellow (10YR7/3)

and reserved for finer serving ware. The gritty paste is gray (10YR5/1) or brown-yellow (10YR6/4) and reserved for larger jars and basins as well as less fine serving bowls. Fire clouding is extremely common on jar forms. Firing cores are not common.

*Surface finish and decoration:* On smaller bowls, vessel interiors and exteriors are smoothed. Red-orange slip (2.5YR4/8, 2.5YR4/6) is applied to vessel interiors, over the lip, and about half way down the exterior surface. Plates are slipped entirely with a relatively even red or red-orange slip. Jars are slipped a thin red, but become heavily fireclouded. Slip often does not continue up the neck of the vessel making broken rims difficult to distinguish between Cambio Unslipped jars.

*Form:* 1) Small round-sided bowls with direct rim and rounded or squared lip, 2) plates with open outflaring walls, convex base, and tripod supports, 3) jars with outcurving necks, direct rim, and squared or sometimes pie-crust lip.

*Intrasite locations and contexts:* Tinaja Red vessels are mostly found at Holmul, but do appear in South Group, K'o, and La Sufricaya.

*Intersite locations and contexts:* Tinaja Red appears in Uaxactun (Smith and Gifford 1966:163, 172), Altar de Sacrificios (Adams 1971:23), Tikal (Culbert n.d.; 1993), Seibal (Sabloff 1975:158-160), at El Mirador Forsyth classifies it as Tinaja Red: Nanzal Variety (Forsyth 1989:79-86), and in the Petexbatun Region (Foias 1996:468-478).

*Comment:* It is certainly possible that the current description contains more than one variety of Tinaja Red. Pending further analysis, the type will doubtless be subdivided into more types and varieties. Tinaja Red is currently found more frequently in Kisin/Tepeu 3 contexts, but does appear in very small frequencies in Ik Chuah/Tepeu 2 contexts. Frequencies are not available for

this type because it crosscuts the Late Classic and Terminal Classic complexes and modes of the Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complex material have not yet been distinguished.

*Illustration:* 5.52, 5.53

### **Cameron Incised: Variety Unspecified**

*Sample:* 45 rims, 78 total, 4% of group

*Whole Vessels:* SF# ST.09.02.02.03, SF#(HOL.T.25.10), SF#(HOL.TL25.10), SF#  
HOL.T.61.15.02.01, SF# SUF.T.11.10.02.01

*Established:* Smith and Gifford at Uaxactun (1966: 155, 172)

*Principal identifying modes:* 1) Red-orange slip, 2) plates with tripod supports and basal flanges, 3) thin bands of incision on exterior surface just below the lip, and tick marks on basal flanges.

*Paste, firing, and temper:* Cameron Incised plates are made with the first of the two paste variants described for Tinaja Red – fine orange or yellow (10YR7/3) with volcanic and possibly fine crushed calcite inclusions (reacts heavily to HCL).

*Surface finish and decoration:* Interior and exterior surfaces or smoothed, polished, and slipped red or red-orange (2.5YR4/8, 2.5YR4/6). A single or double horizontal circumferential band of incision is executed just below lip on vessel exteriors. A circumferential band of dentate stamping is also common on plate exteriors near the basal break. Tick marks can appear on basal flanges.

*Form:* Plates with flaring walls, direct rim, rounded lip, flat base, tripod supports and basal flanges/ridges, 2) vases with incurving walls, direct rim, and rounded lip.

*Intrasite locations and contexts:* Cameron only appears at Holmul.

*Intersite locations and contexts:* Cameron Incised also appears at Uaxactun (Smith and Gifford 1966:155, 172), Tikal (Culbert 1993:13; n.d) Altar de Sacrificios (Adams 1971:44), and Seibal (Sabloff 1975:179-181).

*Comment:* Cameron plates from the Holmul Region bear striking resemblance to plates from the Belize River Valley (Xunantunich in particular) classified as Belize Red (personal observation 2005).

*Illustration:* 5.61a-g, H.20, H. 21, H.25, H.26

### **Chinja Impressed: Form B Variety**

*Sample:* 41 rims, 61 total, 3% of total

*Whole Vessels:*

*Established:* Type by Smith and Gifford at Uaxactun (1966:156, 172).

*Principal identifying modes:* 1) Large open bowl or “olla” forms, 2) ring of shallow “slash” fingernail impressions encircling the vessel exterior, 3) red slipped interior with slip running up and over lip and extending down to row of fingernail impressions on vessel exterior.

*Paste, firing, and temper:* Paste is the second variant of Tinaja Red. Medium textured with crystalline inclusions. Color is gray (10YR5/1) or brown-yellow (10YR6/4). Firing cores are not common, but do appear.

*Surface finish and decoration:* Vessel interiors and exteriors are well smoothed and polished. A row of shallow almost incised fingernail impressions encircles the vessel exterior. The entire interior is slipped red (2.5YR4/8, 10R4/8). The slip continues up over the lip and extends down to row of fingernail impressions. The remainder of the vessel exterior below the row of impressions is usually left unslipped.

*Form:* 1) Large open bowls or “ollas”, incurving walls, direct rim, and squared lip.

*Intrasite locations and contexts:* Chinja Form B can be found in largest quantities in Holmul.

*Intersite locations and contexts:* Chinja Impressed appears at Uaxactun (Smith and Gifford 1966:156, 172), Altar de Sacrificios (Adams 1971:47), Seibal (Sabloff 1975:168-171), Tikal (Culbert n.d.), and at El Mirador (Forsyth 1989:86-89). Chinja Impressed is similar to Pascua Impressed (Gifford 1976:178), Gloria Impressed (Gifford 1976:200, 202), and Kaway Impressed (Gifford 1976:239-240) at Barton Ramie.

*Illustration:* 5.62

### **Chaquiste Impressed: Variety Unspecified**

*Sample:* 10 rims, 14 total, 1% of group

*Whole Vessels:*

*Established:* Adams at Altar de Sacrificios (1971: 47).

*Principal identifying modes:* 1) Large incurving orifice bowls or “ollas”, 2) finger impressed appliqué fillet encircling vessel exterior, 3) red slip extending from interior lip down to top of fillet on exterior.

*Paste, firing, and temper:* Paste is the second variant of Tinaja Red. Medium textured with crystalline inclusions. Color is gray (10YR5/1) or brown-yellow (10YR6/4). Firing cores are not common, but do appear.

*Surface finish and decoration:* Vessel exterior is smoothed and possibly polished. A finger impressed appliqué fillet encircles the vessel exterior. Red slip (2.5YR4/8, 10R4/8) extends down from the interior lip to the top of the fillet on vessel exterior.

*Form:* 1) Large open bowls or “ollas”, incurving walls, folded rim, and rounded lip.

*Intrasite locations and contexts:* Only one piece of Chaquiste has been found in the South Group.

*Intersite locations and contexts:* Chaquiste is more prevalent in the Pasion River Region and can be found at Altar de Sacrificios (Adams 1971: 47), Seibal (1975:168), and the Petexbatun Region (Foias 1996:497:502)

*Illustration:* 5.61h

## **Achote Ceramic Group**

### **Achote Black: Variety Unspecified**

*Sample:* 16 rims, 166 total, 100% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:154, 172).

*Principal identifying modes:* 1) Black slip, 2) smooth polished vessel surfaces, 3) small dishes or bowls with outflaring walls.

*Paste, firing, and temper:* Paste varies from yellow (10YR7/4), gray (10YR5/1) to black with crystalline calcite inclusions. Firing cores are common and compose one hundred percent of cross section.

*Surface finish and decoration:* Surfaces are smoothed and polished. Black slip could be applied over an orange slip. Slip often appears “mottled” with brown or orange showing through from underneath.

*Form:* Late Classic blacks are rare in the Holmul Region and only a few rims are present.

Definite forms include: 1) a small dish or bowl with outflaring sides, direct rim, and rounded lip,

2) bowls with round sides, direct rim, and rounded lip, and 3) a possible jar form with outcurving neck, direct rim, and rounded lip.

*Intrasite locations and contexts:* Achote is found only at Holmul in Group III excavations.

*Intersite locations and contexts:* Achote Black can also be found at Uaxactun (Smith and Gifford 1966:154), Altar de Sacrificios (Adams 1971:25), Tikal (Culbert 1993: Figures 98a 2, b, c 2, 145b, 147c, 151c 2; n.d.), Seibal (Sabloff 1975:181, 184), and Barton Ramie (Gifford 1976:248).

*Comment:* This type is extremely rare in Terminal Classic contexts at Holmul. This is not surprising, as black slipped pottery of the Infierno group was rare in the preceding Chak/Tepeu 1 and Ik Chuah/Tepeu 2 complexes as well.

*Illustration:* 5.63a-c

## **Maquina Ceramic Group**

### **Maquina Brown: Variety Unspecified**

*Sample:* 3 rims, 3 total, 100% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:159, 172).

*Principal identifying modes:* 1) Brown slip, 2) small flaring walled incurving lip bowls, 3) large restricted bowls or “ollas”.

*Paste, firing, and temper:* Paste is medium to fine textured with mixed volcanic and calcite inclusions. Color is yellow to orange (10YR7/3).

*Surface finish and decoration:* Vessel surfaces are well smoothed and slipped a light brown (7.5YR5/4) on vessel interiors and exteriors. Patches of orange are also present. Vessels are polished to a dull shine.

*Form:* 1) Small outflaring walled bowls with slightly incurving rim and rounded lip. This form variant is identical to Asote Orange as recorded at Uaxactun (see Smith and Gifford 1966: 154, 159), 2) large bowls or “ollas” with incurving rim and rounded lip.

*Intrasite locations and contexts:* Found in Kisin/Tepeu 3 deposits in Group III, Holmul.

*Intersite locations and contexts:* Maquina Brown is very rare, but is found at Uaxactun (Smith and Gifford 1966:159, 172), Tikal (Culbert n.d.), and in the Dolores Valley (Laporte et al 1993:117).

*Comment:* It is quite possible that Maquina Brown and Asote Orange are the same type, but because of differential preservation they appear different. Regardless, elsewhere in the lowlands these two types are extremely diagnostic of the Tepeu 3 ceramic phase.

*Illustration:* 5.63d-e

## **Asote Ceramic Group**

### **Asote Orange: Variety Unspecified**

*Sample:* 9 rims, 9 total, 100% of group

*Whole Vessels:*

*Established:* Smith and Gifford at Uaxactun (1966:154, 172).

*Principal identifying modes:* 1) Orange slip, 2) small flaring walled incurving lip bowls, 3) large restricted bowls or “ollas”.

*Paste, firing, and temper:* Paste is medium to fine textured with mixed volcanic and calcite inclusions. Color is yellow to orange (10YR7/3, 10YR7/4).

*Surface finish and decoration:* Vessel interiors and exteriors are well smoothed and polished. An orange slip may have been applied to the entire surface. Color is unknown, because slip is almost always extremely eroded.

*Form:* Same as Maquina Brown except large restricted ollas. 1) Small outflaring walled bowls with slightly incurving rim and rounded lip.

*Intrasite locations and contexts:* Like Maquina Brown, Asote Orange is found only at Holmul.

*Intersite locations and contexts:* Asote Orange has been identified as a Tepeu 3 ceramic type at Uaxactun (Smith and Gifford 1966:154, 172). It can also be found in the Dolores Valley (Laporte et al 1993: 133).

*Illustration:* 5.63f-j

## **FINE ORANGE WARE**

### **Altar Ceramic Group**

#### **Trapiche Incised: Variety Unspecified**

*Sample:* 1 rim, 1 total, 100% of group

*Whole Vessels:* SF# HOL.T.65.02.01.01

*Established:* Smith and Gifford at Uaxactun (1966:163, 173).

*Principal identifying modes:* 1) Fine orange paste, 2) incurving bowls with hollow tripod supports, 3) deep incised lines on interior base of bowl, 4) black or red slip.

*Paste, firing, and temper:* Fine orange (5YR6/8, 7.5YR6/8) volcanic paste with little to no visible inclusions. Completely oxidized leaving no core.

*Surface finish and decoration:* Vessel surfaces are smoothed. Interior base of bowl is incised with deep lines. A black slip is applied to the interior vessel surface. Exterior surfaces are eroded.

*Form:* Bowl with incurving walls, direct rim, convex base, and hollow tripod supports.

*Intrasite locations and contexts:* Found exclusively in Group III at Holmul.

*Intersite locations and contexts:* Trapiche Incised is a definitive Terminal Classic marker at many lowland sites. It can be found at Uaxactun (Smith and Gifford 1966:163, 173), Altar de Sacrificios (Adams 1971: 45), Seibal (Sabloff 1975:192), and Becan (Ball 1977:88).

*Illustration:* --

## **UNNAMED: MISCELLANEOUS GROUPS AND TYPES**

### **Unnamed Painted**

#### **Unnamed Polychrome: Variety Unspecified**

*Sample:* 117 rims, 166 total

*Whole Vessels:* SF# SUF.L.08.01.02.01, SF# SUF.T.25.55.02.01, SF# HOL.T.25.10.05.01,

SF#(SLT.01.01), SF# SUF.17.7.57.007, SF# HOL.T.35.02.02.01

*Established:* n/a

*Principal identifying modes:* 1) Orange slip, 2) red and black painted designs, 3) matte surface, 4) flaring walled plates, 5) round-sided bowls, 6) cylinders, and 7) flaring walled bowls.

*Paste, firing, and temper:* Paste is similar to second variant of Tinaja Red. Fine with mixed volcanic and possibly crushed calcite (paste reacts strongly to HCL). Color is yellow to orange (10YR7/3).

*Surface finish and decoration:* Orange (7.5YR6/8) underslip serves as a background for black and red painted bands, geometric patterns, and figures. This type of polychrome is not placed in the Peten Gloss Ware because surfaces remain slightly dull and not highly polished. Surfaces are usually highly eroded, but when paint is present designs are simple and geometric.

*Form:* 1) Bowls with flaring or outcurving walls, direct rim, and rounded lip, 2) bowls with round sides, direct rim, and rounded lip, 3) cylinders with vertical walls, direct rim, and rounded lip, and 4) plates with flaring walls, direct rim, rounded lip, flat or convex base, basal ridge, and hollow tripod supports.

*Intrasite locations and contexts:* This unnamed polychrome is relatively rare, but has been found in the sites of Holmul and South Group.

*Intersite locations and contexts:* This unnamed polychrome resembles ceramic material of the Vinaceous Tawny Ware from Belize more than sites in the central Peten, specifically Benque Viejo Polychrome (Smith and Gifford 1966:155; Gifford 1976:269-272).

*Illustration:* H.19, H.30

### **Unnamed Black-on-Orange: Variety Unspecified**

*Sample:* 7 rims, 16 total

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Orange slip, 2) black painted designs, 3) matte surface, 4) flaring walled plates, 5) round-sided bowls, 6) cylinders, and 7) flaring walled bowls.

*Paste, firing, and temper:* Paste is similar to Unnamed Polychrome above and second variant of Tinaja Red. Fine with mixed volcanic and possibly crushed calcite (paste reacts strongly to HCL). Color is yellow to orange (10YR7/3, 10YR7/4).

*Surface finish and decoration:* Orange (7.5YR6/8) underslip serves as a background for black and painted bands and geometric patterns. This type of painted pottery is not placed in the Peten Gloss Ware because surfaces remain slightly dull and not highly polished. Surfaces are usually highly eroded, but when paint is present designs are simple and geometric.

*Form:* 1) Bowls with flaring or outcurving walls, direct rim, and rounded lip, 2) bowls with round sides, direct rim, and rounded lip, 3) cylinders with vertical walls, direct rim, and rounded lip, and 4) plates with flaring walls, direct rim, rounded lip, flat or convex base, basal ridge, and hollow tripod supports.

*Intrasite locations and contexts:* This unnamed polychrome is relatively rare, but has been found in the sites of Holmul and South Group.

*Intersite locations and contexts:* This unnamed black-on-orange type resembles ceramic material of the Vinaceous Tawny Ware from Belize more than sites in the central Peten, specifically Xunantunich Black-on-Orange (Gifford 1976:268-269).

*Illustration:* --

### **Unnamed Red-on-Cream Carved: Variety Unspecified**

*Sample:* 4 rims, 6 total

*Whole Vessels:* SF# HOL.T.62.19.02.01

*Established:* n/a

*Principal identifying modes:* 1) Red on cream painting, 2) carved design band on rim, and 3) cylinder vases.

*Paste, firing, and temper:* Paste is fine-textured and volcanic. Color is buff to yellow (10YR8/2, 10YR8/3, 10YR7/4). Cores are not present in the sample.

*Surface finish and decoration:* Surfaces are well smoothed. Interior is usually eroded, but may have been slipped. On vessel exteriors a red (10R4/8) band decorates the rim. Paint may contain specular hematite. Beneath the rim is a band of carved and incised repeating pseudo-glyphs. Beneath the band the vessel is fluted with vertical bands. The pseudo-glyphs and fluting is covered with cream slip (10YR8/1).

*Form:* 1) Cylinder vase with direct rim, rounded lip, and flat base.

*Intrasite locations and contexts:* Currently only found in Kisin/Tepeu 3 contexts at Holmul.

*Intersite locations and contexts:* I have not come upon this type of pottery at other lowland sites, but the combination of vessel and surface modes are common in the southern lowlands or northern highlands (see Smith 1952). However, carving like this is a common decorative mode in the Terminal Classic period throughout the lowlands (see Smith 1955:25).

*Illustration:* H.24

### **Unnamed Modeled and Painted: Variety Unspecified**

*Sample:* 1 rim, 1 total

*Whole Vessels:* SF# ----

*Established:* n/a

*Principal identifying modes:* 1) Bowls with barrel shaped or vertical sides, 2) modeled and appliqué design elements, 3) red, blue, and white paint

*Paste, firing, and temper:* Paste is medium textured with crystal calcite inclusions. Color is gray to yellow (10YR5/1, 10YR6/4). There is no firing core in the one sample from the Holmul Region.

*Surface finish and decoration:* Interior vessel is heavily eroded. Exterior is well smoothed. A face, supernatural, is created by modeled and appliqué design. Traces of red (7.5Y3/8), blue, and white or cream (10YR8/1) paint are visible in some areas.

*Form:* 1) Bowl with barrel-shaped sides, direct rim, and squared lip.

*Intrasite locations and contexts:* The one example of this type of material was found in the main plaza at Holmul in a cache associated with Stela 7.

*Intersite locations and contexts:* This type is most similar to Pedregal Modeled which was established by Smith and Gifford (1966:161) at Uaxactun. Pedregal Modeled: Appliquéd Head Variety is common at Seibal (Sabloff 1975:114-116) and in other varieties at Altar de Sacrificios (Adams 1971:57).

*Comment:* While this type is similar to Pedregal Modeled, it differs in surface decoration. The appliqué head is not human in appearance, but supernatural. Furthermore, I prefer not to place this type in the Uaxactun Unslipped Ware because it is clearly painted and vessel form and paste characteristics are not completely consistent with Uaxactun Unslipped ware on the whole.

*Illustration:* H.34

## **Imitation Fine Orange Group**

### **Unnamed Thin-Walled Orange: Variety Unspecified**

*Sample:* 2 rims, 39 total

*Whole Vessels:*

*Established:* n/a

*Principal identifying modes:* 1) Fine orange paste, 2) vases with insloping sides and annular bases, 3) occasional incision.

*Paste, firing, and temper:* Paste is extremely similar to first variant of Tinaja Red. Fine textured with mixed volcanic and crushed calcite inclusions. Color is yellow to orange (10YR7/3, 10YR7/4). Paste is extremely compact and sherds are fired to a hard state. Firing cores are not present.

*Surface finish and decoration:* Surfaces are very well smoothed and slipped an orange-red color (7.5YR6/8, 5YR6/8, 2.5YR5/8). Vessels are highly polished. Occasionally, thin bands of pre-slip or post-slip incision are present on vessel rims. Firing clouds may occur, but are not common.

*Form:* 1) Vases with insloping walls, direct rim, rounded lip, and occasionally annular base.

*Intrasite locations and contexts:* This type of thin walled orange slipped pottery is currently found in contexts within Holmul and South Group.

*Intersite locations and contexts:* The type appears to be a local imitation of fine paste pottery of the Altar group found in many Terminal Classic contexts in the Pasion River Region and Central Peten at this time (see Sabloff 1975:189, 192).

*Illustration:* --

### **Unnamed Modeled-Carved: Variety Unspecified**

*Sample:* 3 rims, 7 total

*Whole Vessels:* SF# HOL.T.35.05.02.02

*Established:* n/a

*Principal identifying modes:* 1) Scenes of human figures created by a mold on vessel exteriors, 2) barrel shaped vessels, 4) round sided bowls.

*Paste, firing, and temper:* Paste is fine to medium and carbonate based or mixed crystal calcite and volcanic. Color is orange to yellow (10YR7/3, 2.5Y7/3).

*Surface finish and decoration:* A mold was probably applied to vessel exterior when the clay was still malleable. The mold creates impressions of human figures dressed in regal or military regalia. Surfaces are usually highly eroded and no slip visible. The one partial vessel is slipped red-orange (2.5YR4/6) on the exterior.

*Form:* 1) Vases with insloping sides, direct rim, rounded lip, and annular or pedestal base, 2) vases with vertical sides, direct rim, rounded lip, flat base, and hollow tripod supports, 3) bowls with round sides, direct rim, rounded lip, and flat base.

*Intrasite locations and contexts:* Found exclusively at contexts in Holmul.

*Intersite locations and contexts:* This type is very similar to Pabellon Modeled-Carved of the Pasion River Region, but lacking the fine orange paste. Pabellon Modeled-Carved is a definitive Terminal Classic marker at many lowland sites. It can be found at Uaxactun (Smith and Gifford 1966:160, 173), Altar de Sacrificios (Adams 1971: 49), Seibal (Sabloff 1975:195), Tikal (Culbert 1993:14; n.d.), and Becan (Ball 1977:98).

*Illustration:* H.29

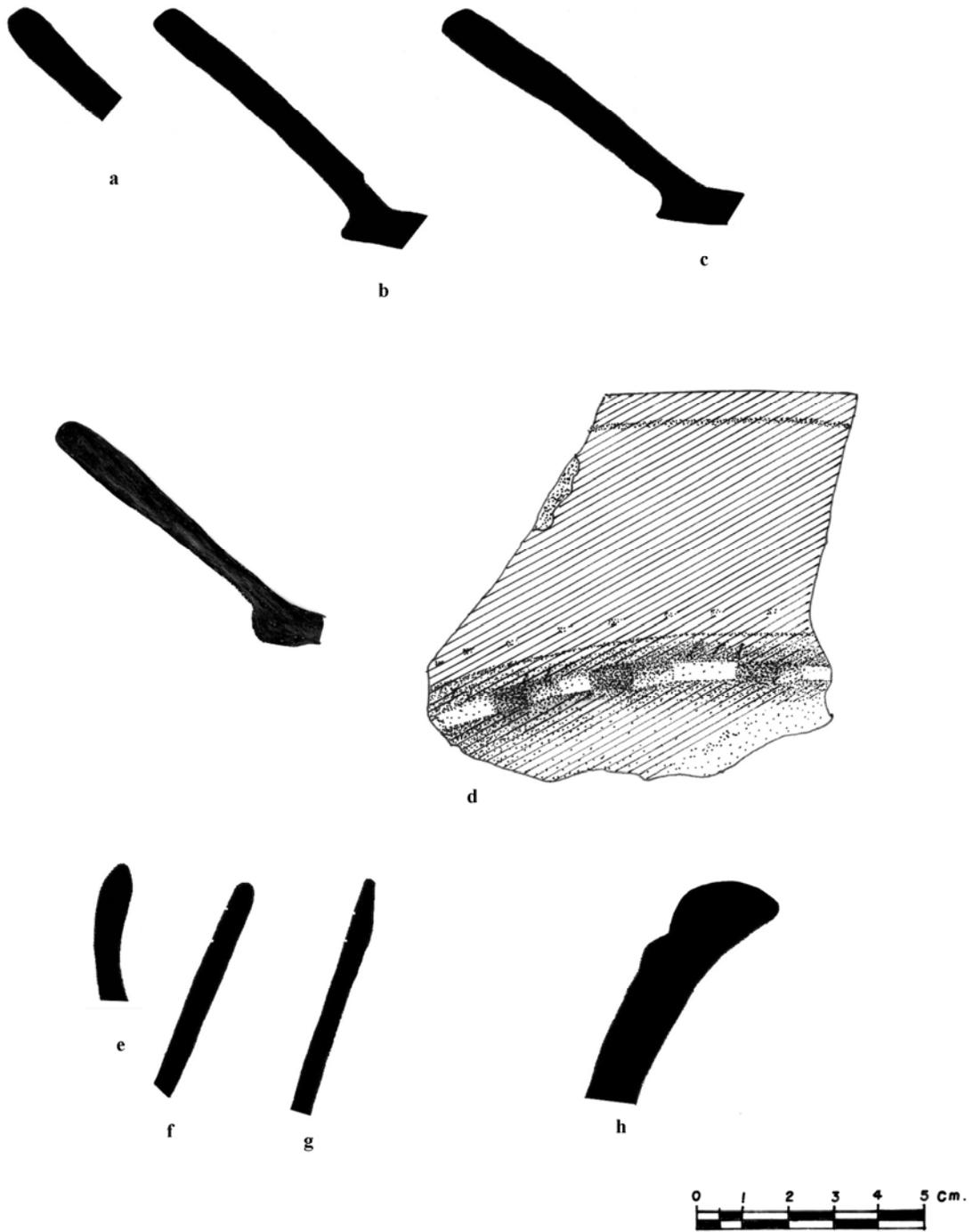


Figure 5.61 Kisin/Tepeu 3 complex ceramics (a-h, Cameron Incised: Variety Unspecified)

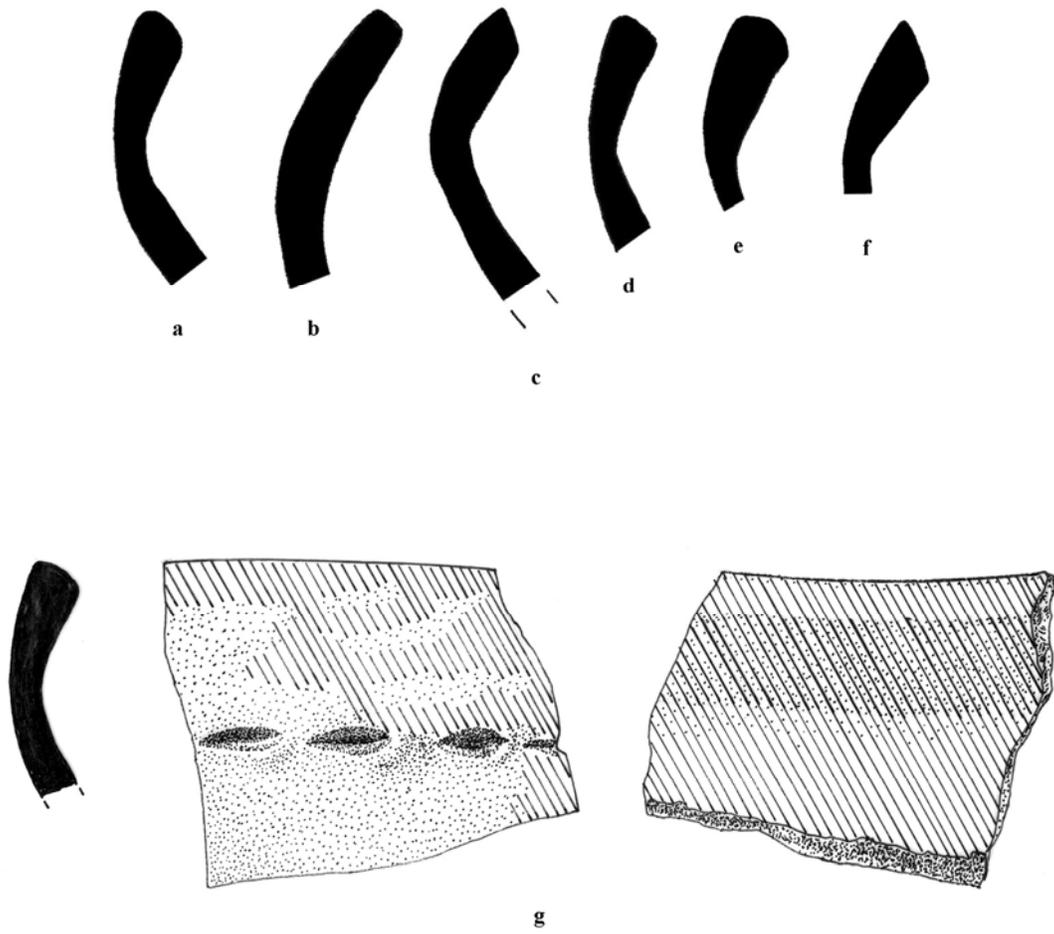


Figure 5.62 Kisin/Tepeu 3 complex ceramics (a-g, Chinja Impressed Form B: Variety Unspecified)

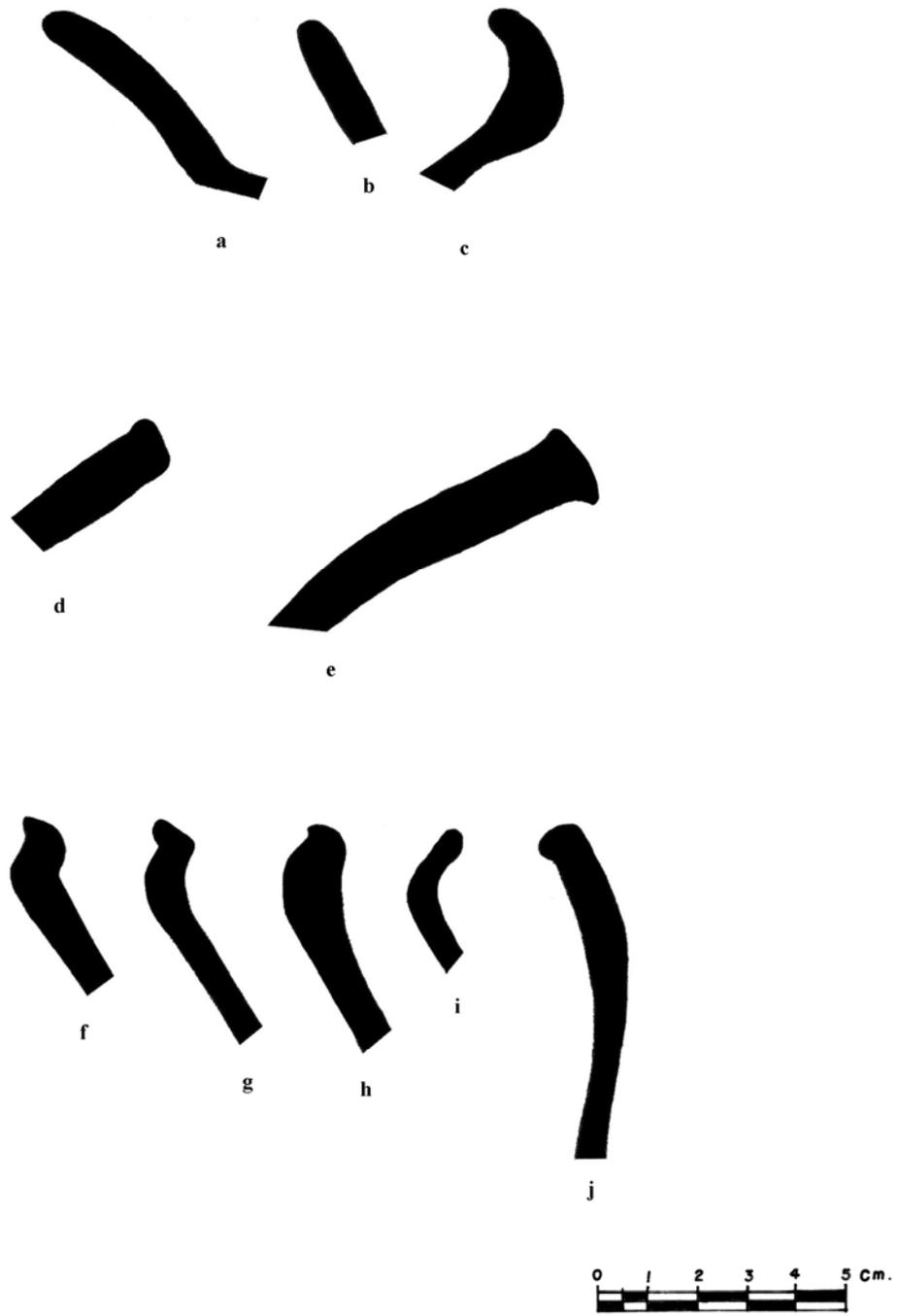


Figure 5.63 Kisin/Tepeu 3 complex ceramics (a-c, Achote Black: Variety Unspecified; d-e, Maquina Brown: Variety Unspecified; f-j, Asote Orange: Variety Unspecified)

## CHAPTER VI

### MODAL, STANDARDIZATION, AND DIVERSITY ANALYSES

#### Introduction

In this chapter I present results of the modal analysis and diversity studies for paste, form, firing, and surface attributes of type-forms within the monochrome red, monochrome orange, and painted orange ceramic traditions. In accordance with the methodology presented in the last chapter, results are presented for two type-forms within each of the traditions: namely, the medium sized flaring bowl shape-class and the medium sized composite bowl shape-class of Sierra, Aguila, Ixcario, Actuncan, and Boleto. It is important to note that flaring bowl forms of monochrome orange and monochrome red material are not compared to painted oranges. This is because no painted ceramics in the flaring bowl shape-class have been found in the Holmul Region to date. Attributes for type-forms were first quantified and compared between type-forms within the three traditions, and diversity indices calculated where appropriate. Specific attributes which could be indicative of preferred technologies associated with orange gloss ceramics were then selected for probability testing. Using statistical tests of association, I then assessed the relationship between attributes relating to preferred technologies and ceramic traditions. The strength of these relationships was also determined. These results are presented at the end of this chapter.

The results of the modal and diversity studies indicate that a number of measurable ceramic attributes are positively associated with orange gloss ceramics. However, these attributes also appear in limited quantities in red ceramics calling into question the idea that these

technologies were restricted. Similarly, a great degree of diversity within certain orange type-forms also suggests that production may have taken place locally and was performed by many production units. Both of these findings do not support the hypothesis that orange gloss ware was produced within a prestige goods system as archaeologists have traditionally defined it. The results of the modal and diversity studies are supplemented by results of the petrographic analysis and INAA described in the following chapters. Raw data of modal, petrographic, and INAA paste analyses for all sherds used in the study are presented in Appendix G.

### **Flaring Bowl Shape-Class**

#### *Paste*

Data for paste texture of flaring bowl forms is presented in Table 6.1 (as a general note concerning all tables in this chapter the abbreviation “IR” signifies Sierra Flaring Bowls with Incurving rim). All pastes tend toward the medium and fine ranges. Interestingly, Sierra Red type-forms contain more examples of pastes with fine texture. As I will demonstrate in the petrography section, this is possibly due to the type of primary inclusions that make up the paste of each of the three type-forms. Aguila orange pastes are for the most part fashioned from clays with medium to fine sized, rounded gray calcite inclusions, or *peloids*. Sierra pastes are fashioned from a range of pastes including fine-grained crystalline calcite, or *sparitic calcite*, and sometimes added glass fiber inclusions (ground tuff or volcanic ash).

**Table 6.1 Paste Texture of Flaring Bowls**

<b>Texture</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Very Coarse</b>	0	0%	0	0%	0	0%
<b>Coarse</b>	4	4%	1	1%	0	0%
<b>Medium</b>	75	67%	31	33%	29	76%
<b>Fine</b>	33	29%	61	66%	9	24%

Data for overall paste classification of flaring bowl forms is presented in Table 6.2. Flaring bowl forms of monochrome orange material are exclusively carbonate based while monochrome red material shows a small amount of mixed carbonate and ash based paste recipes. Monochrome red material appears to be slightly more diverse in this respect.

**Table 6.2 Paste Classification of Flaring Bowls**

<b>Paste Classification</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Carbonate</b>	95	85%	91	98%	38	100%
<b>Volcanic</b>	0	0%	0	0%	0	0%
<b>Mixed</b>	17	15%	2	2%	0	0%

Table 6.3 contains information related to paste color. Final paste color depends on a variety of factors, among others the minerals present in the clay source, temperature at which the ceramics were fired, and the length of time the ceramics were fired (Rice 1987b:343-346). Therefore, color is not used in this study as an indicator of a specific production behavior. However, it is still measured here as it potentially represents a production choice or effect that is necessary for the successful manufacture of a certain tradition of ceramic material. Looking at

the data table, paste color tends toward a light buff (Munsell range 10YR8/1 – 10YR8/3) in monochrome orange ceramics whereas it tends towards a darker yellow (Munsell range 10YR7/1 – 10YR7/3) in red monochrome material. A lighter paste color may have been necessary for the application and desired shade of orange slip.

**Table 6.3 Paste Color of Flaring Bowls**

<b>Color</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Yellow</b>	48	43%	74	80%	5	13%
<b>Orange</b>	13	12%	2	2%	0	0%
<b>Pink</b>	8	7%	2	2%	0	0%
<b>Red</b>	5	4%	2	2%	1	3%
<b>Buff</b>	26	23%	12	13%	24	63%
<b>Gray</b>	9	8%	1	1%	6	16%
<b>Dark brown</b>	2	2%	0	0%	1	3%
<b>Black</b>	1	1%	0	0%	1	3%

As Table 6.4 illustrates, the majority of all pastes are relatively poorly sorted. This means that when seen through the stereo-microscope, inclusions do not all tend toward the same size. This could mean that potters of all traditions did not spend a relatively great deal of time or energy sorting clays after they had been mined and dried from the source. Conversely, the reason for poor sorting could be less socially determined and simply be indicative of inherent sorting within the clay source where these different pastes were mined. Interestingly, it is the flaring bowl with incurving rim form of the Sierra type that seems to represent the most well sorted shape-class of the two traditions.

**Table 6.4 Particle Sorting of Flaring Bowls**

<b>Sorting</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Very Poorly Sorted</b>	30	27%	10	11%	10	26%
<b>Poorly Sorted</b>	65	58%	54	58%	16	42%
<b>Fairly Sorted</b>	17	15%	24	26%	10	26%
<b>Well Sorted</b>	0	0%	5	5%	2	5%

Like sorting, density of inclusions within the paste could also be indicative of processing behavior or composition of the clay source (Rice 1987b:230-232). Table 6.5 again shows that density of inclusions falls within similar ranges for the two ceramic traditions, here it is the 10% - 30% range. However, orange material has more examples in the 3% - 5% range and, along with other paste data, could suggest pastes used in manufacturing orange material came from a different source than that used to make red material.

**Table 6.5 Paste Density of Flaring Bowls**

<b>Density</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>1%</b>	0	0%	0	0%	0	0%
<b>3%</b>	0	0%	0	0%	1	3%
<b>5%</b>	1	0%	3	3%	2	5%
<b>10%</b>	16	1%	18	19%	7	18%
<b>20%</b>	78	14%	62	67%	21	55%
<b>30%</b>	17	70%	10	11%	7	18%

Paste variants were created first by identifying the major inclusion class using a stereo-microscope: three groups were created using this method, 1) crystalline calcite, 2) gray calcite,

and 3) ash. Next, I sub-divided each of these groups by identifying the second primary inclusion. In the absence of a second primary inclusion, the group is characterized only by the first inclusion. A list of all paste variants and their distribution within type-forms of the two traditions is presented in Table 6.6. A number of patterns are immediately recognizable in the data. The first is that orange monochrome flaring bowls seem to be fashioned of fewer pastes than ceramics of the red tradition. Next, it appears that the major primary inclusion in orange monochrome material is gray calcite (peloidic calcite) as compared to crystalline calcite (sparitic calcite) in the red material. What is absent in paste recipes of orange material is volcanic glass temper. However, the two traditions do share both sherd temper and gray calcite temper, although in differing percentages.

**Table 6.6 All Paste Variants of Flaring Bowls**

<b>All Paste Variants</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Crystalline calcite</b>	23	22%	38	40%	4	11%
<b>Crystalline calcite and white calcite</b>	6	6%	5	5%	3	8%
<b>Crystalline calcite and gray calcite</b>	5	5%	0	0%	0	0%
<b>Crystalline calcite and gray sherd</b>	6	6%	9	10%	0	0%
<b>Crystalline calcite and orange sherd</b>	33	32%	30	32%	4	11%
<b>Crystalline calcite and quartz</b>	2	2%	1	1%	0	0%
<b>Crystalline calcite and chert</b>	0	0%	0	0%	0	0%
<b>Crystalline calcite and mica</b>	1	1%	3	3%	0	0%
<b>Crystalline calcite and organic</b>	3	3%	2	2%	0	0%
<b>Gray calcite</b>	8	8%	3	3%	25	66%
<b>Gray calcite and white calcite</b>	0	0%	0	0%	1	3%
<b>Gray calcite and orange sherd</b>	0	0%	0	0%	1	3%
<b>White calcite</b>	0	0%	0	0%	0	0%
<b>White calcite and gray sherd</b>	0	0%	1	1%	0	0%
<b>Ash</b>	1	1%	0	0%	0	0%
<b>Ash and crystalline calcite</b>	9	9%	2	2%	0	0%
<b>Ash and gray calcite</b>	1	1%	0	0%	0	0%
<b>Ash and white calcite</b>	5	5%	0	0%	0	0%

To further quantify the first pattern observed above, I performed separate studies of richness and evenness on the paste variant data. The results are presented in Table 6.7. A simple category count reveals that more paste variants make up the flaring bowl and flaring bowl with incurving rim forms of Sierra type material. However, this could be due to the larger sample size of these two types of ceramics. Therefore, Margalef's Index was calculated for each of the three type-forms. Margalef's Index calculates species richness while controlling for unequal sample sizes. The results confirm data from the simple category count and show that paste variants are richer (there are more variants) in Sierra material than there are in Aguila material. Through its lower index for the flaring bowl with incurving rim form of the Sierra type, the table also shows that this type-form may come closer to representing an ancient classificatory category than the simple flaring bowl form of Sierra material. The incurving rim form shows less variation within itself than the simple flaring form. Finally, through calculating the standard deviation of paste variants within each type-form I quantified evenness. The data show that paste variants are more evenly distributed within the monochrome orange type-form as opposed to the monochrome red material. In sum, richness and evenness tests reveal that paste variants are more diverse within type-forms of the red monochrome tradition. This could indicate more producers involved in the production of this material in comparison to orange monochrome material.

**Table 6.7 Diversity Data for All Paste Variants of Flaring Bowls**

<b>(All Paste Groups)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Category count</b>	13	10	6
<b>Richness (Margalef's Index)</b>	2.59	1.98	1.37
<b>Evenness (Standard Deviation)</b>	9.51	13.31	9.24

The paste-variants discussed above were then reduced to eight major paste groups that cross-cut type-forms and traditions. The distribution of rim sherds for each type-form within the eight groups is presented in Table 6.8 (Figures 6.1 – 6.8). The eight groups were separated out in order to diminish some of the variation found within the type-forms with a larger sample size. The groups were also created in an effort to reveal any relationships between specific paste groups and specific type-forms or traditions. The data reveal much of the same information in Table 6.7 above. The majority of Aguila bowls were created using pastes with gray calcite. Some Sierra bowls were created with pastes tempered by volcanic ash while Aguila bowls were not. Finally, orange fired sherd temper is present in all type-forms, but more prevalent in Sierra types.

**Table 6.8 Major Paste Variants of Flaring Bowls**

Major Paste Variants	Sierra Flaring (n = 86)		Sierra Flaring (IR) (n = 87)		Aguila Flaring (n = 36)	
<b>Crystalline calcite</b>	23	27%	38	44%	4	11%
<b>Crystalline calcite and white calcite</b>	6	7%	5	6%	3	8%
<b>Crystalline calcite and gray sherd</b>	6	7%	9	10%	0	0%
<b>Crystalline calcite and orange sherd</b>	33	38%	30	34%	4	11%
<b>Gray calcite</b>	8	9%	3	3%	25	69%
<b>White calcite</b>	0	0%	0	0%	0	0%
<b>Ash</b>	1	1%	0	0%	0	0%
<b>Ash and crystalline calcite</b>	9	10%	2	2%	0	0%

A diversity study of major paste variants within type-forms also reveals information similar to that reported in relation to the diversity of all paste variants and is presented below in Table 6.9. By pairing down the number of paste variants, simple category counts are greatly reduced. This also reduces richness as determined by Margalef's Index. However, results for

the richness test remain relatively similar, with Aguila type-forms shown to be the least rich or diverse, followed by Sierra red flaring bowls with incurving rims, and finally Sierra red flaring bowls. Paste variants within Aguila bowls are similarly distributed more evenly than flaring bowls of the red monochrome material. Interestingly, paste variants within simple Sierra red flaring bowls seem to be more evenly distributed than flaring bowls with incurving rims. This is caused by the small frequency of ash tempered pastes and those with gray calcite. In summary, the frequency table and diversity study reveal a greater amount of pastes used to make monochrome red vs. orange material. Monochrome orange also appears to be produced primarily by the gray calcite paste variant, while the majority of monochrome red material was produced using either the crystalline calcite based paste or crystalline calcite tempered with orange sherd.

**Table 6.9 Diversity Data for Major Paste Variants of Flaring Bowls**

<b>(Major Paste Groups)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Category count</b>	7	6	4
<b>Richness (Margalef's Index)</b>	1.35	1.12	0.84
<b>Evenness (Standard Deviation)</b>	11.40	15.50	10.68

Finally, a separate frequency, distribution, and diversity study was performed on all additional inclusions (excluding the two primary inclusions used to create paste groups). This was used as yet another way to gauge the relative number of production units involved with the production of monochrome red and monochrome orange ceramics. Frequency and distribution data are presented below in Table 6.10. Not only is the total number of additional inclusions

greater in monochrome red material than monochrome orange, but certain inclusions like earthy hematite, chert, mica, and ash are found exclusively in Sierra type material.

**Table 6.10 Total Secondary Inclusions of Flaring Bowls**

Inclusion Type	Sierra Flaring (n = 112)		Sierra Flaring (IR) (n = 93)		Aguila Flaring (n = 38)	
Indeterminate white	6	2%	1	0%	1	3%
Indeterminate gray	14	5%	9	4%	2	6%
Indeterminate black	5	2%	1	0%	1	3%
White Calcite	30	10%	26	13%	16	46%
Gray Calcite	4	1%	5	2%	0	0%
Ash	10	3%	1	0%	0	0%
Quartz	35	12%	19	9%	2	6%
Grog (gray)	45	15%	28	14%	0	0%
Grog (orange)	57	19%	47	23%	6	17%
Chert	14	5%	24	12%	1	3%
Mica	6	2%	1	0%	0	0%
Organic	28	9%	22	11%	3	9%
Shell	0	0%	0	0%	0	0%
Feldspar	1	0%	0	0%	0	0%
Ferruginous particle	8	3%	8	4%	3	9%
Crystal Calcite	9	3%	1	0%	0	0%
Earthy Hematite	17	6%	4	2%	0	0%
Gray Oval Calcite	4	1%	0	0%	0	0%
Indeterminate Orange	0	0%	0	0%	0	0%
Pumice	1	0%	0	0%	0	0%
Glass Chunks	1	0%	0	0%	0	0%
Indeterminate angular	0	0%	4	2%	0	0%
<b>TOTAL</b>	<b>295</b>		<b>201</b>		<b>35</b>	

Table 6.11 presents the results of richness and evenness studies for total secondary inclusions within the three type-forms. Results complement the results for paste-variants

described above. Aguila bowls show less richness and a greater evenness overall, potentially indicating fewer producers were involved with the production of this type of material.

**Table 6.11 Diversity Data for Total Secondary Inclusions of Flaring Bowls**

<b>(Total 2<sup>nd</sup> Inclusions)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Category count</b>	19	16	9
<b>Richness (Margalef's Index)</b>	3.17	2.83	2.25
<b>Evenness (Standard Deviation)</b>	15.86	12.84	3.55

### *Firing*

Firing attributes related to paste characteristics are paste hardness and paste core presence. Paste hardness in this study is used to estimate relative firing temperatures (see Rice 1987b:354-363). Hardness was measured using the Mohs' scale (Rice 1987b:355-357). Hardness measurements were taken by scraping objects with a corresponding Mohs' hardness value across a fresh cross-section of each rim sherd and viewed under the stereo-microscope. If the object left a mark, the value of that object was recorded as the paste hardness for the sherd. Table 6.12 presents the results of a Mohs' hardness test on the three type-forms in this study. The paste of all three type-forms falls within the 2 – 4 hardness range. However, Sierra type ceramics contain pastes in the 4 range as opposed to Aguila material which contain none. Similarly, Sierra pastes show few to little ceramics in the 2 range, whereas Aguila material is represented by a small percentage there. This could indicate that potters manufacturing orange monochrome flaring bowls fired the material at lower temperatures, thus indicating a difference or possibly even change in firing technology from monochrome red material.

**Table 6.12 Paste Hardness of Flaring Bowls**

<b>Paste Hardness (Mohs' scale)</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>2 = Fingernail</b>	1	1%	0	0%	4	11%
<b>3 = Penny</b>	77	69%	73	78%	33	89%
<b>4 = Glass</b>	34	30%	20	22%	0	0%

Paste cores are darkened areas visible in a freshly cut sherd cross-section. Cores can be the result of 1) a reducing atmosphere during the firing process which limits the amount of oxygen the fire is allowed to absorb or 2) firing the ceramic material in an oxygen rich environment, but removing it before the paste is fully oxidized. Like paste hardness, the presence/absence of paste cores can be a rough indicator of firing technology (Bill 1997:473-475). The results of a frequency count for firing cores within the three type-forms is presented below in Table 6.13. While all type-forms do have sherds with firing cores, Aguila type flaring bowls not only have the least, but sherds with firing cores are in the minority. These data complement the results for paste hardness above and suggests that potters producing orange monochrome flaring bowls were utilizing different firing technologies than those used for producing red monochrome material.

As I discuss later, the change in firing processes may have been a function of both potter's choice and the physical properties of the clay. Light colored pastes were desirable in order for the orange slip to gain and maintain its brilliance, thus clays that fired to a light color were probably mined for use specifically in the production of monochrome orange material. Furthermore, creating light colored clays necessitated the need to sustain an oxygen rich environment during firing therefore reducing the amount of paste cores or even surface

smudging on vessels. Additionally, the firing properties of the gray peloid based paste may have precluded potters from firing orange monochrome material too hot or too long without it becoming weak and unstable leading to breakage during the firing process or becoming more prone to breaking during subsequent use.

**Table 6.13 Paste Firing Cores of Flaring Bowls**

<b>Core</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Yes</b>	70	63%	49	53%	13	34%
<b>No</b>	42	38%	44	47%	25	66%

The two attributes used to quantify differences in firing technology as they relate to paste surface are 1) presence of crazing or crackling marks and 2) presence of fire clouds. True crazing is seen on ceramic material that has been fired at temperatures high enough to vitrify the surface creating a glass-like texture (e.g., temperatures above 1100°C). Crazing on these ceramics is the result of unequal contraction rates between the surface slip and the vessel body. The slip cools and contracts quicker than the body resulting in a surface marked by multiple crazing lines or cracks (see Rice 1987b: figure 4.9). The same process can occur in low-fired ceramics, like the earthenware in this study. In this case, the slip is not nearly vitrified, but still gains a crazed or crackled appearance due to differences in cooling and contraction rates. I realize that crazing may be due to differences in the physical properties of slips used in each tradition under study, but it may also be due to differences in the cooling process employed by potters making ceramics of these three traditions. Therefore, I place crazing within the realm of firing or firing and cooling stages of production. Crazing rates may represent behavioral

differences in the production process which are closely linked to the firing stage – for example, the time at which the pots are removed from the fire and how long and where they are left to cool.

Presence of crazing marks for the exterior and interior surfaces are presented in Tables 6.14 and 6.15. On the exterior, red monochrome material displays a small percentage of crazing marks while orange monochrome material shows no evidence of crazing. On the interior, percentages of crazing marks increase in all type-forms. However, orange monochrome material still displays the least amount of sherds with crazing. This could indicate differences in the firing/cooling stage of ceramic production between the two traditions.

**Table 6.14 Exterior Crazing of Flaring Bowls**

<b>Crazing (Ext.)</b>	<b>Sierra Flaring (n = 95)</b>		<b>Sierra Flaring (IR) (n = 78)</b>		<b>Aguila Flaring (n = 28)</b>	
<b>Yes</b>	8	8%	10	13%	0	0%
<b>No</b>	87	92%	68	87%	28	100%

**Table 6.15 Interior Crazing of Flaring Bowls**

<b>Crazing (Int.)</b>	<b>Sierra Flaring (n = 94)</b>		<b>Sierra Flaring (IR) (n = 85)</b>		<b>Aguila Flaring (n = 34)</b>	
<b>Yes</b>	19	20%	33	39%	4	12%
<b>No</b>	75	80%	52	61%	30	88%

Fire clouds can be the result of numerous processes during the firing stage such as pottery coming in direct contact with flames or smudging due to a micro-localized reduced environment

in a bonfire. Clouds can be small and isolated or large and nebulous, sometimes resulting in the color mottling of the entire vessel surface. Like the other variables discussed above, while the primary reasons for their occurrence may vary and seem impossible to decipher, their consistent presence or absence may indicate some quantifiable, yet currently unknown, aspect of the firing process. Fire cloud data for the exterior and interior of sherds within the three type-forms are presented in Tables 6.16 and 6.17. Fire clouds are present on some percentage of all types. However, on the exterior surface clouds are markedly lower in Aguila bowls than they are in Sierra bowls. In contrast, they are markedly higher in the interior of Aguila bowls than they are in Sierra bowls. Interestingly enough, Sierra material displays relatively consistent percentages between type-forms for both the exterior and interior surfaces. These data may represent a difference in the firing stage of the production process between monochrome red and monochrome orange flaring bowls. Perhaps bowls within each tradition are stacked differently, fired in different quantities, fired using different fuels, or fired by using the same fuels but in a different manner.

**Table 6.16 Exterior Fire Clouds of Flaring Bowls**

<b>Fire cloud (Ext.)</b>	<b>Sierra Flaring (n = 95)</b>		<b>Sierra Flaring (IR) (n = 78)</b>		<b>Aguila Flaring (n = 28)</b>	
<b>Yes</b>	39	41%	38	49%	4	14%
<b>No</b>	56	59%	40	51%	24	86%

**Table 6.17 Interior Fire Clouds of Flaring Bowls**

<b>Fire cloud (Int.)</b>	<b>Sierra Flaring (n = 94)</b>		<b>Sierra Flaring (IR) (n = 85)</b>		<b>Aguila Flaring (n = 34)</b>	
<b>Yes</b>	12	13%	10	12%	17	50%
<b>No</b>	82	87%	75	88%	17	50%

*Surface*

A number of attributes were measured in an effort to quantify characteristics of surface technologies between the three type-forms in this part of the modal analysis. The most relevant and reliable attributes are discussed here and include smoothing, polishing, slip application, slip color, and slip hardness. The quality of smoothing was assessed using an ordinal scale with numbers 1 through 4 representing unsmoothed to well smoothed surfaces and 5 indicating a surface too eroded to quantify *any* surface characteristics. The scale is explained fully in Appendix B, but I will briefly restate the definitions of each value: a rating of 2 or “poorly smoothed” indicates that substantial raking marks or lumps appear on the surface of the sherd, a rating of 3 or “smoothed” indicates a relatively well smoothed surface but with one or two instances of dimpling or raking noticeable, a rating of 4 or “well smoothed” indicates a virtually flawlessly smoothed surface. Sherds with a score of 5 for smoothing on either the exterior or interior were excluded from further surface analyses on that side. Tables 6.18 and 6.19 present results from the analysis of smoothing quality. It is interesting to note that values for orange monochrome ceramics consistently fall within the lower half of the scale. That is, the smoothing on Sierra material appears to be qualitatively better than that of Aguila material. As I discuss later, this result taken together with other results from the modal analysis shows that this type of

material was by no means technologically superior to monochrome red material. In contrast, it seems to be characterized by experimental technology perhaps not yet fully established.

**Table 6.18 Exterior Smoothing of Flaring Bowls**

Smoothing (Ext.)	Sierra Flaring (n = 112)		Sierra Flaring (IR) (n = 93)		Aguila Flaring (n = 38)	
<b>Not smoothed</b>	0	0%	0	0%	0	0%
<b>Poorly smoothed</b>	2	2%	1	1%	10	26%
<b>Smoothed</b>	88	79%	61	66%	18	47%
<b>Well smoothed</b>	5	4%	15	16%	0	0%
<b>Eroded</b>	17	15%	16	17%	10	26%

**Table 6.19 Interior Smoothing of Flaring Bowls**

Smoothing (Int.)	Sierra Flaring (n = 112)		Sierra Flaring (IR) (n = 93)		Aguila Flaring (n = 38)	
<b>Not smoothed</b>	0	0%	0	0%	0	0%
<b>Poorly smoothed</b>	0	0%	0	0%	0	0%
<b>Smoothed</b>	46	41%	26	28%	34	89%
<b>Well smoothed</b>	48	43%	58	62%	0	0%
<b>Eroded</b>	18	16%	9	10%	4	11%

Results for a quantitative analysis of polishing characteristics are similar to that of the study of smoothing quality. Orange monochrome material is consistently less well polished than monochrome red material. Many examples of orange monochrome material appear dull. It is important to note that these pieces are not classified here as Aguacate Orange – the dull orange type from Terminal Preclassic deposits found at sites in Belize (see Gifford 1976) and Naj

Tunich Cave in Guatemala (Brady 1989). The form is clearly an early facet Early Classic flaring bowl and the paste buff colored, carbonate based, and with gray calcite inclusions. However, the dull finish does make classifying these pieces of Aguila Orange problematic – as Aguila Orange falls within the Peten Gloss Ware. In this case, I refer back to the problems with the type-variety system discussed in chapter 6, specifically to the poorly defined Ware category. Form, paste, and other aspects of surface characteristics are consistent with Aguila Orange and make me feel comfortable placing these rims within the Aguila type. Returning to the nature of polishing, while Aguila flaring material may often appear relatively well polished, the number of rims is less than Sierra, especially for exterior surfaces. Aguila sherds often show signs of polishing marks – tiny horizontally aligned circumferential grooves – on vessel surfaces possibly made by a small smooth stone or piece of wood. This is almost never the case with Sierra material where polishing often leaves little evidence, and when it does in the form of micro-thin scrape lines.

**Table 6.20 Exterior Polishing of Flaring Bowls**

<b>Polishing (Ext.)</b>	<b>Sierra Flaring (n = 95)</b>		<b>Sierra Flaring (IR) (n = 81)</b>		<b>Aguila Flaring (n = 28)</b>	
<b>Not polished</b>	0	0%	4	5%	8	29%
<b>Burnished</b>	1	1%	0	0%	5	18%
<b>Pattern burnished</b>	0	0%	0	0%	0	0%
<b>Polished</b>	94	99%	75	93%	15	54%
<b>Well polished</b>	0	0%	2	2%	0	0%

**Table 6.21 Interior Polishing of Flaring Bowls**

<b>Polishing (Int.)</b>	<b>Sierra Flaring (n = 93)</b>		<b>Sierra Flaring (IR) (n = 84)</b>		<b>Aguila Flaring (n = 34)</b>	
<b>Not polished</b>	0	0%	0	0%	0	0%
<b>Burnished</b>	0	0%	0	0%	1	3%
<b>Pattern burnished</b>	0	0%	1	1%	0	0%
<b>Polished</b>	92	99%	80	95%	33	97%
<b>Well polished</b>	1	1%	3	4%	0	0%

The results for an analysis of slip application are presented in Tables 6.22 and 6.23. On the exterior of vessel surfaces slip application is markedly more “streaky” for the Sierra type-forms. By “streaky”, I mean the slip is relatively unevenly applied to vessel surfaces. This is not the extreme streaky slip characterized by Society Hall material, but simply a lack of even application. This same pattern holds for interior surfaces. Like the other surface variables discussed earlier and below, this could indicate a difference in technologies used to produce ceramics within the two traditions. These differences could be the result of different tools used to apply the slip, different mixtures of slip with varying amounts of clay and water, or different numbers of coats applied to vessel surfaces.

**Table 6.22 Exterior Slip Application of Flaring Bowls**

<b>Application (Ext.)</b>	<b>Sierra Flaring (n = 90)</b>		<b>Sierra Flaring (IR) (n = 77)</b>		<b>Aguila Flaring (n = 25)</b>	
<b>Streaky</b>	41	46%	37	48%	6	24%
<b>Blotchy</b>	0	0%	3	4%	0	0%
<b>Even</b>	49	54%	37	48%	19	76%

**Table 6.23 Interior Slip Application of Flaring Bowls**

<b>Application (Int.)</b>	<b>Sierra Flaring (n = 89)</b>		<b>Sierra Flaring (IR) (n = 84)</b>		<b>Aguila Flaring (n = 27)</b>	
<b>Streaky</b>	21	24%	10	12%	1	4%
<b>Blotchy</b>	3	3%	2	2%	0	0%
<b>Even</b>	65	73%	72	86%	26	96%

As with other variables discussed in this study, final slip color can be the result of many factors including clays used to make the slip, how many coats were applied, and even at what point in the firing process the vessel was removed from the kiln or bonfire. Again, what I am looking for are consistent quantifiable aspects of slip color between the monochrome red and monochrome orange traditions. The range and frequency of slip colors for the interior and exterior of Sierra and Aguila type-forms are presented in Tables 6.24 – 6.29 with the most frequent Munsell color in bold type. Admittedly, measuring the color of archaeological material with the Munsell Soil Color chart can be rather subjective. However, if colors are measured by the same researcher under controlled conditions, the results can be valid. Noted in the methodology section, I performed all the color measurements personally both outside in daylight and indoors using a daylight bulb. The tables demonstrate that while the three type-forms may share certain colors in common, they do so in extremely different frequencies. The majority of Sierra materials falls within the 10R4/8 and 2.5YR4/8 range while Aguila material ranges between 2.5YR5/8 and 5YR5/8. Regardless of how the colors were produced, the orange of Aguila material and red of Sierra material are quantifiably and consistently different from one another. This surely indicates an active choice on the part of potters to create different products,

perhaps for different demand crowds, and certainly using different technologies (whether it is the slip itself, the number of slip coats, or the firing process).

**Table 6.24 Exterior Slip Color of Sierra Flaring Bowls**

<b>Sierra Flaring Ext. (n = 99)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R3/4	1	1%
10R4/4	1	1%
10R4/6	11	11%
<b>10R4/8</b>	<b>57</b>	<b>58%</b>
2.5YR3/6	1	1%
2.5YR4/4	1	1%
2.5YR4/6	2	2%
2.5YR4/6	16	16%
2.5YR5/8	1	1%
7.5R3/6	1	1%
7.5R3/8	2	2%
7.5YR5/6	5	5%

**Table 6.25 Interior Slip Color of Sierra Flaring Bowls**

<b>Sierra Flaring Int. (n = 103)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R3/4	1	1%
10R4/4	1	1%
10R4/6	13	13%
<b>10R4/8</b>	<b>63</b>	<b>61%</b>
2.5YR3/6	1	1%
2.5YR4/6	2	2%
2.5YR4/8	18	17%
2.5YR5/8	2	2%
7.5R3/8	2	2%

Table 6.26 Exterior Slip Color of Sierra Flaring (IR) Bowls

<b>Sierra Flaring (IR) Ext. (n = 81)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R3/4	1	1%
10R3/6	1	1%
10R4/6	3	4%
10R4/8	30	37%
10R5/8	1	1%
10R6/4	1	1%
10R6/6	1	1%
2.5/0 GLEY 1	1	1%
2.5YR3/6	1	1%
2.5YR4/6	1	1%
<b>2.5YR4/8</b>	<b>35</b>	<b>43%</b>
2.5YR5/8	1	1%
5YR4/6	1	1%
7.5YR5/6	3	4%

Table 6.27 Interior Slip Color of Sierra (IR) Flaring Bowls

<b>Sierra Flaring (IR) Int. (n = 88)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R3/6	1	1%
10R4/4	1	1%
10R4/6	6	7%
<b>10R4/8</b>	<b>34</b>	<b>39%</b>
10R5/6	1	1%
2.5G/1	1	1%
2.5G2.5/1	1	1%
2.5YR3/6	2	2%
2.5YR4/6	2	2%
<b>2.5YR4/8</b>	<b>34</b>	<b>39%</b>
2.5YR5/6	2	2%
2.5YR6/6	3	3%

**Table 6.28 Exterior Slip Color of Aguila Flaring Bowls**

<b>Aguila Flaring Ext. (n = 32)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10YR6/4	1	3%
2.5YR4/8	1	3%
<b>2.5YR5/8</b>	<b>13</b>	<b>41%</b>
2.5YR6/8	1	3%
5YR4/4	1	3%
5YR5/8	10	31%
5YR6/8	3	9%
7.5YR4/4	1	3%
7.5YR5/6	1	3%

**Table 6.29 Interior Slip Color of Aguila Flaring Bowls**

<b>Aguila Flaring Int. (n = 28)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R4/8	1	4%
2.5YR4/8	1	4%
<b>2.5YR5/8</b>	<b>20</b>	<b>71%</b>
5YR5/8	5	18%
7.5YR6/8	1	4%

Because the analysis produced a range of colors for each type-form, I decided to conduct a separate diversity study on Munsell colors for exterior and interior vessel surfaces. The results are presented in Tables 6.30 and 6.31. Simple category counts reveal that Sierra type-forms vary more than Aguila. Margalef's Indices calculated for each type-form confirm these data after controlling for sample size. Finally, an evenness calculation using the standard deviation shows that colors are more evenly distributed among Aguila flaring bowls. This study complements the

diversity studies of paste attributes and supports the idea that Sierra flaring bowls may have been created by more production units than Aguila flaring bowls.

**Table 6.30 Diversity Data for Exterior Slip Color of Flaring Bowls**

<b>(Munsell Diversity Ext.)</b>	<b>Sierra Flaring (n = 99)</b>	<b>Sierra Flaring (IR) (n = 81)</b>	<b>Aguila Flaring (n = 32)</b>
<b>Category Count</b>	12	14	9
<b>Richness (Margalef's Index)</b>	2.39	2.96	2.31
<b>Evenness (Standard Deviation)</b>	16.09	11.38	4.61

**Table 6.31 Diversity Data for Interior Slip Color of Flaring Bowls**

<b>(Munsell Diversity Int.)</b>	<b>Sierra Flaring (n = 103)</b>	<b>Sierra Flaring (IR) (n = 88)</b>	<b>Aguila Flaring (n = 28)</b>
<b>Category Count</b>	9	12	5
<b>Richness (Margalef's Index)</b>	1.73	2.46	1.20
<b>Evenness (Standard Deviation)</b>	20.30	12.54	8.23

The results of a Mohs' analysis for slip hardness are presented in Tables 6.32 and 6.33. Slip hardness is usually used to infer behavior related to the firing process – specifically, the firing temperatures (Rice 1987b:354-363). However, the hardness of vessel surfaces does not always relate directly to firing temperatures and can be more closely associated with post-depositional processes (rates of erosion due to the nature of context), physical properties of the slip, or even surface finishing techniques such as smoothing and polishing (Rice 1987:354-356). In this analysis, I have found that slip hardness does not positively correlate to paste hardness. This led me to disregard slip hardness as an indicator of firing technology, and instead use it as

an indicator of surface technology. In the tables below, the data show that Sierra slips are consistently softer than Aguila slips. This is most likely the result of potters from each tradition using different sources to obtain the clay they use to make orange and red slip respectively. The best way to determine differences in slip composition, and potentially identify characteristics of slip sources, would be to perform an LA-ICP-MS analysis (see Speakman 2005). Such an analysis may be the subject of future research on these types of ceramic material.

**Table 6.32 Exterior Slip Hardness of Flaring Bowls**

<b>Slip Hardness Ext. (Mohs' scale)</b>	<b>Sierra Flaring (n = 95)</b>		<b>Sierra Flaring (IR) (n = 79)</b>		<b>Aguila Flaring (n = 28)</b>	
<b>2 = Fingernail</b>	50	53%	32	41%	13	46%
<b>3 = Penny</b>	18	19%	14	18%	1	4%
<b>4 = Glass</b>	27	28%	33	42%	14	50%

**Table 6.33 Interior Slip Hardness of Flaring Bowls**

<b>Slip Hardness Int. (Mohs' scale)</b>	<b>Sierra Flaring (n = 94)</b>		<b>Sierra Flaring (IR) (n = 84)</b>		<b>Aguila Flaring (n = 34)</b>	
<b>2 = Fingernail</b>	44	47%	33	39%	11	32%
<b>3 = Penny</b>	23	24%	20	24%	7	21%
<b>4 = Glass</b>	27	29%	31	37%	16	47%

*Form*

Three measurements were used to compare morphological attributes of Sierra and Aguila flaring bowl forms: these attributes were rim diameter, lip thickness, and wall thickness at the rim. While these kinds of gross morphological attributes have been successfully used to

compare levels of standardization and specialization by ceramicists in the past (Benco 1988; Blackman et. al. 1993; Costin and Hagstrum 1995; Foias and Bishop 1997), they have similarly been heavily critiqued (Arnold 1991; Arnold and Santley 1993; Costin and Hagstrum 1995; Kvamme, et. al. 1996; Stark 1995). The most salient critiques allege that comparison of gross morphological characteristics are inaccurate or unable to compare levels of standardization (and therefore specialization) because analysts often do not group ceramic forms in the same categories as the ancient or modern potters under study. This leads to greater variation in morphological measurements and therefore higher coefficients of variation, indicating a lower level of standardization and specialization than might have actually existed. In this study measurements and comparison of coefficients of variation for gross morphological characteristics are used to complement the diversity studies performed on non-metric attributes of paste, firing, and surface categories. Furthermore, they will not be used to determine a level of specialization or mode of production (e.g., “household production”, “workshop production”, etc.). Because of the nature of the sample their values will simply be too high for accurate classification. Instead, measurements of gross morphological attributes of the type-forms will simply be compared to one another in order to gain a better understanding of the potential relative amount of producers manufacturing each type-form (Costin 1991:36). Here, greater variation will be attributed to a greater number of producers involved in making each type-form.

Table 6.34 presents data for measurements of rim diameter within each type-form of the two traditions under study. The data are similar to many of the categories discussed above in the paste, firing, and surface sections. Sierra flaring bowls show the greatest amount of variation, with Sierra flaring bowls with incurving rim with the second greatest amount of variation, and

finally Aguila bowls with the least amount of variation. This could indicate that more producers were involved with the production of Sierra flaring bowls than Aguila.

**Table 6.34 Diversity Data for Rim Measurements of Flaring Bowls**

<b>Rim Diameter (cm)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Mean</b>	19.27	19.72	23.21
<b>Median</b>	18.00	20.00	23.00
<b>Mode</b>	20.00	16.00	19.00
<b>STD</b>	6.58	5.25	5.15
<b>Coefficient of variation</b>	34.17	26.62	22.40

Data for lip thickness is presented in Table 6.35. The results are similar to the data presented for rim diameter above.

**Table 6.35 Diversity Data Lip Thickness of Flaring Bowls**

<b>Lip Thickness (mm)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Mean</b>	9.35	8.30	8.98
<b>Median</b>	9.30	8.22	8.92
<b>Mode</b>	11.01	9.24	9.45
<b>STD</b>	2.26	1.66	1.64
<b>Coefficient of variation</b>	24.12	20.00	18.37

Finally, data for wall thickness at the rim are presented in Table 6.36. This measurement was taken approximately 4cm from the lip down the vessel wall on each sherd. Once again

Aguila bowls show the least variation. However, here Sierra flaring bowls with incurving rims show slightly more variation than simple Sierra flaring bowls. This is an interesting result, but at the current time I cannot explain its statistical significance – especially considering that Sierra Red flaring bowls ranked so much higher in terms of other diversity analyses in this study.

**Table 6.36 Diversity Data for Wall Thickness of Flaring Bowls**

<b>Wall Thickness (mm)</b>	<b>Sierra Flaring (n = 112)</b>	<b>Sierra Flaring (IR) (n = 93)</b>	<b>Aguila Flaring (n = 38)</b>
<b>Mean</b>	8.27	7.71	8.68
<b>Median</b>	8.22	7.48	8.71
<b>Mode</b>	6.67	9.93	7.96
<b>STD</b>	1.57	1.53	1.24
<b>Coefficient of variation</b>	18.98	19.87	14.29

### *Distribution*

A simple distribution study was performed on the three type-forms in order to calculate frequencies at each site in the region. The data are shown in Table 6.37. Sierra material has the widest distribution and is present at the four major sites in the region. Aguila flaring bowls are more concentrated at Holmul, and less so at La Sufricaya. This is not surprising, as previous research has shown that these two sites experienced periods of growth during the close of the Preclassic period and beginning of the Early Classic period (Callaghan 2006; Estrada-Belli 2006b, 2006c). K'o also experiences growth at this time, but to this date it does not contain examples of Aguila flaring bowls (although it does show evidence of painted orange ceramics as will be discussed later). Cival experiences a great political and population decline during this

time (Callaghan 2006; Estrada-Belli 2006b). Aside from an extremely small number of later facet Early Classic dwellings, the site is primarily abandoned.

**Table 6.37 Distribution of Flaring Bowls at Sites in the Holmul Region**

<b>Site</b>	<b>Sierra Flaring (n = 112)</b>		<b>Sierra Flaring (IR) (n = 93)</b>		<b>Aguila Flaring (n = 38)</b>	
<b>Holmul</b>	21	18%	11	12%	31	82%
<b>La Sufricaya</b>	19	17%	10	11%	7	18%
<b>K'o</b>	12	10%	9	10%	0	0%
<b>Cival</b>	63	55%	64	68%	0	0%
<b>Tot/Caracol</b>	0	0%	0	0%	0	0%
<b>Hamontun</b>	0	0%	0	0%	0	0%

*Conclusions: Flaring Bowl Shape-Class*

A modal analysis of paste, form, surface, and firing characteristics has consistently shown that production technologies of monochrome red and monochrome orange material are quantifiably different. However, despite their differences, they often show overlap. That is, while some of the differences are in kind (e.g., hard orange slip vs. soft red slip), many other differences are due to frequency (e.g., differential distribution of major paste recipes among the type-forms). This suggests that technologies used to produce orange monochrome ceramics may have arisen out of existing ceramic production techniques. That is, the monochrome orange material of the flaring bowl shape-class, at least in the Holmul Region, seems to represent a local innovation. Furthermore, the continuity in production techniques revealed by the study contradicts what we may expect if the production of orange slipped pottery was being controlled or restricted in some way. It appears many potters had access to the pastes used to make both red

and orange pottery. However, diversity studies of metric and non-metric variables consistently show more variation (richness) in the production techniques used to make monochrome red material than monochrome orange material. Similarly, frequencies of production techniques are usually more evenly distributed in orange material. This could indicate that a smaller number of more specialized producers were involved in the production of orange material than red material. Finally, distribution data is not exactly helpful in determining whether orange material was restricted or not. Distribution seems to follow patterns of site occupation with most orange located at Holmul and La Sufricaya, both sites with strong Early Classic occupations. These results will later be compared to the results of the following modal analysis of composite bowl forms of the monochrome red and painted traditions.

### **Composite Bowl Shape-Class**

#### *Paste*

Data for paste texture is presented in Table 6.38. As a general note for tables in this section, abbreviations are as follows: “S” stands for Sierra Red composite bowls, “Ag” stands for Aguila Orange composite bowls, “Bol” stands for Boleto Black-on-Orange composite bowls, “Act” stands for Actuncan Orange Polychrome composite bowls, and “Ix” stands for Ixcario Orange Polychrome composite bowls. All pastes tend toward the medium to fine range with different percentages in each of those two categories. Here Sierra composite bowls seem to be the coarsest pastes in the study while Boleto pastes are the finest. It is interesting to note that Ixcario pastes are not as fine as the other two painted ceramics. These data mark the beginning

of a larger trend where slight (and often extreme) differences are noted in the technology used to make composite bowls between and within the orange gloss traditions.

**Table 6.38 Paste Texture of Composite Bowls**

Texture	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 7)	
<b>Very Coarse</b>	0	0%	0	0%	0	0%	0	0%	0	0%
<b>Coarse</b>	1	5%	0	0%	0	0%	0	0%	0	0%
<b>Medium</b>	17	77%	15	52%	3	20%	4	22%	4	57%
<b>Fine</b>	4	18%	14	48%	12	80%	14	78%	3	43%

Data for general paste classification is presented in Table 6.39. It is interesting to note that Actuncan pastes are the most varied in general composition. The other tests will further demonstrate the great variation in Actuncan pastes.

**Table 6.39 Paste Classification of Composite Bowls**

Paste Classification	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 7)	
<b>Carbonate</b>	22	100%	29	100%	15	100%	10	56%	7	100%
<b>Volcanic</b>	0	0%	0	0%	0	0%	1	6%	0	0%
<b>Mixed</b>	0	0%	0	0%	0	0%	7	39%	0	0%

Paste color data are presented in Table 6.40. The majority of Sierra composite bowl material is made from a yellow paste, the same as Sierra flaring bowl forms. The same pattern between flaring bowls and composite form pastes holds true for Aguila composite bowls. Boletto pastes also share similarities with Aguila material – a pattern which will be further demonstrated

in some of the following paste analyses. Ixcanrio and Actuncan pastes are varied in color and do not tend toward the buff of Aguila and Boleto material.

**Table 6.40 Paste Color of Composite Bowls**

<b>Color</b>	<b>S (n = 22)</b>		<b>Ag (n = 29)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 18)</b>		<b>Ix (n = 7)</b>	
<b>Yellow</b>	16	73%	2	7%	0	0%	9	50%	3	43%
<b>Orange</b>	4	18%	0	0%	0	0%	1	6%	0	0%
<b>Pink</b>	0	0%	0	0%	1	7%	2	11%	2	29%
<b>Red</b>	0	0%	0	0%	0	0%	0	0%	0	0%
<b>Buff</b>	0	0%	25	86%	14	93%	5	28%	2	29%
<b>Gray</b>	2	9%	2	7%	0	0%	1	6%	0	0%
<b>Dark brown</b>	0	0%	0	0%	0	0%	0	0%	0	0%
<b>Black</b>	0	0%	0	0%	0	0%	0	0%	0	0%

Table 6.41 presents data for particle sorting among the five composite bowl type-classes. Again, there is no strong pattern noticeable among the pastes of all the orange painted fine-ware in this study. For example, Ixcanrio pastes were found to be relatively very poorly sorted compared to all other types – even the Sierra material. Discussed earlier in relation to Aguila flaring bowls, this pattern may suggest that the technology used to manufacture Ixcanrio polychrome vessels (and other painted ceramics) may have been in an experimental stage. Ixcanrio vessels, along with Actuncan polychromes, may also have been produced by many producers at different foreign locations, thus attesting to the great variability in technologies. Petrographic and INAA results shed further light on this issue.

**Table 6.41 Particle Sorting of Composite Bowls**

Sorting	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 7)	
	<b>Very Poorly Sorted</b>	7	32%	4	14%	5	33%	1	6%	5
<b>Poorly Sorted</b>	12	55%	13	45%	3	20%	7	39%	1	14%
<b>Fairly Sorted</b>	2	9%	10	34%	7	47%	6	33%	1	14%
<b>Well Sorted</b>	1	5%	2	7%	0	0%	4	22%	0	0%

Data for the density of pastes is presented in Table 6.41. The Sierra and Aguila data correlate well with their flaring bowl counterparts. The painted material similarly shows the majority of pastes in the 20% range, but they also contain more pastes in the finer 3% - 10% ranges. This could indicate the more frequent use of finer clay in the production of these ceramics or a longer time spent refining the clay before forming.

**Table 6.42 Paste Density of Composite Bowls**

Density	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 7)	
	<b>1%</b>	0	0%	0	0%	0	0%	0	0%	0
<b>3%</b>	0	0%	0	0%	0	0%	1	6%	0	0%
<b>5%</b>	0	0%	0	0%	3	20%	0	0%	2	29%
<b>10%</b>	5	23%	3	10%	1	7%	3	17%	1	14%
<b>20%</b>	14	64%	25	86%	11	73%	13	72%	4	57%
<b>30%</b>	3	14%	1	3%	0	0%	1	6%	0	0%

Data for all paste variants and a diversity study is presented in Tables 6.42 and 6.43. The data support the previously discussed data for general paste composition. The composite bowl type with the most paste variant variation is Actuncan Orange Polychrome followed by Ixcario and Boleto. The great variation in paste variants of all three painted types potentially suggests

that these types of material were produced by a number of different producers using their own specific paste recipes. Both traditions of monochrome ceramics show the least variation. Once again, paste variant data for Sierra and Aguila composite bowl forms are relatively similar to that of their flaring bowl counterparts. However, it appears that the lateral angle bowl form of Sierra contains less paste variants than the flaring bowl form. This may indicate that this form was produced by fewer producers. The composite bowl may have been a special form manufactured only by certain potters.

**Table 6.43 All Paste Variants of Composite Bowls**

All Paste Variants	S (n = 22)		A (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 7)	
Crystalline calcite	4	18%	1	3%	3	20%	3	17%	1	14%
Crystalline calcite and white calcite	1	5%			2	13%	1	6%	1	14%
Crystalline calcite and gray calcite	8	36%					1	6%		
Crystalline calcite and gray sherd	9	41%							2	29%
Crystalline calcite and orange sherd							1	6%	2	29%
Crystalline calcite and quartz										
Crystalline calcite and chert										
Crystalline calcite and mica										
Crystalline calcite and organic										
Gray calcite			26	90%	7	47%	3	17%		
Gray calcite and white calcite			2	7%	2	13%	1	6%		
Gray calcite and orange sherd										
White calcite									1	14%
White calcite and gray sherd					1	7%				
Ash							2	11%		
Ash and crystalline calcite							6	33%		
Ash and gray calcite										
Ash and white calcite										

**Table 6.44 Diversity Data for All Paste Variants of Composite Bowls**

<b>(All Paste Groups)</b>	<b>S (n = 22)</b>	<b>Ag (n = 29)</b>	<b>Bol (n = 15)</b>	<b>Act (n = 18)</b>	<b>Ix (n = 7)</b>
<b>Category count</b>	4	3	5	8	5
<b>Richness (Margalef's Index)</b>	0.97	0.59	1.48	2.42	2.06
<b>Evenness (Standard Deviation)</b>	3.70	14.15	2.35	1.75	0.55

Data for major paste variants and their relative diversity is presented in Tables 6.44 and 6.45. Paste variants between type-forms in all three traditions are not very well related. However, the majority of paste recipes for Aguila and Boleto material fall into the gray calcite range. This is a pattern that is strengthened by the petrographic and INAA data. These two types of material are more related to one another than they are to any other type. After pairing the paste categories down Ixcantio material is seen to show the greatest amount of variation (richness) in paste variants as well as an even distribution among those variants. Aguila orange shows the least variation followed by Sierra and Boleto material. Again, it is interesting to note the lack of diversity in Sierra lateral angle paste variants, possibly attesting to a lesser amount of producers involved with the production of this form and a slightly higher level of specialization.

**Table 6.45 Major Paste Variants of Composite Bowls**

Major Paste Variants	S (n = 14)		Ag (n = 27)		Bol (n = 12)		Act (n = 16)		Ix (n = 7)	
	Crystalline calcite	4	29%	1	4%	3	25%	3	19%	1
Crystalline calcite and white calcite	1	7%			2	17%	1	6%	1	14%
Crystalline calcite and gray sherd	9	64%							2	29%
Crystalline calcite and orange sherd							1	6%	2	29%
Gray calcite			26	96%	7	58%	3	19%		
White calcite									1	14%
Ash							2	13%		
Ash and crystalline calcite							6	38%		

**Table 6.46 Diversity Data for Major Paste Variants of Composite Bowls**

(Major Paste Groups)	S (n = 14)	Ag (n = 27)	Bol (n = 12)	Act (n = 16)	Ix (n = 7)
Category count	3	2	3	6	5
Richness (Margalef's Index)	0.76	0.30	0.80	1.80	2.06
Evenness (Standard Deviation)	4.04	17.68	2.65	1.86	0.55

Finally, data for the total amount of secondary inclusions (excluding the two primary inclusion types) and diversity analysis are presented in Tables 6.46 and 6.47. The type with the most and varied amount of inclusions is again Actuncan Orange Polychrome followed by Sierra, Aguila, Ixcanrio, and Boletto. Fibrous glassy ash and other particles associated with this inclusion (namely, mica and glass chunks or larger pieces of volcanic tuff) set Actuncan apart from the rest of the types in the study. A paste ingredient associated with both Sierra material and Ixcanrio material is grog (whether gray or orange). This may suggest, as was the case with monochrome orange and red material, paste recipes used to make the first polychromes in the

Holmul Region (e.g., Ixcario Orange Polychromes) arose out of pre-existing, potentially local, recipes.

**Table 6.47 Total Secondary Inclusions of Composite Bowls**

<b>2<sup>nd</sup> Inclusion Type</b>	<b>S (n = 22)</b>		<b>Ag (n = 29)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 18)</b>		<b>Ix (n = 7)</b>	
<b>Indeterminate white</b>										
<b>Indeterminate gray</b>			1	7%	1	7%	2	7%	1	8%
<b>Indeterminate black</b>										
<b>White Calcite</b>	8	15%	6	40%	7	50%	6	21%	1	8%
<b>Gray Calcite</b>	1	2%			2	14%	1	3%		
<b>Ash</b>							2	7%		
<b>Quartz</b>	2	4%	2	13%			2	7%		
<b>Grog (gray)</b>	18	33%			1	7%	1	3%	2	15%
<b>Grog (orange)</b>	17	31%					5	17%	5	38%
<b>Chert</b>	1	2%								
<b>Mica</b>							2	7%		
<b>Organic</b>	2	4%	2	13%	2	14%	1	3%		
<b>Shell</b>			1	7%						
<b>Feldspar</b>										
<b>Ferruginous particle</b>	1	2%	1	7%			2	7%	3	23%
<b>Crystal Calcite</b>							4	14%	1	8%
<b>Earthy Hematite</b>	2	4%			1	7%				
<b>Gray Oval Calcite</b>			2	13%						
<b>Indeterminate Orange</b>										
<b>Pumice</b>										
<b>Glass Chunks</b>							1	3%		
<b>Indeterminate angular</b>	2	4%								
<b>TOTAL</b>	<b>54</b>		<b>15</b>		<b>14</b>		<b>29</b>		<b>13</b>	

**Table 6.48 Diversity Data for Total Secondary Inclusions of Composite Bowls**

<b>(Total 2<sup>nd</sup> Inclusions)</b>	<b>S (n = 22)</b>	<b>Ag (n = 29)</b>	<b>Bol (n = 15)</b>	<b>Act (n = 18)</b>	<b>Ix (n = 7)</b>
<b>Category count</b>	10	7	6	12	6
<b>Richness (Margalef's Index)</b>	2.26	2.22	1.89	3.27	1.95
<b>Evenness (Standard Deviation)</b>	5.18	1.39	1.56	1.73	1.26

*Firing*

The paste hardness data reflect patterns seen in the Aguila and Sierra flaring bowl data. Paste hardness data are presented in Table 6.48. Sierra pastes are consistently harder than paste in the orange slip traditions. This could attest to a higher firing temperature although it could be the result of the physical properties of minerals in the clays, or even the length of time the pots were subject to direct heat. Because many of the paste recipes seem to cross-cut types (as shown in the paste variant tables above), I am more inclined to use paste hardness as an indicator of firing technologies. It is interesting to note that the softest pastes are those in the Aguila and Boleto type-forms. This again may suggest that these two types of ceramics are more closely related to one another in terms of production technology than they are to the rest of the orange gloss and red monochrome material. These data may also suggest the use of different firing technologies for the Actuncan and Ixcario types when compared to Boleto and Aguila ceramics – therefore, as with the paste variant data, we can see the use of different technologies not only between orange gloss and red monochrome ceramics but within the orange gloss traditions.

**Table 6.49 Paste Hardness of Composite Bowls**

Paste Hardness (Moh's scale)	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 17)		Ix (n = 7)	
<b>2 = Fingernail</b>	1	5%	8	28%	4	27%	0	0%	0	0%
<b>3 = Penny</b>	20	91%	21	72%	11	73%	17	100%	7	100%
<b>4 = Glass</b>	1	5%	0	0%	0	0%	0	0%	0	0%

Data for paste cores is presented in Table 6.49. While paste cores are present in each type-form of the three traditions, they appear in different quantities. The first pattern to emerge is that the majority of Sierra lateral angle bowls in the study showed evidence of paste cores, while paste cores remained in the minority for the orange traditions. As discussed in the analysis of flaring bowl forms, this may have had to do with a light paste being necessary for the orange slip to gain and maintain its brilliance and color. A lighter colored paste is not necessary for Sierra ceramics with their thick coat of red slip. An interesting aspect about the paste core data is that core presence is relatively high for Boletto Black-on-Orange forms. Such a frequency is not seen in the other orange gloss ceramics. This could again attest to the experimental nature, reflected in frequent random peaks of diversity, of production techniques associated with orange gloss ceramics.

**Table 6.50 Paste Cores of Composite Bowls**

Core	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 8)	
<b>Yes</b>	16	73%	9	31%	7	47%	2	11%	3	38%
<b>No</b>	6	27%	20	69%	8	53%	16	89%	5	63%

Data tabulated for the presence of crazing marks is presented in Tables 6.50 and 6.51. None of the type-forms demonstrate a relatively high amount of crazing marks on the interior or exterior surfaces. However, crazing marks are present within each type-form in different frequencies. On the exterior, crazing is most prevalent on Sierra type material. These frequencies are relatively higher than the frequencies for flaring bowls. Crazing marks are present in the lowest frequency in Actuncan and Ixcantio material. This may be due in part to the great care needed in firing and cooling this material in order for the painted designs not to become obscured by crazing lines. These vessels may have served a specific function to relay symbolic information through their designs during sacred or secular rituals. They could not perform this function if the painting was flawed so as to make the symbols illegible or unrecognizable.

**Table 6.51 Exterior Crazing of Composite Bowls**

<b>Crazing (Ext.)</b>	<b>S (n = 20)</b>		<b>Ag (n = 12)</b>		<b>Bol (n = 14)</b>		<b>Act (n = 17)</b>		<b>Ix (n = 9)</b>	
<b>Yes</b>	6	30%	2	17%	1	7%	1	6%	1	11%
<b>No</b>	14	70%	10	83%	13	93%	16	94%	8	89%

**Table 6.52 Interior Crazing of Composite Bowls**

<b>Crazing (Int.)</b>	<b>S (n = 18)</b>		<b>Ag (n = 21)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 16)</b>		<b>Ix (n = 8)</b>	
<b>Yes</b>	6	33%	3	14%	5	33%	1	6%	0	0%
<b>No</b>	12	67%	18	86%	10	67%	15	94%	8	100%

The data in Tables 6.52 and 6.53 show the relative frequencies of fire clouds on interior and exterior surfaces of the five type-forms in this study. On the exterior, Sierra red material shows the most frequent occurrence of fire clouds followed by Aguila composite bowls. It is interesting to note that the majority of Aguila bowl sherds show evidence of fire clouds. This is not inconsistent with the flaring bowl data, however, as 49% of flaring bowl sherds showed evidence of fire clouds, almost representing the majority. Again, the overall lower frequency of fire clouds on Actuncan and Ixcanrio material suggests that greater care was taken in ensuring the designs on this material were not obscured. While cloud frequencies are low, they are not absent altogether. This suggests these types of ceramics may still have been subjected to open firing and not placed in firing containers or “saggers” as is suggested for the firing of Late Classic period polychromes of the palace school traditions (Reents Budet et. al. 1994; Rice 1985). Therefore, while technology may have been different, it may have been predicated on the same overall methods used to make monochrome red and orange material.

**Table 6.53 Exterior Fire Clouds of Composite Bowls**

<b>Fire cloud (Ext.)</b>	<b>S (n = 20)</b>		<b>Ag (n = 12)</b>		<b>Bol (n = 14)</b>		<b>Act (n = 17)</b>		<b>Ix (n = 9)</b>	
<b>Yes</b>	17	85%	7	58%	3	21%	1	6%	1	11%
<b>No</b>	3	15%	5	42%	11	79%	16	94%	8	89%

**Table 6.54 Interior Fire Clouds of Composite Bowls**

<b>Fire cloud (Int.)</b>	<b>S (n = 22)</b>		<b>Ag (n = 21)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 16)</b>		<b>Ix (n = 8)</b>	
<b>Yes</b>	7	32%	7	33%	2	13%	1	6%	1	13%
<b>No</b>	15	68%	14	67%	13	87%	15	94%	7	88%

*Surface*

Smoothing data for exterior and interior surfaces are presented in Tables 6.54 and 6.55.

Actuncan sherds are the most well smoothed of all traditions followed by Ixcantio, Sierra, Boleto, and Aguila types. Variation is noticeable among the orange gloss traditions, with red monochrome material ranking somewhat higher than monochrome orange and Black-on-Orange ceramics. Again this may be indicative of the earlier orange gloss traditions experimental nature or not yet fully established production system.

**Table 6.55 Exterior Smoothing of Composite Bowls**

Smoothing (Ext.)	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 9)	
	<b>Not smoothed</b>	0	0%	0	0%	0	0%	0	0%	0
<b>Poorly smoothed</b>	0	0%	1	3%	0	0%	0	0%	1	11%
<b>Smoothed</b>	18	82%	9	31%	12	80%	1	6%	5	56%
<b>Well smoothed</b>	2	9%	2	7%	2	13%	16	89%	3	33%
<b>Eroded</b>	2	9%	17	59%	1	7%	1	6%	0	0%

**Table 6.56 Interior Smoothing of Composite Bowls**

Smoothing (Int.)	S (n = 22)		Ag (n = 29)		Bol (n = 15)		Act (n = 18)		Ix (n = 9)	
	<b>Not smoothed</b>	0	0%	0	0%	0	0%	0	0%	0
<b>Poorly smoothed</b>	1	5%	0	0%	0	0%	0	0%	0	0%
<b>Smoothed</b>	6	27%	20	69%	10	67%	0	0%	2	22%
<b>Well smoothed</b>	11	50%	1	3%	5	33%	16	89%	6	67%
<b>Eroded</b>	4	18%	8	28%	0	0%	2	11%	1	11%

Polishing data presented in Tables 6.56 and 6.57 show much the same trends as smoothing data. Actuncan is once again the most well polished type followed by Ixcario and the other type-forms. A high polish and brilliance on the polychrome material may have again been necessitated by the desire of potters, and the owners of these pots, to display or transmit symbolic messages more clearly or fantastically when using these pieces during feasting events associated with sacred or secular rituals.

**Table 6.57 Exterior Polishing of Composite Bowls**

<b>Polishing (Ext.)</b>	<b>S (n = 20)</b>		<b>Ag (n = 12)</b>		<b>Bol (n = 14)</b>		<b>Act (n = 17)</b>		<b>Ix (n = 9)</b>	
<b>Not polished</b>	0	0%	0	0%	0	0%	0	0%	0	0%
<b>Burnished</b>	0	0%	2	17%	1	7%	0	0%	0	0%
<b>Pattern burnished</b>	0	0%	1	8%	0	0%	0	0%	1	11%
<b>Polished</b>	20	100%	8	67%	12	86%	3	18%	8	89%
<b>Well polished</b>	0	0%	1	8%	1	7%	14	82%	0	0%

**Table 6.58 Interior Polishing of Composite Bowls**

<b>Polishing (Int.)</b>	<b>S (n = 18)</b>		<b>Ag (n = 21)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 16)</b>		<b>Ix (n = 8)</b>	
<b>Not polished</b>	1	6%	0	0%	0	0%	0	0%	0	0%
<b>Burnished</b>	0	0%	1	5%	0	0%	0	0%	0	0%
<b>Pattern burnished</b>	0	0%	0	0%	0	0%	1	6%	0	0%
<b>Polished</b>	16	89%	20	95%	14	93%	4	25%	7	88%
<b>Well polished</b>	1	6%	0	0%	1	7%	11	69%	1	13%

The patterns above continue for slip application data as presented in Tables 6.58 and 6.59. Actuncan and Ixcario types display the most evenly applied slip while Sierra, Boletto, and

Aguila slips appear streaky. Again it is interesting to note the greater similarity between Boleto and Aguila composite bowls than any other type. The same techniques used to make monochrome bowls may have been employed in the production of Boleto bowls with the addition of black painting.

**Table 6.59 Exterior Slip Application of Composite Bowls**

Application (Ext.)	S (n = 18)		Ag (n = 11)		Bol (n = 13)		Act (n = 16)		Ix (n = 9)	
<b>Streaky</b>	9	50%	9	82%	8	62%	6	38%	4	44%
<b>Blotchy</b>	1	6%	0	0%	0	0%	0	0%	0	0%
<b>Even</b>	8	44%	2	18%	5	38%	10	63%	5	56%

**Table 6.60 Interior Slip Application of Composite Bowls**

Application (Int.)	S (n = 12)		Ag (n = 18)		Bol (n = 13)		Act (n = 15)		Ix (n = 8)	
<b>Streaky</b>	2	17%	10	56%	4	31%	4	27%	3	38%
<b>Blotchy</b>	0	0%	1	6%	0	0%	0	0%	0	0%
<b>Even</b>	10	83%	7	39%	9	69%	11	73%	5	63%

Slip color for exterior and interior of vessel surfaces and diversity indices for each of the type-forms is presented in Tables 6.60 – 6.71. Sierra slip color correlates well with the primary color found on flaring walled bowls (10R4/8). Aguila, Boleto, and Ixcario oranges tend toward the 2.5YR5/8 range while Actuncan stands alone with a majority of colors registering in the 5YR5/8 range. In terms of diversity, patterns noted in production variables discussed above

appear to continue with Sierra and Boletto colors at the bottom of the spectrum representing the least diverse type-forms, and Actuncan at the top representing the most diverse.

**Table 6.61 Exterior Slip Color of Sierra Composite Bowls**

<b>Sierra (LA) Ext. (n = 19)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R4/6	3	16%
<b>10R4/8</b>	<b>11</b>	<b>58%</b>
10R5/8	1	5%
2.5YR4/8	4	21%

**Table 6.62 Interior Slip Color of Sierra Composite Bowls**

<b>Sierra (LA) Int. (n = 13)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
<b>10R4/8</b>	<b>9</b>	<b>69%</b>
10R5/6	1	8%
2.5YR3/6	1	8%
2.5YR4/8	2	15%

Table 6.63 Exterior Slip Color of Aguila Composite Bowls

<b>Aguila (RZ) Ext. (n = 19)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R4/8	4	21%
2.5Y6/3	1	5%
2.5YR4/8	1	5%
<b>2.5YR5/8</b>	<b>7</b>	<b>37%</b>
5YR4/6	2	11%
5YR5/8	3	16%
7.5R4/8	1	5%

Table 6.64 Interior Slip Color of Aguila Composite Bowls

<b>Aguila (RZ) Int. (n = 21)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R4/8	5	24%
2.5YR3/6	1	5%
2.5YR4/8	2	10%
<b>2.5YR5/8</b>	<b>11</b>	<b>52%</b>
5YR4/6	1	5%
5YR5/8	1	5%

Table 6.65 Exterior Slip Color of Boleto Composite Bowls

<b>Boleto Ext. (n = 13)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
<b>2.5YR5/8</b>	<b>7</b>	<b>54%</b>
5YR5/8	2	15%
5YR6/8	2	15%
7.5YR6/8	2	15%

Table 6.66 Interior Slip Color of Boleto Composite Bowls

<b>Boleto Int. (n = 15)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
2.5YR4/8	1	7%
<b>2.5YR5/8</b>	<b>11</b>	<b>73%</b>
5YR5/8	2	13%
7.5YR6/8	1	7%

Table 6.67 Exterior Slip Color of Actuncan Composite Bowls

<b>Actuncan Ext. (n = 17)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10YR6/6	1	6%
10YR7/8	1	6%
10YR8/4	1	6%
2.5YR4/8	1	6%
<b>5YR5/8</b>	<b>5</b>	<b>29%</b>
5YR6/8	3	18%
7.5YR5/8	1	6%
7.5YR6/6	1	6%
7.5YR6/8	3	18%

Table 6.68 Interior Slip Color of Actuncan Composite Bowls

<b>Actuncan Int. (n = 17)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
10R4/8	1	6%
2.5YR4/8	1	6%
2.5YR5/8	4	24%
<b>5YR5/8</b>	<b>11</b>	<b>65%</b>

**Table 6.69 Exterior Slip Color of Ixcanrio Composite Bowls**

<b>Ixcanrio Ext. (n = 9)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
<b>2.5YR5/8</b>	<b>3</b>	<b>33%</b>
5YR5/8	2	22%
5YR6/8	2	22%
7.5YR5/8	1	11%
7.5YR6/6	1	11%

**Table 6.70 Interior Slip Color of Ixcanrio Composite Bowls**

<b>Ixcanrio Int. (n = 8)</b>		
<b>Munsell Color</b>	<b>No.</b>	<b>Percent</b>
<b>2.5YR5/8</b>	<b>5</b>	<b>63%</b>
5YR5/6	1	13%
7.5YR5/8	1	13%
7.5YR6/6	1	13%

**Table 6.71 Diversity Data for Exterior Slip Color of Composite Bowls**

<b>(Munsell Diversity Ext.)</b>	<b>S (n = 19)</b>	<b>Ag (n = 19)</b>	<b>Bol (n = 13)</b>	<b>Act (n = 17)</b>	<b>Ix (n = 9)</b>
<b>Category Count</b>	4	7	4	9	5
<b>Richness (Margalef's Index)</b>	1.02	2.04	1.17	2.82	1.82
<b>Evenness (Standard Deviation)</b>	4.35	2.21	2.50	1.45	0.84

**Table 6.72 Diversity Data for Interior Slip Color of Composite Bowls**

(Munsell Diversity Int.)	S (n = 13)	Ag (n = 21)	Bol (n = 15)	Act (n = 17)	Ix (n = 8)
<b>Category Count</b>	4	6	4	4	4
<b>Richness (Margalef's Index)</b>	1.17	1.64	1.11	1.06	1.44
<b>Evenness (Standard Deviation)</b>	3.86	3.99	4.86	4.72	2.00

Measurements of slip hardness correspond with measurements of smoothing and polishing. Tables 6.72 and 6.73 present the results of a Mohs' hardness test on the exterior and interior of vessel surfaces. The Actuncan composite bowl type-form is consistently shown to have the hardest slip followed by Sierra. The other type-forms vary in their positions on the spectrum depending on exterior or interior vessel surfaces. This variety in slip hardness again points to the possible use of different slips between and within each ceramic tradition.

**Table 6.73 Exterior Slip Hardness of Composite Bowls**

Slip Hardness Ext. (Moh's scale)	S (n = 20)		Ag (n = 12)		Bol (n = 14)		Act (n = 17)		Ix (n = 9)	
<b>2 = Fingernail</b>	6	30%	4	33%	7	50%	5	29%	6	67%
<b>3 = Penny</b>	4	20%	4	33%	3	21%	3	18%	3	33%
<b>4 = Glass</b>	10	50%	4	33%	4	29%	9	53%	0	0%

**Table 6.74 Interior Slip Hardness of Composite Bowls**

<b>Slip Hardness Int. (Moh's scale)</b>	<b>S (n = 18)</b>		<b>Ag (n = 21)</b>		<b>Bol (n = 15)</b>		<b>Act (n = 16)</b>		<b>Ix (n = 8)</b>	
<b>2 = Fingernail</b>	6	33%	13	62%	5	33%	4	25%	3	38%
<b>3 = Penny</b>	3	17%	4	19%	5	33%	1	6%	2	25%
<b>4 = Glass</b>	9	50%	4	19%	5	33%	11	69%	3	38%

*Form*

The data for measurements of rim diameter, lip thickness, and wall thickness at the rim for composite bowl forms are presented in Tables 6.74 – 6.76. The coefficients of variation are extremely high for all type-forms. Discussed in the previous section concerning morphological measurements of the flaring bowl shape-class, these values should not be used to infer level of specialization or mode of production directly – and they are not here. But, taken together with other measurements of morphological attributes and non-metric paste attributes, I believed that these measurements would help me gain insight into the relative number of producers manufacturing each type-form. Unfortunately, this was not the case. The lowest coefficients of variation vary depending on which attribute is being measured. Furthermore, the variation in paste data discussed above (Tables 6.43 and 6.45) does not correlate with the ranking of coefficients of variation in these morphological studies. For example, Actuncan and Ixcanrio polychromes have the lowest coefficients of variation for rim diameter. However, they have the highest measurements of richness for paste variants. Similarly, the Boleto type-form has the lowest coefficient of variation for lip thickness and wall thickness at the rim, but it has the third highest score for Margalef's Index of richness for both all paste variants and major paste variants.

**Table 6.75 Diversity Data for Rim Diameter of Composite Bowls**

<b>Rim Diameter (cm)</b>	<b>S (n = 22)</b>	<b>Ag (n = 29)</b>	<b>Bol (n = 15)</b>	<b>Act (n = 18)</b>	<b>Ix (n = 7)</b>
<b>Mean</b>	23.22	30.33	21.07	21.50	21.90
<b>Median</b>	21.00	29.00	21.50	23.00	23.00
<b>Mode</b>	18.00	44.00	25.00	23.00	24.00
<b>STD</b>	6.99	8.52	6.06	4.01	3.87
<b>Coefficient of variation</b>	30.10	29.39	28.17	18.64	16.83

**Table 6.76 Diversity Data for Lip Thickness of Composite Bowls**

<b>Lip Thickness (mm)</b>	<b>S (n = 22)</b>	<b>Ag (n = 29)</b>	<b>Bol (n = 15)</b>	<b>Act (n = 18)</b>	<b>Ix (n = 7)</b>
<b>Mean</b>	11.36	10.38	7.82	7.76	8.89
<b>Median</b>	11.33	10.18	7.59	8.09	8.87
<b>Mode</b>	#N/A	#N/A	7.51	#N/A	9.50
<b>STD</b>	2.68	2.39	0.83	1.10	1.15
<b>Coefficient of variation</b>	23.59	23.51	10.94	14.17	12.93

**Table 6.77 Diversity Data for Wall Thickness of Composite Bowls**

<b>Wall Thickness (mm)</b>	<b>S (n = 22)</b>	<b>Ag (n = 29)</b>	<b>Bol (n = 15)</b>	<b>Act (n = 18)</b>	<b>Ix (n = 7)</b>
<b>Mean</b>	8.60	10.20	8.05	7.03	7.94
<b>Median</b>	8.43	10.04	7.86	6.81	7.83
<b>Mode</b>	#N/A	11.77	#N/A	#N/A	#N/A
<b>STD</b>	2.80	1.67	0.85	0.94	1.06
<b>Coefficient of variation</b>	33.24	16.68	10.82	13.79	13.58

These results are incredibly interesting. At first glance they appear to contradict the paste data. That is, the type-forms with the most varied paste recipes like Actuncan and Ixcancario have the lowest coefficients of variation while the type-forms with the least paste recipes like Sierra and Aguila have the greatest coefficients of variation. This could be taken simply as more evidence to support the notion that standardization tests should not be relied upon to measure potential number of production units, and paste studies may prove more reliable (see Abbot and Walsh-Anduze 1995; Bishop et. al. 1982; D'Altroy and Bishop 1990; Habicht-Mauche 1995; Hegemon et. al. 1995; Neff 1992). However, the data suggest to me that production may also have been segmented with different numbers of producers (and possibly even different producers) taking part in the paste preparation and forming stages of ceramic manufacture. In this case more producers may have been involved in paste preparation while fewer producers were involved in the forming stage. This potentially makes sense as some of the forms of polychrome painted vessels, such as the composite bowl with mammiform supports or even composite bowl with basal flange, may have been difficult to execute calling for more highly skilled producers. I will take up the issue of segmented production once again in chapter 9.

### *Distribution*

The results of a simple distribution study of the type-forms in this analysis are presented in Table 6.77. The results show some continuity with the flaring bowl data presented earlier, but also some differences. The majority of Sierra material is still found at Cival. The majority of painted orange ceramics are found at Holmul. The comparatively small amount of orange material found in Cival contexts to date, combined with the site's dramatic decline in occupation and cessation of monumental construction, suggest Cival elites may not have had as much access

to orange painted pottery or technology during the Terminal Preclassic period. Thus, prohibiting their frequent participation in feasting events associated with the other centers in the Holmul Region and the Maya lowlands that managed to survive politically through the Terminal Preclassic period. Or, again, the distribution patterns could merely be attributable to occupation patterns with Cival falling into political decline before or during the introduction of the orange slipped ceramic industry.

**Table 6.78 Distribution of Composite Bowls at Sites in the Holmul Region**

Site	S (n = 23)		Ag (n = 30)		Bol (n = 17)		Act (n = 18)		Ix (n = 12)	
<b>Holmul</b>	0	0%	11	37%	9	53%	13	72%	10	83%
<b>La Sufricaya</b>	2	9%	12	40%	4	24%	3	17%	1	8%
<b>K'o</b>	2	9%	5	17%	2	12%	0	0%	1	8%
<b>Cival</b>	18	78%	2	7%	0	0%	1	6%	0	0%
<b>Tot/Caracol</b>	1	4%	0	0%	0	0%	0	0%	0	0%
<b>Hamontun</b>	0	0%	0	0%	2	12%	1	6%	0	0%

*Conclusions: Composite Bowl Shape-Class*

A modal analysis of paste, form, surface finish, and firing variables associated with composite bowls of the monochrome red, monochrome orange, and painted orange traditions produces a number of observable production patterns. The first pattern to emerge is similar to that discussed in reference to flaring bowl forms in the previous section. The data show quantifiable differences in production techniques between monochrome red and orange gloss ceramics.

However, the data also suggest that a great deal of variation exists within type-forms of the orange gloss traditions themselves. Types and diversity of production techniques are not uniform across monochrome orange and orange painted traditions – nor are they uniform within them. For example, total paste variants and the frequency of major paste variants vary between all type-forms in the orange traditions. The amount of paste variation within each type-form also varies, with the two polychrome types (Actuncan and Ixcanrio) varying the most. These data suggest that more producers were involved with certain stages of the production of polychrome material than monochrome orange material and even red monochrome material. Variation could be due to a segmented production process in which different numbers of producers, and perhaps even different producers, took part in the paste preparation, forming, and finishing stages.

Another interesting pattern revealed by the data is the similarity between paste variants, paste color, and slip color between Aguila Orange and Boletto Black-on-Orange material. While not completely identical, these two type-forms are more similar to one another than they are any other type-form. The technology used to make monochrome orange vessels may have also been used to make black-on-orange vessels. This also leads to the assumption that some of the same producers may have been making type-forms within both traditions of pottery. Also interesting to note is that type-forms within these two traditions contain *the least* amount of variation in many of the variables tested in the modal analysis. Type-forms within these two traditions may have been produced by fewer producers and perhaps more specialized than the production of the other type-forms in the study.

The data also show that production techniques used to make the lateral angle composite bowl form of Sierra Red often proved to be less diverse and more standardized than those used to make orange polychrome material. Production of the lateral angle bowl may have been more

specialized, employing fewer producers and possibly even restricted producers, in comparison to the production of other Sierra forms such as simple flaring bowls or flaring bowls with incurving rims. The relatively specialized techniques used to make the lateral angle form does not rule out the possibility that it was the precursor to later z-angle, rounded z-angle, and basal flange forms of the early facet Early Classic period.

In conclusion, while the data suggest that production techniques used to manufacture monochrome red and orange gloss traditions is quantifiably different, the techniques are not nearly uniform within the orange traditions themselves or the type-forms within these larger traditions. Despite this variation, the modal analysis does reveal that a small number of specific technologies may be statistically associated with the orange gloss traditions: these technologies are 1) the presence of gray calcite (peloids) in the paste, 2) the general lack of a paste core, 3) the general lack of fire clouds on exterior and interior surfaces, and 4) an orange slip measuring 2.5YR5/8 or 5YR5/8. In the next section the relationship between these four variables will be tested against their presence in orange ceramic material using chi-square calculations.

### **Orange Tradition Technologies: Tests of Association**

#### *Paste*

Paste data from the modal analysis show that the majority, or at least a large percentage, of each type-form within the flaring bowl and composite bowl shape-classes of monochrome orange and painted orange traditions is composed of a paste containing gray calcite or peloid calcite. A chi-square calculation tests the association of the presence of gray calcite in the pastes of the red monochrome, orange monochrome, and painted orange traditions (Table 6.78).

Results show that there is a relationship between the presence of gray calcite and pastes of the orange traditions. The Cramer's V value, also presented below, is relatively high showing that the relationship between the presence of gray calcite in paste recipes of orange slipped traditions is quite strong. These data show that orange slipped ceramics are not merely characterized by changes in surface technologies, but also paste recipes.

However, as I noted earlier and visible in the table below, gray calcite does also appear in a very small quantity of monochrome red ceramics analyzed in this study. This potentially means that the gray calcite recipe was in existence prior to the production of orange pottery, it was simply not often utilized by potters who made monochrome red ceramics. As I discussed earlier, the reasons why the lighter colored gray calcite paste was used in the production of orange pottery could be a combination of social and material factors. In order for the orange slip to gain and maintain its brilliance, a paste that fires to a lighter color would be preferred. A light colored paste used previously, but rarely, in the manufacture of monochrome red ceramics may have been selected by ancient potters for its firing properties and perhaps even accessibility. There may have also been other social concerns of potters producing ceramics in the orange tradition. Perhaps they wanted symbolically and literally to break from the technological traditions used to manufacture ceramics of the past, thus a new paste variant was selected. Perhaps the use of different paste recipes is indicative of different potters producing ceramics of the orange traditions and those producing monochrome red ceramics. Or perhaps access to clay sources used for making red pottery were somehow cut-off during the Late Terminal Preclassic period, leaving potters to mine for clays elsewhere. The potential specific reasons for changes in paste recipes are seemingly endless. However, the data show that change is significant, and it was doubtless a combination of social and material factors.

**Table 6.79 Test of Association for Gray Calcite**

<b>GRAY CALCITE VARIANT</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red</b>	11 (O)	215 (O)
<b>Monochrome</b>	58.76 (E)	167.24 (E)
<b>Orange</b>	64 (O)	17 (O)
<b>Monochrome</b>	21.06 (E)	59.94 (E)
<b>Orange</b>	16 (O)	27 (O)
<b>Painted</b>	11.18 (E)	31.82 (E)

**$\chi^2 = 173.58$**   
**df = 2**  
**p = <.0001**  
**V = .7402**

*Firing*

Two variables indicative of changes in the firing process were tested within the combined flaring bowl and composite bowl type-forms of the three traditions under study. Results for a chi-square test of paste core are presented in Table 6.79 and results for a test of firing clouds (both exterior and interior) are presented in Tables 6.80 and 6.81. The chi-square and Cramer's V values for these tests are not nearly as high as those for the presence of gray calcite. However, they do still reveal a relationship between the lack of firing cores and firing clouds and orange slipped ceramics. This possibly indicates that along with paste technology, firing technology changed as well. As with the change in paste technology, the change in firing practices could have been due to a combination of material and social factors. Specifically, in order for orange slip to gain and maintain brilliance, ceramic pastes would have to remain light colored, and therefore oxygenated. This impedes the frequent formation of dark paste cores. Similarly, in

order for symbolic information in the form of painted characters to be transmitted effectively during social occasions, vessels surfaces had to be free of fire clouds.

However, as I discussed with the gray calcite based pastes of the red monochrome ceramics, fire clouds do crosscut red and orange ceramic traditions. That is, a small occurrence of fire clouds is noted in frequency counts of orange material, even on the finely painted polychrome material. This potentially shows that while firing practices may have changed, they were not necessarily revolutionized much less restricted. Firing most likely still took place in open bonfires. However, some other part of the process may have changed. Perhaps more care was taken to diminish the occurrence of fire clouds. Perhaps vessels were removed from the fire at different times in comparison to red material. Or perhaps, a different fuel was used to feed the fire, or at least placed in the bonfire so as not to come in contact with the pots directly. Again, it was probably a combination of social and material factors.

**Table 6.80 Test of Association for Paste Core**

<b>PASTE CORE</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red Monochrome</b>	135 (O) 113.67 (E)	93 (O) 114.32 (E)
<b>Orange Monochrome</b>	27 (O) 40.38 (E)	54 (O) 40.61 (E)
<b>Orange Painted</b>	14 (O) 21.93 (E)	30 (O) 22.06 (E)

$\chi^2 = 22.55$   
 $df = 2$   
 $p = <.0001$   
 $V = .2527$

**Table 6.81 Test of Association for Exterior Fire Cloud**

<b>FIRE CLOUD EXT.</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red</b>	92 (O)	101 (O)
<b>Monochrome</b>	74.49 (E)	118.5 (E)
<b>Orange</b>	12 (O)	37 (O)
<b>Monochrome</b>	18.91 (E)	30.08 (E)
<b>Orange</b>	6 (O)	37 (O)
<b>Painted</b>	16.59 (E)	26.40 (E)

$x^2 = 21.83$   
 $df = 2$   
 $p = <.0001$   
 $V = .2768$

**Table 6.82 Test of Association for Interior Fire Cloud**

<b>FIRE CLOUD INT.</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red</b>	26 (O)	171 (O)
<b>Monochrome</b>	34.87 (E)	162.121 (E)
<b>Orange</b>	24 (O)	42 (O)
<b>Monochrome</b>	11.68 (E)	54.31 (E)
<b>Orange</b>	4 (O)	38 (O)
<b>Painted</b>	7.43 (E)	34.56 (E)

$x^2 = 20.45$   
 $df = 2$   
 $p = <.0001$   
 $V = .2589$

## *Surface*

Finally, a chi-square calculation was performed in order to test the association of specific Munsell color values with combined flaring bowl and composite bowl type-forms of the red and orange traditions. In this test, I was looking for support for the assumption that the orange slipped ceramics could be consistently separated from the red material on the basis of one or two quantifiable color categories, and not that the orange material simply represented an inflated category of the red slipped ceramics. That is, were surface colors between the two ceramic traditions quantifiably different? Tables 6.82 and 6.83 present the results of a chi-square analysis for the presence of the most commonly occurring orange slip color values, 2.5YR5/8 and 5YR5/8, within the flaring bowl and composite bowl shape-classes of red monochrome, orange monochrome, and painted orange traditions. The data show that there is a strong relationship between these two types of orange colors and ceramics of the orange traditions. Furthermore, the observed values for these colors within the red monochrome tradition are significantly lower than their expected values, supporting the idea that these colors all but did not exist within the range of Sierra Red material. Conversely, the observed values for absence of these colors in the orange material is well below what would be expected in a normal distribution. As with the three other variables tested above, this change in slip color undoubtedly concerned both social and material factors. The difference in slip color between the red and orange traditions could have been the result of 1) the use of different clays for slips, 2) the use of different methods for slip application, or 3) the addition or subtraction of slip coats.

**Table 6.83 Test of Association for Exterior Slip Color**

<b>MUNSELL SLIP EXT.</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red</b>	4 (O)	196 (O)
<b>Monochrome</b>	42.24 (E)	157.75 (E)
<b>Orange</b>	38 (O)	23 (O)
<b>Monochrome</b>	12.88 (E)	48.11 (E)
<b>Orange</b>	22 (O)	20 (O)
<b>Painted</b>	8.87 (E)	33.12 (E)

$\chi^2 = 130.59$   
 $df = 2$   
 $p = <.0001$   
 $V = .6565$

**Table 6.84 Test of Association for Interior Slip Color**

<b>MUNSELL SLIP INT.</b>		
	<b>Presence</b>	<b>Absence</b>
<b>Red</b>	2 (O)	199 (O)
<b>Monochrome</b>	53.86 (E)	147.13 (E)
<b>Orange</b>	44 (O)	18 (O)
<b>Monochrome</b>	16.61 (E)	45.38 (E)
<b>Orange</b>	36 (O)	7 (O)
<b>Painted</b>	11.52 (E)	31.47 (E)

$\chi^2 = 200.91$   
 $df = 2$   
 $p = <.0001$   
 $V = .8103$

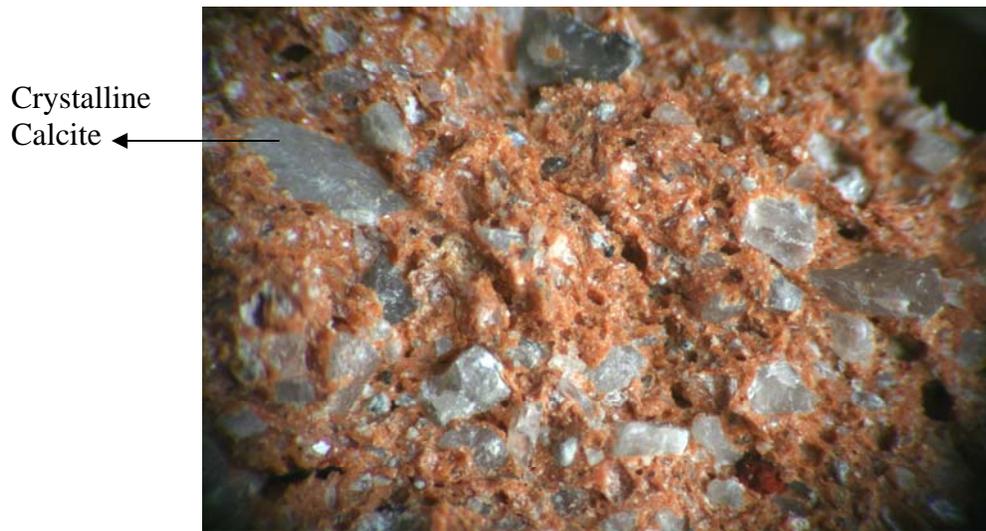
## Conclusions

The first conclusion supported by the results of the modal analysis reported in this chapter is that production technologies used to make ceramics of the flaring bowl and composite bowl shape-classes of the monochrome red and combined orange slip traditions are quantifiably different. These production technologies go beyond surface characteristics and involve paste and firing technologies as well. The data also show that four specific technologies are statistically related to ceramics of the orange traditions: these technologies are 1) a paste variant containing gray calcite (peloid calcite) inclusions, 2) a decreased occurrence of firing cores, 3) a decreased occurrence of firing clouds on the exterior and interior surfaces, and 4) a quantifiably different slip color of 2.5YR5/8 or 5YR5/8.

While production technologies between the two traditions may be different, they are not necessarily mutually exclusive. This is especially apparent as concerns paste recipes where the gray calcite variant of orange ceramics was seen to make up a small percentage of red ceramics. These data indicate that production technologies related to the orange traditions may have developed out of less common technologies of previously existing red ceramics. This shows evidence of continuity between the three traditions and does not necessarily support the idea of foreign influence or intrusion regarding the introduction of orange gloss traditions into the Holmul Region.

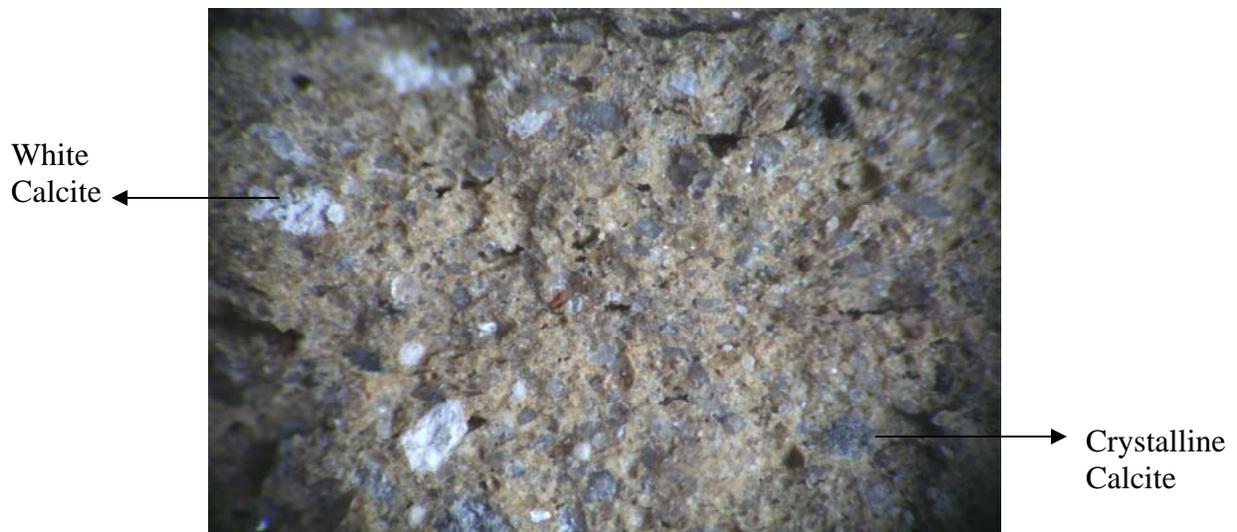
Similarly, while there were found to be quantifiable differences in production technologies between the red and orange traditions, there was also much diversity within each tradition, and even each type-form. The frequency of total and major paste variants within each type-form were used to approximate the diversity of each type-form and tradition, as well as approximate the relative number of producers involved in production. Based on paste recipes,

the least diverse type-forms belonged to the orange monochrome tradition. With the exception of Boleto Black-on-Orange painted material, Sierra Red ceramics were found to be less diverse than the rest of the painted orange ceramics, namely Ixcanrio and Actuncan orange polychromes. This potentially suggests that fewer producers were involved with the production of orange monochrome material than both red and painted orange material (again, with the exception of the Boleto composite bowl form). More significant, as concerns testing the prestige goods hypothesis, based on diversity of paste recipes, certain stages in the production process of painted orange ceramics appear to have been performed by more producers than red ceramics of the Sierra group. All of these conclusions call into question the assumption that technologies associated with orange gloss ceramics were restricted and considered prestige technologies. Furthermore, it does not support the notion that production of orange ceramics may have been tightly controlled as is necessary for prestige goods production. The most that can be gained from the data concerning restriction is that certain production technologies were *preferred* over others by potters for the production of orange ceramics versus red ceramics.



Crystalline  
Calcite ←

Figure 6.1 Crystalline calcite paste variant in stereo microscope taken at 70x magnification (photo by author)



White  
Calcite ←

→ Crystalline  
Calcite

Figure 6.2 Crystalline calcite and white calcite paste variant in stereo microscope taken at 70x magnification (photo by author)

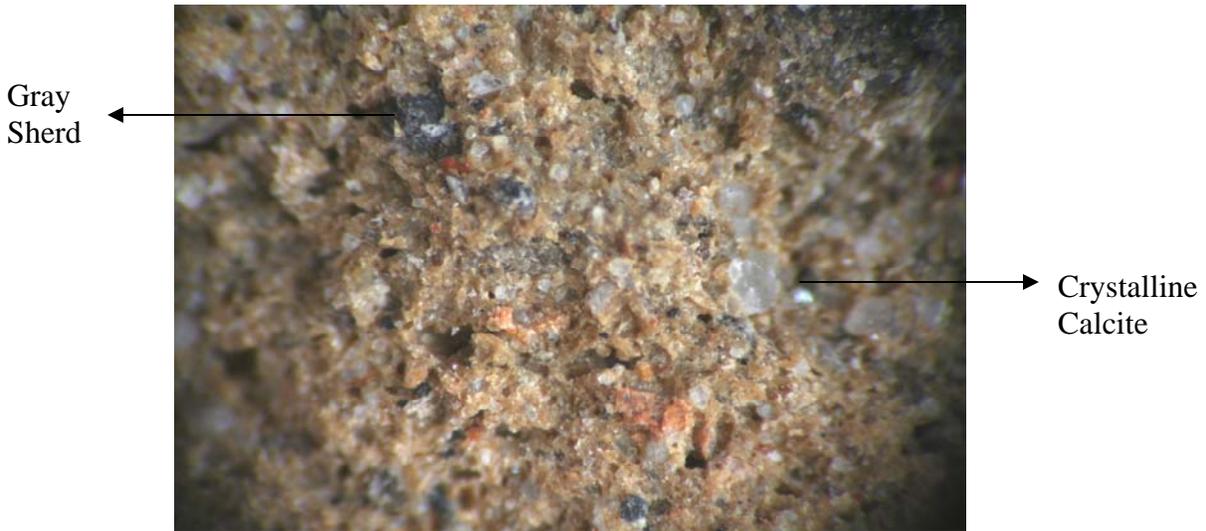


Figure 6.3 Crystalline calcite and gray sherd paste variant in stereo microscope taken at 70x magnification (photo by author)



Figure 6.4 Crystalline calcite and orange sherd paste variant in stereo microscope taken at 70x magnification (photo by author)



Figure 6.5 Gray calcite paste variant in stereo microscope taken at 70x magnification (photo by author)



Figure 6.6 White calcite paste variant in stereo microscope taken at 70x magnification (photo by author)



Figure 6.7 Ash paste variant in stereo microscope taken at 70x magnification. The glass fiber labeled on the left is oriented slightly perpendicular to the crosssection and sticking up from the paste – allowing an excellent photo. All other fibers were sliced during the sectioning process and lay flat against the paste (e.g. fiber labeled on the right) (photo by author)

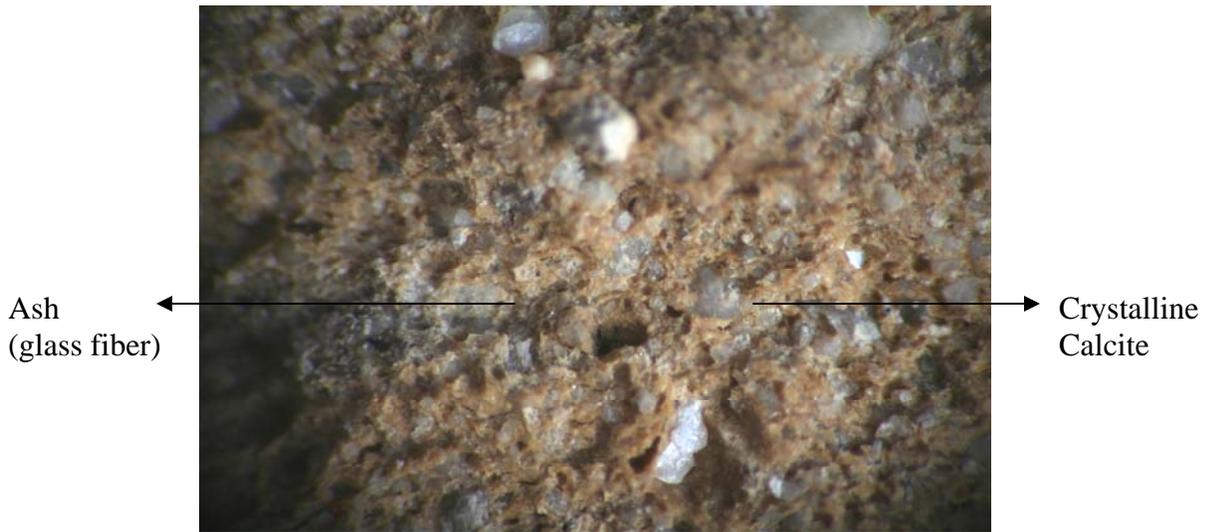


Figure 6.8 Ash and crystalline calcite paste variant in stereo microscope taken at 70x magnification (photo by author)

## CHAPTER VII

### PETROGRAPHIC ANALYSIS

#### Introduction

As part of this study I performed a petrographic analysis on ceramic material from the three traditions to characterize the mineral inclusions initially identified with the stereo microscope. Here the goal was to identify and quantify the mineralogical characteristics of these inclusions. My assumption was that specific characteristics of the minerals present in the major paste variants of each type-form and tradition may be used to differentiate paste recipes further and distinguish potential restricted technologies. Another goal of the petrographic analysis was to begin making inferences about the characteristics of potential clay sources and relate these sources to ceramic traditions, type-forms, and even sites within the Holmul Region. Finally, the petrographic data would serve to complement chemical compositional data from INAA.

As I discussed in the methodology chapter, thin sections were made from a sample of one sherd from each of the eight major paste groups, from each site, from flaring bowl and composite bowl type-forms within each of the three ceramic traditions. Another goal of this sampling procedure was to select the same paste variants from each site so as to compare seemingly identical paste variants across sites, allowing me to make inferences about potential distribution and exchange patterns within the region. Because of the shape of many of the sherds, I was not always able to cut samples perpendicular to the rim (i.e., on the vertical axis). As a result, certain aspects of traditional ceramic petrographical analyses could not be performed. For example, accurate point-counting, the study of voids, and forming techniques based on the

alignment of inclusions. The results of these analyses would not be reliable, as the sherds were not all cut in the same standardized orientation. However, I was still able to perform an analysis focusing on the type, shape, size, relative frequency, and mineralogical characteristics of inclusions within the type-forms under study.

Petrographic thin sections of 0.03mm or 30 microns were made courtesy of Applied Petrographic Services Inc. of Greenburg, PA. All analysis took place in the petrology laboratory of the department of the Earth and Environmental Sciences at Vanderbilt University. Thin sections were studied using a Nikon petrographic microscope with magnification between 10X and 150X. Photographs were taken using an Olympus 5 megapixel digital camera attached to the third ocular of the scope.

## **Mineralogical Inclusions and their Characteristics**

### *Calcite (CaCO<sub>3</sub>)*

Calcite is the most commonly occurring inclusion found in pastes from thin sections studied for this analysis. Aside from pastes in the ash tempered group, calcite minerals are the primary inclusion of all ceramic pastes in the analysis. While calcite appears in virtually all pastes in the analysis, its primary form varies. Petrographic analysis revealed that calcite is present in archaeological pastes in four major forms: these are sparitic calcite, peloids, bioclasts, and crypto-crystalline calcite.

Sparitic calcite (Figure 7.1) is the most commonly occurring calcite mineral. It ranges in size from smaller than silt (<0.0625mm) to as large as 1mm with an average size of 0.2mm. In pastes of which it composes the groundmass, sparitic calcite can be round and spherical or sub-

round and sub-angular. As an inclusion at average size, it is usually sub-angular to angular. It is usually found in large quantities, densely packed, and depending on paste variant either poorly or fairly sorted. The relief of this mineral, or its surface texture, is relatively high. It cleaves and goes extinct in crossed-polars at a 75 degree angle. Interference colors are in the highest orders ranging from white to multiple iridescent colors (pink, aqua, yellow). Twinning is common and visible as varying black and iridescent colored streaks through the mineral when turning the stage under crossed-polars. Large conglomerate chunks of sparitic calcite, or limestone cement, were found in a number of thin sections. These larger chunks could be remnants of larger rocks which were ground down to produce the smaller crystals of sparitic calcite distributed through the paste. Because of this, sparitic calcite was certainly added to the paste by prehistoric potters. However, the small size and almost perfect roundness and sphericity of other sparitic calcite grains smaller than the size of silt found in the groundmass also suggest this type of calcite was naturally occurring in clays as well.

Peloids (Figure 7.2) are the second most common form of calcite found in pastes selected for this analysis. Peloids range in size from 0.02mm to as large as almost 2mm with an average size of 0.3mm. Peloid calcite is consistently round and spherical. When it is the primary inclusion, it is found in large quantities, densely packed, and fairly sorted. This type of calcite shows no relief, because it is opaque under both plain polarized light and crossed-polars. This is because this type of calcite is composed of a dense micritic mud – or densely packed microscopic-crystals of calcite. Peloids are believed to be the fossilized remnants of fecal matter from small prehistoric sea creatures (Adams et. al. 1984:36). On some grains, a thin dark ring is visible around the outside of the mineral. Like sparite, larger conglomerate chunks of peloid calcite were found in a number of thin sections. These larger chunks could be remnants of larger

rocks which were ground down to produce the smaller peloids distributed throughout the paste. Also like sparitic calcite, the combination of rock fragments and silt sized grains leads me to believe that peloids were both naturally occurring and added to ceramic pastes.

Bioclasts (Figure 7.3) are calcified fossils of prehistoric sea creatures and found in association with peloid based pastes. Bioclasts range in size from 0.1mm to 0.7mm with an average size of 0.3mm. Bioclasts can take the form of linear shell fragments, ovular rings, or even coils of interlocking cells that resemble the shape of a snail. Bioclasts are usually scattered throughout peloid based pastes at infrequent intervals – that is, they are poorly sorted and not densely packed together. Like peloids, this type of calcite shows no relief, because it is opaque under both plain polarized light and crossed-polars. It is also composed of dense micritic replacement cement. Because of their large size, it was more than likely that bioclasts originated from crushed peloid limestone that was added to clay and are not naturally occurring in clay deposits.

Crypto-crystalline calcite combines characteristics of sparitic calcite and peloids. It ranges in size from 0.1mm to 1mm with an average size of 0.4mm. This type of calcite is very rare. When it is present, it is usually angular to sub-angular and not spherical. It is less opaque than peloids, but not completely transparent either. Its interference color is gray to pale white and no relief is visible on the surface. This is due to the densely packed micritic calcite that composes this type of mineral grain. This type of mineral can also appear in large conglomerate chunks, providing evidence that it was added as temper and not altogether a natural inclusion.

### *Quartz (SiO<sub>2</sub>)*

Quartz grains are visible in three forms: namely, monocrystalline, polycrystalline, and crypto-crystalline. Monocrystalline and polycrystalline quartz vary in size from 0.04mm all the way to 1.5mm. The average size is 0.4mm. Both types are well rounded and sub-spherical. They occur often in pastes, but their frequencies are limited within any one paste. They are always considered an “additional inclusion”, not occurring frequently enough to warrant them a primary inclusion. Monocrystalline quartz is composed of one solid crystal, while polycrystalline quartz is composed of two or more crystals. The two types of grains are easily distinguished under cross-polarized light. When the stage is turned, monocrystalline grains go extinct all at once, while polycrystalline grains reveal their component crystals through multiple extinctions. Interference color is generally yellow to gray. Quartz grains show no relief or cleavage. The roundness, sphericity, small quantity, and size of the grains leads me to believe quartz is usually a naturally occurring inclusion and a constituent of the clay used to fashion ceramic pastes – that is, I do not believe monocrystalline and polycrystalline quartz were intentionally added to the paste fabric during the production process.

Crypto-crystalline quartz is composed of densely packed micritic quartz grains. The most commonly occurring type of crypto-crystalline quartz in the present sample is chert. These grains are usually large ranging from 0.1mm to 0.8mm and averaging 0.5mm. They are extremely angular and not spherical. They are overall rare in the present paste sample and when they do appear frequencies are very low. Like quartz, they are always considered an “additional inclusion”. Also like quartz, chert grains show no cleavage and their interference color is closer to gray. However, unlike quartz, because of their angularity, I consider these rare chert grains as added inclusions as opposed to naturally occurring.

*Mica [biotite  $K(Mg, Fe)_3AlSi_3O_{10}(F, OH)_2$ , or muscovite  $KAl_2(AlSi_3O_{10})(F, OH)_2$ ]*

The most common form of mica found in the present paste sample is biotite (Figure 7.4). This mineral ranges in size from 0.1mm to 1mm with an average size of 0.3mm. It is angular with no relief and perfect cleavage. It appears dark green or brown under plain polarized light and is often pleochroic, changes shades of color, when the stage is turned. Under polarized light, it appears a dark gold and speckled with higher level interference colors such as magenta and aqua. As I noted above, biotite is found mostly in association with ash temper, but can also be found in calcite based pastes. Because of its rare occurrence in calcite based clays, its angularity, and higher frequency in ash based pastes, I am more inclined to classify it as an added inclusion. It was possibly present in larger rocks of volcanic tuff that had been crushed and made into temper.

Muscovite is an extremely rare form of mica in the present sample. Only one thin section showed presence of this mineral. Its size was 0.1mm. It was a thin angular strip, transparent in plain polarized light and displaying iridescent high order colors in cross-polarized light. The presence of this mineral may indicate that the vessel the thin section came from was either imported into the Holmul Region or at least the temper used to make it was imported into the area.

*Hematite ( $Fe_2O_3$ )*

Hematite was a fairly frequently occurring additional inclusion in the present sample and cannot be positively related to any one paste group or type of mineral. It ranges in size from 0.1mm to 0.2mm. Hematite is usually sub-round and opaque both in plain-polarized and cross-

polarized light. It has a deep red color. It is not frequent within the pastes it is found and is more than likely a naturally occurring inclusion that is present in clays used to make ceramic pastes.

#### *Sherd (Grog)*

Sherd temper or grog (Figure 7.5) is crushed ceramic from previously fired vessels. It varies in size from 0.04mm to 2mm with an average size of 0.4mm. The larger pieces sometimes have intact strips of slip on them. The smaller pieces, and the majority of sherd temper, do not have slip and take the shape of angular square or rectangular grains. Sherd temper grains are composed of clay and inclusions which are also distinguishable and classifiable. The clay portion remains opaque, while the inclusions display their own respective properties. When present, sherd temper usually composes the second primary inclusion of sparitic calcite based pastes, but it is also found as an additional inclusion in some peloid based pastes. It is usually poorly sorted and not densely packed within the paste. Like volcanic glass discussed below, sherd inclusions are never naturally occurring in a clay source and always immediately classifiable as temper.

#### *Ash (Volcanic Glass)*

Ash temper (see Figure 7.7) is found in two forms: namely, small fibers and larger conglomerations of fibers which could be classified as pieces of volcanic tuff which have not been fully crushed. The small fibers vary in size from 0.1mm to 0.4mm with an average of 0.2mm. The larger pieces of tuff range from 0.1mm to 1mm with an average size of 0.2mm. The fibers are completely transparent in plain polarized light and go extinct in cross-polarized light. This is because these fibers are composed of volcanic glass or  $\text{SiO}_2$  molecules that cooled

so quickly that mineral structures did not have time to form. When ash is the primary inclusion, it is usually densely packed and very well sorted. Ash pastes also commonly contain biotite mica in very small quantities. Volcanic tuff is not native to the lowlands (R. West 1964) and must have been imported into the area. The Guatemalan highlands are a likely source, but some scholars have argued that other sources of tuff may be present in Belize in or around the Maya Mountains (Jones 1986:39; Shepard 1942:24). The presence of volcanic ash in some pastes does not necessarily mean that the ceramic vessels were manufactured outside of the lowlands and imported into the area. Larger pieces of volcanic tuff or even pumice are extremely light and could have been easily transported in solid or even crushed form from the highlands, possibly as buffer or cushion for obsidian polyhedral cores (Jones 1986:55; Simmons and Bren 1979; G. West 2002:172). Vessels were then made using local clays and the foreign ash as temper (see INAA results of ash-tempered polychrome from the Petexbatun region in Foias and Bishop 1997). The most we can say about ash based pastes, is that they do indicate some sort of trade with outside areas beginning as far back as the Middle Preclassic period. How this trade was organized, we cannot yet determine.

### **Paste Groundmass and its Characteristics**

In this study groundmass is defined by the combination of clay and inclusions smaller than silt (<.0625mm) that make up the ceramic paste of each thin section. Five types of groundmass were identified (Table 7.1). Groundmass was classified in an attempt to 1) distinguish paste production technologies between type-forms in the three traditions and 2) characterize the mineralogy of clay sources that were used to produce the type-forms in the present study. The general assumption underlying this second goal is that the well-rounded or

sub-round inclusions smaller than the size of silt found in the groundmass of ceramic pastes are more likely present due to their natural occurrence in a clay bed and not addition by prehistoric potters. However, it is also possible that these extremely small inclusions are the product of larger inclusions which have been ground down during the paste-preparation stage. This idea is strengthened by the fact that pastes with a specific type of primary inclusion usually contain that same inclusion in greatest quantity in the groundmass. This is yet another reason for the supplementary analysis of ceramic pastes by INAA. Mineralogical data from the petrographic analysis can be compared to chemical data of INAA in order to form a more informed hypothesis about the composition of potential sources. These data are discussed in the proceeding chapter.

**Table 7.1 Groundmass Types**

<b>Groundmass Variant</b>	<b>Description</b>
<b>Type 1</b>	Pure clay
<b>Type 2</b>	Spherical, round sparitic calcite and clay
<b>Type 3</b>	Sub-spherical, sub-round sparitic calcite and clay
<b>Type 4</b>	Iridescent streams of sparitic calcite
<b>Type 5</b>	Clay and peloids

*Type 1 Groundmass*

The first type of groundmass contains no inclusions smaller than the size of silt and only a thick clay groundmass (see Figures 7.7 and 7.8). This type of groundmass is found in pastes of ash tempered ceramics and possibly even peloid based pastes. However, the presence of peloids smaller than the size of silt in the latter pastes make me reticent to lump that type of groundmass (Type 5, discussed below) together with Type 1. If characteristics of groundmass were found to represent characteristics of clay sources, the source for Type 1 may be considered to be relatively

old. That is, many years of erosion have sorted out or broken down larger inclusions. However, this texture might also have been produced by the action of prehistoric potters. The fine clay matrix could be a result of very refined sorting processes during the paste-preparation process of ceramic manufacture.

### *Type 2 Groundmass*

Type 2 groundmass is characterized by clay and round sparitic calcite (see Figure 7.4). The calcite inclusions in this type of groundmass are rounded and almost perfectly spherical. They are also extremely dense and very well sorted. Clay is barely even visible between the separate sparitic calcite grains. The border between clay and calcite grains, and between the grains themselves, is very well defined. Because of the lack of clay platelet matrix and the well defined boundaries of the sparitic calcite grains, if this groundmass were to characterize a clay source, the source may be relatively young – that is, there is less evidence of long term erosion of minerals into clay particles. Not surprisingly this type of groundmass is associated with pastes that have many sparitic calcite inclusions.

### *Type 3 Groundmass*

Type 3 groundmass is characterized by clay and sub-round sparitic calcite grains (see Figures 7.1 and 7.5). Here the calcite grains are markedly more angular than the almost spherical grains in the Type 2 groundmass. There is also a greater amount of clay between the sparitic calcite grains. Finally, the boundaries between sparitic calcite grains and clay are often somewhat diffuse or obscured. They are not nearly as well defined as the boundaries in the Type 2 groundmass. If groundmass were able to represent mineralogical characteristics of the clay

source, this could indicate that the source for clay for Type 3 groundmass is relatively older than that for Type 2, but not as old as that of Type 1.

#### *Type 4 Groundmass*

Type 4 groundmass is relatively rare in frequency and may not actually represent a true type of groundmass, but instead was caused by inconsistencies in the thickness of thin sections (Figure 7.9). Here Type 4 groundmass is characterized by iridescent streams of sparitic calcite. No actual grains are noticeable, only streams of high interference colors between larger inclusions. The larger inclusions always consist of sparitic calcite grains. This effect may have been caused by the accidental sectioning of samples with a Type 3 groundmass to thicknesses less than 0.03mm. I have not completely disregarded the Type 4 category, however, because Bartlett (Bartlett 2004; Angelini 1998) reports a groundmass with similar characteristics from the site of K'axob, Belize.

#### *Type 5 Groundmass*

The Type 5 groundmass is characterized by a thick clay matrix and silt-sized calcite peloids (see Figures 7.2, 7.3, and 7.6). The peloids are sub-round to round and vary from sub-spherical to spherical. The boundaries between the peloids and clay matrix are well defined. It is entirely possible that this type of groundmass is actually a Type 1 with ground peloid limestone later added to the mix. Not surprisingly, this type of groundmass is found exclusively with larger peloid and bioclast inclusions.

## **Petrographic Paste Variants and their Characteristics**

Using the same methodology for creating major paste variants within the modal analysis, I created three major types of variants based on sparitic calcite, peloid calcite, and ash as the primary inclusions. These three groups were further split into eight paste variants based upon the first two primary inclusions identified in the petrographic analysis. The eight major petrographic variants and their corresponding primary inclusions are shown in Table 7.2. Not surprisingly, the petrographic paste variants are similar to the paste variants created in the modal analysis. However, as I explain in the next section of this chapter, one modal variant was eliminated, two were combined, and another created. Table 7.3 shows the distribution of groundmass types within the eight petrographical paste variants. Table 7.4 shows the distribution of paste variants within type-forms. Finally, Table 7.5 shows the distribution of paste variants among sites in the Holmul Region. All of these tables will be referenced in the discussion of specific petrographic paste variants that now follows. It is important to note that due to the sampling strategy used in this analysis, these tables do not represent actual distributions of paste variants within type-forms and sites. These tables represent the distribution of paste variants within type-form and sites which were specifically chosen, based on modal paste variant, site, and type-form, from the larger sample used for modal analysis. Therefore, frequencies in these tables are not representative of actual distributions, merely distribution within the samples under study.

**Table 7.2 Petrographic Paste Variants**

<b>Petrographic Paste Variant</b>	<b>Paste Description</b>
<b>PV1</b>	Sparitic calcite
<b>PV2</b>	Sparitic calcite and sherd
<b>PV3</b>	Peloid calcite
<b>PV4</b>	Peloid calcite and bioclasts
<b>PV5</b>	Peloid calcite and sherd
<b>PV6</b>	Crypto-crystalline calcite
<b>PV7</b>	Ash
<b>PV8</b>	Ash and sparitic calcite

**Table 7.3 Distribution of Groundmass Types within Petrographic Paste Variants**

<b>Groundmass Variant</b>	<b>PV1</b>	<b>PV2</b>	<b>PV3</b>	<b>PV4</b>	<b>PV5</b>	<b>PV6</b>	<b>PV7</b>	<b>PV8</b>
<b>Type 1</b>						2	4	
<b>Type 2</b>	11	10						1
<b>Type 3</b>	11	13						1
<b>Type 4</b>	1	5						
<b>Type 5</b>			20	12	3			

**Table 7.4 Distribution of Petrographic Paste Variants within Type-Forms**

<b>Paste Variant</b>	<b>S (F)</b>	<b>S(FIR)</b>	<b>S(LA)</b>	<b>A(F)</b>	<b>A(RZ)</b>	<b>BOL</b>	<b>ACT</b>	<b>IXC</b>
<b>PV1</b>	8	4	2	3	1	2	1	2
<b>PV2</b>	9	9	6	1			1	2
<b>PV3</b>	2	3		1	7	5	1	1
<b>PV4</b>	1			2	4	4	1	
<b>PV5</b>				1				2
<b>PV6</b>						1	1	
<b>PV7</b>							4	
<b>PV8</b>	2							

**Table 7.5 Distribution of Petrographic Paste Variants at Sites within the Holmul Region**

<b>Paste Variant</b>	<b>HOL</b>	<b>SUF</b>	<b>K'O</b>	<b>CIV</b>	<b>TOT</b>	<b>HAM</b>
<b>PV1</b>	4	10	4	4		
<b>PV2</b>	10	5	5	8	1	
<b>PV3</b>	7	4	3	2		2
<b>PV4</b>	9	4	1	1		
<b>PV5</b>	3					
<b>PV6</b>	2					
<b>PV7</b>	1	3				1
<b>PV8</b>			1	1		

*PV1*

The first paste variant is composed primarily of sparitic calcite inclusions (see Figures 7.1, 7.4, and 7.9). Additional inclusions such as mica, hematite, and quartz occasionally appear in this paste variant, but in very small quantities and at this time are not related to specific paste variants. Paste variant 1 is commonly composed of either type 1 or type 2 groundmasses, both of which are rich in sparitic calcite. This variant composes a portion of all type-forms in the study as can be seen in Table 7.4. It is also present at the four major excavated sites in the Holmul Region (Holmul, La Sufricaya, K'o, and Cival) as seen in Table 7.5. Paste variant 1 seems to have been a popular common variant used throughout the Late Preclassic and early facet Early Classic period to manufacture serving ware. It not only shows longevity, but also diversity in the type-forms it was used to produce.

*PV2*

Paste variant 2 (see Figure 7.5) is composed of sparitic calcite and sherd. In the present sample, PV2 is most commonly associated with groundmass types 2, 3, and 4 (Table 7.3). All of these groundmass types are sparitic calcite based. Paste variant 2 is commonly associated with

ceramics of the monochrome red tradition (Table 7.4). However, it is also present in small quantities of monochrome and painted orange ceramics. As seen in the modal analysis, the presence of this paste in type-forms of the orange traditions suggests some continuity in production techniques. It may also suggest that potters experimented with surface finish and decoration before they changed paste compositions.

### *PV3*

Paste variant 3 (see Figure 7.2) is composed primarily of peloid calcite inclusions. Paste variant 3 can only be found associated with a type 5 groundmass. Additional inclusions of sparitic calcite, quartz, and even mica are not uncommon, but their frequencies are extremely low. Paste variant three is found mostly within the orange monochrome and painted ceramic traditions, specifically the Aguila and Boletto composite type-forms. However, it is also found in small quantities within the Sierra flaring forms once again suggesting some continuity in paste preparation. Paste variant three is found in ceramics at five of the six sites sampled in this study (Table 7.5). If a larger sample existed from Tot, it might appear at that site as well.

### *PV4*

Paste variant four (see Figure 7.3) is identical to PV3 with the addition of the high frequency of bioclast calcite inclusions. This paste variant is found only in association with the type 5 groundmass (Table 7.3). Furthermore, with the exception of one Sierra flaring sherd, PV4 is almost exclusively restricted to ceramics of the orange traditions (Table 7.4). The presence of more bioclasts in orange ceramics may suggest that while this paste variant may have longevity, the ingredients used to produce it differed or came from different areas. Specifically, the peloid

limestone source from which temper was extracted changed from one poor in bioclasts to one rich in bioclasts. PV4 is found in ceramics at the four major excavated sites in the region.

#### *PV5*

Paste variant 5 (Figure 7.6) is composed of peloid calcite and crushed sherd. Like other variants based upon peloid inclusions, PV5 is only associated with a type 5 groundmass (Table 7.3). It is relatively rare among type-forms and only found in ceramics of the orange traditions, specifically Aguila and Ixcario composite forms. In the sample selected for petrographic analysis, it is only found at sherds from Holmul. Discussed in the next section, this variant was not recognizable with the stereo microscope. This further supports the use of supplementary microscopic and petrographic research in compositional analyses.

#### *PV6*

Paste variant 6 is composed of crypto-crystalline calcite inclusions and a type 1 groundmass (Table 7.3). This paste variant is extremely rare and only associated with composite forms of Boleto and Actuncan painted ceramics (Table 7.4). In the present sample, it is restricted to ceramics from Holmul. Like the peloid and sherd variant described above, PV6 would not have been identified without the aid of the petrographic microscope. Discussed in the next section, crypto-crystalline calcite appears as white crystals with the stereo microscope, leading me to group it in the “white calcite” modal paste variant. After petrographic analysis these white calcite crystals were identified simply as sparitic calcite which may have changed outward appearance due to differences in firing procedures. However, the calcite crystals in this

variant do not share the same petrographic properties, leading me to place them in a separate paste group.

#### *PV7*

Paste variant 7 (see Figure 7.7) is composed of clay and crushed volcanic glass. It is exclusively associated with a type 1 groundmass (Table 7.3). PV7 is relatively rare in the present sample and is only associated with the Actuncan type-form. It may represent a paste preparation technology available to a small number of potters within the Holmul Region. Or, it may similarly indicate that these specific pieces of Actuncan pottery were produced in areas outside of the Holmul Region. This paste variant is found in Actuncan ceramics at Holmul, La Sufricaya, and Hamontun.

#### *PV8*

Paste variant 8 (Figure 7.8) is composed of both sparitic calcite and crushed volcanic glass. The paste is calcite based and associated with either type 2 or 3 groundmasses (Table 7.3). Interestingly, PV8 is only found in the Sierra flaring bowl type-form in the present sample (Table 7.4). These sherds come from the sites of Cival and K'o in the Holmul Region (Table 7.5). While ash temper makes this paste variant similar to PV7 described above, the difference in groundmass types between the two variants suggests they were not identical in composition. Paste variant 8 is associated with the more commonly used types 2 and 3 groundmasses while PV7 is associated with much rarer type 1 groundmass composed of pure clay. Yet again, through petrographic analysis I am further able to quantify inclusions within the sherds under study.

## **Underslip**

Brady and colleagues (1998) suggested that what distinguished orange slip gloss ceramics of the Aguila and Actuncan groups from the Sierra Red group was the presence of cream underslip or highly polished pre-slip vessel surface. One of the objectives of this petrographic analysis was to identify and quantify this cream underslip. All ninety four thin sections were studied for a cream underslip and only sherd of the Actuncan composite bowl type-form was found to have it. This underslip is actually visible without the aid of microscopes as a thin cream or yellow layer of slip below the streaky orange slip on the exterior surface of the sherd. Orange sherds of the Sierra, early facet Early Classic Aguila, Ixcanrio, Boleto, and most Actuncan type-forms do not possess a cream underslip (Figures 7.10 and 7.11). Instead, potters applied a layer of red or orange slip directly to smoothed and polished vessel surfaces. As I discuss both in this chapter and the previous chapter on modal attributes, what distinguished ceramics of the orange traditions from the monochrome red tradition in the Holmul Region were 1) a truly orange colored slip measuring within the range of 2.5YR5/8 or 5YR5/8, 2) a light colored peloid calcite based paste, and 3) firing technology that reduced paste cores and firing clouds, and created an oxygen rich environment that made for a lighter colored paste.

## **Combined Stereo Microscope and Petrographic Analyses**

The stereo microscope and petrographic analyses generally produced the same results. However, there were some differences in the findings. This is because these two approaches essentially study two different aspects of the pastes under study. The stereo microscope can produce information about the visual characteristics of the surface of inclusions and aspects of ceramic pastes. Petrographic analysis is aimed more at studying the mineralogical structure of

inclusions and clay groundmass. The different results produced by these different aims of analysis are reflected in the groups of major paste variants represented in Tables 7.2 (reproduced below) and Table 7.6.

**Table 7.2 Petrographic Paste Variants**

<b>Petrographic Paste Variant</b>	<b>Paste Description</b>
<b>PV1</b>	Sparitic calcite
<b>PV2</b>	Sparitic calcite and sherd
<b>PV3</b>	Peloid calcite
<b>PV4</b>	Peloid calcite and bioclasts
<b>PV5</b>	Peloid calcite and sherd
<b>PV6</b>	Crypto-crystalline calcite
<b>PV7</b>	Ash
<b>PV8</b>	Ash and sparitic calcite

**Table 7.6 Association of Petrographic Paste Variant with Modal Paste Description**

<b>Petrographic Paste Variant</b>	<b>Modal Paste Description</b>
<b>PV1</b>	Crystalline calcite
<b>PV2</b>	Crystalline calcite and white calcite
<b>PV3</b>	Crystalline calcite and gray sherd
<b>PV4</b>	Crystalline calcite and orange sherd
<b>PV5</b>	Gray calcite
<b>PV6</b>	White calcite
<b>PV7</b>	Ash
<b>PV8</b>	Ash and crystalline calcite

Here PV1 is identical to the crystalline calcite variant of the modal analysis. Paste variant 2 combines the crystalline calcite and orange sherd variant and the crystalline calcite and gray sherd variants. The petrographic analysis does not discriminate between the surface color

of grog, only the visual properties of its structure in plain polarized and cross polarized light. Paste variant 3 is represented by the gray calcite variant created in the modal analysis. Paste variant 4 is not represented in the modal analysis, because bioclasts cannot be seen (or were not seen by me) with use of the stereo microscope alone. Here, petrographic analysis provides a deeper level of analysis and allows for further discrimination between paste variants. Paste variant 5 was similarly not recognized in the modal analysis. Sherds found to be classified as having PV5 were initially classified as having a crystalline calcite and sherd variant in the modal analysis. I was probably not able to distinguish the pieces of sherd because they were gray, leading me to believe they were additional inclusions of peloid. Furthermore, because sparitic calcite can appear clear, white, or even gray under the stereo microscope, I may have misclassified these sherds as having crystalline or sparitic as opposed to peloid primary inclusions. This example shows some of the pitfalls involved with relying solely on optical characteristics of the surfaces of inclusions, and not on their mineralogical structure. Paste variant 6 is roughly equivalent to the white calcite variant. However, as with PV5 above, petrographic analysis further refined this modal paste variant. Many of the sherds initially classified as having “white” calcite grains (or potentially crypto-crystalline calcite), were actually found to contain sparitic calcite grains in the petrographic analysis. This is again because of the varying color of sparitic calcite under direct light in a simple stereo microscope. Finally, PV7 and PV8 correspond to the ash and ash and crystalline calcite paste variants of the modal analysis respectively.

Out of the ninety four samples studied using both methods I classified only 7 primary inclusions completely incorrect during the stereo microscope analysis (see Appendix G). Most of these errors concerned classifying a gray inclusion incorrectly as sherd or crystalline calcite.

For the most part, petrographic analysis either supported or refined the findings of the stereo microscope analysis. This supports the idea that mineral inclusions can be identified relatively consistently by the analyst in the field. Of course, the more experience an analyst has with the collection under study, the lower the error rate might be. The results also show that petrographic analysis is extremely valuable in refining and further characterizing inclusions in paste variants.

Petrographic analysis can reveal differences in the properties of specific types of minerals. This is seen in the birefringence colors of sparitic calcite grains. Table 7.7 below shows the difference in interference colors between the major calcite grains in ceramic sherds used in the analysis. A classification of white, multiple colors, and opaque are present in the paste of each type-form, albeit in varying frequencies. However, only type-forms of the orange tradition contain calcite grains with an iridescent classification (see Figure 7.12). This could again support the assumption that different clay and/or temper sources were being mined to make ceramics of the orange tradition versus those of the red tradition.

**Table 7.7 Major Calcite Birefringence Colors within Type-forms**

<b>Birefringence</b>	<b>S (F)</b>	<b>S(FIR)</b>	<b>S(LA)</b>	<b>A(F)</b>	<b>A(RZ)</b>	<b>BOL</b>	<b>ACT</b>	<b>IXC</b>
<b>White</b>	10	4	2	1		3	1	3
<b>Multiple colors</b>	9	9	6		1		3	
<b>Iridescent</b>				3			1	1
<b>Opaque</b>	3	3		4	11	9	2	3

## **Conclusions**

Petrographic analysis supported and supplemented the results of the modal analysis. It allowed me potentially to characterize clay and temper sources used in the manufacture of

monochrome red, monochrome orange, and painted orange ceramic traditions. Paste variants and groundmass within the type-forms of the three traditions showed evidence of different production technologies. Similar to findings of the modal analysis, data from the petrographic analysis revealed a preference for certain paste recipes within the orange type-forms: namely, 1) a paste recipe based upon calcite peloid inclusions, 2) a paste recipe based upon pure clay and crushed volcanic inclusions with little to no sparitic calcite, and 3) a paste recipe based upon sparitic calcite inclusions with a unique iridescent birefringence color. Also like the modal analysis, it appears these recipes were not restricted to orange ceramics, but were simply more frequent within those traditions – once again showing signs of limited continuity between the two ceramic industries and a lack of complete technological restriction. A cream underslip was identified on only one sherd of the Actuncan composite bowl type-form and is not considered part of a suite of restricted technologies associated with orange ceramics of the Terminal Preclassic and early facet Early Classic periods.

Results of the petrographic analysis supported and supplemented results of the modal analysis. Paste variants created in the petrographic analysis and based upon mineralogical characteristics of inclusions corresponded approximately to paste variants created in the modal analysis and based upon surface characteristics of inclusions. In general, the different kinds of calcite identified by color and shape in the modal analysis corresponded to different kinds of calcite identified by mineralogical structure in the petrographic analysis. However, certain inclusions were more difficult to identify than others using only the stereo microscope: namely, 1) specific grains of sparitic calcite, and 2) calcite bioclasts. Sparitic calcite was misclassified using the stereo microscope due to its common variation in surface color (transparent, gray, or white) translating into sparitic calcite, peloid calcite, and crypto-crystalline calcite. Similarly,

bioclasts could not be identified using only the stereo microscope due to their gray color and often ovular shape, leading me to classify them as calcite peloids. Despite these errors, the relatively low error rate and supplemental nature of the findings created by using the two approaches supports the use of both stereo microscopic and petrographic analysis by ceramicists in the field and laboratory settings to both identify and compare inclusions and paste fabric.

Through the characterization of groundmasses for each of the paste variants, petrographic analysis also enabled me to identify potential characteristics of clay and temper sources in the Holmul Region. Five types of groundmass based upon the combination of clay matrix and inclusions smaller than silt, and eight paste variants based upon potentially added inclusions were created using the petrographic microscope. While certain groundmasses were seen to crosscut type-forms and even traditions (e.g., types 2 and 3) others were reserved more for specific traditions or even type-forms within those traditions (e.g., types 1, 4, and 5).

The results of the modal and petrographic analyses detailed above and in the previous chapter accurately identify and quantify the differences in production patterns between the red and orange traditions. However, the question remains, why did production patterns change between these three ceramic traditions during the Terminal Preclassic period? As I discussed earlier within aspects of the modal analysis, the reasons for these changes were most likely based on a combination of material and social factors.

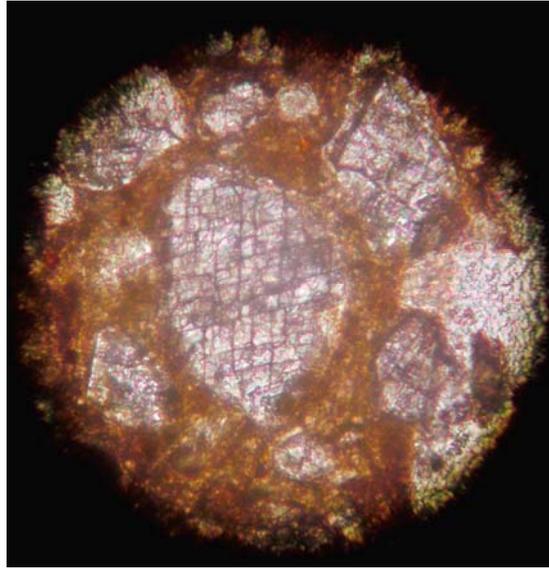
One of the most distinguishing characteristics of the red monochrome tradition is the use of sherd temper in a popular paste variant. Sherd may have been used due to the ease of its accessibility. With the use of sherd temper, potters did not have to mine separate temper sources, they could merely use crushed sherd from old, broken, or misfired vessels. Because sherd temper had similar or even identical physical properties to the paste it was integrated with,

this could have led to less firing mishaps and the production of a larger quantity of sturdy, durable vessels. Socially, sherd temper was part of other vessels created and used by previous potters, or perhaps familial or social relations from within or outside the region. The inclusion of these broken vessels into new pottery, and their subsequent use by future consumers, may have symbolically integrated social units within and between areas in the Holmul Region (Bartlett 2004:160; Sterner 1989:458).

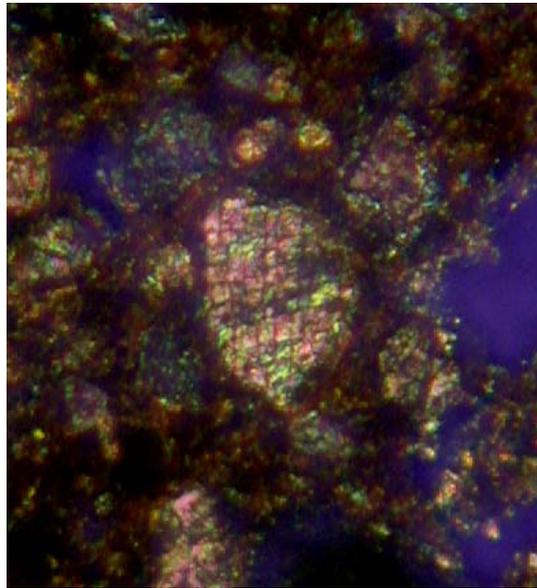
Barring the unique social aspect of sherd temper discussed above, many of the same reasons could be applied to answer the question of why sparitic calcite may have been chosen by Preclassic potters as a popular temper. Sparitic calcite may have been readily available to potters in the Holmul Region – unsampled limestone quarries are located near every major site in the Holmul Region. Like sherd, sparitic calcite also made up a great portion of most clay groundmasses and therefore potentially clay sources. The inclusion of larger grains of sparitic calcite in these pastes would help to maintain chemical and physical properties of these pastes and potentially lead to fewer accidents during the firing process. The lack of the social aspect described above in relation to sherd temper could also have been a reason why sparitic calcite temper had a greater longevity in paste variants of the Holmul Region. Sparitic calcite was not part of a previous vessel, produced and used by groups or individuals with specific identities. Therefore, it may have still been desirable, or at least not prohibited, after the shift in other aspects of material culture of the Maya lowlands occurred during the Terminal Preclassic period.

The reasons potters producing ceramics of the orange traditions utilized pastes with peloid calcite were certainly based upon both material and social concerns as well. As I noted in the previous chapter, potters would need to use a paste variant which fired to a lighter color in order for the orange slip to gain and maintain its color and brilliance. Perhaps the peloid paste

clay groundmass (Type 5) worked best in this respect. Socially, it is possible that the peloid based paste variants represent the desire of potters who made orange slipped ceramics to break from production patterns of the paste – to create a new technological identity. The combination of the light firing clay of the peloid groundmass and the difference in location and type of clay or temper source may have satisfied this desire. At this point in the ceramic analysis of the Holmul Region, it is difficult to support any single explanation. However, further analysis combined with geological surveys in the area will hopefully shed more light on the situation.



a



b

Figure 7.1 Sparitic calcite grain at 150x magnification (a, plain polarized light; b, cross-polarized light). Note the pronounced relief and 75 degree angle of cleavage in both images. Also, note the high order interference colors in 7.1b. Paste is Petrographic Variant 1 with Type 3 groundmass. (photos by author)

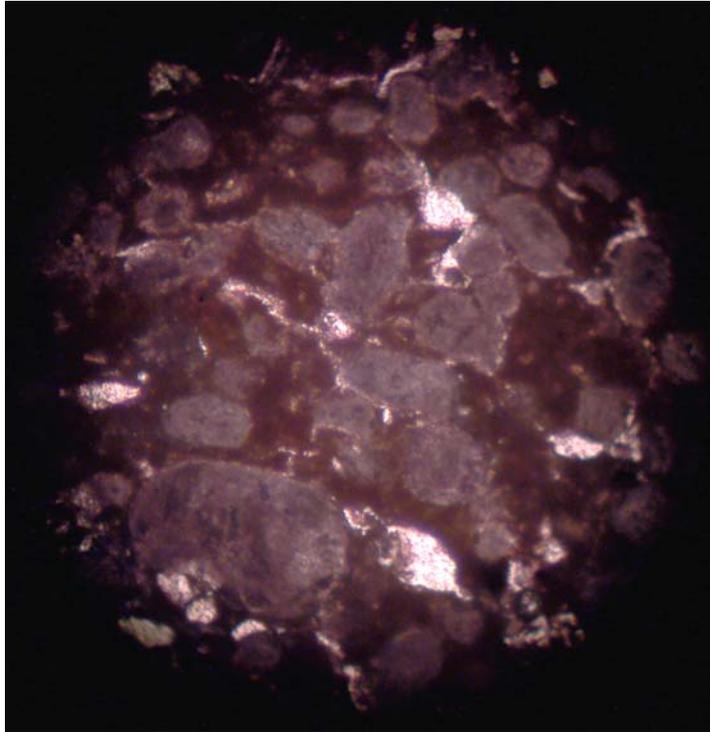
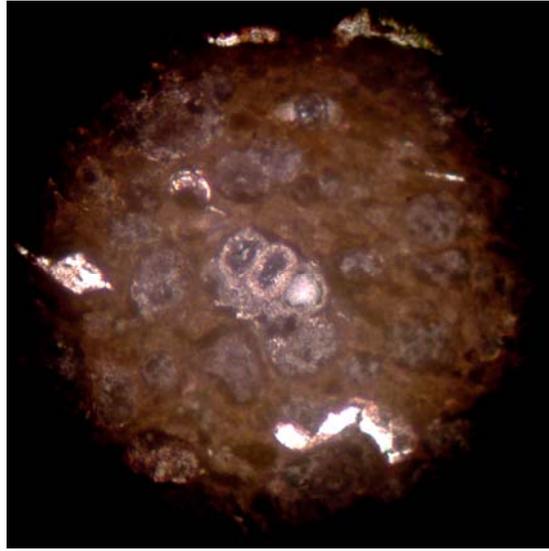
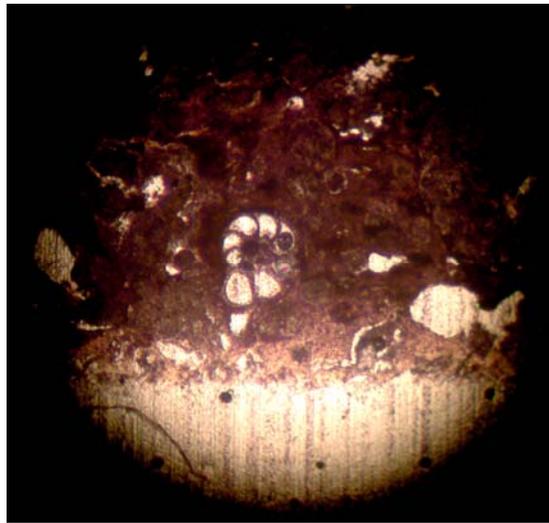


Figure 7.2 Peloid grains in plain polarized light at 150x magnification. Petrographic Paste Variant 3, Groundmass Type 5 (photo by author)

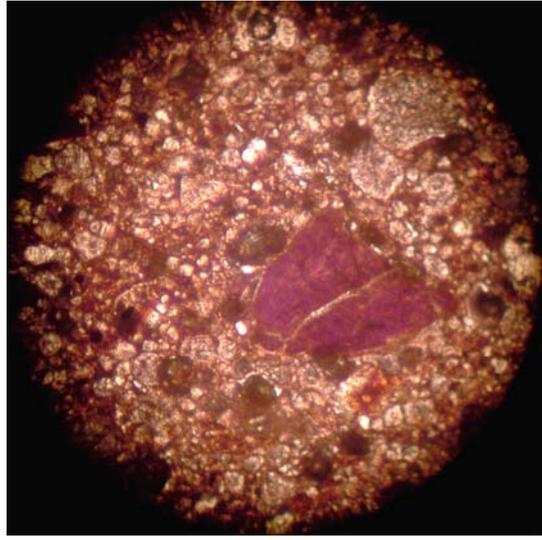


a

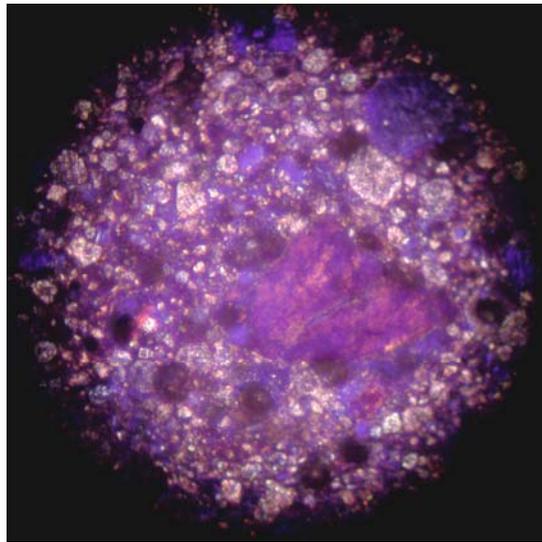


b

Figure 7.3 Bioclast particles in plain polarized light at 150x magnification. Petrographic Paste Variant 4, Groundmass Type 5 (photos by author)

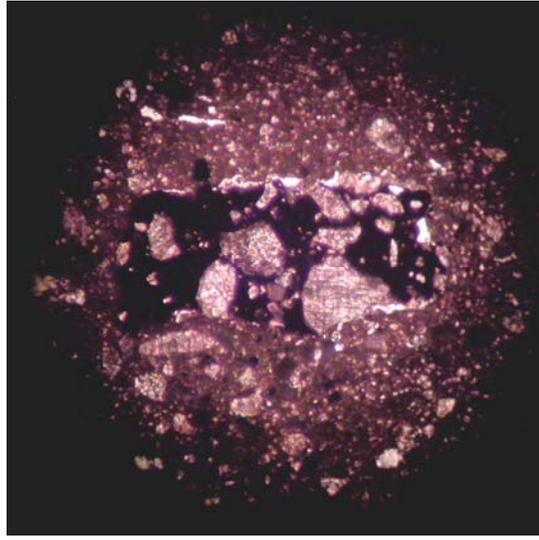


a

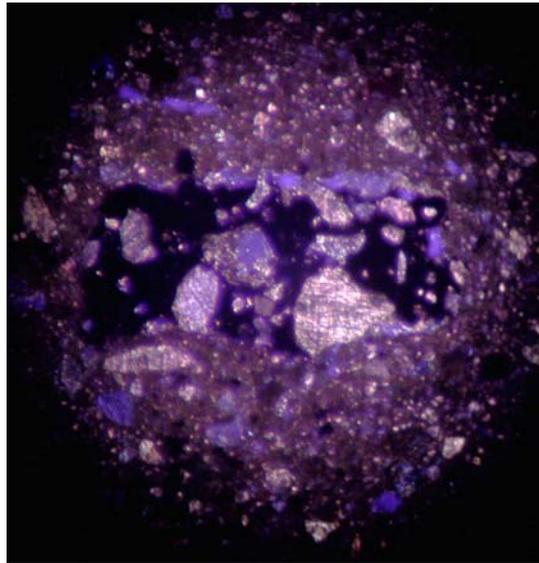


b

Figure 7.4 Biotite mica at 150x magnification (a, plain polarized light; b, cross polarized light). Petrographic Paste Variant 1, Groundmass Type 2 (photos by author)



a



b

Figure 7.5 Sherd temper at 150x magnification (a, plain polarized light; b, cross polarized light). Note the large pieces of sparitic calcite within the sherd temper itself. Petrographic Paste Variant 2, Groundmass Type 2 (photos by author)

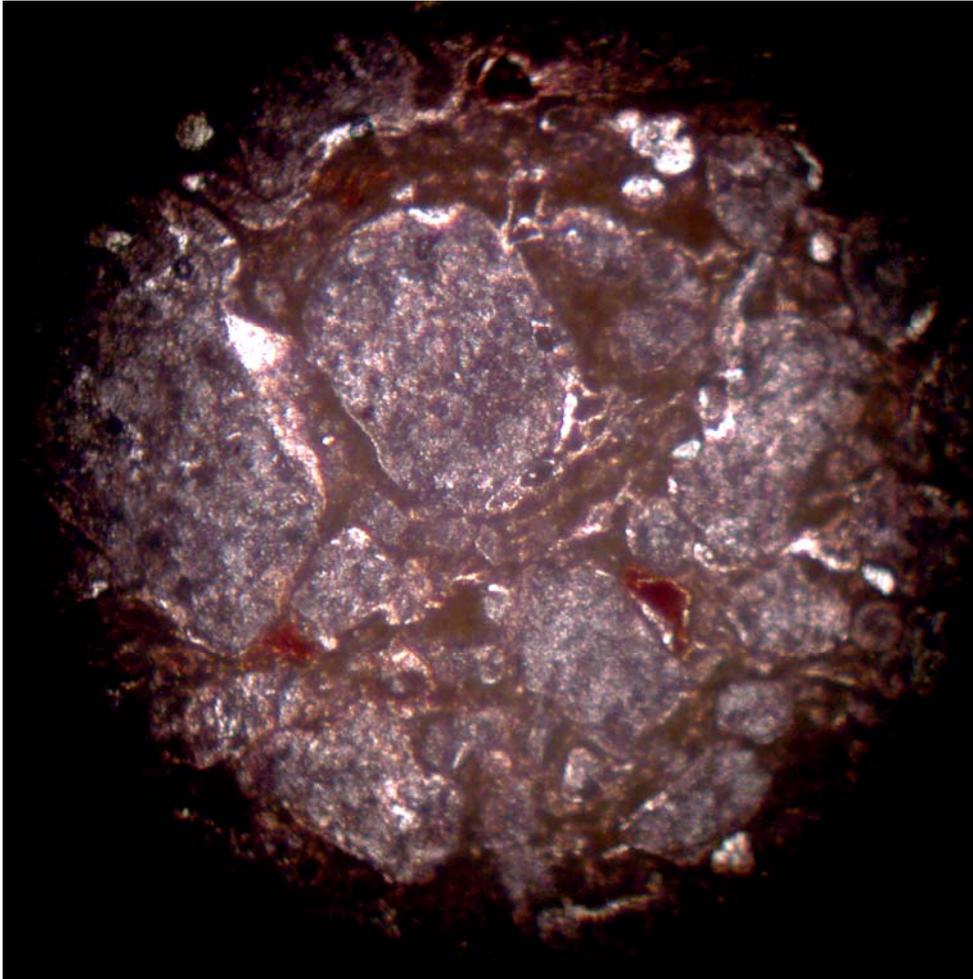
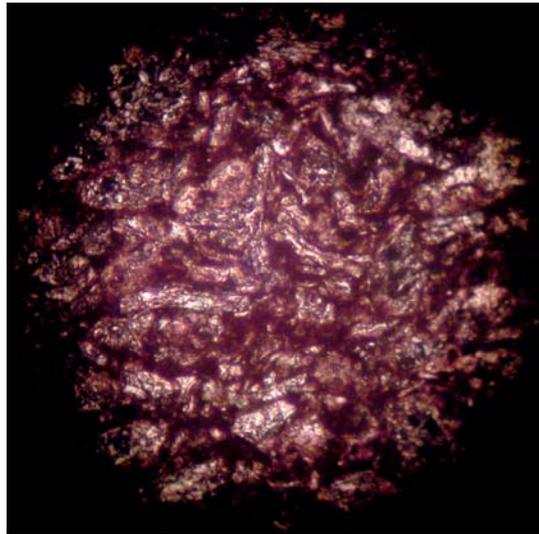
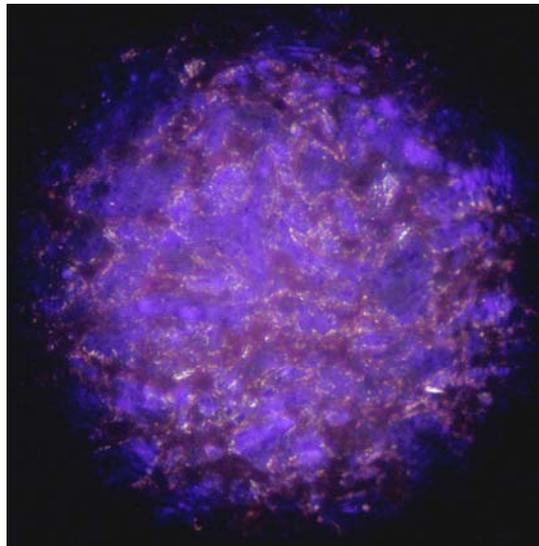


Figure 7.6 Paste Variant 5, Groundmass 5, in plain polarized light at 150x magnification. Note the large peloid inclusions and smaller pieces of sherd between them (photo by author)

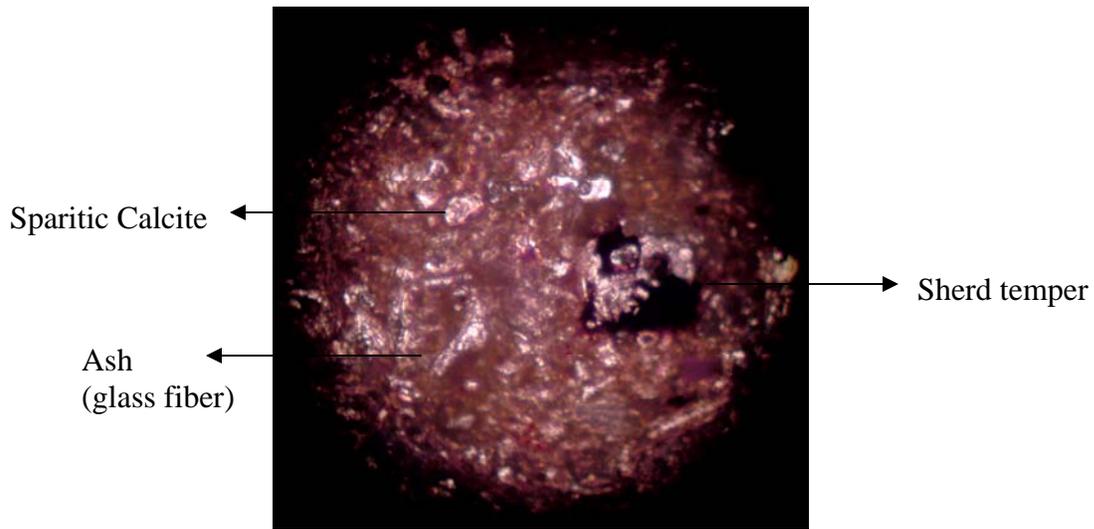


a

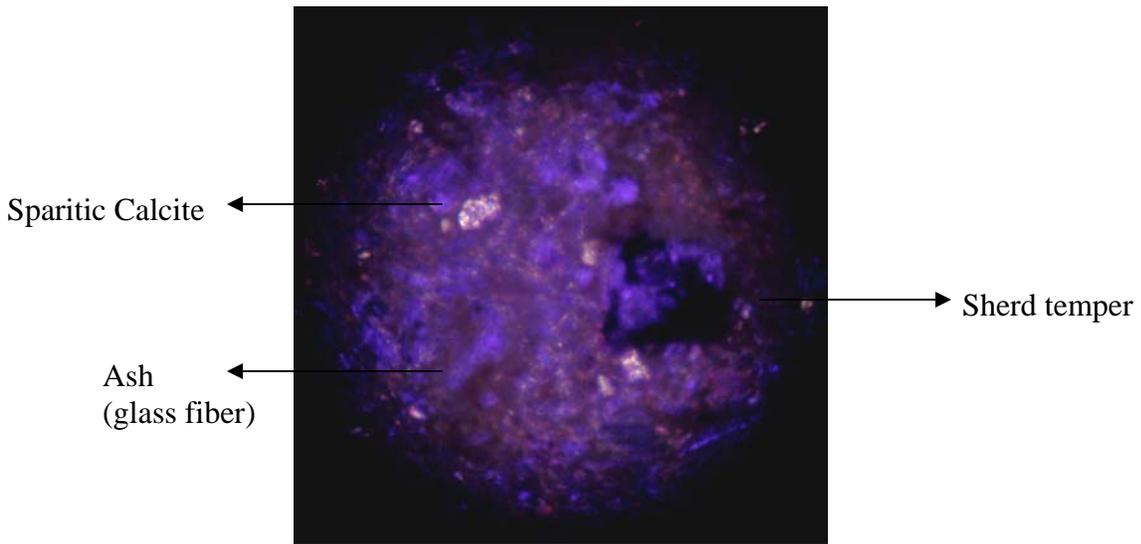


b

Figure 7.7 Paste Variant 7, Groundmass Type 1 at 150x magnification (a, plain polarized light; b, cross polarized light. Note how the glass fibers are clear in plain polarized light and extinct (purple) in cross polarized light (the clay matrix appears in streams of brown between the glass fibers in both images) (photos by author)

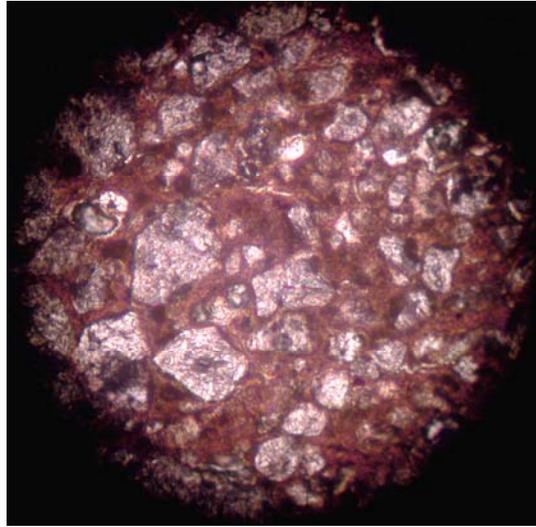


a

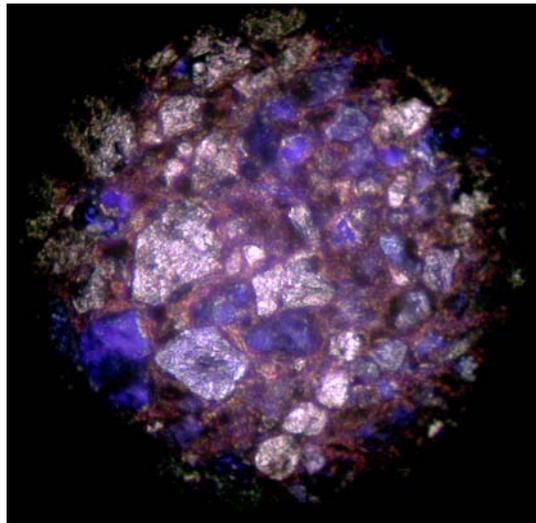


b

Figure 7.8 Paste Variant 8, Groundmass Type 1 at 150x magnification (a, plain polarized light; b, cross polarized light). Note the large additional sherd inclusion on the right side of the image (photos by author)



a



b

Figure 7.9 Paste Variant 1, Groundmass Type 4 at 150x magnification (a, plain polarized light; b, cross polarized light). Note the lack of smaller sparitic calcite grains visible in the clay matrix – only streams of iridescent-brown calcite (photos by author)

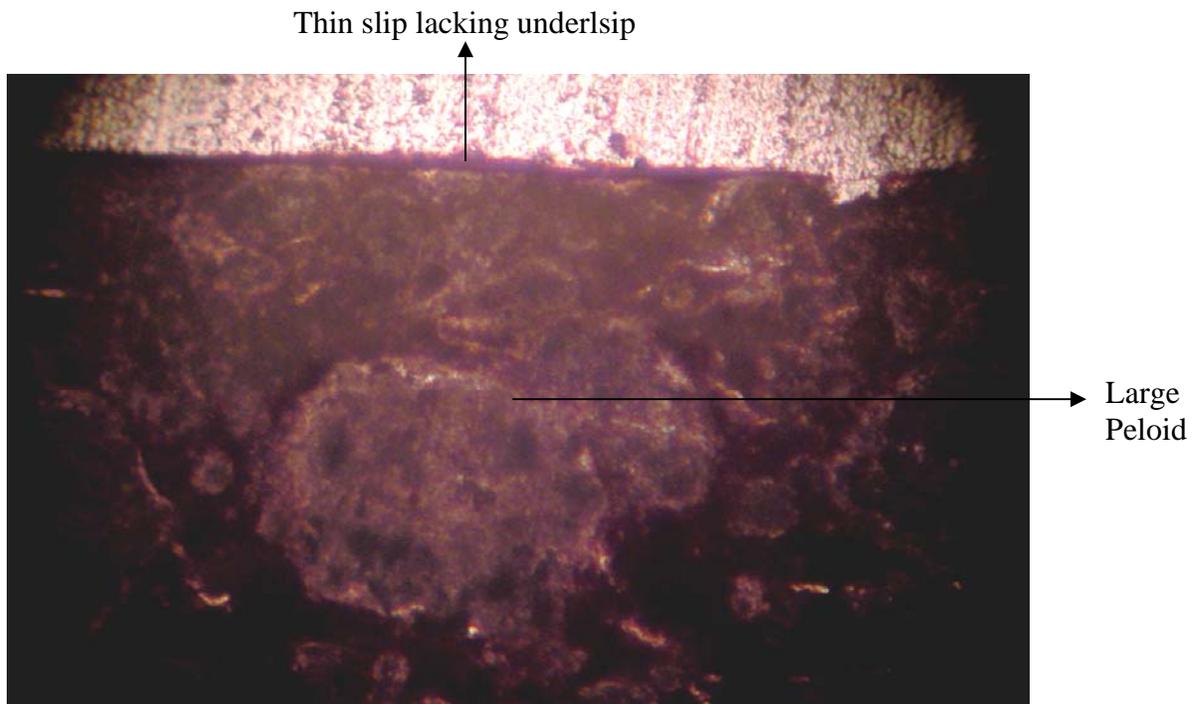


Figure 7.10 Thin section of Aguila Orange composite bowl form in plain polarized light at 150x magnification showing lack of underslip. Petrographic Paste Variant 3, Groundmass Type 5 (photo by author)

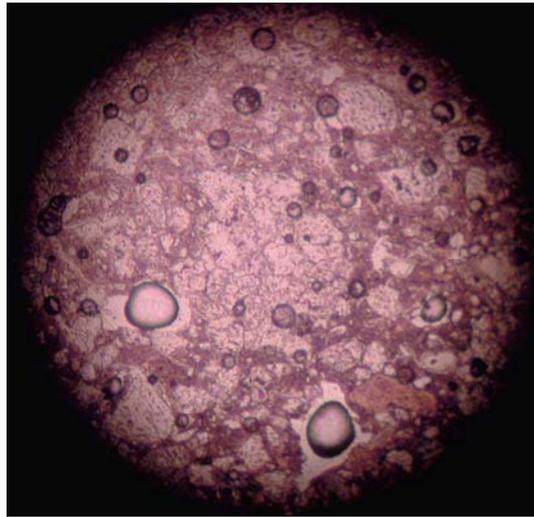


a

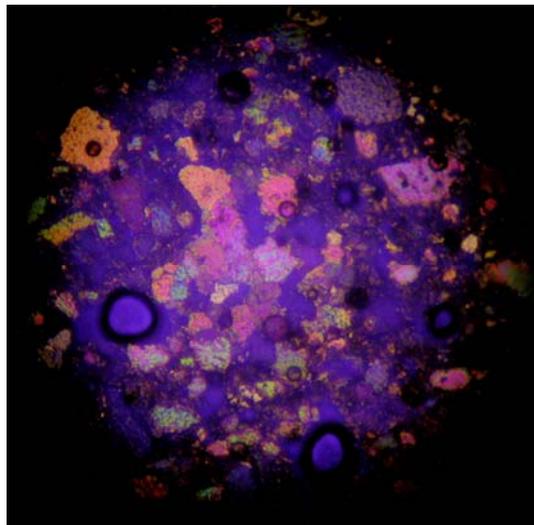


b

Figure 7.11 Comparison of cross sections with and without underslip using the stereo microscope at 70x magnification (a, early facet Early Classic Aguila Orange flaring bowl form lacking underslip; b, late facet Early Classic Aguila Orange composite form with thick cream underslip and thin orange slip) (photos by author)



a



b

Figure 7.12 Iridescent birefringence colors of sparitic calcite in one Ixcario composite bowl type-form (a, plain polarized light; b, cross polarized light). Petrographic Paste Variant 1, Groundmass Type 3. Note the extreme iridescence of sparitic calcite grains under cross polarized light (photos by author)

## CHAPTER VIII

### INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS

#### Introduction

The objectives of the Instrumental Neutron Activation Analysis (INAA) were to 1) characterize the chemical composition of the pastes used to fashion monochrome red, monochrome orange, and painted orange ceramics in the study, 2) based on the chemical analysis, identify any clays used exclusively to make pottery of the orange traditions, 3) relate the results to the petrographic and stereo-microscope data, and 4) identify any potential patterns of trade and exchange both within and outside of the Holmul Region. INAA took place at the Archaeometry Laboratory Research Reactor at the University of Missouri, Columbia or the Missouri University Research Reactor (MURR). The analysis was subsidized as part of a special grant from the National Science Foundation to MURR which significantly cut the costs of the procedure. Analysis was conducted and interpreted by Drs. Jeffery Ferguson and Michael D. Glascock of MURR. The ninety four samples used in the petrographic analysis were also used in INAA.

Procedures used in INAA at MURR for preparing samples, irradiating samples, measuring elemental quantities, and interpreting data are explained fully by Glascock (1992) and Ferguson and Glascock (2008:2-6) in their laboratory report, but I will briefly summarize them here. Sample preparation begins with 1 cm<sup>2</sup> piece of ceramic material. All sides of the ceramic are ground down using a silicon carbide burr which removes all outside traces of slip and soil in an effort to reduce contamination of the true paste. The samples were then washed in deionized

water, dried, and subsequently ground into powder to homogenize the paste mix. Two samples were prepared from each piece of ceramic material using the ground powder. One sample of 150mg was weighed and placed into a clean high-density polyethylene vial that would be used for short irradiation while another 200mg sample was weighed and placed into a clean high-purity quartz vial for use in long irradiation. Both vials were then sealed prior to irradiation. A set of both unknown and known clay and rock standards were similarly prepared for use as control samples to check against the elemental compositions of the samples under study. This would ensure the equipment was working properly and the results would be accurate.

The two powder samples from each piece of ceramic material were then subjected to two irradiation sequences: one short and lasting 5 seconds and another long lasting 24 hours. A gamma count was performed on the short-term irradiated samples for 720 seconds immediately after irradiation. This count provided measurement of nine short-lived elements including aluminum (Al), barium (Ba), calcium (Ca), dysprosium (Dy), potassium (K), manganese (Mn), sodium (Na), titanium (Ti), and vanadium (V). The long-term irradiated samples were subjected to two counts: one count occurred after 7 days which lasted 1800 seconds and was designed to detect the elements arsenic (As), lanthanum (La), lutetium (Lu), neodymium (Nd), samarium (Sm), uranium (U), and ytterbium (Yb), and one count occurring after a 3 to 4 week decay lasting 8500 seconds and designed to detect the long half-life elements cerium (Ce), cobalt (Co), chromium (Cr), cesium (Cs), europium (Eu), iron (Fe), hafnium (Hf), nickel (Ni), rubidium (Rb), antimony (Sb), scandium (Sc), strontium (Sr), tantalum (Ta), terbium (Tb), thorium (Th), zinc (Zn), and zirconium (Zr). Elemental concentrations were tabulated for each sample in parts per million, standardized, and interpreted using a variety of statistical techniques including Principal Component Analysis and Mahalanobis distances.

## **Results of INAA**

The results of INAA on the one hundred and two samples from this study are presented in Table 8.1. The analysis separated the samples into three larger paste groups based upon elemental concentrations of strontium, calcium, and chromium (Figures 8.1 and 8.2). Thirteen samples (approximately 13%) were labeled “unassigned”. However, in their final report Ferguson and Glascock (2008:13) state that most of these samples are related to the three established compositional groups, but that smaller concentrations of other elements preclude them from a comfortable inclusion in those groups. Demonstrated in Table 8.1, the INAA and petrographic data correlated directly to one another in all but one instance (HRG095, sherd 853, an Actuncan composite bowl). The compositional groups and their sample members are described below.

Table 8.1 Stereo-microscopic, petrographic, and INAA data

MURR#	SHERD #	CONTEXT	TV:F	STEREO.	PET.	G-MASS	INAA
HRG014	2033	HOL.T.71.01	Ixcanrio	White calcite	Peloid	5	1
HRG100	918	CLT.02.14	Actuncan	Gray calcite	Peloid	5	1
HRG071	467	KOL.T.13.04	Aguila:RZ	Gray calcite	Peloid	5	1
HRG075	891	BLDG.B.L.	Aguila:RZ	Gray calcite	Peloid	5	1
HRG078	948	KOL.T.10.02	Aguila:RZ	Gray calcite	Peloid	5	1
HRG067	1900	SLT.25	Aguila:RZ	Gray calcite	Peloid	5	1
HRG068	1904	SUF.T.12.04	Aguila:RZ	Gray calcite	Peloid	5	1
HRG069	2037	HOL.T.71.01	Aguila:RZ	Gray calcite	Peloid	5	1
HRG007	932	SUF.T.37.03	Boleto	Gray calcite	Peloid	5	1
HRG001	1136	HOL.LT.63.01	Boleto	Gray calcite	Peloid	5	1
HRG003	1954	HM.LT.01	Boleto	Gray calcite	Peloid	5	1
HRG004	1959	HM.LT.01	Boleto	Gray calcite	Peloid	5	1
HRG010	1939	GII.STR.F.L-6	Boleto	Gray calcite	Peloid	5	1
HRG025	193	HOL.T.49.23	Sierra:F	Gray calcite	Peloid	5	1
HRG033	518A	KOL.T.13.03	Sierra:F	Gray calcite	Peloid	5	1
HRG047	170	HOL.T.49.13	Sierra:FIR	Gray calcite	Peloid	5	1
HRG050	297	ST.08.08	Sierra:FIR	Gray calcite	Peloid	5	1
HRG060	883	HOL.T.63.01	Aguila:F	Gray calcite	Peloid and bioclasts	5	1
HRG064	980	HOL.T.49.04	Aguila:F	Gray calcite	Peloid and bioclasts	5	1
HRG070	282	CIV.T.12.10	Aguila:RZ	Gray calcite	Peloid and bioclasts	5	1
HRG072	502	KOL.T.13.05	Aguila:RZ	Gray calcite	Peloid and bioclasts	5	1
HRG073	847	ST.10.09	Aguila:RZ	Gray calcite	Peloid and bioclasts	5	1
HRG076	892	BLDG.B.L.	Aguila:RZ	Gray calcite	Peloid and bioclasts	5	1
HRG005	869	HOL.T.49.13	Boleto	Gray calcite	Peloid and bioclasts	5	1
HRG009	943	HOL.T.49.04	Boleto	Gray calcite	Peloid and bioclasts	5	1
HRG012	905	HOL.T.49.13	Boleto	Gray calcite	Peloid and bioclasts	5	1
HRG011	1940	GII.STR.F.L-6	Boleto	Gray calcite	Peloid and bioclasts	5	1
HRG061	893	BLDG.B.L.	Aguila:F	Crystal calcite and orange sherd	Peloid and sherd	5	1
HRG013	2032	HOL.T.71.03	Ixcanrio	Crystal calcite and orange sherd	Peloid and sherd	5	1
HRG098	871	HOL.T.56.01	Actuncan	Gray calcite	Peloid and bioclasts	5	1

Table 8.1 cont'd

HRG066	885	HOL.L.63.01	Aguila: P	Ash	Ash	1	2
HRG099	872	ST.19.04	Actuncan	Ash	Ash	1	2
HRG101	931	SUF.T.26.00	Actuncan	Ash	Ash	1	2
HRG094	1955	HM.LT.01	Actuncan	Ash	Ash	1	2
HRG008	941	SUF.L.08.00	Boleto	Gray calcite	Sparite	2	3
HRG002	1816	SUF.T.26.03	Boleto	Gray calcite	Sparite	2	3
HRG046	169	HOL.T.49.13	Sierra:FIR	Crystal calcite	Sparite and sherd	2	3
HRG016	870	HOL.T.41.04	Ixcantio	Crystal calcite and gray sherd	Sparite and sherd	2	3
HRG018	922	HOL.T.41.06	Ixcantio	Crystal calcite and gray sherd	Sparite and sherd	3	3
HRG045	168	HOL.T.49.13	Sierra:FIR	Crystal calcite and gray sherd	Sparite and sherd	3	3
HRG097	855	HOL.T.49.16	Actuncan	Crystal calcite and orange sherd	Sparite and sherd	2	3
HRG029	304	ST.08.08	Sierra:F	Crystal calcite	Sparite	2	3a
HRG020	148	SUF.T.26.11	Sierra:F	Crystal calcite	Sparite	2	3a
HRG062	969	HOL.T.56.01	Aguila:F	Crystal calcite and white calcite	Sparite	3	3a
HRG065	997	HOL.T.49.14	Aguila:F	Crystal calcite and white calcite	Sparite	3	3a
HRG022	181	HOL.T.49.16	Sierra:F	Crystal calcite and gray sherd	Sparite and sherd	4	3a
HRG034	524	KOL.T.03.05	Sierra:F	Crystal calcite and orange sherd	Sparite and sherd	2	3a
HRG052	482	KOL.L.2.00	Sierra:FIR	Crystal calcite and orange sherd	Sparite and sherd	2	3a
HRG006	876	BLDG.B.L	Boleto	Gray calcite	Crypto-crystalline	1	3b
HRG028	3	CIV.T.08.01	Sierra:F	Crystal calcite	Sparite	2	3b
HRG093	713	CIV.T.22.06	Sierra:LA	Crystal calcite	Sparite	2	3b
HRG074	874	HOL.T.41.04	Aguila:RZ	Crystal calcite	Sparite	3	3b
HRG031	512	KOL.T.10.04	Sierra:F	Crystal calcite	Sparite	3	3b
HRG043	138	SUF.T.28.06	Sierra:FIR	Crystal calcite	Sparite	2	3b
HRG091	525	KOL.T.03.05	Sierra:LA	Crystal calcite	Sparite	2	3b
HRG030	488	KOL.T.06.04	Sierra:F	Crystal calcite	Sparite	3	3b
HRG096	854	HOL.T.49.23	Actuncan	Crystal calcite and white calcite	Crypto-crystalline	1	3b
HRG019	929	KOL.T.13.05	Ixcantio	Crystal calcite and white calcite	Sparite	3	3b
HRG026	1948	CIV.T.30.04	Sierra:F	Crystal calcite and gray sherd	Sparite and sherd	3	3b
HRG054	517A	KOL.T.10.04	Sierra:FIR	Crystal calcite and gray sherd	Sparite and sherd	3	3b
HRG086	18	ST.19.05	Sierra:LA	Crystal calcite and gray sherd	Sparite and sherd	3	3b
HRG092	596	CIV.T.22.05	Sierra:LA	Crystal calcite and gray sherd	Sparite and sherd	3	3b
HRG041	99	ST.08.55	Sierra:F	Crystal calcite and orange sherd	Sparite and sherd	3	3b
HRG021	156	CIV.T.22.08	Sierra:F	Crystal calcite and orange sherd	Sparite and sherd	3	3b

Table 8.1 cont'd

HRG057	88A	ST.08.05	Sierra:FIR	Crystal calcite and orange sherd	Sparite and sherd	3	3b
HRG088	1957	CAR.STR3.LT.01	Sierra:LA	Crystal calcite and orange sherd	Sparite and sherd	3	3b
HRG063	976	HOL.T.56.01	Aguila:F	Crystal calcite	Sparite	2	3c
HRG048	1827	CIV.T.30.04	Sierra:FIR	Crystal calcite	Sparite	2	3c
HRG102	936	HOL.T.49.17	Actuncan	Crystal calcite	Sparite	4	3c
HRG055	6	ST.07.09	Sierra:FIR	Crystal calcite	Sparite and sherd	2	3c
HRG038	700A	CIV.T.22.01	Sierra:F	Crystal calcite	Sparite	2	3c
HRG049	281	CIV.T.16.03	Sierra:FIR	Crystal calcite and gray sherd	Sparite and sherd	2	3c
HRG035	567	ST.19.04	Sierra:F	Crystal calcite and gray sherd	Sparite and sherd	3	3c
HRG044	166	HOL.T.49.10	Sierra:FIR	Crystal calcite and orange sherd	Sparite and sherd	2	3c
HRG051	428	CIV.T.33.01	Sierra:FIR	Crystal calcite and orange sherd	Sparite and sherd	2	3c
HRG059	1222	HOL.T.41.04	Aguila:F	Crystal calcite and orange sherd	Sparite and sherd	3	3c
HRG089	412	CIV.L.06.00	Sierra:LA	Crystal calcite and orange sherd	Sparite and sherd	4	3c
HRG090	481	KOL.L.02.00	Sierra:LA	Crystal calcite and orange sherd	Sparite and sherd	4	3c
HRG087	1956	CIV.L.06.00	Sierra:LA	Crystal calcite and orange sherd	Sparite and sherd	4	3c
HRG095	853	ST.19.04	Actuncan	Gray calcite and white calcite	Ash	1	3c
HRG027	199	HOL.T.49.23	Sierra:F	Crystal calcite	Sparite	2	3c
HRG058	1002	HOL.T.49.10	Aguila:F	Gray calcite	Peloid	5	Unas
HRG077	937	ST.20.22	Aguila:RZ	Gray calcite	Peloid	5	Unas
HRG056	673	CIV.T.22.05	Sierra:FIR	Gray calcite	Peloid	5	Unas
HRG037	65	SUF.L.17.00	Sierra:F	Gray calcite	Peloid and bioclasts	5	Unas
HRG042	1206	KOL.T.03.04	Sierra:FIR	Crystal calcite	Sparite	3	Unas
HRG023	182	HOL.T.49.16	Sierra:F	Crystal calcite	Sparite and sherd	2	Unas
HRG053	49A	CIV.T.30.04	Sierra:FIR	Crystal calcite	Sparite	2	Unas
HRG024	1875	CIV.T.16.03	Sierra:F	Crystal calcite and gray sherd	Sparite and sherd	3	Unas
HRG015	862	BLDG.B.RM.1	Ixcanrio	Crystal calcite and orange sherd	Peloid and sherd	5	Unas
HRG039	73	HOL.LT.63.01	Sierra:F	Crystal calcite and orange sherd	Sparite and sherd	4	Unas
HRG032	513A	KOL.T.10.04	Sierra:F	Ash and crystal calcite	Ash and Sparite	2	Unas
HRG036	603	CIV.T.22.05	Sierra:F	Ash and crystal calcite	Ash and Sparite	3	Unas
HRG040	956	ST.21.13	Sierra:F	Ash and crystal calcite	Sparite	3	Unas

### *Group 1*

Group 1 contains thirty one samples and is characterized chemically by high strontium and high calcium values (Figures 8.1 and 8.2). Petrographically, samples in this chemical composition group correspond to samples containing peloid inclusions (Table 8.2). These samples are also characterized by a peloid and clay groundmass, or Type 5 groundmass (Table 8.3). The majority of Group 1 pastes belong to ceramics of the orange monochrome and orange painted traditions (Table 8.4). However, there is also a small number of monochrome red ceramic material within Group 1. This data complements the petrographic data perfectly. Ferguson and Glascock (2008:12, 15) note that aside from the high level of strontium, the elemental concentrations of Group 1 and Group 3 material are very similar. The difference in strontium levels may be due to the presence of peloid calcite in the Group 1 material and the lack of peloid calcite and presence of sparitic calcite in Group 3 material. Despite the similarities in other elemental concentrations, Ferguson and Glascock (*ibid*) believe the difference in strontium concentrations is so great between Groups 1 and 3 that it warrants separation into two separate groups. Because of their frequency and similarity in elemental concentrations other than strontium to Group 3 material, it is more than likely that this paste was fashioned from clay and potentially temper from within the Holmul area.

Table 8.2 INAA and petrographic groups

Petrographic Groups	Group 1	Group 2	Group 3	Unassigned
Sparitic calcite			19	3
Sparitic calcite and sherd			25	3
Peloid calcite	17			3
Peloid calcite and bioclasts	11			1
Peloid calcite and sherd	2			1
Crypto-crystalline calcite			2	
Ash		3		1
Ash and sparitic calcite				2

Table 8.3 INAA and groundmass groups

Groundmass	Group 1	Group 2	Group 3	Unassigned
Clay		3	3	
Spherical Sparite			22	3
Sub-spherical sparite			18	4
Iridescent sparite streams			5	1
Clay and peloids	30			5

Table 8.4 INAA groups and type-forms

Type-Forms	Group 1	Group 2	Group 3	Unassigned
Sierra Flaring	2		13	7
Sierra Incurving Rim	2		11	3
Sierra Composite			8	
Aguila Flaring	3		4	1
Aguila Composite	10		1	1
Boleto	9		3	
Actuncan	2	3	4	
Ixcanrio	2		3	1

## *Group 2*

Group 2 was comprised of only four samples. It is characterized chemically by low levels of calcium and low levels of chromium in comparison to Groups 1 and 3 (Figures 8.1 and 8.2). Petrographically, Group 2 material is characterized by ash temper and the lack of calcite inclusions of any kind (Table 8.2). The lack of calcite would surely explain the low levels of calcium in these types of ceramics. Group 2 ceramics are also characterized by a pure clay groundmass (Table 8.3). Group 2 ceramics are composed of Actuncan composite bowls and one Aguila Orange plate with supports that was seen to have ash temper in both the stereo-microscope and petrographic analyses. This one sample (HRG066, sherd #885) was not discussed in the modal and petrographic analyses described in chapters 6-7 because of its form. However, I included the sherd in the paste study because of its clear Terminal Preclassic period form, surface treatment, and archaeological context – a fragment of a plate with large hollow supports and orange slip that was discovered in the room fill of Building B, Group 2 at Holmul. Ferguson and Glascock did not provide enough information in their report to make any conclusions about the origins of the clay used to fashion ceramics belonging to Group 2, and consequently, the ash tempered petrographic and stereo-microscopic groups. At this point I cannot say if the vessels themselves were imported into the region or made within the region using local or foreign clays and temper. Because of the presence of ash temper, it is likely that some aspect of the production and exchange of polychrome vessels belonging to Group 2, or the ash tempered petrographic group, involved some kind of foreign trade. Furthermore, using the Mahalanobis distance method, Ferguson and Glascock (2008:16-17) found that none of the samples in Group 2 had a high probability of inclusion within either Groups 1 or 3, lending further support to notion that they clearly come from different sources.

### *Group 3*

Group 3 material is the most abundant and is comprised of forty seven sherds. Group 3 is largely characterized chemically of sherds containing high concentrations of calcium and low concentrations of strontium in comparison to sherds of Group 1 (Figures 8.1 and 8.2). Petrographically, Group 3 is characterized by sherds with sparitic calcite as their major inclusion (Table 8.2). These sherds also have a sparitic calcite, or in rare instances, a clay based groundmass (Table 8.3). As the petrographic data revealed in chapter 7, the majority of these ceramics are classified within the Sierra Red Group, but also crosscut every other type-form (Table 8.4). Because of the size of Group 3, Ferguson and Glascock tried to narrow down samples in the group into further sub-groups based on chromium and thorium concentrations (Figure 8.3). Unfortunately, this did not reveal any more significant patterning among the sherds within Group 3. Petrographically, the sherds still fall within the sparitic calcite variants (Table 8.5) with groundmasses also based upon sparitic calcite that do not seem to reveal much patterning (Table 8.6). A correlation of type-forms to chemical groups does reveal some interesting patterns (Table 8.7). It appears that if ceramics of the orange traditions are produced using Group 3 or sparitic calcite pastes they are primarily characterized by Group 3b pastes and on the rare occasion Group 3c pastes. Again, it appears that Actuncan composite bowls contain the most diverse paste recipes – a finding which complements my findings from the modal analysis with stereo-microscope and petrographic analysis. As with Group 1 material, because of the large number of Group 3 sherds and their similarity in other elemental concentrations to Group 1 material (aside from their lower levels of strontium), it may be safe to assume that these pastes were fashioned from clay and temper from within the Holmul Region.

Table 8.5 INAA Group 3 sub-groups and petrographic groups

Petrographic Groups	Group 3a	Group 3b	Group 3c	Unassigned
Sparitic calcite	4	8	5	2
Sparitic calcite and sherd	3	8	9	5
Peloid calcite				
Peloid calcite and bioclasts				
Peloid calcite and sherd				
Crypto-crystalline calcite		2		
Ash			1	
Ash and sparitic calcite				

Table 8.6 INAA Group 3 sub-groups and groundmass groups

Groundmass	Group 3a	Group 3b	Group 3c	Unassigned
Clay		2	1	
Spherical Sparite	4	4	8	5
Sub-spherical sparite	2	12	2	2
Iridescent sparite streams	1		4	
Clay and peloids				

Table 8.7 INAA Group 3 sub-groups and type-form

Type-Forms	Group 3a	Group 3b	Group 3c	Unassigned
Sierra Flaring	4	6	3	
Sierra Incurving Rim	1	3	4	2
Sierra Composite		5	3	
Aguila Flaring	2		2	
Aguila Composite		1		
Boleto		1		2
Actuncan		1	2	1
Ixcario		1		2

### *Unassigned Group*

As I discussed earlier, thirteen sherds were grouped in the unassigned category. These samples appear as “+” and “x” symbols in Figures 8.1 and 8.2 respectively. Also noted earlier, while Ferguson and Glascock (2008:13) placed these samples in the unassigned category they believed these samples were almost similar enough to the three established groups, but not enough to warrant definite inclusion. Petrographically, unassigned samples consist of ceramics with sparitic calcite, peloid calcite, and ash and sparitic calcite based clays (Table 8.8). What is most interesting here is the ash and sparitic based clays. None of these samples were separated into any of the other established three groups and could indicate exchange from outside the Holmul Region. It is interesting that these ceramics do not belong to the orange traditions, but the red tradition (Table 8.1). Only one polychrome sherd was placed in the unassigned group, an Ixcario sherd with peloid and sherd based paste (see Table 8.1). This is also a rare form of paste recipe in the Holmul Region and could also indicate outside exchange.

**Table 8.8 Unassigned and petrographic groups**

<b>Petrographic Groups</b>	<b>Unassigned</b>
<b>Sparitic calcite</b>	3
<b>Sparitic calcite and sherd</b>	3
<b>Peloid calcite</b>	3
<b>Peloid calcite and bioclasts</b>	1
<b>Peloid calcite and sherd</b>	1
<b>Crypto-crystalline calcite</b>	
<b>Ash</b>	
<b>Ash and sparitic calcite</b>	2

## Discussion

INAA created three composition groups based upon elemental concentrations and more specifically concentrations of strontium, chromium, and calcium. Like the modal analysis with stereo microscope and the petrographic analysis, INAA did not reveal any conclusive signs of restricted paste recipes based upon chemical concentrations. While pastes belonging to Groups 1 and 2 may have been more often selected by potters to produce ceramics of the orange traditions, they were by no means exclusive to the orange traditions. As the modal analysis, petrographic analysis, and now INAA show, some Sierra Red material was produced using pastes containing peloid calcite and ash (pastes from Groups 1 and 2 respectively). This shows signs of limited continuity between the production of monochrome red ceramics and orange ceramics and indicates potters may have had access to and exploited the same resources to make these ceramics on occasion, or they may have been made by the same producers. The INAA data also reflect the diversity in pastes used by potters to produced ceramics of the orange traditions. Composite bowls of the monochrome and painted orange type-forms were produced using a variety of paste recipes including all three composition groups. As I demonstrated with the modal analysis, the most diverse pastes come from Actuncan Polychrome composite bowls and the least diverse from Aguila orange composite bowls, with Boleto Black-on-Orange composite bowls and Sierra Red flaring and composite bowls trailing close behind. These data suggest that the paste preparation stage of the production process of polychrome ceramics was the product of multiple production units and was not necessarily more specialized or restricted than the paste preparation for red ceramics.

It is possible that the variation in polychrome material could have been the result of multiple production units outside of the Holmul Region, yet still restricted within their respective

production areas. The INAA data only partially supports this hypothesis. The data suggest that the ash tempered polychromes may have been produced outside the Holmul Region or within the region using imported clay or temper. However, because of the great similarity in elemental concentrations other than strontium, it is more than likely that orange and red ceramics of Group 1 and 2 compositions were made within the same resource procurement zone. Owing to the large majority of these ceramics found within the Holmul Region, it is more than likely that their manufacture was local. Therefore, orange ceramics may have been made by many producers within the region – or at least their paste preparation was not restricted. This hypothesis is strengthened when Ferguson and Glascock (2008:17) compared the Holmul samples to other samples in the MURR database and found surprisingly few compositional matches. The closest matches came from ceramics collected from the Peten Lakes Region of Guatemala. Ferguson and Glascock (*ibid*) believe the most likely reason for the lack of matches is that the MURR database presently contains few samples from the northeastern Peten area. However, this also does not preclude relatively localized production and exchange of red and orange material within the Holmul Region. Only more sampling in the area, as well as comparison to material in other INAA databases, will aid in formulating clearer patterns regarding trade and exchange between the Holmul Region and other areas during the Late Preclassic, Terminal Preclassic, and early facet Early Classic periods.

In the previous chapter I demonstrated how data from the modal analysis complemented data from the petrographic analysis. That is, optical characteristics of inclusions seen with the stereo microscope were largely reflected in mineralogical characteristics when viewing pastes using a petrographic microscope. The same holds true for petrographic analysis and INAA. The compositional reference groups created by Ferguson and Glascock using INAA directly reflect

differences in the primary paste inclusions identified in the petrographic analysis: those inclusions and groups are once again Group 1/peloid calcite, Group 2/ash, and Group 3/sparitic calcite. The diversity in paste recipes within each type-form was similarly reflected in all three levels of the three-tiered analysis.

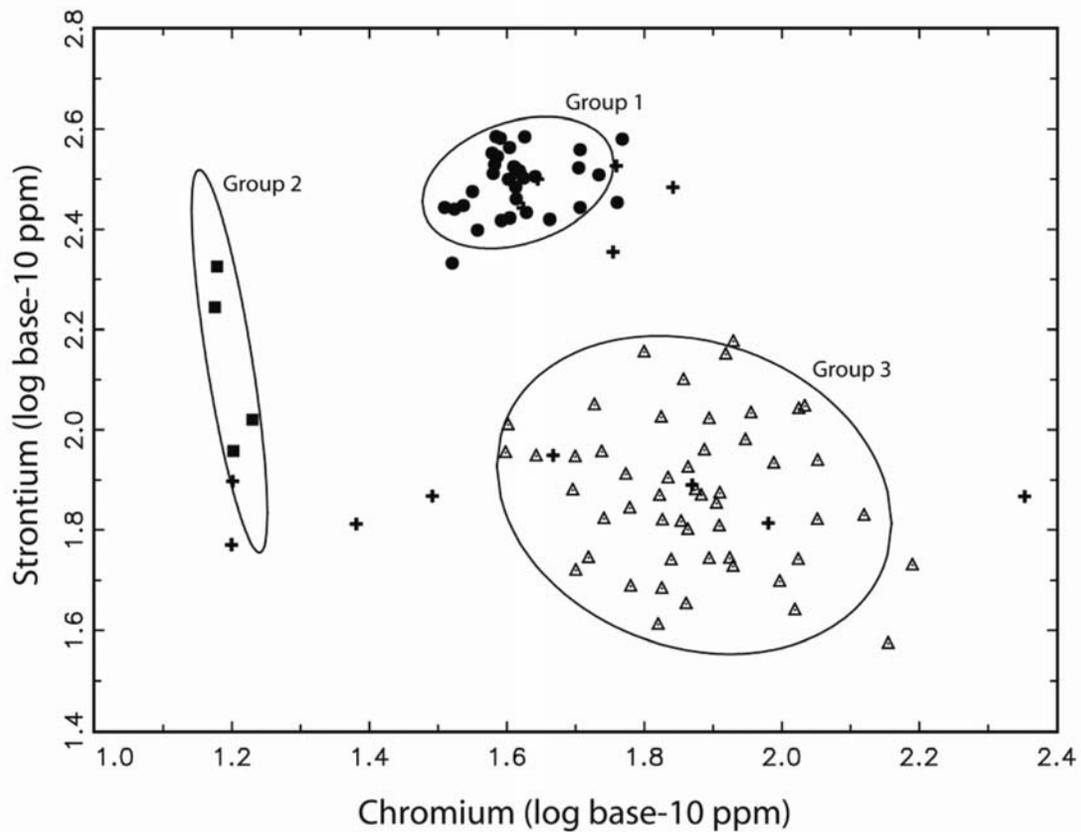
It is important to note that while these three methods produce results that seem to reflect the findings of one another, they are most valuable when used together and not in opposition or as a substitute for one another. These methods measure different aspects of the pastes under study: namely, modal stereo-microscopic analysis measures simple optical properties of inclusions and groundmass, petrography measures mineralogical properties of inclusions and groundmass, and INAA measures chemical or elemental properties of inclusions and groundmass. There are advantages and disadvantages to each approach as well as specific shortcomings. For example, it is not difficult for an analyst to classify an inclusion incorrectly based upon color or perceived structure using the stereo microscope. I misclassified crystalline calcite as gray calcite a number of times in the present analysis. A similar problem occurred in the petrographic analysis when I misclassified one Actuncan composite sherd with sparitic calcite-based paste as having an ash-based paste. Finally, as concerns INAA, despite previous (Neff, Bishop, and Arnold 1988; Neff, Bishop, and Sayre 1988, 19819) and more recent (Neff et. al. 2006) discussions discounting the affect of the elemental make-up of inclusions or “temper” upon chemical paste composition, it appears, at least from the present analysis, that the inclusions within the pastes of the samples used for this study may have influenced placement in paste composition groups. We are reminded of this fact by Ferguson and Glascock’s (2008:15) observations, “The two main groups in this study (Groups 1 and 3) are very similar in their composition, with the exception of strontium...Considering that these two groups are

dramatically different in the concentration of only one element (Sr), it is not surprising that there is considerable overlap between the groups in the probabilities of membership calculated using all of the elements". In this case, the specific inclusion potentially causing the spike in strontium levels may be peloid calcite. However, it is also possible that 1) the pure clay groundmass used by potters in conjunction with peloid inclusions contained a high strontium concentration on its own prior to addition of peloid temper or 2) the naturally occurring clay including peloid inclusions is simply higher in strontium concentrations. Only future analysis of both ceramics and clays from the Holmul Region can shed light on these findings.

## **Conclusions**

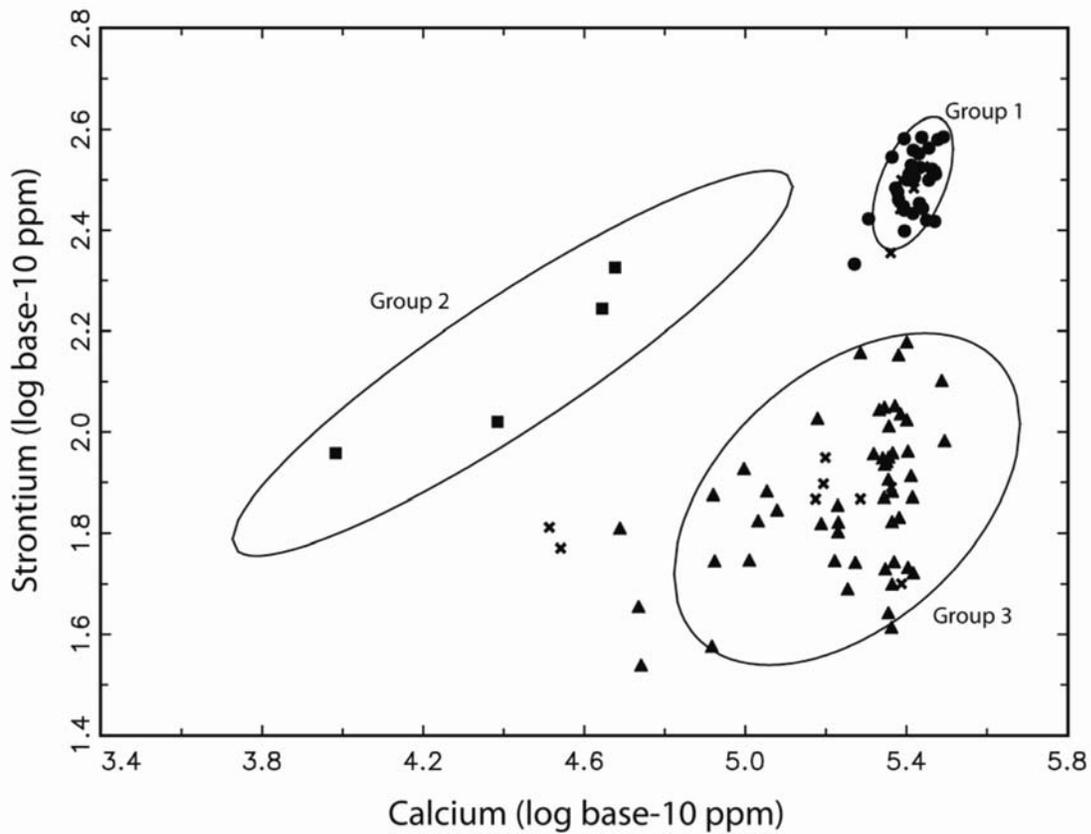
To briefly conclude, INAA revealed three distinct groups of paste composition. These groups associate directly with larger petrographic and stereo-microscopic paste groups that I discussed in previous chapters: namely, Group 1/peloid calcite/gray calcite, Group 2/ash/ash, and Group 3/sparitic calcite/crystalline calcite. Like the modal and petrographic analysis, INAA revealed no clear signs of restricted paste recipes. Instead it revealed some continuity between monochrome red, monochrome orange, and painted orange ceramics. However, orange ceramics were primarily fashioned out of pastes belonging to Group 1 and Group 2 while red ceramics were produced with pastes of Group 3. INAA also reflected patterns of diversity that I discussed previously in chapter 6: namely, polychrome ceramics appear to contain the most paste recipes while monochrome orange ceramics contain the least. This could indicate polychrome material was produced by many producers or at least that the process of production may have been segmented, with paste preparation not subject to restriction for both orange and red ceramics. INAA also revealed that the majority of pastes used to make both red and orange material may

have come from within the Holmul Region, with the exception of ash tempered ceramics. While no clear matches for Holmul material were found in the MURR database, this could be a factor of the small number of ceramic samples from central and eastern Peten sites in the database at this time and not a true indicator of a lack of interregional trade and exchange. Finally, it appears that data from INAA reflect patterns that I previously discussed regarding stereo-microscopic and petrographic data, thus strengthening support for the three-tiered model of paste analysis.



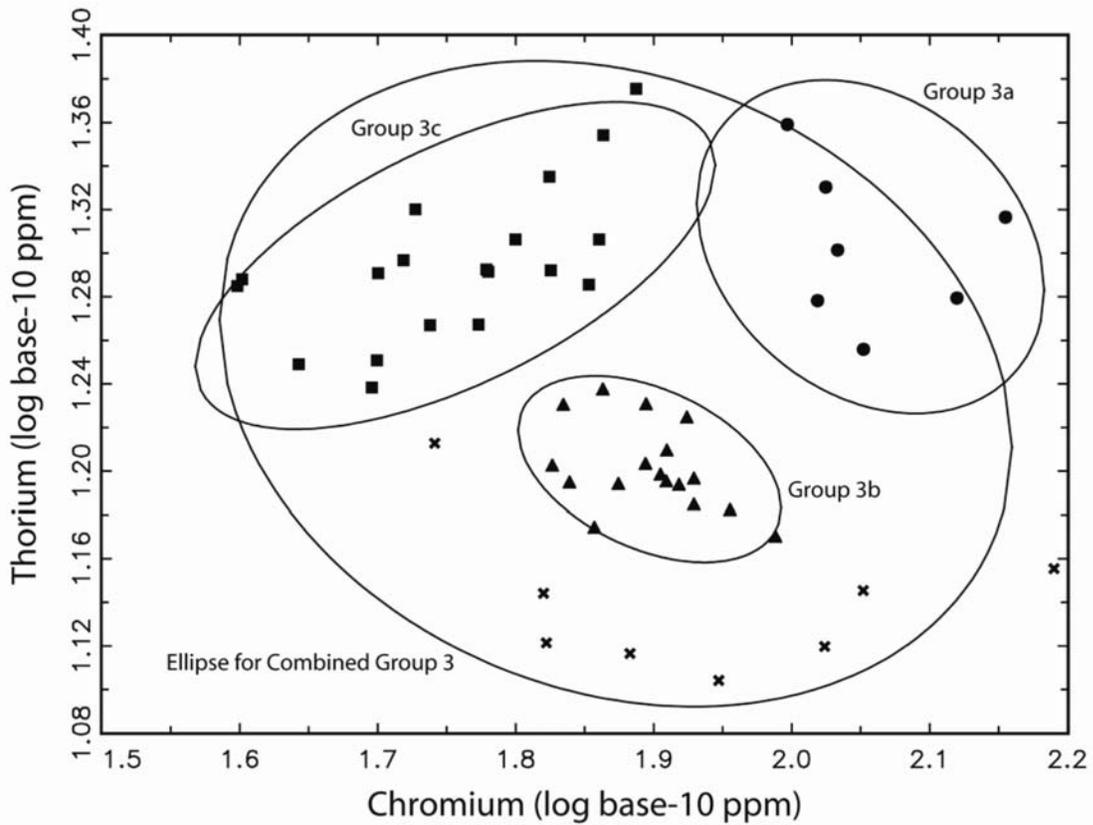
*Bivariate plot of strontium and calcium-corrected chromium base-10 logged concentrations showing the three compositional groups and the unassigned samples (plotted with a "+" symbol). Ellipses represent a 90% confidence level for membership in the group.*

Figure 8.1 INAA paste groups as determined by concentrations of chromium and strontium (Ferguson and Glascock 2008; Figure 1)



*Bivariate plot of uncorrected calcium and strontium base-10 logged concentrations showing all three compositional groups. Unassigned samples are plotted with an "x" symbol. Ellipses represent a 90% confidence level for membership in the group.*

Figure 8.2 INAA paste groups as determined by concentrations of calcium and strontium (Ferguson and Glascock 2008; Figure 2)



*Bivariate plot of chromium and thorium base-10 logged concentrations showing the three subgroups of compositional Group 3. The Group 3 members not assigned to a subgroup are plotted with an "x" symbol. Ellipses represent a 90% confidence level for membership in the group.*

Figure 8.3 Sub-groups of INAA paste group 3 as determined by concentrations of chromium and thorium (Ferguson and Glascock 2008; Figure 3)

## CHAPTER IX

### SYNTHESIS AND CONCLUSIONS

#### **Synthesis of Research**

Using the lens of ritual economy, I have argued that orange slipped pottery of the Terminal Preclassic period originally gained its value through its use in potential “diacritical” elite feasting events in the northeastern and central Maya lowlands. Through its association with such symbolically charged foods as chocolate and corn tamales, these vessels would have gained value during the instances in which they were employed as serving ware within feasting rituals. Elites may have recognized this aspect of feasting and worked within the social parameters of these rituals ultimately to transform these events to reaffirm their own position in the social spectrum through innovations in performance and ceramic technology. A critical rule of the feasts may have been the inclusion of foods made from chocolate and corn, but the manner in which this food was served could have been altered. Therefore, the new or previously less frequently used forms of orange slipped pottery from the Terminal Preclassic period may have represented a change in the performance surrounding the serving of chocolate and corn food during these feasts. The forms and surface decoration on orange slipped pottery of this time also may have represented new expressions of political identities or even ideologies transmitted by elites in these small feasting events during a turbulent political period in the Maya lowlands.

A major goal of this study was to identify and quantify production technologies between the orange slipped traditions of the Terminal Preclassic and early facet Early Classic periods and the red monochrome tradition of the Late Preclassic. The ceramic analysis revealed four

statistically significant markers of new technologies (aside from painting) associated with the orange slipped traditions of pottery from the Terminal Preclassic and early facet Early Classic periods in the Holmul Region. The first concerned the frequent of a light firing paste-recipe that included spherical gray calcite peloids often mixed with calcite bioclasts. New or different firing technologies were possibly evidenced in the lower occurrence of firing cores and firing clouds on interior and exterior surfaces of sherds and vessels belonging to orange traditions of the Terminal Preclassic and early facet Early Classic periods versus the red monochrome tradition of the Late Preclassic period. Slip color was also quantifiably different between orange slipped material of the Terminal Preclassic and early facet Early Classic periods falling within the range of 2.5YR5/8 and 5YR5/8 whereas red ceramics usually fell within the range of 10R4/8 and 2.5YR4/8.

Another goal of this research was to understand the degree of restriction of technologies associated with the orange slipped traditions versus the red traditions. Separate richness and evenness analyses of paste-variants within the flaring bowl shape-class of red and orange traditions suggest that red monochrome ceramics were produced using more recipes than ceramics of the orange traditions. This may reflect the number of production units involved in the production of these two traditions of ceramics and correlate to red monochrome ceramics being made by more production units than orange ceramics. This could, in turn, also lead to the assumption that the production of orange slipped ceramics was more specialized than red slipped ceramics. However, diversity analyses of paste variant data for composite bowl forms of red and orange traditions did not maintain this trend. One of the more surprising aspects of the study was that the orange slipped polychrome type-forms of Actuncan composite bowls and Ixcario composite bowls were made from many different recipes. These findings suggest that this type

of pottery may also have been made by many producers within a system of segmented production, and it calls into question the restricted nature of the paste technology used to make these vessels.

The study suggests that many of these technologies arose out of pre-existing technologies in the Holmul Region. The light firing color paste-variant with its spherical gray peloids associated with orange slipped pottery was also found in a small quantity of Sierra Red vessels from the Late Preclassic period. Similarly, crushed volcanic ash, exclusively associated with Actuncan Orange Polychrome of the early facet Early Classic period, was found in at least two sherds of Sierra Red – albeit in much lower quantities and associated with large amounts of sparitic calcite. In regard to firing technology, firing clouds persisted on orange slipped pottery, even the highly decorated polychromes. This suggests that while potters may have changed their firing technology, they may not have completely abandoned traditional methods – specifically, the process of open pit firing. Interestingly enough, there was little to no sign of a cream underslip on orange slipped pottery, except for one single sherd of the Actuncan composite bowl type-form. Similarly, heavy burnishing marks on many orange slipped vessels (especially those of the Aguila and Boleto types) argue against the complete adoption of what Graham (1994:326-330) calls “levigated” slip technology in which potters perform a process to dilute slip-clays and ultimately create the effect of a self-polishing slip. In essence, potters of the orange slipped traditions (at least of the Aguila and Boleto type-forms) were using similar polishing technology as previous (or briefly co-existing) potters of the monochrome red tradition. Finally, in regard to vessel form, potters of the orange slip tradition were making more frequent use of previously little used vessel form modes, such as the tetrapod support mode found on pottery of the Late

Preclassic period (Brady et. al. 1998), the simple flaring bowl, and even the pitcher with bridge-spout.

In summary, the data suggest orange slipped pottery of the Terminal Preclassic and early facet Early Classic periods may have been quantifiably different from red monochrome pottery of the Late Preclassic period, but it 1) did not show strong signs of restricted or exclusive technologies in all aspects of the production process, and 2) was not “invasive” to the Holmul Region, but arose out of existing technologies. But if these technologies did not develop outside of the Maya lowlands, then where and how might they have developed within the Maya area?

### **Potential Geographical and Social Origins of the Orange Slipped Traditions**

Orange slipped pottery of the Terminal Preclassic period is an amalgam of paste, form, firing, and surface modes that were present in isolation, but occasionally together, throughout the Late Preclassic period. Brady and colleagues (1998) present an excellent synthesis of how the specific modes associated with orange slipped pottery of the Terminal Preclassic period evolved over many years and in different areas of the lowlands eventually to crystallize into the vessels found in tombs like the ones of Building B, Group II at Holmul. One important point they make is that none of these vessels or technologies were necessarily intrusive into the Maya lowlands during what they consider the first (75 BC – AD 150) and second half (AD 150 – 400) of the Terminal Preclassic period. The authors believe that orange slip surface finish arose out of a matte finish orange-brown ware of the first phase of the Terminal Preclassic period, exemplified in types such as Ixobel Orange and San Antonio Golden Brown of the Late Preclassic found at the sites of Cahal Pech and Barton Ramie, Belize and Naj Tunich, Guatemala. Polychrome painting, while not nearly executed with the same level of skill and scale, appeared on stucco

surfaces of sherds and vessels dating as far back to the Middle Preclassic period at the site of Nakbe, Guatemala (Forsyth 2005). Similarly, Robertson-Freidel (1980) notes the use of specialized firing procedures to produce dichromes and trichromes during the close of the Late Preclassic period at the site of Cerros (~50BC). Graham (1994:326-330) finds experimentation with slip “levigation” technology and polychrome painting in Late Preclassic cave deposits in the Stann Creek area of Belize. Positively painted, *not traditional drip-resist*, Usulután style ceramics also date to Late Preclassic deposits at Tikal (Culbert 1993), Altar de Sacrificios (Adams 1971), Barton Ramie (Gifford 1976), and even Uaxactun (Smith 1955). Brady and colleagues (1998:22) also present a similar evolutionary development of the mammiform support mode, tracing its inception from solid nubbin supports on flat bottom bowls at sites in the early Late Preclassic to its seemingly hyperbolized hollow mammiform shape during the second half of the Terminal Preclassic period. Finally, paste modes seem to have been studied with less fervor over the years, but when they have been studied (as in the case of the present analysis), they appear to be an amalgam of local technologies from both the Late Preclassic and early facet Early Classic periods. The question that remains to be asked is, “*Where might this amalgam of technologies of the Terminal Preclassic period have originated?*”

In addressing this question, the simple theory of the “criterion of abundance” may serve useful. Data suggest that most sites containing orange gloss polychrome pottery during the Terminal Preclassic period were located on important communication and trade routes (usually rivers) of the Late Preclassic period (Brady et. al. 1998; Pring 2000; Reese-Talker and Walker 2002). Furthermore, the glossy orange-slipped tradition seems to have thrived in the northeastern Peten, Belize Valley, northern Belize, and to a lesser extent the central Peten areas with the finest examples of polychrome coming from the central Peten and northeastern Peten

areas (e.g., structure 5D-86 at Mundo Perdido, Tikal and Building B, Group II, Holmul).

However, these types of ceramics do reach as far south as the northern highlands to sites such as Salinas de los Nueve Cerros (Dillon 1977) and La Lagunita (Ichon and Arnauld 1985) – both sites located on important Late Preclassic, Terminal Preclassic, and Early Classic trade and communication routes: namely, the Chixoy/Usumacinta river system. The extreme variation in aspects of paste, form, and surface decoration of these polychromes suggests that they were not all made by the same potters, much less were they produced at the same sites (especially as concerns the results of this analysis – see Chapters 6 and 7). These pots better represent a form of “international style” (Robertson 1970; Renfrew 1986) that were used to serve symbolically charged food at diacritical feasting rituals by elites positioned along the crumbling communication and trade networks of the Late Preclassic period. I suggest the larger general areas for their initial production was focused in the central Peten, northeastern Peten, Belize Valley, and northern Belize. There was no one production center for the orange slipped traditions of pottery, but multiple centers with their own potters innovating and emulating each others examples of the orange slipped traditions – specifically, polychromes.

Finally, while I focus on elite use of orange slipped pottery in this study, this does not preclude the production and use of orange pottery by non-elites during the Terminal Preclassic period. This type of ceramic was circulated within a ritual economy and potentially produced and consumed by individuals at various levels of society. I simply address the level of elites because that is the nature of my present dataset. The data leave open the possibility that non-elites and underrepresented groups in the archaeological record were involved in the production and distribution of this pottery as well as the continued evolution of the technology used to create it, a concept I will explore in the proceeding section.

## **Relation to Established Patterns of Maya Ceramic Economy**

The data in this dissertation do not support the hypothesis that orange slipped pottery was produced and distributed according to the traditional guidelines of a prestige goods system. The multiple forms of analysis revealed there were no examples of restricted technology in the paste preparation, forming, firing, and surface finishing stages of production. The only potential restricted technology could be polychrome painting. However, even the quality and design of painted elements varied among vessels and sherds found in the Holmul Region suggesting this pottery was made by different producers with varying levels of artistic skill. Not only were technologies seemingly unrestricted, they were present in the Late Preclassic Sierra Red ceramic industry further attesting to the lack of restriction of these techniques as well as their continuity with previously existing ceramic industries. A great amount of diversity was found in different parts of the production process of orange slipped vessels, namely paste preparation of composite bowl forms, suggesting many craftspeople were involved in the production of these vessels. The data also did not support evidence for intense interregional interaction from the pottery sampled for the study, further countering the notion that orange slipped pottery was an externally controlled good and circulated in a traditional prestige goods system. Finally, the contexts in which these vessels were found in the Holmul Region suggest above all else they served a ritual function as opposed to primarily a political and/or socio-economic one. These findings are supported by distribution patterns from other lowland sites cited in chapter 1 (see Anderson and Cook 1944:84; Brady 1989; Case 1982; Culbert 1993; n.d.; Dillon 1977; Forsyth 1989:10; Gann and Gann 1939; Lopez Varela 1996:302; Meskill 1992; Ichon and Arnauld 1985; Pring 2000:106, 117, 122; Pring and Hammond 1985; Thompson 1931:284-288, 291; Willey and Gifford 1961).

The results of my study complement previous studies of Maya ceramic economy from the Late Classic period and further strengthen the notion that the prestige goods model (consequently the theoretical framework of political economy) fails to explain adequately the complicated patterns of ceramic production and distribution revealed by these studies. Similar to the present study, studies focusing on the Late Classic ceramic economy reveal that while there may have been restricted *aspects* of the production and distribution of certain type-forms of Late Classic ceramics, the entire production or distribution process cannot be considered completely restricted or controlled by any one group, much less elites. A number of trends in these Late Classic studies is worth noting and relate strongly to the findings in this research.

Production and distribution of Late Classic utilitarian and serving ware was not controlled by the state in the large site centers of Tikal and Palenque. At Tikal, Fry's (1979) research suggests that production took place outside of the site center and that distribution of utilitarian and serving ware forms took the form of a complex market system where the Tikal site center acted as a main point of distribution. Politics affected ceramic production and distribution at Tikal in so much as the distribution sphere of serving ware expanded during the site's time of greatest political influence in the Late Classic period. At Palenque, Rands (1967) and Rands and Bishop (1980) found that production of serving and utilitarian ware took place at multiple sites outside of Palenque, as well as within Palenque itself. Different sites may have specialized in different vessel forms and there exists evidence that the sites traded with one another in contrast to the complex marketing system present at Tikal. Rands and Bishop (1980) suggest that aside from ritual incense burners, figurines, and certain fine serving ware, pottery was overall imported into the site and not exported. During the Otolum phase (~ AD 600-600) under the rule of Lord Pacal II, distribution of vessels produced within the site center and exported to outer areas

increased slightly and then dropped off. The case studies from Tikal and Palenque support the idea that the state had little control over production and distribution of both utilitarian and serving ware during Late Classic. Furthermore, Rands and Bishop's (1980) study supports evidence for uncontrolled community specialization of specific vessel forms. While my current research sample is not adequate enough to account for similar intraregional patterns of distribution, my technological study of Late Preclassic, Terminal Preclassic, and Early Classic material does show similar patterns suggesting a lack of state control over the production of monochrome red, monochrome orange, and painted orange ceramics.

These patterns are also reflected and expanded upon in studies of utilitarian and serving ware from the site of Copan and multiple sites in the Petexbatun Region. At Copan, Bill (1997) found that the Terminal Classic political collapse had little effect on the production of polychrome serving ware in the Copan Valley and that demography may have had more of a role to play in determining aspects of production than a stable political environment. Bill's analysis revealed that diversity within and between polychrome serving vessels, as well as certain aspects of quality, decreased after the political decline at Copan. She associates these changes not with changes in the control of production, but with market mechanisms and the shrinking pool of elite consumers after the political collapse. Foias (1996) and Foias and Bishop (1997) found similar evidence for the lack of state control over the production of polychrome serving ware in the Petexbatun Region. Foias and Bishop found that standardization decreased only slightly within polychrome material after the political collapse in the region at approximately AD 760. Furthermore, standardization values of utilitarian vessels were not affected at all. However, intraregional and interregional exchange of polychromes vessels did decrease rather significantly. Similar to Copan, however, this decrease could be attributed to demographic

changes in the region and not state control of production and distribution. That is, the consumption pool or market of Petexbatun elite consumers shrank considerably after the political collapse, directly affecting consumption of foreign vessels at each site in the region. My study of the Holmul Region shows similar distribution patterns revealed by the Copan and Petexbatun analyses. While presence of orange monochrome and painted orange ceramics of the Terminal Preclassic and early facet Early Classic period is scant at the site of Cival after its collapse at approximately AD 150-200, these ceramics still do appear in and around the site center. This pattern suggests that demographic levels affected the distribution of orange ceramics more than political collapse. The market at Cival simply shrank, in effect causing distribution to shrink as well.

Beaudry's (1984) work at Copan suggests that production of Copador Polychrome vessel forms differed because of the context in which they would be used. She found that Copador bowls were much more highly standardized in regard to morphological and painted decorative attributes than cylinder vessels. Cylinder vessels were, in turn, more idiosyncratic and appeared to require more time and skill to produce. She also found that cylinders were more often found in ritually charged contexts such as burials. In another study of regionalized polychrome serving ware, through her study of Holmul style Cabrito Cream Polychromes, Reents-Budet (Reents 1985; Reents-Budet et. al. 2000; Reents-Budet et. al. 1994) found that this type of serving ware encompassed different levels of quality. She identified at least three larger levels of quality that may have been produced by artisans possessing different skill levels and marketed or distributed to groups of varying socio-economic statuses ranging from non-elite, to elite, to royal elite. Patterns similar to these preceding studies emerge from my own study. In relation to Beaudry's study of Copador, I found that monochrome orange flaring bowls appear to be more standardized

in terms of paste preparation, forming, and firing than orange polychrome composite bowl forms. While monochrome bowls may have been used for both everyday serving purposes as well as in ritual contexts such as in burials and lip-to-lip caches, polychrome material may have only been reserved for important ritual feasting events and burial or caching purposes like the cylinder vessels of Copador Polychrome. Concerning Reents-Budet's studies of Cabrito Cream Polychrome, one need only look at the different style and quality of painting on the polychrome vessels of Building B, Group II Rooms 8 and 9 to see the differences in quality of forming and decoration. It is possible that these vessels were made by different producers with different levels of skill, and while all present in the tombs of Building B, may have also been destined for consumers at different levels of the social spectrum.

A number of studies of Late Classic serving ware suggest that the ceramic production process may have been segmented and performed by individuals with varying amounts of skill. Turning once again to Copan, Beaudry (1984) suggests that different producers participated in the painting of Copador Polychrome bowls. She found that the interior painting on the bowls is more standardized and less complex than the exterior and suggests that less skilled artisans painted the interior while more experienced artists painted the more complicated exterior designs. Reents-Budet (Reents-Budet 1994) suggests that production of Late Classic Codex style polychromes was potentially segmented as well. She uses differences in the quality of vessel forming and vessel painting to show that certain producers may have formed the bowls, while others may have painted them. She cites the often less than perfect form of the bowls and suggests lesser artisans performed this part of the production process. Meanwhile, expert painters, or even the master artisan of a workshop, may have been in charge of painting the ornate, complex, and ideological charged scenes on vessel exteriors. These conclusions relate

directly the present research in that my study revealed varying of amounts of standardization or diversity from one part of the production process to the next. More significantly, I found that paste recipes were diverse among polychrome painted composite bowls of the Terminal Preclassic and early facet Early Classic periods suggesting that a number producers or production units may have been involved in the paste preparation process. In contrast, attributes of form were relatively more standardized for polychrome bowls than any other type-form in the study suggesting this process was performed by fewer, more skilled artisans.

### **Implications for the Palace-School Ceramic Economy**

The Terminal Preclassic and early facet Early Classic orange slipped polychromes in this study bear a vague resemblance to the orange slipped polychromes of the Late Classic Period. That is, they could be the products of what some scholars have called a “palace-school” ceramic economy during the Terminal Preclassic and early facet Early Classic periods. I would like to take a moment in this concluding chapter to address the relation of the production and distribution of the polychrome material studied in this research to production and distribution patterns of well-studied Late Classic polychrome material, as well as the theoretical framework and utility of the palace-school model. This research does not negate the existence of a palace-school economy, but taken together with the studies I discussed above, it suggests a slight refinement of the model.

During the apogee of the Late Classic period (AD 700 – 830), special polychrome pottery called “palace-school” polychromes were produced by a small number of highly skilled craftspeople (Ball 1993). These potters were usually located in elite compounds as evidenced in possible palace-workshop debris at Buena Vista del Cayo (Reents-Budet et. al. 2000) and Motul

de San Jose (Foias 2001), as well as the discovery of polychrome painting implements and other tools in a palace at Aguateca (Inomata 2001). In chapter 2, I explained how palace-school polychromes were exquisite one-of-a-kind vessels that showed signs of restricted technologies such as fine-line and calligraphic painting, pyrotechnic skills, writing, and knowledge of elite ideology. These vessels materialized elite ideologies through hieroglyphic inscriptions and visually stimulating scenes in which kings sat in court, received tribute, and impersonated gods. Scholars have posited that palace-school polychromes were used in elite gift-giving and redistribution networks (Ball 1993; Reents-Budet et. al. 1994) and that certain painting styles and chemical paste signatures are related to specific geographical locations in the Maya lowlands (Ball 1993:260-263; Reents-Budet et. al. 1994). Furthermore, elite painters of palace-school vessels would often sign the pottery they painted. One well known example is the signature of Ah Maxam, an elite, possibly royal artisan responsible for the painting of specific Holmul style pottery associated with the site of Naranjo and found in the tombs of other provincial lords (Reents-Budet 1994). His signature on a vessel, and the social structure that supported his position in society, imbued the vessel with greater value.

While at first glance it may seem that the architects (Ball 1993; Reents-Budet et. al. 1994) of the palace-school model base their framework on the foundation of political economy and prestige goods systems, this is not actually the case. Reents-Budet (Reents-Budet 1994; Reents-Budet et. al. 1994; Reents-Budet 2000, 2006) consistently emphasizes the link between the value of a vessel and the specific social context in which it is being used, the importance of ritual crafting and how artisans materialize ancient Maya ideologies during the production process, as well as how the value of a vessel may change in relation to the identity of the individuals who either helped create or owned it. In many ways, the framework of the palace-

school economy embodies the fundamental tenets of ritual economy. We need only open the model up to allow for more socio-economic flexibility in the production and distribution processes to make it even stronger.

Reents-Budet (1994) has previously stated that the process of palace-school pottery production may have been segmented, with different producers performing different production steps. I would like to add that these producers need not always be elite. As concerns this study, the only part of the production process that could have encompassed a prestige technology was surface decoration, or more specifically, polychrome painting. It was more than likely that only elites had, not just the artistic ability, but more importantly the knowledge of elite ideology or culture that was necessary for painting the complex symbolic designs on polychrome vessel surfaces. However, this did not mean that lesser elites or even non-elites were not integrated into the less-skilled or less restricted levels of the production process such as paste preparation, forming, or surface slipping. Through an integration of INAA and studies of decorative style, Reents-Budet (Reents 1985; Reents-Budet et. al. 1994; Reents-Budet et. al. 2006) has shown support for the idea that palace-school polychromes were produced by multiple craftspeople at various production areas. This is also similar to the findings of the paste analysis studies for composite bowl forms of the polychrome traditions in the present study. These data suggest that production need not always take place in one location using the same economic resources. Expanding on this idea, it is possible that all of the stages of production did not take place in the same area either. It is possible that the different stages in the production process could have taken place in different socio-economic settings, including households outside of major sites and possibly at the hands of lesser elites or groups that are traditionally underrepresented in the archaeological record. Because of the possibility that at least part of the production process took

place outside of the immediate palace area, it may be better to label these types of polychromes as possessing a certain “regional” or “site-centered” style as opposed to labeling them as belonging to a specific “palace-school”. Once again, Reents-Budet (Reents-Budet et. al.) has avoided this problem by referring to the regional styles by name (e.g., “Holmul Style”, “Tikal Dancer”, “Codex Style” or “Ik Style”) and not as “palace-school” pottery in general.

Turning again to the data contained in this study, it is possible that Terminal Preclassic orange polychrome vessels found in the Holmul Region represented products of specific regional styles. Hammond (1984) has already pointed to some of the similarities shared between the vessels in Room 9, Building B, Group II at Holmul. Some of these similarities are based on form and include a characteristic concave vessel base, over-sized mammiform supports with nubbin tips, and out-curving vessel walls. These characteristics in form are quite different from Terminal Preclassic orange vessels found at other sites in the lowlands which display flat bases, smaller more cylindrical supports, with ball-shape or even absent nubbin tips. Similarities and differences also abound in painting styles both within and between the vessels within Room 9. I have classified Vessel 1 (Figure 4.12) as Ixcanrio Orange Polychrome: Turnbull Variety because it displays very simple designs of wavy vertical black lines and a red lip band on its exterior. This style is similar to other pottery of this type, originally identified by Pring (1977b) in northern Belize. It is possible that this particular vessel was an import into Holmul and represents the regional style of a northern Belize site. I classified vessels 4 and 6 from Room 9 as Ixcanrio Orange Polychrome: Ixcanrio Variety (Figures 4.15, 4.17). While their forms are different, their painting technique, quality, and composition are almost identical and it could be the case that these two vessels were painted by the same artisan. The current production location for these vessels, however, is unknown at this time. Finally, I classified vessel 2 in Room 9

(Figure 4.13), vessel 10 in the Room 8 Vault (Figure 4.22), and SF# HT.41.10.02.01 of Burial 10 (Figure 4.19) all as Ixcanrio Orange Polychrome: Unnamed Variety.

Regarding painting composition, what these three vessels share in common is a center panel containing a repeating design that is related to both shamanism and political office during the Early Classic period. Vessel 2 from Room 9 contains a repeating conventionalized “serpent” motif which is often depicted on later Early Classic Dos Arroyos type polychromes found in the Holmul Region and elsewhere in the lowlands. The serpent is, of course, a significant symbol of shamanism and ancestor worship as it was out of the mouth of the vision serpent that ancestors would emerge to shamans and political leaders during hallucinogenic journeys. Vessel 10 from the Room 8 Vault displays the repeating symbol of a bird (macaw) in motion or flight, yet another important symbol related to shamanism and ritual in the Classic Period, as shamanistic journeys were often associated with journeys of flight. Finally, SF# HT.41.10.02.01 from Burial 10 displays the repeating pattern of a weave or mat design. The mat pattern was a traditional symbol of political authority, because it was upon a palm-frond mat upon which kings or leaders sat during important ritual ceremonies or to receive visitors in courtly events. In terms of form, all three of these vessels again share the convex base and out-curving sides so common within other varieties of Ixcanrio Polychromes found Building B. Vessel 2, Room 8 does differ in that its supports do not contain small nubbin tips, but large cylindrical bases attached to the mammiform supports, attesting again to the idiosyncrasy of these vessels and potential multiple production locales. These three vessels may represent yet another two, but perhaps even three, more kinds of regional polychrome styles of the Terminal Preclassic period. This would bring the total of regional style contained within Building B to three or possibly even four: according

to type name these would be 1) Ixcanrio: Ixcanrio Variety, 2) Ixcanrio: Turnbull Variety, and 3) Ixcanrio: Unnamed Variety (possibly consisting of two styles sub-divided by form).

### **Ritual Economy: An Alternative to Political Economy**

What all of the studies of Late Classic ceramics suggest is that production and distribution of ceramic vessels varied according to site, type-form, time period, demand market, and context of consumption. The same is true for my present study. This means that the theoretical framework of political economy with its corresponding prestige goods system may not be adequate enough to completely understand the complicated patterns of production, distribution, consumption, and exchange of ancient Maya ceramic economy. The concept of ritual economy with its emphasis on integration, social context, and flexibility of value may be better suited to help us understand these complicated production and distribution patterns.

As I have shown previously, after close analysis the contexts where Terminal Preclassic and early facet Early Classic orange slipped material is found in the Holmul Region and beyond are not always immediately classifiable as elite, much less socially restricted. Specific contexts include, chultunes at Tzimin Kax (Thompson 1931:284-288), a tomb at Cahal Cunil (Thompson 1931:291), a burial mound at Nohmul (Anderson and Cook 1944:84; Gann and Gann 1939), burials at Barton Ramie (Pring 2000:106; Willey and Gifford 1961), a chultun at El Mirador (Forsyth 1989:10; Pring 1000:117), “ritual contexts” (Lopez Varela 1996:302) at K’axob, contexts of an “elite element of society” (Pring 2000:122) at Kichpanha (Meskill 1992), a tomb and cave at La Lagunita (Ichon and Arnauld 1985), a cave at Naj Tunich (Brady 1989), and tombs or caches at Tikal (Culbert 1993; n.d.). Sherds of Terminal Preclassic orange gloss pottery have also been found in construction fill of the potential “port mound” at Nohmul, Belize

(Pring and Hammond 1985), in construction fill of a large mound in the epicenter of El Pozito (Case 1982), in a large midden deposit at Salinas de los Nueve Cerros, Guatemala (Dillon 1977), in construction fill of Building B, Group II at Holmul, and in construction fill of Structure 1 at La Sufricaya also in the Holmul Region. The existence of these last contexts immediately calls into question the prestige goods model with its emphasis on strict social restriction and begs the question why would a strictly controlled valuable prestige good be found so often in trash used for construction fill? Aside from the last three cases of construction fill, most of these contexts are ritually charged and potentially significant to sacred or secular performances. The concept of ritual also makes sense of the fact that this class of material can be found in trash deposits. That is because ritual economy allows for the value of this material to change over time according to social context. It need not always and everywhere be a static prestige good, but can transform into an under-valued object through accident or purposeful action.

The concept of ritual economy, with its lack of emphasis on elite control, allows for the integration of multiple groups with varying levels of status into the production and consumption process. This would explain the variation in diversity and quality of ceramics both within and between the orange and red slipped traditions used in this study. It is not only possible that different individuals took part in the different aspects of the ceramic production process, but that these individuals were of varying socio-economic status, possessed different levels of artistic skill, and were even members of groups traditionally underrepresented in the archaeological record (e.g., women, intermediate elites, or non-elites). This is especially significant when we look at the differing levels of quality of Ixcanrio Polychromes found at different sites in the Maya lowlands. For example, there are noticeable differences in quality of vessels from burials at sites in the Barton Ramie area (Gifford 1976), burials in the village site of K'axob (Lopez

Varela 2004), and the tombs at Holmul (Merwin and Vaillant 1932) and Nohmul (Hammond 1984; Pring 2000). Vessels with well executed polychrome decoration and forming techniques are found in the seemingly more elite restricted contexts of the larger sites while lesser quality examples come from burials at the smaller sites. Furthermore, artisans at some sites may not have the social or mechanical ability, or even access to materials, needed to execute polychrome painting at the site of Chan Chich, Belize (Houk 1998, 1999). This is evident in the discovery of Terminal Preclassic tomb containing Sierra Red vessels exhibiting the composite bowl with mammiform supports shape form, but lacking polychrome decoration. Again, this evidence points to a lack of restriction on all technologies needed to make these vessels and only restriction, whether through ability or resources, of polychrome painting technology.

Building upon the concept of inclusion I discussed above, the theoretical framework of ritual economy does not focus on social conflict and exclusion, but it allows for social integration through the production process. It is quite possible that different groups took part in the production process of ritually charged objects in an effort to solidify larger political, social, or even ethnic identities. In this case, the finished product would represent the work of an entire community encompassing multiple levels of social, political, and economic status – representing all these groups when it was used in a ritual ceremony (see Mills 2004). Political economy and prestige goods theory do not necessarily allow for this type of integration.

Finally, within the framework of ritual economy, value is assigned to an object based on its function within specific social contexts. Orange slipped vessels, especially the polychrome type-forms, were not valuable because they possessed some type of *a-priori* prestige value due to their painted surfaces or mammiform shape. These vessels gained their value through being associated with the sacred food substances which they held at important sacred and secular ritual

events. They were material objects that mediated social relations and may have even possessed an inalienable quality related to the people who crafted them, the people who owned them, and the people who used them in ritual ceremonies. This inalienable quality need not have extinguished after the death of an owner, but continued on through memory in the minds of groups and individuals of the larger community serving as a timeless symbol of stored or cached identity (see Hendon 2000). Related to this, the production process of these vessels need not have been a mundane crafting activity, but it may have been imbued with ritual significance itself – potentially as a responsibility of social station or even a means to reshape an individual's identity and place in the social structure (see Inomata 2001; Hruby 2007; Kovacevich 2006; 2007). The traditional framework of political economy and prestige goods systems does not allow for any of the preceding explanations or ruminations on ancient Maya ceramic production and distribution. It is time to begin formulating and testing another model of economy for the ancient Maya, and ritual economy may serve to be a very fruitful approach.

### **Directions for Future Study**

The data generated by my research suggest we continue to experiment with alternative theoretical frameworks to understand the organization of ancient Maya ceramic economy and the nature of its integration with political systems. The elite-centered top-down approach of political economy and prestige goods systems cannot adequately explain the complex patterns of ceramic production and distribution generated by the current research. Neither do these frameworks leave open the possibility that material objects can change value, or even classification, according to social context. Similarly, these models cannot account for the possibility that many groups representing different levels of socio-economic status could have been involved in the

production and distribution of ceramic objects for the purpose of social integration, as opposed to division and conflict for the purposes of social control. We must be wary of any approach that requires us to create dichotomous, or even multiple categories, with static definitions in which to assign the function and meaning of material objects. Ceramic objects and all other material culture for that matter fulfilled many roles in the society of the ancient Maya from the utilitarian to the symbolic, often at the same time during the same social occasion. Similarly, their value may have changed over time, across social contexts, or even according to who owned and used them at specific periods. Therefore, we must continue to search for and apply theoretical frameworks that allow for this kind of flexibility and the possibility that integration through ritual, as much as division through conflict, may drive systems of production, distribution, consumption, and exchange.

My analysis has also proven that we should continue to perform close analyses of production and distribution systems in the archaeological record. I advocate dissecting the production process into stages using a modal or *chaine operateire* type analysis to study each aspect of the production process. As my analysis has shown, the degree of restriction of technologies and the level of diversity within each stage of production can vary greatly. Only after each stage is studied can we piece together a more accurate picture of the entire process. In turn, this could lead us to valuable insights about the nature of ancient Maya social relations of production and how social structure may have been reflected in different stages of the production or even consumption processes (see Inomata 2001; Kovacevich 2006, 2007; LeCount 2001). This necessitates that we continue focusing on identifying and quantifying the different technologies performed during each stage of production. In the case of the present study, I moved beyond traditional discussions of form, surface treatment, and decoration and studied

aspects of paste preparation as a means to further discriminate between production technologies and potential degree of restriction. Related to this, we must also continue to study closely the contexts of distribution and consumption of a class of ceramic material. A case in point is Brady and colleagues' (1998) and my own close analysis of contexts associated with orange slipped pottery of the Terminal Preclassic period. After refined analysis, orange material does not appear to be found strictly associated with elite contexts. Instead, the common denominator appears to be contexts related to ritual: namely, chultunes, tombs, caches, and caves. We must also acknowledge the construction fill contexts, sometimes in rather "un-elite" areas, in which orange ceramics have been found. These findings further call into question the notion that this material was a strictly controlled type of prestige good with a static social value.

In an effort to identify and distinguish differences in the technology related to different stages of production I advocate a methodological approach that uses multiple types of analysis, similar to the three-tiered paste analysis I used in the present research. Each level of this analysis supplemented the other, beginning with simple optical observations of inclusions and fabric, moving up to mineralogical classifications, and finally ending with chemical characterizations. I want to note again that I recommend performing each one of these analyses because they provide data about different aspects of the paste under study. Each level potentially allows a researcher to classify and quantify technology according to different physical properties, culminating in a refined, verifiable, multidimensional data set. This method also allows the field ceramicist to maintain control over much of the compositional study, checking his/her results against the different findings of each level of analysis.

The analysis has also shown that the northeastern and central Peten continue to be fruitful areas for the study of Late Preclassic, Terminal Preclassic, and Early Classic ceramic economy.

Working with the sample I had at my disposal, I did the best I could to perform an in-depth study of production, distribution, and exchange of specific type-forms of the Late Preclassic, Terminal Preclassic, and Early Classic periods. My study was similar in purpose and method as the well-established Late Classic studies of ceramic economy conducted by previous scholars. I urge ceramicists to continue pushing the focus of their analyses back into the Preclassic period in order to better understand and relate this epoch of Maya prehistoric economy to the well-known Late Classic period. The first step in these types of analysis is the continued creation of regional ceramic chronologies and their relation to existing chronologies in neighboring and foreign areas. This was another goal of the present research, resulting in the establishment of another important lowland regional chronology.

In conclusion, and returning once more to the theoretical focus of this dissertation, I urge archaeologists to always study ceramic material, and the production process that led to their creation, while keeping in mind the function, meaning, and value of these objects in association with specific social contexts. In the case of this research, Terminal Preclassic period orange slipped ceramics were more than mere “prestige goods”. They were on the same and different occasions vessels for holding sacred food, materializations of specific ideologies, props in the performance of sacred and secular rituals, mementos of special occasions, inalienable possessions and the embodiment of actual individuals, and *lastly*, something that may have been used to increase one’s social standing in society. It is only if we constantly consider and work to decipher their function, meaning, and value in association with the various social contexts in which they were used can we truly gain an understanding of the role that these ceramics played in the larger process of ancient Maya culture.

APPENDIX A: VESSELS FROM MERWIN'S ORIGINAL EXCAVATIONS (1911) CURRENTLY STORED IN MUSEUMS

C# = Peabody or American Museum of Natural History catalogue number

MV = Plate number from Merwin and Vaillant (1932)

V = Illustration number from Vaillant (1927)

P = Illustration and Plate number from Pring (2000)

**Building B, Group II, Holmul**

**Rooms 1 and 2, Skeleton 1**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Orange polychrome, basal flange, panels	5665	Dos Arroyos: Unspecified		p. 306; no ill.		
2	Orange and buff, polished, basal flange	5426	Aguila: Polished Buff		not listed		Not listed in Vaillant 1927, but everywhere else correct
3	Orange, round bowl, ring base	5427	Aguila: Unspecified		p. 305; no ill.		
4	Black, round bowl	5428	Balanza: Balanza		p. 305; no ill.		
5	Orange and buff, unpolished, round bowl, ring base	5429	Nitan: Unspecified		p. 305; no ill.		
6	Black, incised, pot-stand	5430	Lucha: Unspecified	26, d	p. 305; ill. 234		
7	Orange and buff, unpolished, round bowl, ring base	5431	Aguila: Unspecified		p. 305; no ill.		
8	Orange, incised, round bowl, annular base	5432	Pita: Unspecified		p. 305; no ill.		Listed as 5432.1 in Peabody catalogue

Rooms 1 and 2, Skeleton 1 cont'd

9	Red, cylinder, four short hollow cylinder supports	5533	Unnamed	26, e	p. 306; ill. 240	Not listed in Peabody catalogue; incorrectly listed as c-5543 in V, 1927 and 1932; incorrectly labeled illustration MV, 1932 (c-5433); correct description in all sources
10	Orange, basal flange, fireclouded	5434	Aguila: Aguila		not listed	Not listed in V 1927, but everywhere else correct
11	White bowl on orange pot-stand	5435	Unnamed	27, e	p. 305; 233	
12	Black animal effigy and bowl, goes with Pot 19	5436-5439	Balanza: Balanza	27, a, b, c, d	p. 305; ill.'s 236, 238	Many problems between M, V, and Peabody c #'s - 5436 not found in Peabody collections and not on list, but listed in V, 1927 - possible that 5436 and 5438 are one pair with 5437 and 5439 as another
13	Black animal effigy, goes with Pot 14	5436-5439	Balanza: Balanza	27, a, b, c, d	p. 305; ill.'s 236, 238	Many problems between M, V, and Peabody c #'s - 5436 not found in Peabody collections and not on list, but listed in V, 1927 - possible that 5436 and 5438 are one pair with 5437 and 5439 as another
14	Black animal and bowl, goes with Pot 13	5436-5439	Balanza: Balanza	27, a, b, c, d	p. 305; ill.'s 236, 238	Many problems between M, V, and Peabody c #'s - 5436 not found in Peabody collections and not on list, but listed in V, 1927 - possible that 5436 and 5438 are one pair with 5437 and 5439 as another
15	Black olla with spout and applique decoration	5440	Unnamed		p. 306; ill. 237	
16	Black, incised, basal flange with lid, simple knob	5441	Lucha: Lucha	24, b	not listed	Vessel belongs with Pot 12, Skeletons 13 and 14 (c-5579)
17	Orange, basal flange	5442	Aguila: Unspecified		p. 305; no	

**Rooms 1 and 2 cont'd Skeleton 1**

					ill.		
18	Black, round bowl, pinched sides	5443	Balanza: Balanza	27, f	not listed		Not listed in Vaillant 1927, but everywhere else correct
19	Black animal effigy and bowl, goes with Pot 12	5436-5439	Balanza: Balanza	27, a, b, c, d	p. 305; ill.'s 236, 238		Many problems between M, V, and Peabody c #'s - 5436 not found in Peabody collections and not on list, but listed in V, 1927 - possible that 5436 and 5438 are one pair with 5437 and 5439 as another

**Rooms 1 and 2, Skeleton 5/12**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Black, basal flange	5476	Balanza: Balanza		p. 305; no ill.		
2	No record						No record
3	Orange polychrome, cover for Pot 4, bird head handle	5477	Dos Arroyos: Unspecified	25, a, b, c	p. 304; ill. 227		
4	Orange polychrome, basal flange, goes with Pot 3	5478	Dos Arroyos: Unspecified	25, b	p. 304; ill. 227		
5	Black, round bowl, pinched sides	5479	Balanza: Balanza		p. 305; ill. 239		

Room 2 West, Skeleton 5/12

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
A	Orange polychrome, basal flange, flying man	5591	Dos Arroyos: Unspecified	26, b	p. 304; ill. 229		All sources correct; V, 1927 ill. could be incorrect
A (lid)	Orange polychrome, Lid for Pot A, parrot handle	5592	Dos Arroyos: Unspecified	26, a	p. 304; ill. 229		All sources correct; V, 1927 ill. could be incorrect
B	Orange, z-angle, four large hollow supports	5593	Aguila: Unspecified		p. 304; ill. 229		All sources correct; V, 1927 ill. could be incorrect
C	Black lacquer bowl, composite silhouette with bevel, incised on lip and bevel.	AMNH 30.0-6527	Lucha: Lucha	26, c			

Rooms 1 and 2, Skeleton 6

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Orange and buff, unpolished, flaring bowl	5520	Nitan: Unspecified	27, h	p. 306; no ill.		
2	Orange and buff, unpolished, flaring bowl	5521	Nitan: Unspecified		not listed		Not listed in V, 1927; elsewhere correct
3	Red cylinder, three short slab feet	5522	Unnamed		p. 305; no. ill		All sources correct; no catalogue no. in V, 1927, but description fits
4							
5	Red/orange, miniature gadrooned jar	5523	Unnamed	27, g	p. 306; ill. 235		Listed incorrectly as c-5524 on Peabody catalogue list; correct everywhere else
6	Black, round bowl, spout, ring base	5525	Balanza: Unspecified	27, i	p. 306; ill. 232		
7	Cream polychrome, basal flange, bee man	5524	Caldero: Unspecified	29, b	p. 306; no ill.		Listed incorrectly, possibly as c-5523, in Peabody catalogue; correct everywhere else

**Room 2, Skeleton 10**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Red and resist (smudge), cylinder with lid, monkey design in resist	5559	Japon: Unspecified	28, c, e, f	p. 303; ill. 22-		V, 1927 switches catalogue numbers between these two vessels; correct elsewhere
2	Red and resist (smudge), cylinder with lid, stylized design	5560	Japon: Unspecified	28, a, d	p. 303; ill. 21-		V, 1927 switches catalogue numbers between these two vessels; correct elsewhere

**Room 2, Skeletons 13 and 14**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Black, incised, cover for Pot 2, jaguar head	5572	Lucha: Lucha	21, a, b, c	p. 304; ill. 224		
2	Black, incised, basal flange, with Pot 1	5572	Lucha: Lucha	21, a, b, c	p. 304; ill. 224		
3	Red, fireclouded, basal flange	5573	Dos Hermanos: Dos Hermanos		not listed		Not listed in V, 1927; elsewhere correct
4	Unslipped jar with spout, striated and impressed	5574	Triunfo: Unspecified	20, d	p. 304; no ill.		
5	Unslipped jar with spout in shape of peccary	5575	Quintal: Unspecified	20, c	p. 304; ill. 222		
6	Orange polychrome with stucco, cover for Pot 7	5576.1	Dos Arroyos: Unspecified	20, e	p. 304; ill. 228		Peabody catalogue lists Pot or Cover as 5576.1; all other sources 5576 and correct description
7	Orange polychrome with stucco, basal flange	5576	Dos Arroyos: Unspecified	20, e	p. 304; ill. 228		Peabody catalogue lists Pot or Cover as 5576.1; all other sources 5576 and correct description
8	Black, incised, cover for Pot 9, jaguar head	5577	Lucha: Lucha	22, a, b, c	p. 304; ill. 230		Could be some confusion with Pots 1 and 2 in V, 1932 and M, 1932 - not

**Room 2, Skeletons 13 and 14 cont'd**

							much difference between "tiger" and "jaguar" head
9	Black, incised, basal flange, with Pot 8	5577	Lucha: Lucha	22, a, b, c	p. 304; ill. 230		Could be some confusion with Pots 1 and 2 in V, 1932 and M, 1932 - not much difference between "tiger" and "jaguar" head
10	Black, incised, cover for Pot 11, grotesque head handle	5578	Lucha: Lucha	23, a, b, c	p. 304; ill. 225		MV, 1932 incorrectly labeled (a, 5576; b, 5441); all other sources correct
11	Black, incised, basal flange, with Pot 10	5578	Lucha: Lucha	23, a, b, c	p. 304; ill. 225		MV, 1932 incorrectly labeled (a, 5576; b, 5441); all other sources correct
12	Black, gauge-incised, lid, possible cover for Pot 16, Skeleton 1, Room 1	5579	Uritas: Unspecified	24, a, b, c	p.304; ill. 226		Associated with Pot 16, Skeleton 1; but M and V believe it belongs with Skeletons 13 and 14; correct no. and description in all sources

**Room 7, Skeleton 16**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Polished black olla.	5629			not listed		This pot not seen and not listed in V, 1927, but all sources correct
2	No record						
3	Orange, rounded-z, bowl	5683	Aguila: Unspecified		p. 305; no ill.		Peabody catalogue lists "Room 5A" in Bldg. B, G II; correct elsewhere
4	Black, incised, pot-stand with four solid supports	5630	Lucha: Unspecified	19, g	p. 303; ill. 21?		
5	Black, incised, cover for Pot 6, animal head, handle	5631	Uritas: Unspecified	20, a, b	p. 303; ill. 223		No catalogue no. listed in V, 1927, but fits description; all sources correct
6	Black, incised, bowl with four supports, with Pot 5	5631	Uritas: Unspecified	20, a	p. 303; ill. 223		No catalogue no. listed in V, 1927, but fits description; all sources correct

Room 8, Skeletons 17, 18, and 19

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Red flaring bowl	5641	Sierra: Sierra		not listed	p. 46; Fig. 1	Not listed in V, 1927, but everywhere else correct
2	Red, cylinder with four supports	AMNH 30.0- 6525	Sierra: Sierra	19, d	p. 303; ill. 203	p. 47; Fig. 2	All sources correct; listed as c-5642 in V, 1927
3	Red, rounded bowl	5643	Sierra: Sierra		p. 303; no ill.	p. 47; Fig. 3	
4	Orange Polychrome	5644	Actuncan: Unspecified	18, b	p. 303; ill. 21?	p. 48; Fig. 4, Plate II	
5	Red, fireclouded, pot-stand	5645	Sierra: Sierra	19, e	p. 303; ill. 21?	p. 48- 49; Fig. 5, Plate II	
6	Red, flaring bowl	5651	Sierra: Sierra	19, f	not listed	p. 49; Fig. 6	Not listed in V, 1927, but everywhere else correct
7	Red, flaring bowl	5651	Sierra: Sierra		not listed	p. 49; Fig. 7	Not listed in V, 1927; not listed in V, 1932, instead there is Pot 7 from Room 9 (plate with hollow cylinder supports) - this is incorrect; correct elsewhere

**Room 8 Vault**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
8	Orange, round bowl with annular base	5648	Aguila: Unspecified		p. 303; no ill.	p. 50; Fig. 8, Plate I	
9	Cream, pitcher, stucco covered	5649	Flor Cream Group	19, b	p. 303; ill. 210	p. 50-51; Fig. 9, Plate I	
10	Orange polychrome, tetrapod, parrots	5650	Ixcanrio: Unspecified	18, f	p. 303; ill. 20?	p. 51-52; Fig. 10, Plate I	

**Room 9, Skeleton 21**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Orange bowl, black wavy lines, annular base	5656	Ixcanrio: Turnbull	18, a	p. 302; ill. 214	p. 52; Fig. 11	
2	Orange polychrome, tetrapod mammiform	5657	Ixcanrio: Unspecified	18, e	p. 302; ill. 205	p. 53; Fig. 12	
3	Orange, tetrapod	5658	Aguila: Unspecified	18, c	p. 302; ill. 208	p. 53-54; Fig. 13, Plate III	No catalogue no. in V, 1927, but description fits; correct elsewhere
4	Orange polychrome, tetrapod mammiform, triangles	5659	Ixcanrio: Ixcanrio	18, d	p. 302; ill. 206	p. 54; Fig. 4	
5	Cream, incised, pitcher	5660	Accordion: Unspecified	19, a	p. 302; ill. 209	p. 55; Fig. 15	

**Rooms 9, Skeleton 21 cont'd**

6	Orange polychrome, tetrapod, cylinder	5646	Ixcanrio: Ixcanrio	19, c	p. 303; ill. 204	p. 55-56; Fig. 16, Plate IV	
7	Orange, plate with tetrapod cylinder supports	5647	Aguila: Unspecified	20, f	p. 303; ill. 21?	p. 56; Fig. 17	Incorrectly listed in Peabody catalogue as "Room 8"; no catalogue no. in V, 1927, but description fits - also lists as "Room 9, No. 7"; correct elsewhere

**Room 10, Skeleton 22**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Cream polychrome, basal flange	5661	Caldero: Unspecified	28, g	p. 306; no ill.		
2	Polychrome	AMNH 30.0-6528	Unnamed	28, h	p. 306; no ill.		All sources correct; listed as c-5662 in V, 1927
3	Black on Orange, basal flange	5663	Boleto: Unspecified		p. 306; no ill.		
4	Black on Orange, z-angle	5664	Boleto: Unspecified		p. 306; no ill.		

**Room 3**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Orange, flaring bowl	5622	Aguila: Unspecified				Listed in Peabody catalogue "Pottery Dish Holmul, Ruin B, Room 3, Group II" Referred to by V, 1932: 40.
2	Orange, flaring bowl	5623	Aguila: Unspecified				Listed in Peabody catalogue "Pottery Dish Holmul, Ruin B, Room 3, Group II" Referred to by V, 1932: 40.

**Building F, Group I, Holmul**

**Room 1, Skeleton 1**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Cream polychrome, plate with three supports, real glyphs	5666	Cabrito: Unspecified	29, a, c	p. 307; ill's 216-17		
2	Tall cylinder, possible cream polychrome, extremely eroded		Indeterminate				
3	Cream polychrome, cylinder vase, real glyphs (dancer)	5668	Cabrito: Unspecified	30, a, c	p. 306; ill. 241		
4	Cream polychrome, bowl flaring sides	5669	Zacatel: Unspecified	31, a	p. 307; ill. 243		
5	Cream polychrome, plate with three supports	5670	Zacatel: Unspecified	31, d, e	p. 307; no ill.		

**Room 1, SW Wall Fill**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
A	Red and buff, round bowl/barrel	5671	Unnamed	31, b	p. 307; ill. 244		
B	Red/Orange and unpolished (ext.), polished (int.)	5673	Unnamed		p. 307; no ill.		
C	Bowl with flat bottom, three hollow cylindrical legs broken off, red-on-white lacquer exterior, red-on-yellow lacquer interior.	5672	Indeterminate		p. 307; no ill.		

**Ruin X**

**Room 1, Skeleton 1**

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Orange polychrome plate, three supports (scars)	5709	Palmar: Unspecified		p. 307; no ill.		
2	Large plain bowl.	5711			not listed		Not listed in V, 1927; correct elsewhere
3	Cream polychrome, cylinder vase, pelicans and fish	5710	Cabrito: Unspecified	30, b, d	p. 306; ill. 242		

Room 2, Floor

POT	DESCRIPTION	C #	TYPE-VARIETY	MV, 1932	V, 1927	P, 2000	DISCREPANCIES
1	Incensario	5690		31, c	not listed		Not found anywhere, but MV, 1932

## APPENDIX B: MODAL ANALYSIS CODING KEY

### I. CATALOG

Sherd #:

Four digit number assigned to each sherd - numbered sequentially and counted in total

Small Find #:

INAA#:

Vessel #:

Site:

HOL = Holmul

SUF = La Sufricaya

KOL = K'o

CIV = Cival

TOT = Tot/Caracol

HAM = Hamontun

SOU = South Group

Cut Type:

L = Looter's Trench

T = Archaeological Trench

Site Value:

1 = Holmul

2 = La Sufricaya

3 = K'o

4 = Cival

5 = Tot/Caracol

6 = Hamontun

7 = South Group

Cut Type Value:

1 = Looter's Trench

2 = Archaeological Trench

3 = Surface

Cultural Context:

Determined from site reports and informes

01 = Humus

02 = Wall-fall

03 = Construction fill

04 = On floor

05 = In floor

06 = Midden

07 = Burial

08 = Cache

09 = Looter's debris

10 = Backdirt

Type: Variety:

01 = Sierra Red: Sierra Variety

02 = Society Hall: Society Hall Variety

03 = Laguna Verde Incised: Laguna Verde Variety

04 = Laguna Verde Incised: Groove-Incised Variety

05 = Sierra Impressed: V. Unspecified

06 = Sierra and Unslipped: Variety Unspecified

07 = Altamira Fluted: Altamira Variety

08 = Polvero Black: Polvero Variety  
09 = Aguila Orange: Variety Unspecified  
10 = ----  
11 = Ixcanrio Orange Polychrome: Variety Unspecified  
12 = Aguila Orange: Aguila Variety  
13 = Pita Incised: Variety Unspecified  
14 = Actuncan Orange Polychrome: Variety Unspecified  
15 = Dos Arroyos Orange Polychrome: Variety Unspecified  
16 = Caldero Buff Polychrome: Variety Unspecified  
17 = Orange on Buff: Unpolished Variety  
18 = Orange on Buff: Polished Variety  
19 = Orange on Buff: Polished Incised Variety  
20 = Balanza Black: Balanza Variety  
21 = Lucha Incised: Lucha Variety  
22 = Uritas Gauged-Incised: Variety Unspecified  
23 = Balanza Black: Stucco Variety  
24 = Society Hall: Impressed Variety  
25 = Society Hall: Incised Variety  
26 = Altamira Fluted: Horizontal Variety  
27 = Altamira Fluted: Incised Variety  
28 = Polvero Black: Impressed Jar Variety  
29 = Lechugal Incised: Variety Unspecified  
30 = Caribal Red: Variety Unspecified  
31 = Boleto Black on Orange: Variety Unspecified  
32 = ----  
33 = Dos Hermanos Red: Variety Unspecified  
34 = Aguila Orange: Applique Variety  
35 = Aguila Orange: Fluted Variety  
36 = Balanza Group: Applique Variety  
37 = Positas Modeled: Variety Unspecified  
38 = Early Classic Matte Brown: Variety Unspecified (Pucte?)  
39 = Mount Maloney: Variety Unspecified  
40 = Boxcay Brown: Variety Unspecified  
41 = Joventud Red: Variety Unspecified  
42 = Chunhinta Black: Variety Unspecified  
43 = Depricio Incised: Variety Unspecified  
44 = Tinaja Red: Variety Unspecified  
45 = Early Classic Censerware: Variety Unspecified  
46 = Chinja Impressed: Form A  
47 = Late Classic Polychrome: Eroded  
48 = Trapiche Incised: Variety Unspecified  
49 = Miniature Vessel: Eroded  
50 = Cambio Unslipped: Variety Unspecified  
51 = Palmar Orange Polychrome: Variety Unspecified  
52 = Quintal Unslipped: Variety Unspecified  
53 = Cameron Incised: Variety Unspecified

54 = Unnamed Red and Buff Carved  
 55 = Chaquiste Impressed: Variety Unspecified  
 56 = Zacatel Cream Polychrome: Variety Unspecified  
 57 = Unnamed Late Classic Orange Polychrome  
 58 = Unnamed Modelled-Carved (Terminal Classic)  
 59 = Miseria Applique: Variety Unspecified  
 60 = Pedregal Modeled: Variety Unspecified  
 61 = Unnamed Modelled Unslipped (Terminal Classic)  
 62 = Guitarra Incised: Variety Unspecified  
 100 = Eroded  
 200 = Indetermined

Type of Sherd:

01 = Rim	09 = Solid Rounded Support
02 = Rim whole vessel	10 = Solid Slab Support
03 = Rim Partial vessel	11 = Hollow Rounded Support
04 = Body	12 = Mammiform Support
05 = Z-Angle Body	13 = Apron Lid
06 = Basal Flange	14 = Scutate Lid
07 = Base	15 = Handle
08 = Base with support scar	16 = Rounded Z-Angle Body

State of Preservation:

01 = Fragmented	03 = Complete/Completely Restored
02 = Partially Restored/Large Pieces	

Sample: Y/N

## II. MORPHOLOGY

General Vessel Form:

01 = Jar	08 = Mushroom Stand
02 = Plate	09 = Cuspidor
03 = Plate/Dish	10 = Large Bucket
04 = Dish	11 = Pot Stand
05 = Dish/Bowl	12 = Lid
06 = Bowl	13 = Pitcher
07 = Vase	14 = Censer (N/A)

Wall Form:

01 = Vertical	04 = Rounded	07 = Recurving
02 = Outflaring	05 = Incurving/Insloping	08 = Composite
03 = Outcurving	06 = Markedly Incurving	09 = Composite/Flaring

Rim Form:

- |                         |  |
|-------------------------|--|
| 01 = Direct             | 08 = Gradually Wide-Everted Horizontal           |
| 02 = Exterior Thickened | 09 = Wide-Everted Horizontal                     |
| 03 = Exterior Folded    | 10 = Hook/Grooved/Notched                        |
| 04 = Interior Thickened | 11 = Gradually Everted Horizontal                |
| 05 = Incurving          | 12 = Gradually Wide-Everted Horizontal Thickened |
| 06 = Everted Horizontal | 13 = Everted Downward Curved                     |
| 07 = Everted Downward   | 14 = Beveled Exterior                            |

Lip Form:

- |              |                      |                       |
|--------------|----------------------|-----------------------|
| 01 = Round   | 04 = Grooved/Notched | 07 = Beaded and Round |
| 02 = Squared | 05 = Beveled-in      | 08 = Pie-crust        |
| 03 = Pinched | 06 = Beveled-out     |                       |

Neck Form:

- |                 |                 |                |
|-----------------|-----------------|----------------|
| 01 = Vertical   | 03 = Outcurving | 05 = Composite |
| 02 = Outflaring | 04 = Incurving  |                |

Rim Diameter:

Measured in centimeters using rim diameter chart, reading taken from interior of lip

Rim %:

Using rim diameter chart, reading taken from interior of lip

Rim Width:

Measured in millimeters (for everted rims) using digital calipers - measurement taken from interior lip to orifice opening

Lip Thickness:

Measured in millimeters using digital calipers

Wall Thickness at the rim:

Measured in millimeters using digital calipers - measurement taken ~4cm down from lip

Neck Height:

Measured in millimeters using digital calipers - measurement taken from where neck meets shoulder break to lip

Vessel Height:

Measured in centimeters - measurement taken from base to lip

Wall Angle:

Measured in degrees using a protractor laying flat - sherd was held at proper orientation using a ruler across the orifice opening and lip - measurement taken from interior wall

Additional Wall Treatment:

- |                    |                    |                      |
|--------------------|--------------------|----------------------|
| 01 = Labial Flange | 04 = Medial Fillet | 07 = Rounded Z-Angle |
|--------------------|--------------------|----------------------|

02 = Medial Flange                      05 = Lateral Angle  
03 = Basal Flange                      06 = Z-Angle

Additional Wal Treatment Lip Form:

01 = Rounded                      04 = Rounded with Bead  
02 = Squared                      05 = Notched  
03 = Pinched

Lip to Treatment Distance:

Measured in millimeters using digital calipers - measurement taken from lip to break of wall treatment at angle of the sherd

Thickness Above Treatment:

Measured in millimeters using digital calipers - identical to wall thickness at the rim

Thickness Below Treatment:

Measured in millimeters using digital calipers - measurement taken ~3cm from wall treatment

Thickness of Treatment:

Measured in millimeters using digital calipers - measurement taken from top of treatment to bottom

Width of Treatment:

Measured in millimeters using digital calipers - measurement on the top surface of the treatment with calipers oriented at the same angle as the treatment

Angle of Treatment:

Measured in Degrees - similar to measurement of wall angle but measuring the treatment, measurement taken from the exterior side of treatment

Angle Above Treatment:

Measured in Degrees - similar to wall angle

Angle Below Treatment:

Measured in Degrees - similar to wall angle

Support Type:

00 = Indeterminate                      05 = Mammiform  
01 = Solid round                      06 = Hollow rattle cylinder  
02 = Hollow round                      07 = Mammiform rattle  
03 = Solid slab                      08 = Hollow round rattle  
04 = Hollow slab                      09 = Solid nubbin

Support Diameter:

Measured in millimeters using digital calipers - approximate diameter of the support

Support Wall Thickness:

Measured in millimeters using digital calipers

Mammiform Support - Nubbin Thickness:

Measured in millimeters using digital calipers

### III. PASTE

Paste Texture (microscope):

01 = Very Coarse Sand (1.0 - 2.0 mm)	04 = Fine Sand (1/8 - 1/4 mm)
02 = Coarse Sand (1/2 - 1.0 mm)	05 = Very Fine Sand (1/16 - 1/8 mm)
03 = Medium Sand (1/4 - 1/2 mm)	06 = Silt (< 1/16 mm)

Paste Inclusion Classification (microscope):

01 = Carbonate	03 = Mix carbonate/volcanic
02 = Volcanic	

Paste Color (Qualitative):

01 = Yellow	05 = Buff
02 = Orange	06 = Gray
03 = Pink	07 = Dark brown
04 = Red	08 = Black

Paste Color Munsell:

Munsell Value

Paste Core: Yes/No

Paste Core Location:

01 = Center	03 = Exterior
02 = Interior	04 = Interior and Exterior

Paste Core %:

01 = < 25%	04 = 75%
02 = 25%	05 = 100%
03 = 50%	

Paste Core Color:

01 = Light gray	03 = Dark gray
02 = Tan	04 = Black

Paste Hardness:

Moh's Scale

02 = Fingernail	05 = Pocket knife
03 = Penny	06 = Between pocket knife and quartz

04 = Glass

07 = Quartz

Particle Sorting (microscope):

01 = Very Poorly Sorted

02 = Poorly Sorted (majority similar, one or few dissimilar)

03 = Fairly Sorted

04 = Well Sorted

Particle Density (microscope):

01 = 1% (sparse)      10 = 10% (dense)

03 = 3%              20 = 20%

05 = 5%              30 = 30% (very dense)

Inclusion Type 1 (microscope):

01 = Indeterminate white

12 = Organic

02 = Indeterminate gray

13 = Shell

03 = Indeterminate black

14 = Feldspar

04 = White Calcite/Dolomite

15 = Ferruginous particle

05 = Gray Calcite

16 = Crystal Calcite

06 = Ash (Glass)

17 = Earthy Hematite

07 = Quartz/Quartzite (Sand)

18 = Gray Oval Calcite

08 = Grog (gray/black)

19 = Indeterminate Orange

09 = Grog (orange)

20 = Pumice

10 = Chert

21 = Glass Chunks

11 = Mica

22 = Large angular inclusion (chert? clay particle?)

Size of Inclusion 1 (microscope):

01 = Very Coarse Sand (1.0 - 2.0 mm)

05 = Very Fine Sand (1/16 - 1/8 mm)

02 = Coarse Sand (1/2 - 1.0 mm)

06 = Silt (< 1/16 mm)

03 = Medium Sand (1/4 - 1/2 mm)

07 = Extreme Variation

04 = Fine Sand (1/8 - 1/4 mm)

Angularity/Roundness of Inclusion 1 (microscope):

01 = Angular

02 = Sub-Angular/Sub-Rounded

03 = Rounded

Inclusion Type 2:

(see Inclusion Type 1)

Size of Inclusion 2:

(see Size of Inclusion 1)

Angularity/Roundness of Inclusion 2:

(see Angularity/Roundness of Inclusion 1)

Inclusion Type 3:  
(see Inclusion Type 1)

Size of Inclusion 3:  
(see Size of Inclusion 1)

Angularity/Roundness of Inclusion 3:  
(see Angularity/Roundness of Inclusion 1)

Inclusion Type 4:  
(see Inclusion Type 1)

Size of Inclusion 4:  
(see Size of Inclusion 1)

Angularity/Roundness of Inclusion 4:  
(see Angularity/Roundness of Inclusion 1)

Additional Inclusion 1:  
(see Inclusion Type 1)

Additional Inclusion 2:  
(see Inclusion Type 1)

Additional Inclusion 3:  
(see Inclusion Type 1)

#### **IV. SURFACE FINISH**

Smoothing Exterior:

01 = Not smoothed	04 = Well smoothed (flawless)
02 = Poorly smoothed (raking, surface particles)	05 = Eroded
03 = Smoothed (some dimpling/denting)	

Polishing Exterior:

01 = Not polished	04 = Polished (signs of polishing)
02 = Burnished	05 = Well polished (flawless)
03 = Pattern burnished	

Texture Exterior:

01 = Coarse/Gritty	03 = Smooth (soft - e.g. greasy)
02 = Chalky/Powdery	04 = Smooth (hard - e.g. glossy)

Appearance Exterior:

01 = Matte/dull                      03 = Lustrous  
02 = Shiny

Underslip Exterior:

01 = Cream    02 = Orange

Slip Color Exterior:

Munsell Value

Slip Color Exterior (Munsell HUE Code):

0 = Gley 1                      05 = 5  
1 = Gley 2                      07 = 7  
02 = 2.5                      10 = 10

Slip Color Exterior (Munsell LETTER Code):

0 = Gley 0                      02 = YR  
01 = R                      03 = Y

Slip Color Exterior (Munsell VALUE Code):

2 = 2.5                      6 = 6  
3 = 3                      7 = 7  
4 = 4                      8 = 8  
5 = 5

Slip Color Exterior (Munsell CHROMA Code):

0 = Gley N                      4 = 4  
1 = 1                      5 = 5  
2 = 2                      6 = 6  
3 = 3                      8 = 8

Slip Application Exterior:

01 = Streaky                      03 = Even  
02 = Blotchy

Crazing:                      Y/N

Rootlets:                      Y/N

Fire Cloud:                      Y/N

Fire Cloud Location Exterior:

01 = Lip                      05 = Lower Vessel Wall  
02 = Upper Vessel Wall (Rim) and Lip                      06 = Lower Vessel Wall and Base

03 = Upper Vessel Wall (Rim)                      07 = Base  
04 = Middle Vessel Wall

Fire Cloud Color Exterior:

01 = Black                      03 = Red                      05 = Cream  
02 = Tan                      04 = Orange                      06 = Mottled

Fire Cloud Aspect Exterior:

01 = Isolated  
02 = Continuous (only one border visible on sherd)  
03 = All inclusive (entire sherd is clouded - only form determines type)

Slip Hardness Exterior:

Moh's Scale

02 = Fingernail                      04 = Glass                      06 = Between pocket knife and quartz  
03 = Penny                      05 = Pocket knife                      07 = Quartz

Smoothing Interior:

(see Smoothing Exterior)

Polishing Interior:

(see Polishing Exterior)

Texture Interior:

(see Texture Exterior)

Appearance Interior:

(see Appearance Exterior)

Underslip Interior:

(see Underslip Exterior)

Slip Color Interior:

Munsell Value

Slip Color Interior (Munsell HUE Code):

(see Munsell HUE code exterior)

Slip Color Interior (Munsell VALUE Code):

(see Munsell VALUE Code Exterior)

Slip Color Interior (Munsell CHROMA Code):

(see Munsell CHROMA Code Exterior)

Slip Application Interior:

(see Slip Application Exterior)

Crazing Interior: Y/N

Rootlets Interior: Y/N

Fire Cloud Interior: Y/N

Fire Cloud Location Interior:  
(see Fire Cloud Location Exterior)

Fire Cloud Color Interior:  
(see Fire Cloud Color Exterior)

Fire Cloud Aspect Interior:  
(see Fire Cloud Aspect Exterior)

Slip Hardness Interior:  
(see Slip Hardness Exterior)

## V. SURFACE DECORATION

Decoration 1 Exterior:

01 = Striating	09 = Plano-relief
02 = Incision	10 = Modelled-carving
03 = Groove-Incision	11 = Impressing
04 = Gauge-Incision	12 = Stamping
05 = Scratching	13 = Applique
06 = Fluting	14 = Applique with impression
07 = Gadrooning	15 = Modeling
08 = Chamfering	

Location Decoration 1 Exterior:

01 = Lip	09 = Medial flange
02 = Rim	10 = Basal flange
03 = Upper vessel wall	11 = Shoulder
04 = Middle vessel wall	12 = Z-Angle
05 = Lower vessel wall	13 = Rim and basal flange
06 = Base	14 = Rim, vessel wall, and basal flange
07 = Whole vessel wall	15 = Lip and rim
08 = Labial flange	

Decoration 2 Exterior:  
(see Decoration 1 Exterior)

Location Decoration 2 Exterior:

(see Location Decoration 1 Exterior)

Decoration 3 Exterior:

(see Decoration 1 Exterior)

Location Decoration 3 Exterior:

(see Location Decoration 1 Exterior)

Incision Type Exterior:

01 = Pre-slip fine                      04 = Post-slip thick

02 = Pre-slip thick                      05 = Post-fire

03 = Post-slip fine

Incision Composition Exterior:

01 = Abstract                      03 = Conventionalized

02 = Naturalistic                      04 = Glyphic

Design Code 1 Exterior:

01 = Unknown abstract	16 = Part disc
02 = Unknown Naturalistic	17 = Square
03 = Unknown Conventionalized	18 = Simple scroll and related elements
04 = Unknown Glyphic	19 = Crosshatched lines
05 = Line	20 = Scroll, simple curvilinear
06 = Wavy line	21 = Fish-scale
07 = Zig-Zag line	22 = Scroll, hook
08 = Dotted line	23 = Right angle or side step
09 = Tic marks	24 = S-shape or reverse curve
10 = Fence	25 = Squiggle
11 = Line Break	26 = Tlaloc
12 = Crescent	27 = U-shape
13 = Kan cross	28 = Diamond
14 = Rectangle	29 = Triangle filled with parallel lines
15 = Reverse angle	

Design Code 2 Exterior:

(see Design Code 1 Exterior)

Design Code 3 Exterior:

(see Design Code 1 Exterior)

Smith Code: Text

From Smith 1955(1): 62-71

Line Orientation Exterior:

01 = Horizontal                      02 = Vertical

Line Quantity Exterior:

01 = 1            04 = 4  
02 = 2            05 = Multiple  
03 = 3

Incision Quality Exterior:

01 = Poor            03 = Excellent  
02 = Good

Width Line 1 Exterior:

Measured in millimeters

Width Line 2 Exterior:

Measured in millimeters

Width Line 3 Exterior:

Measured in millimeters

Width Line 4 Exterior:

Measured in millimeters

Distance Between Lines Exterior:

Measured in millimeters

Pigment Filled Incision:            Y/N

Incision Comment:    Text

Note on style

Impression Type Exterior:

01 = Pre-slip            02 = Post-slip

Impression Pattern Exterior:

01 = Circular punctate	08 = Band of horizontal slash
02 = Horizontal slash	09 = Band of vertical slash
03 = Vertical slash	10 = Band of fingernail impression
04 = Fingernail impression	11 = Band of pattern stamp
05 = Pattern stamp	12 = Diagonal slash
06 = Dentate stamping	13 = Band of diagonal slash
07 = Band of circular punctate	

Impression Quality Exterior:

01 = Poor            03 = Excellent  
02 = Good

Width Impression Exterior:

Measured in millimeters

Distance Between Impressions Exterior:  
Measured in millimeters

Applique Type Exterior:

01 = Button

02 = Incised Button (e.g. "screwhead")

03 = Filet

04 = Impressed filet

05 = Spike

Applique Pattern Exterior:

01 = Isolated

04 = Double band

02 = Group

05 = Triple band

03 = Single band

Width of Applique Exterior:  
Measured in millimeters

Applique Distance Exterior:  
Measured in millimeters

Decoration 1 Interior:  
(see Decoration 1 Exterior)

Location Decoration 1 Interior:  
(see Location Decoration 1 Exterior)

Decoration 2 Interior:  
(see Decoration 1 Exterior)

Location Decoration 2 Interior:  
(see Location Decoration 1 Exterior)

Decoration 3 Interior:  
(see Decoration 1 Exterior)

Location Decoration 3 Interior:  
(see Location Decoration 1 Exterior)

Incision Type Interior:  
(see Incision Type Exterior)

Incision Composition Interior:  
(see Incision Composition Exterior)

Design Code 1 Interior:

(see Design Code 1 Exterior)

Design Code 2 Interior:  
(see Design Code 1 Exterior)

Design Code 3 Interior:  
(see Design Code 1 Exterior)

Smith Code: Text  
From Smith 1955(1): 62-71

Line Orientation Interior:  
01 = Horizontal                      02 = Vertical

Line Quantity Interior:  
(see Line Quantity Exterior)

Incision Quality Interior:  
(see Incision Quality Exterior)

Width Line 1 Interior:  
Measured in millimeters

Width Line 2 Interior:  
Measured in millimeters

Width Line 3 Interior:  
Measured in millimeters

Width Line 4 Interior:  
Measured in millimeters

Distance Between Lines Interior:  
Measured in millimeters

Pigment Filled Incision:                      Y/N

Incision Comment: Text  
Note on style

Impression Type Interior:  
(see Impression Type Exterior)

Impression Pattern Interior:  
(see Impression Pattern Exterior)

Impression Quality Interior:  
(see Impression Quality Exterior)

Width Impression Interior:  
Measured in millimeters

Distance Between Impressions Interior:  
Measured in millimeters

Applique Type Interior:  
(see Applique Type Exterior)

Applique Pattern Interior:  
(see Applique Pattern Exterior)

Width of Applique Interior:  
Measured in millimeters

Applique Distance Interior:  
Measured in millimeters

## **VI. PAINTING**

Lip Band Design:

01 = Eroded	07 = Alternating black, red, slip, and abstract design
02 = No band, slip color	08 = Red with black parallel lines
03 = Black	09 = Red with red parallel lines
04 = Red	10 = Interior red, exterior black
05 = Alternating black and red	11 = Interior black, exterior red
06 = Alternating black, red, and slip	12 = Red with red and black parallel lines

Lip Band Thickness Exterior:  
Measured in millimeters

Lip Band Color Exterior:

01 = Eroded	04 = Red
02 = No band, slip color	05 = Alternating red and black
03 = Black	

Munsell Color Lip Band Exterior:

Upper Band Design 1 Exterior:

01 = Eroded	12 = Parallel Black lines
02 = No band, slip color	13 = Black dash line

03 = Black	14 = Black dotted lines
04 = Red	15 = Black zig-zag lines
05 = Red chevrons	16 = Black wavy line
06 = Red U-shapes	17 = Black dotted line and scroll
07 = Diagonal red lines	18 = Black zig-zag line and dots
08 = Parallel red lines	19 = Black ovoids and dash lines
09 = Black chevrons	20 = Black U-shapes, vertical
10 = Black U-shapes, horizontal	21 = Red and black triangles
11 = Diagonal Black lines	

Thickness of Upper Band 1 Exterior:  
Measured in millimeters

Munsell Color Upper Band 1 Exterior:

Upper Band Design 2 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 2 Exterior:  
Measured in millimeters

Munsell Color Upper Band 2 Exterior:

Upper Band Design 3 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 3 Exterior:  
Measured in millimeters

Munsell Color Upper Band 3 Exterior:

Upper Band Design 4 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 4 Exterior:  
Measured in millimeters

Munsell Color Upper Band 4 Exterior:

Upper Band Design 5 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 5 Exterior:  
Measured in millimeters

Munsell Color Upper Band 5 Exterior:

Main Design Composition Exterior:

01 = Abstract            03 = Conventionalized  
02 = Naturalistic        04 = Glyphic

Main Design Code 1 Exterior:

01 = Unreadable abstract  
02 = Unreadable Naturalistic  
03 = Unreadable Conventionalized  
04 = Unreadable Glyphic

101 = Black band(s)	118 = Black Diamond
102 = Black wavy line	119 = Black reverse angle
103 = Black zig-zag line	120 = Black part disc
104 = Black dotted line	121 = Black square
105 = Black dashed line	122 = Black simple scroll and elements
106 = Black triangle	123 = Black bracket
107 = Black rectangle	124 = Red and black parallel stripes
108 = Black crescent	125 = Black step and angular scroll
109 = Black Kan cross	126 = Black partial step combination
110 = Black crosshatched lines	127 = Black outline concentric circles
111 = Black scroll, simple	128 = Red and black quatrefoil
112 = Black Fish-scale	129 = Red and black scroll and elements
113 = Black scroll, hook	130 = Black and red outline concentric circles
114 = Black side step	131 = see 231
115 = Black reverse curve	132 = Black weave pattern
116 = Black squiggle	133 = Red and black Kan cross
117 = Black U-shape	
201 = Red band(s)	217 = Red U-shape
202 = Red wavy line	218 = Red Diamond
203 = Red zig-zag line	219 = Red reverse angle
204 = Red dotted line	220 = Red part disc
205 = Red dashed line	221 = Red square
206 = Red triangle	222 = Red simple scroll and related elements
207 = Red rectangle	223 = Red Bracket
208 = Red crescent	224 = see 124
209 = Red Kan cross	225 = Red step and angular scroll
210 = Red crosshatched lines	226 = Red partial step combination
211 = Red scrool, simple	227 = Red outline concentric circles
212 = Red Fish-scale	228 = Red partial panels
213 = Red scroll, hook	229 = Red parallel stripes
214 = Red right angle or side step	230 = Black and red step and angular scroll
215 = Red reverse curve	231 = Black and red tassel
216 = Red squiggle	

Main Design Code 2 Exterior:  
(see Main Design Code 1 Exterior)

Main Design Code 3 Exterior:  
(see Main Design Code 1 Exterior)

Main Design Code 4 Exterior:  
(see Main Design Code 1 Exterior)

Main Design Code 5 Exterior:  
(see Main Design Code 1 Exterior)

Lower Band Design 1 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 1 Exterior:  
Measured in millimeters

Munsell Color Lower Band 1 Exterior:

Lower Band Design 2 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 2 Exterior:  
Measured in millimeters

Munsell Color Lower Band 2 Exterior:

Lower Band Design 3 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 3 Exterior:  
Measured in millimeters

Munsell Color Lower Band 3 Exterior:

Lower Band Design 4 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 4 Exterior:  
Measured in millimeters

Munsell Color Lower Band 4 Exterior:

Lower Band Design 5 Exterior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 5 Exterior:  
Measured in millimeters

Munsell Color Lower Band 5 Exterior:

Basal Flange Design Code Exterior:

01 = Eroded	12 = Red rectangles
02 = No design, slip color	13 = Red half ovoids
03 = Cont'd Main Design	14 = Red concentric half ovoids
04 = Black	15 = Red half discs
05 = Red	16 = Red dots
06 = Black rectangles	17 = Red chevrons
07 = Black half ovoids	18 = Red triangles
08 = Black concentric half ovoids	19 = Red rectangles with black U-shape
09 = Black half discs	20 = Alternating red and black bands, vertical
10 = Black dots	21 = Alternating red and black bands, horizontal
11 = Black chevrons	22 = R/B lines, dotted line, concentric black circle

Lip Band Thickness Interior:  
Measured in millimeters

Lip Band Color Interior:  
(see Lip Band Color Exterior)

Munsell Color Lip Band Exterior:

Upper Band Design 1 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 1 Interior:  
Measured in millimeters

Munsell Color Upper Band 1 Interior:

Upper Band Design 2 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 2 Interior:  
Measured in millimeters

Munsell Color Upper Band 2 Interior:

Upper Band Design 3 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 3 Interior:  
Measured in millimeters

Munsell Color Upper Band 3 Interior:

Upper Band Design 4 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 4 Interior:  
Measured in millimeters

Munsell Color Upper Band 4 Interior:

Upper Band Design 5 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Upper Band 5 Interior:  
Measured in millimeters

Munsell Color Upper Band 5 Interior:

Main Design Composition Interior:  
(see Main Design Composition 1 Exterior)

Main Design Code 1 Interior:  
(see Main Design Code 1 Exterior)

Main Design Code 2 Interior:  
(see Main Design Code 1 Exterior)

Main Design Code 3 Interior:  
(see Main Design Code 1 Exterior)

Main Design Code 4 Interior:  
(see Main Design Code 1 Exterior)

Main Design Code 5 Interior:  
(see Main Design Code 1 Exterior)

Lower Band Design 1 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 1 Interior:  
Measured in millimeters

Munsell Color Lower Band 1 Interior:

Lower Band Design 2 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 2 Interior:  
Measured in millimeters

Munsell Color Lower Band 2 Interior:

Lower Band Design 3 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 3 Interior:  
Measured in millimeters

Munsell Color Lower Band 3 Interior:

Lower Band Design 4 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 4 Interior:  
Measured in millimeters

Munsell Color Lower Band 4 Interior:

Lower Band Design 5 Interior:  
(see Upper Band Design 1 Exterior)

Thickness of Lower Band 5 Interior:  
Measured in millimeters

Munsell Color Lower Band 5 Interior:

Base Design Composition Interior:  
(see Main Design Composition Exterior)

Base Design Code 1 Interior:  
(see Main Design Code 1 Exterior)

Base Design Code 2 Interior:  
(see Main Design Code 1 Exterior)

Base Design Code 3 Interior:  
(see Main Design Code 1 Exterior)

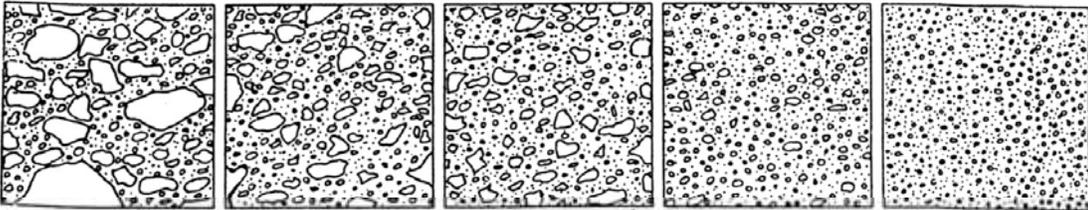
Base Design Code 4 Interior:

(see Main Design Code 1 Exterior)

Base Design Code 5 Interior:  
(see Main Design Code 1 Exterior)

APPENDIX C: SORTING AND ROUNDNESS SCALES

**Scale for Pebble Sorting**



Very Poor	Poor	Fair	Good	Very Good
1	2	3	4	5

Scale for pebble sorting (from Barraclough 1992)

**POWERS' SCALE OF ROUNDNESS**

Class	1	2	3	4	5	6
	Very Angular	Angular	Sub-Angular	Sub-Rounded	Rounded	Well Rounded
High Sphericity						
Low Sphericity						

Powers' scale of roundness and sphericity (from Barraclough 1992)

APPENDIX D: PARTICLE DENSITY AND COLOR CORRELATION

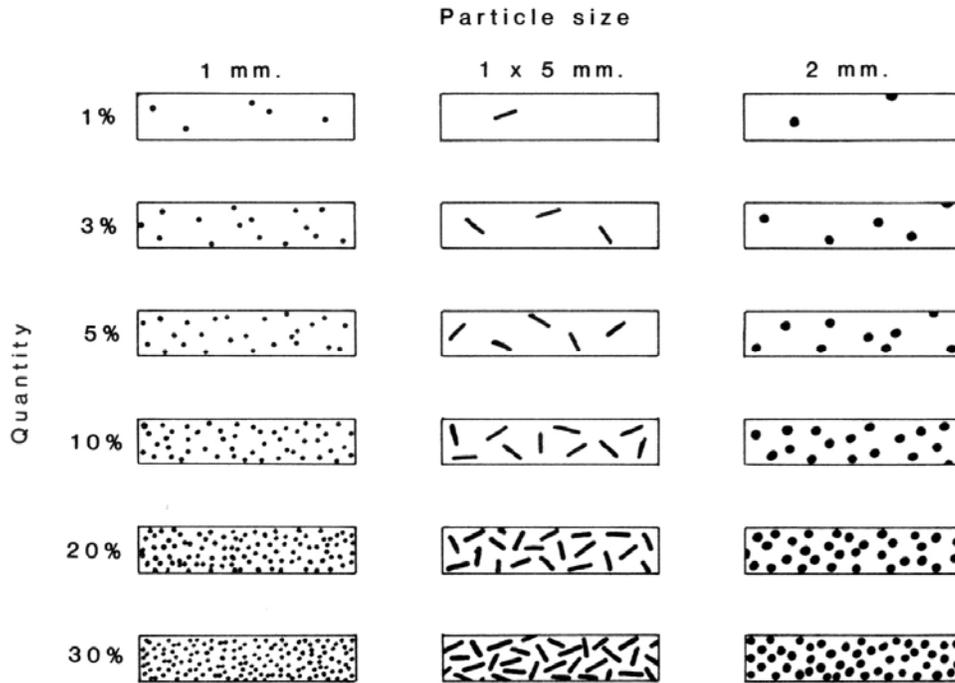


Chart for estimating particle density (from Rice 1987b: figure 12.2)

Conventional Color	Examples of Munsell Soil Colors
Yellow	10YR6/6, 10YR6/8, 10YR7/4, 10YR7/6, 10YR7/8, 10YR8/6, 10YR8/8, 2.5R6/6, 2.5Y6/8, 2.5Y7/6, 2.5Y7/8, 2.5Y8/6, 2.5Y8/8
Orange	7.5YR6/6, 7.5YR6/8, 7.5YR5/6, 7.5YR5/8, 5YR5/6, 5YR5/8, 5YR6/6, 5YR6/8, 2.5YR5/8
Pink	5YR7/4, 5YR7/6, 2.5YR6/4, 2.5YR6/6, 2.5YR6/8, 2.5YR5/4
Red	10R4/6, 10R4/8, 2.5YR4/8
Buff	10YR8/1, 10YR8/2, 10YR8/3, 10YR8/4, 10YR7/1, 10YR7/2, 10YR7/3
Gray	10YR6/1, 10YR5/1, 10YR4/1, 2.5Y5/1
Dark brown	10YR3/2, 10YR3/3
Black	10YR2/1, 2.5Y2/1

Conventional colors with corresponding colors from Munsell Color Chart

## APPENDIX E: PETROGRAPHIC ANALYSIS CODING KEY

### I. CATALOG

Sherd #:

Four digit number assigned to each sherd - numbered sequentially and counted in total

Small Find #:

INAA#:

Vessel #:

Site:

HOL = Holmul

SUF = La Sufricaya

KOL = K'o

CIV = Cival

TOT = Tot/Caracol

HAM = Hamontun

SOU = South Group

Site Value:

1 = Holmul

2 = La Sufricaya

3 = K'o

4 = Cival

5 = Tot/Caracol

6 = Hamontun

7 = South Group

Type: Variety:

01 = Sierra Red: Sierra Variety

02 = Society Hall: Society Hall Variety

03 = Laguna Verde Incised: Laguna Verde Variety

04 = Laguna Verde Incised: Groove-Incised Variety

05 = Sierra Impressed: V. Unspecified

06 = Sierra and Unslipped: Variety Unspecified

07 = Altamira Fluted: Altamira Variety

08 = Polvero Black: Polvero Variety

09 = Aguila Orange: Variety Unspecified

10 = ----

11 = Ixcanrio Orange Polychrome: Variety Unspecified

12 = Aguila Orange: Aguila Variety

13 = Pita Incised: Variety Unspecified

14 = Actuncan Orange Polychrome: Variety Unspecified

15 = Dos Arroyos Orange Polychrome: Variety Unspecified

16 = Caldero Buff Polychrome: Variety Unspecified

17 = Orange on Buff: Unpolished Variety

18 = Orange on Buff: Polished Variety

19 = Orange on Buff: Polished Incised Variety

20 = Balanza Black: Balanza Variety

21 = Lucha Incised: Lucha Variety  
 22 = Uritas Gauged-Incised: Variety Unspecified  
 23 = Balanza Black: Stucco Variety  
 24 = Society Hall: Impressed Variety  
 25 = Society Hall: Incised Variety  
 26 = Altamira Fluted: Horizontal Variety  
 27 = Altamira Fluted: Incised Variety  
 28 = Polvero Black: Impressed Jar Variety  
 29 = Lechugal Incised: Variety Unspecified  
 30 = Caribal Red: Variety Unspecified  
 31 = Boleto Black on Orange: Variety Unspecified  
 32 = ----  
 33 = Dos Hermanos Red: Variety Unspecified  
 34 = Aguila Orange: Applique Variety  
 35 = Aguila Orange: Fluted Variety  
 36 = Balanza Group: Applique Variety  
 37 = Positas Modeled: Variety Unspecified  
 38 = Early Classic Matte Brown: Variety Unspecified (Pucte?)  
 39 = Mount Maloney: Variety Unspecified  
 40 = Boxcay Brown: Variety Unspecified  
 41 = Joventud Red: Variety Unspecified  
 42 = Chunhinta Black: Variety Unspecified  
 43 = Depricio Incised: Variety Unspecified  
 44 = Tinaja Red: Variety Unspecified  
 45 = Early Classic Censerware: Variety Unspecified  
 46 = Chinja Impressed: Form A  
 47 = Late Classic Polychrome: Eroded  
 48 = Trapiche Incised: Variety Unspecified  
 49 = Miniature Vessel: Eroded  
 50 = Cambio Unslipped: Variety Unspecified  
 51 = Palmar Orange Polychrome: Variety Unspecified  
 52 = Quintal Unslipped: Variety Unspecified  
 53 = Cameron Incised: Variety Unspecified  
 54 = Unnamed Red and Buff Carved  
 55 = Chaquiste Impressed: Variety Unspecified  
 56 = Zacatel Cream Polychrome: Variety Unspecified  
 57 = Unnamed Late Classic Orange Polychrome  
 58 = Unnamed Modelled-Carved (Terminal Classic)  
 59 = Miseria Applique: Variety Unspecified  
 60 = Pedregal Modeled: Variety Unspecified  
 61 = Unnamed Modelled Unslipped (Terminal Classic)  
 62 = Guitarra Incised: Variety Unspecified  
 100 = Eroded  
 200 = Indetermined

## II. GROUNDMASS

Ground Mass Type:

- |                                |                        |
|--------------------------------|------------------------|
| 1 = Clay                       | 4 = Streams of calcite |
| 2 = Clay and round calcite     | 5 = Clay and peloids   |
| 3 = Clay and sub-round calcite |                        |

## III. INCLUSIONS

Type of Inclusion 1:

- |                            |  |
|----------------------------|--|
| 1 = Sparitic calcite       | 10 = Biotite                             |
| 2 = Peloid                 | 11 = Iron Oxide                          |
| 3 = Bioclast               | 12 = Grog                                |
| 4 = Carbonate Mud          | 13 = Glass fiber                         |
| 5 = Sparitic limestone     | 14 = Tuff                                |
| 6 = Peloid limestone       | 15 = Cryptocrystalline calcite           |
| 7 = Monocrystalline quartz | 16 = Muscovite                           |
| 8 = Polycrystalline quartz | 17 = Unknown - biotite? Clay?            |
| 9 = Chert                  | 18 = Cryptocrystalline calcite limestone |

Size Inclusion 1:

Three measurements of three separate inclusions of varying size

Angularity Inclusion 1:

- |               |                 |
|---------------|-----------------|
| 1 = round     | 3 = sub-angular |
| 2 = sub-round | 4 = angular     |

Sphericity Inclusion 1:

- |                   |                 |               |
|-------------------|-----------------|---------------|
| 1 = spherical     | 3 = sub-angular | 5 = hexagonal |
| 2 = sub-spherical | 4 = angular     |               |

Type of Inclusion 2:

(see type of inclusion 1)

Size Inclusion 2:

(see size of inclusion 1)

Angularity Inclusion 2:

(see angularity of inclusion 1)

Sphericity Inclusion 2:

(see sphericity of inclusion 1)

Type of Inclusion 3:  
(see type of inclusion 1)

Size Inclusion 3:  
(see size of inclusion 1)

Angularity Inclusion 3:  
(see angularity of inclusion 1)

Sphericity Inclusion 3:  
(see sphericity of inclusion 1)

Type of Inclusion 4:  
(see type of inclusion 1)

Size Inclusion 4:  
(see size of inclusion 1)

Angularity Inclusion 4:  
(see angularity of inclusion 1)

Sphericity Inclusion 4:  
(see sphericity of inclusion 1)

Type of Inclusion 5:  
(see type of inclusion 1)

Size Inclusion 5:  
(see size of inclusion 1)

Angularity Inclusion 5:  
(see angularity of inclusion 1)

Sphericity Inclusion 5:  
(see sphericity of inclusion 1)

Additional Inclusion 1:  
(see type of inclusion 1)

Size Additional Inclusion 1:  
(see size of inclusion 1)

Angularity Additional Inclusion 1:  
(see angularity of inclusion 1)

Sphericity Additional Inclusion 1:

(see sphericity of inclusion 1)

Type of Additional Inclusion 2:  
(see type of inclusion 1)

Size Additional Inclusion 2:  
(see size of inclusion 1)

Angularity Additional Inclusion 2:  
(see angularity of inclusion 1)

Sphericity Additional Inclusion 2:  
(see sphericity of inclusion 1)

Type of Additional Inclusion 3:  
(see type of inclusion 1)

Size Additional Inclusion 3:  
(see size of inclusion 1)

Angularity Additional Inclusion 3:  
(see angularity of inclusion 1)

Sphericity Additional Inclusion 2:  
(see sphericity of inclusion 1)

Major Calcite Type:

- 1 = Sparite
- 2 = Peloid
- 3 = Carbonate Mud
- 4 = Bioclast

Major Calcite Birefringence:

- 1 = white
- 2 = multiple colors
- 3 = gray
- 4 = opaque
- 5 = extreme multiple colors

Major Calcite Cleavage:

- 1 = not visible
- 2 = moderate
- 3 = pronounced

Major Calcite Roundness:

- 1 = round

2 = sub-round  
3 = sub-angular  
4 = angular

Major Calcite Sphericity:

1 = spherical      3 = sub-angular      5 = hexagonal  
2 = sub-spherical      4 = angular

## APPENDIX F: ARCHAEOLOGICAL CONTEXTS

### List of Archaeological Contexts Used in this Study

HAP CONTEXT	LOCATION	CONTEXT TYPE
BLDG. B RM 7	Holmul, Building B, Group II	Sealed room
BLDG. B. RM 10	Holmul, Building B, Group II	Sealed room
BLDG. B. RM 9	Holmul, Building B, Group II	Sealed room
BLDG. B. RM 1	Holmul, Building B, Group II	Sealed room
BLDG. B. RM.8	Holmul, Building B, Group II	Sealed room
BLDG. B. RM 8 V	Holmul, Building B, Group II	Sealed room
BLDG.B.L.	Holmul, Building B, Group II	Looter's trench, construction fill
CAR.STR3.LT.01	Caracol/Tot Structure 3	Looter's trench, construction fill
CIV.T.10.09	Cival, defensive wall	Construction fill
CIV.G1.BAT	Cival, Platform 1, tunnel, east side	Construction fill
CIV.L.06.00	Cival, Platform 1, tunnel, west side	Looter's trench, construction fill
CIV.L.05.00	Cival, W. ballcourt structure	Looter's trench, construction fill
CIV.T.08.00	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.08.01	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.08.83	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.08.86	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.08.87	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.08.88	Cival, Structure 7 (east structure of E Group)	Construction fill
CIV.T.10.04	Cival, defensive wall	Construction fill
CIV.T.12.02	Cival, Structure 9 (west structure of E Group, east side)	Construction fill
CIV.T.12.10	Cival, Structure 9 (west structure of E Group, east side)	Construction fill
CIV.T.15.02	Cival, Structure 9 (west structure of E Group, east side, top)	Construction fill
CIV.T.15.05	Cival, Structure 9 (west structure of E Group, east side, top)	Construction fill
CIV.T.16.01	Cival, Structure 1 atop platform 1	Construction fill
CIV.T.16.02	Cival, Structure 1 atop platform 1	Construction fill

**List of Archaeological Contexts Used in this Study cont'd**

CIV.T.16.03	Cival, Structure 1 atop platform 1	Construction fill
CIV.T.16.04	Cival, Structure 1 atop platform 1	Construction fill
CIV.T.18.08	Cival, plaza between Structure 7 and Platform 1	Construction fill
CIV.T.18.02	Cival, plaza between Structure 7 and Platform 1	Construction fill
CIV.T.22.00	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.01	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.02	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.02.E	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.02.NEXT	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.03	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.04	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.05	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.06	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.07	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.08	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.10	Cival, north-east platform of epicenter	Primary midden
CIV.T.22.11	Cival, north-east platform of epicenter	Primary midden
CIV.T.30.03	Cival, defensive wall	Construction fill
CIV.T.30.04	Cival, defensive wall	Construction fill
CIV.T.32.4	Cival, Structure 17, Group 7	Construction fill
CIV.T.33.01	Cival, Structure 1 atop platform 1	Construction fill
CL.03.01	Cival, Structure 18	Looter's trench, construction fill
CLT.02.14	Cival, Structure 7 (east structure of E Group, west side)	Looter's trench, construction fill
CT.05.01	Cival, plaza west of Structure 7, immediate area of Stela 2	Construction fill
GIL.STR.F.L-6	Holmul, Structure F, Group I	Looter's trench, construction fill
HM.LT.01	Hamontun, Structure 1	Looter's trench, burial vault
HOL.L.63.07	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Looter's trench, construction fill
HOL.L.63.60	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Looter's trench, construction fill
HOL.LT.63.01	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Looter's trench, construction fill
HOL.T.41.02	Holmul, Building B, Group II, Burial 10	Construction fill associated with burial
HOL.T.41.04	Holmul, Building B, Group II, Burial 10	Construction fill associated with burial

**List of Archaeological Contexts Used in this Study cont'd**

HOL.T.41.06	Holmul, Building B, Group II, Burial 10	Construction fill associated with burial
HOL.T.41.07	Holmul, Building B, Group II, Burial 10	Construction fill associated with burial
HOL.T.41.10	Holmul, Building B, Group II, Burial 10	Construction fill associated with burial
HOL.T.49.04	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.07	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.08	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.10	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.11	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.13	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.14	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.16	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.17	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.23	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.49.03	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.56.01	Holmul, Building B, Group II, Rooms 1-6	Construction fill
HOL.T.63.01	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Construction fill
HOL.T.63.03	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Construction fill
HOL.T.63.14	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Construction fill
HOL.T.71.01	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Construction fill
HOL.T.71.03	Holmul, Building B, Group II (e-w trench below Rooms 8 and 9)	Construction fill
KOL.L.02.00	K'o, Structure 3	Looter's trench, construction fill
KOL.T.02.07	K'o, Structures 67 and 68 (ballcourt playing alley)	Construction fill
KOL.T.03.03	K'o, Structure 94 (plaza 10m west of structure)	Construction fill
KOL.T.03.04	K'o, Structure 94 (plaza 10m west of structure)	Construction fill
KOL.T.03.05	K'o, Structure 94 (plaza 10m west of structure)	Construction fill
KOL.T.06.04	K'o, Structure 56 (Plaza 20 m east of structure)	Construction fill
KOL.T.10.02	K'o, Plaza west of Structure 1	Construction fill
KOL.T.10.03	K'o, Plaza west of Structure 1	Construction fill
KOL.T.10.04	K'o, Plaza west of Structure 1	Construction fill
KOL.T.13.02	K'o, Structure 73 (2m north of structure)	Construction fill
KOL.T.13.03	K'o, Structure 73 (2m north of structure)	Construction fill

**List of Archaeological Contexts Used in this Study cont'd**

KOL.T.13.04	K'o, Structure 73 (2m north of structure)	Construction fill
KOL.T.13.05	K'o, Structure 73 (2m north of structure)	Construction fill
SLT.05.28	La Sufricaya, Structure 1, Room 1	Looter's trench, construction fill
SLT.25	La Sufricaya, Structure 1, Room 1	Looter's trench, construction fill
ST.07.03	La Sufricaya, Structure 1, Room 1	Construction fill
ST.07.09	La Sufricaya, Structure 1, Room 1	Construction fill
ST.08.02	La Sufricaya, Structure 1, sub 3 (exterior, bench with mask and interior)	Construction fill
ST.08.05	La Sufricaya, Structure 1, sub 3 (exterior, bench with mask and interior)	Construction fill
ST.08.08	La Sufricaya, Structure 1, sub 3 (exterior, bench with mask and interior)	Construction fill
ST.08.55	La Sufricaya, Structure 1, sub 3 (exterior, bench with mask and interior)	Construction fill
ST.10.09	La Sufricaya, Structure 1	Construction fill
ST.17.12	La Sufricaya, Structure 1	Construction fill
ST.19.04	La Sufricaya, southeast edge of Group I platform	Construction fill
ST.19.05	La Sufricaya, southeast edge of Group I platform	Construction fill
ST.20.22	La Sufricaya, Structure 1	Construction fill
ST.21.01	La Sufricaya, Structure 147	Construction fill
ST.21.13	La Sufricaya, Structure 147	Construction fill
ST.21.16	La Sufricaya, Structure 147	Construction fill
SUF.L.08.03	La Sufricaya, Structure 3 (east side)	Construction fill
SUF.L.08.00	La Sufricaya, Structure 3 (east side)	Construction fill
SUF.L.17.00	La Sufricaya, Structure 49 (ballcourt structure, west side)	Construction fill
SUF.L.17.06	La Sufricaya, Structure 49 (ballcourt structure, west side)	Construction fill
SUF.T.12.04	La Sufricaya, Structure 1	Construction fill
SUF.T.26.00	La Sufricaya, Structure 48 (ballcourt structure, west side)	Construction fill
SUF.T.26.03	La Sufricaya, Structure 48 (ballcourt structure, west side)	Construction fill
SUF.T.26.11	La Sufricaya, Structure 48 (ballcourt structure, west side)	Construction fill
SUF.T.27.02	La Sufricaya, Structure 3 (east side)	Construction fill
SUF.T.28.06	La Sufricaya, plaza of Group 16 (north of structure 39)	Construction fill
SUF.T.29.06	La Sufricaya, plaza of Group 16 (off Group I platform)	Construction fill
SUF.T.36.03	La Sufricaya, Structure 1	Construction fill
SUF.T.37.03	La Sufricaya, Structure 1, southwest exterior	Construction fill

SUF.T.38.23	La Sufricaya, Structure 54	Construction fill
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APPENDIX G: RAW FORM AND PASTE DATA

Raw Data for Sherds Used in this Study

SHERD #	V#	HAP CONTEXT	TYPE-FORM	STEREO PASTE GROUP	PET. PASTE GROUP	G. MASS	ERROR
1		CIV.T.15.02	Sierra-flaring	Crystalline calcite and gray sherd			
10		CIV.T.08.86	Sierra-flaring	Ash and crystalline calcite			
1001		HOL.T.49.10	Aguila-flaring	Gray calcite			
1002		HOL.T.49.10	Aguila-flaring	Gray calcite	Peloid (PV3)	Type 5	
1003		HOL.T.49.10	Aguila-flaring	Crystalline calcite and orange sherd			
104		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
1045		SUF.T.29.06	Sierra-flaring	Crystalline calcite			
107		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and organic			
110		CIV.T.30.04	Sierra-flaring	Gray calcite			
1127		HOL.T.63.01	Aguila-flaring	Crystalline calcite and orange sherd			
1132		HOL.LT.63.01	Aguila-flaring	Crystalline calcite and orange sherd			
1136		HOL.LT.63.01	Boleto-composite	Gray calcite	Peloid (PV3)	Type 5	
114		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
116		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
1163		ST.08.55	Sierra-flaring	Crystalline calcite and organic			
117		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and chert			
118		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
119		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
12		ST.19.05	Sierra-composite	Crystalline calcite and gray sherd			
1206		KOL.T.03.04	Sierra-flaring (ir)	Crystalline calcite	Sparite (PV1)	Type 3	
1219		HOL.T.41.04	Aguila-flaring	Crystalline calcite and white calcite			
1222		HOL.T.41.04	Aguila-flaring	Crystalline calcite and orange	Sparite and sherd (PV2)	Type 3	

**Raw Data for Sherds Used in this Study cont'd**

				sherd			
1223		HOL.T.41.04	Aguila-flaring	Gray calcite			
123		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
126		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
127		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and gray sherd			
128		CIV.T.30.04	Sierra-flaring	Crystalline calcite and gray sherd			
129		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
13		ST.19.05	Sierra-flaring (ir)	Crystalline calcite and white calcite			
130		CIV.T.30.04	Sierra-flaring	Crystalline calcite and orange sherd			
131		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
133		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
138		SUF.T.28.06	Sierra-flaring (ir)	Crystalline calcite	Sparite (PV1)	Type 2	
148		SUF.T.26.11	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
15		ST.19.05	Sierra-flaring	Crystalline calcite			
154		SUF.T.27.02	Aguila-composite	Gray calcite			
156		CIV.T.22.08	Sierra-flaring	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 3	
165		CIV.T.22.08	Sierra-flaring	Crystalline calcite and orange sherd			
166		HOL.T.49.10	Sierra-flaring (ir)	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 2	
168		HOL.T.49.13	Sierra-flaring (ir)	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
169		HOL.T.49.13	Sierra-flaring (ir)	Crystalline calcite	Sparite and sherd (PV2)	Type 2	
170		HOL.T.49.13	Sierra-flaring (ir)	Gray calcite	Peloid (PV3)	Type 5	
171		HOL.T.49.04	Sierra-flaring	Gray calcite			
172		HOL.T.49.17	Sierra-flaring	Gray calcite			
179		HOL.T.49.14	Sierra-flaring (ir)	Crystalline calcite and gray sherd			
18		ST.19.05	Sierra-composite	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
180		HOL.T.49.14	Sierra-flaring (ir)	Crystalline calcite			

**Raw Data for Sherds Used in this Study cont'd**

1803		KOL.T.13.02	Boleto-composite	Gray calcite			
181		HOL.T.49.16	Sierra-flaring	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 4	
1816		SUF.T.26.03	Boleto-composite	Crystalline calcite and white calcite	Sparite (PV1)	Type 2	
182		HOL.T.49.16	Sierra-flaring	Crystalline calcite	Sparite and sherd (PV2)	Type 2	
1827		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite	Sparite (PV1)	Type 2	
185		HOL.T.49.11	Sierra-flaring	Crystalline calcite			
1875		CIV.T.16.03	Sierra-flaring	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
188		HOL.T.49.11	Sierra-flaring	Gray calcite			
1898		HOL.T.56.01	Aguila-composite	Gray calcite			
1900		SLT.25	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
1904		SUF.T.12.04	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
191		HOL.T.49.04	Sierra-flaring (ir)	Crystalline calcite			
1928		SUF.L.17.06	Aguila-flaring	Crystalline calcite			
193		HOL.T.49.23	Sierra-flaring	Gray calcite	Peloid (PV3)	Type 5	
1937		CIV.T.08.88	Sierra-flaring	Crystalline calcite and white calcite			
1939		GII.STR.F.L-6	Boleto-composite	Gray calcite	Peloid (PV3)	Type 5	
1940		GII.STR.F.L-6	Boleto-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
1948	HAPV8	CIV.T.30.04	Sierra-flaring	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
1954	HAPV15	HM.LT.01	Boleto-composite	Gray calcite	Peloid (PV3)	Type 5	
1955	HAPV16	HM.LT.01	Actuncan-composite	Ash	Ash (PV7)	Type 1	
1956	HAPV17	CIV.L.06.00	Sierra-composite	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 4	
1957	HAPV18	CAR.STR3.LT.01	Sierra-composite	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 3	
1959	HAPV20	HM.LT.01	Boleto-composite	Gray calcite	Peloid (PV3)	Type 5	
199		HOL.T.49.23	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
200		HOL.T.49.10	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
201		HOL.T.49.10	Sierra-flaring (ir)	Crystalline calcite			

**Raw Data for Sherds Used in this Study cont'd**

2029	HAPV90	HOL.T.41.10	Ixcantio-composite				
202A		HOL.T.49.10	Sierra-flaring (ir)	Crystalline calcite and organic			
2032		HOL.T.71.03	Ixcantio-composite	Crystalline calcite and orange sherd	Peloid and sherd (PV5)	Type 5	X
2033		HOL.T.71.01	Ixcantio-composite	White calcite	Peloid (PV3)	Type 5	X
2034		HOL.T.71.01	Actuncan-composite	Crystalline calcite			
2035		HOL.T.71.01	Aguila-composite	Gray calcite			
2036		HOL.T.71.01	Aguila-composite	Gray calcite			
2037		HOL.T.71.01	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
206		HOL.T.49.10	Sierra-flaring	Ash and crystalline calcite			
207		HOL.T.49.3	Sierra-flaring (ir)	Ash and crystalline calcite			
22		CIV.T.08.87	Sierra-flaring	Ash and crystalline calcite			
24		ST.21.01	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
25		ST.21.01	Sierra-flaring	Ash and white calcite			
256		CIV.T.16.01	Sierra-flaring (ir)	Crystalline calcite and mica			
259		CIV.T.10.04	Sierra-flaring (ir)	Crystalline calcite			
263		CIV.T.18.08	Sierra-flaring	Crystalline calcite and gray calcite			
264		CIV.T.18.08	Sierra-flaring	Crystalline calcite			
269		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite			
271		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
273		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
275		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite			
276		CIV.T.16.03	Sierra-flaring	Crystalline calcite and gray sherd			
277		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite			
279A		CIV.T.16.03	Sierra-flaring	Crystalline calcite and quartz			
280		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
281		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 2	
282		CIV.T.12.10	Aguila-composite	Gray calcite	Peloid and bioclasts	Type 5	

**Raw Data for Sherds Used in this Study cont'd**

					(PV4)		
283		ST.08.55	Sierra-flaring	Crystalline calcite and chert			
284		CIV.T.12.02	Aguila-composite	Gray calcite			
29		CIV.T.08.00	Sierra-flaring	Crystalline calcite and white calcite			
297		ST.08.08	Sierra-flaring (ir)	Gray calcite	Peloid (PV3)	Type 5	
3		CIV.T.08.01	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
301		ST.08.08	Sierra-flaring	Crystalline calcite			
302		ST.08.08	Aguila-composite	Gray calcite			
304		ST.08.08	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
308		CIV.T.22.10	Sierra-flaring	Crystalline calcite and gray sherd			
309		CIV.T.22.10	Sierra-flaring	Crystalline calcite and orange sherd			
31		CIV.T.15.5	Sierra-flaring (ir)	Crystalline calcite			
311		BLDG. B. RM.1	Sierra-flaring	Crystalline calcite and white calcite			
312		BLDG.B.RM.1	Sierra-flaring	Crystalline calcite and orange sherd			
313		BLDG.B.RM.1	Sierra-flaring	Ash and white calcite			
316		BLDG.B.RM.9	Sierra-flaring	Crystalline calcite and gray calcite			
323		CIV.T.15.5	Sierra-flaring (ir)	Crystalline calcite			
337		CIV.T.22.02.E	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
34		CT.05.01	Sierra-flaring	Ash and crystalline calcite			
35		CIV.T.15.02	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
353		CIV.G1.BAT	Sierra-flaring	Crystalline calcite and orange sherd			
36		CIV.T.15.2	Sierra-flaring (ir)	Crystalline calcite			
360		CIV.G1.BAT	Sierra-flaring	Crystalline calcite and orange sherd			
364		CIV.T.16.04	Sierra-flaring	Crystalline calcite and gray sherd			
365		CIV.T.16.04	Sierra-flaring	Crystalline calcite and gray sherd			

**Raw Data for Sherds Used in this Study cont'd**

367		CIV.T.16.04	Sierra-flaring	Crystalline calcite			
374		CIV.T.16.04	Sierra-flaring	Crystalline calcite and gray sherd			
376		CIV.T.22.06	Sierra-flaring	Crystalline calcite and orange sherd			
384		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			
385		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			
396		CIV.T.22.06	Sierra-flaring	Crystalline calcite and gray sherd			
397		CIV.T.22.06	Sierra-flaring	Crystalline calcite and orange sherd			
398		CIV.T.22.06	Sierra-flaring	Crystalline calcite and orange sherd			
399		CIV.T.22.06	Sierra-flaring	Crystalline calcite and gray sherd			
4		ST.07.09	Sierra-flaring	Crystalline calcite and gray calcite			
40		CIV.T.30.4	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
400		CIV.T.22.06	Sierra-flaring	Crystalline calcite and orange sherd			
412		CIV.L.06.00	Sierra-composite	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 4	
414		CIV.L.06.00	Sierra-composite	Crystalline calcite and gray sherd			
415		CIV.L.06.00	Sierra-composite	Crystalline calcite and orange sherd			
416		CIV.L.06.00	Sierra-composite	Crystalline calcite and orange sherd			
417		CIV.L.06.00	Sierra-composite	Crystalline calcite and gray sherd			
428		CIV.T.33.01	Sierra-flaring (ir)	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 2	
430		CIV.T.22.01	Sierra-flaring	Crystalline calcite and orange sherd			
44		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and white calcite			
445		CIV.T.22.2	Sierra-flaring (ir)	Crystalline calcite and gray sherd			

**Raw Data for Sherds Used in this Study cont'd**

452		CIV.T.22.02	Sierra-flaring	Crystalline calcite and orange sherd			
456		CIV.T.22.02	Sierra-flaring	Crystalline calcite and orange sherd			
457		CIV.T.22.02	Sierra-flaring	Crystalline calcite and orange sherd			
459		CIV.L.6.00	Sierra-flaring (ir)	White calcite and gray sherd			
46		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
461		CIV.L.06.00	Sierra-composite	Crystalline calcite			
467		KOL.T.13.04	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
47		CIV.T.30.04	Sierra-flaring	Crystalline calcite			
481		KOL.L.02.00	Sierra-composite	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 4	
482		KOL.L.2.00	Sierra-flaring (ir)	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 2	
485		KOL.T.06.04	Sierra-flaring	Crystalline calcite			
488		KOL.T.06.04	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 3	
489		KOL.T.06.04	Sierra-flaring (ir)	Crystalline calcite and organic			
48A		CIV.T.30.04	Sierra-flaring	Crystalline calcite and orange sherd			
49		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
491		KOL.T.10.03	Sierra-flaring (ir)	Crystalline calcite and white calcite			
492		KOL.T.10.3	Sierra-flaring (ir)	Crystalline calcite			
49A		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
5		ST.07.09	Sierra-flaring (ir)	Crystalline calcite			
50		CIV.T.30.04	Sierra-flaring	Crystalline calcite and orange sherd			
500		CIV.T.22.00	Sierra-flaring (ir)	Crystalline calcite			
502		KOL.T.13.05	Aguila-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
51		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and gray sherd			
511		KOL.T.10.04	Sierra-flaring (ir)	Crystalline calcite and orange			

**Raw Data for Sherds Used in this Study cont'd**

				sherd			
512		KOL.T.10.04	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 3	
512A		KOL.T.10.04	Sierra-flaring	Ash and gray calcite			
513A		KOL.T.10.04	Sierra-flaring	Ash and crystalline calcite	Ash and Sparite (PV8)	Type 2	
514A		CIV.T.22.02.NEXT	Sierra-flaring	Crystalline calcite			
517		KOL.T.13.03	Sierra-flaring (ir)	Crystalline calcite and quartz			
517A		KOL.T.10.04	Sierra-flaring (ir)	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
518A		KOL.T.13.03	Sierra-flaring	Gray calcite	Peloid (PV3)	Type 5	
520A		KOL.T.10.04	Sierra-flaring	Crystalline calcite			
524		KOL.T.03.05	Sierra-flaring	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 2	
525		KOL.T.03.05	Sierra-composite	Crystalline calcite	Sparite (PV1)	Type 2	
53		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite			
532		KOL.T.03.05	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
54		CIV.T.30.04	Sierra-flaring (ir)	Crystalline calcite and gray sherd			
540		KOL.T.03.05	Sierra-flaring	Crystalline calcite and white calcite			
545		KOL.T.03.05	Sierra-flaring	Crystalline calcite			
550		KOL.T.03.05	Sierra-flaring	Crystalline calcite and orange sherd			
552		KOL.T.03.05	Sierra-flaring	Crystalline calcite			
559		HOL.T.41.07	Sierra-flaring	Ash and crystalline calcite			
562		HOL.T.41.04	Sierra-flaring	Ash and white calcite			
563		CIV.T.16.02	Sierra-flaring (ir)	Crystalline calcite and white calcite			
567		ST.19.04	Sierra-flaring	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
575		CIV.T.16.03	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
579		CIV.T.08.83	Sierra-flaring	Crystalline calcite and gray sherd			
581		CIV.T.08.83	Sierra-flaring	Crystalline calcite and orange sherd			
583		CIV.T.18.2	Sierra-flaring (ir)	Crystalline calcite and gray sherd			

**Raw Data for Sherds Used in this Study cont'd**

585		CIV.10.09	Sierra-flaring	Crystalline calcite and orange sherd			
596		CIV.T.22.05	Sierra-composite	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
6		ST.07.09	Sierra-flaring (ir)	Crystalline calcite	Sparite and sherd (PV2)	Type 2	
601		CIV.T.22.05	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
603		CIV.T.22.05	Sierra-flaring	Ash and crystalline calcite	Ash and Sparite (PV8)	Type 3	
61		SUF.T.38.23	Sierra-flaring	Ash and white calcite			
613		CIV.T.22.5	Sierra-flaring	Crystalline calcite and gray sherd			
615		CIV.T.22.05	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
617		CIV.T.22.05	Sierra-composite	Crystalline calcite			
621		CIV.T.22.05	Sierra-flaring (ir)	Crystalline calcite			
623		CIV.T.22.05	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
63		SUF.L.17.00	Aguila-composite	Gray calcite			
65		SUF.L.17.00	Sierra-flaring	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
66		SUF.L.17.00	Sierra-flaring (ir)	Crystalline calcite			
662		CIV.T.22.04	Sierra-flaring (ir)	Crystalline calcite			
672		CIV.T.22.04	Sierra-composite	Crystalline calcite and gray sherd			
673		CIV.T.22.05	Sierra-flaring (ir)	Gray calcite	Peloid (PV3)	Type 5	
676		CIV.T.22.05	Sierra-composite	Crystalline calcite and white calcite			
678		CIV.T.22.11	Sierra-flaring	Crystalline calcite and orange sherd			
679		SLT.05.28	Sierra-flaring	Crystalline calcite and white calcite			
686		ST.07.03	Sierra-flaring (ir)	Crystalline calcite			
687		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			
688		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			

**Raw Data for Sherds Used in this Study cont'd**

689		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			
69		CIV.T.15.05	Sierra-flaring	Crystalline calcite and orange sherd			
690		CIV.L.06.00	Sierra-flaring	Crystalline calcite and orange sherd			
692		CIV.T.22.01	Sierra-flaring	Crystalline calcite and orange sherd			
693		CIV.T.22.01	Sierra-flaring	Crystalline calcite			
694		CIV.T.22.01	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
698		CIV.T.22.01	Sierra-flaring	Crystalline calcite and gray calcite			
700A		CIV.T.22.01	Sierra-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
706		CIV.T.22.01	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
71		HOL.LT.63.01	Sierra-flaring	Crystalline calcite and gray calcite			
712		CIV.T.22.06	Sierra-composite	Crystalline calcite and orange sherd			
713		CIV.T.22.06	Sierra-composite	Crystalline calcite	Sparite (PV1)	Type 2	
73		HOL.LT.63.01	Sierra-flaring	Ash and white calcite	Sparite and sherd (PV2)	Type 4	X
737		CIV.L.06.00	Sierra-flaring	Crystalline calcite and quartz			
74		CIV.L.5.00	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
749		CIV.L.6.00	Sierra-flaring (ir)	Crystalline calcite			
750		CIV.L.6.00	Sierra-flaring (ir)	Crystalline calcite			
751		CIV.L.6.00	Sierra-flaring (ir)	Crystalline calcite			
752		CIV.L.6.00	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
753		CIV.L.06.00	Sierra-flaring (ir)				
754		CIV.L.6.00	Sierra-flaring (ir)	Ash and crystalline calcite			
758		CIV.T.32.4	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
765		CIV.L.06.00	Sierra-flaring	Ash and crystalline calcite			

**Raw Data for Sherds Used in this Study cont'd**

777		CL.03.01	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
8		ST.21.16	Sierra-flaring	Crystalline calcite			
80		HOL.L.63.60	Sierra-flaring	Crystalline calcite and orange sherd			
805		CIV.T.22.03	Sierra-composite				
805A		CIV.T.22.03	Sierra-composite	Crystalline calcite and orange sherd			
806		CIV.T.22.03	Sierra-flaring	Crystalline calcite			
815		CIV.T.22.07	Sierra-flaring	Crystalline calcite and orange sherd			
817		CIV.T.22.07	Sierra-flaring	Ash and mica			
818		CIV.T.22.07	Sierra-flaring	Crystalline calcite and gray calcite			
823		CIV.T.22.07	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
83		CIV.T.30.03	Sierra-flaring (ir)	Crystalline calcite and white calcite			
832		CIV.T.22.07	Sierra-composite	Crystalline calcite and orange sherd			
834		CIV.T.22.07	Sierra-composite	Crystalline calcite and gray sherd			
836		CIV.T.22.07	Sierra-flaring (ir)	Crystalline calcite and orange sherd			
839		CIV.T.22.07	Sierra-composite	Crystalline calcite and gray sherd			
843		ST.10.09	Sierra-flaring	Gray calcite			
846		ST.10.09	Aguila-composite	Gray calcite			
847		ST.10.09	Aguila-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
853		ST.19.04	Actuncan-composite	Gray calcite and white calcite	Ash (PV7)	Type 1	X
854		HOL.T.49.23	Actuncan-composite	Ash	Crypto-crystalline (PV6)	Type 1	X
855		HOL.T.49.16	Actuncan-composite	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 2	
856		HOL.T.56.01	Actuncan-composite	Crystalline calcite and white calcite			
858		HOL.L.63.07	Aguila-flaring	Gray calcite			

**Raw Data for Sherds Used in this Study cont'd**

862		BLDG.B.RM.1	Ixcanrio-composite	Crystalline calcite and orange sherd	Peloid and sherd (PV5)	Type 5	X
863		BLDG.B.RM.1	Actuncan-composite	Ash and crystalline calcite			
866		HOL.T.49.08	Actuncan-composite	Crystalline calcite and gray calcite			
869		HOL.T.49.13	Boleto-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
870		HOL.T.41.04	Ixcanrio-composite	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 2	
871		HOL.T.56.01	Actuncan-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
872		ST.19.04	Actuncan-composite	Ash and crystalline calcite	Ash (PV7)	Type 1	
874		HOL.T41.04	Aguila-composite	Crystalline calcite	Sparite (PV1)	Type 3	
875		HOL.T.49.04	Aguila-flaring	Gray calcite			
876		BLDG.B.L	Boleto-composite	Crystalline calcite and white calcite	Crypto-crystalline (PV6)	Type 1	
878		HOL.T.41.04	Actuncan-composite	Crystalline calcite			
879		HOL.T.49.04	Ixcanrio-composite				
88		CIV.T.30.03	Sierra-flaring (ir)	Crystalline calcite			
881		BLDG.B.RM.9	Aguila-flaring	Gray calcite			
883		HOL.T.63.01	Aguila-flaring	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
886		BLDG.B.RM.1	Aguila-flaring	Gray calcite			
888		BLDG.B.RM.1	Aguila-flaring	Gray calcite			
889		BLDG.B.RM.1	Aguila-flaring	Gray calcite			
88A		ST.08.05	Sierra-flaring (ir)	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 3	
89		ST.08.05	Sierra-flaring (ir)	Crystalline calcite			
891		BLDG.B.L.	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
892		BLDG.B.L	Aguila-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
893		BLDG.B.L.	Aguila-flaring	Gray calcite and orange sherd	Peloid and sherd (PV5)	Type 5	
894		BLDG.B.L	Aguila-flaring	Gray calcite			
895		SUF.08.03	Aguila-composite	Gray calcite			
897		SUF.L.08.00	Ixcanrio-composite	Crystalline calcite			

**Raw Data for Sherds Used in this Study cont'd**

898		HOL.T.41.02	Actuncan-composite	Ash and crystalline calcite			
900		HOL.T.41.02	Boleto-composite	Gray calcite			
904		ST.17.12	Aguila-composite	Gray calcite			
905		HOL.T.49.13	Boleto-composite	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
906		HOL.T.49.16	Actuncan-composite	Gray calcite			
918		CLT.02.14	Actuncan-composite	Gray calcite	Peloid (PV3)	Type 5	
921		SUF.T.36.03	Aguila-composite	Gray calcite			
922		HOL.T.41.06	Ixcanrio-composite	Crystalline calcite and gray sherd	Sparite and sherd (PV2)	Type 3	
926		HOL.T.63.03	Aguila-composite	Gray calcite			
927		HOL.T.41.06	Actuncan-composite	Ash and crystalline calcite			
928		HOL.T.41.06	Actuncan-composite	Ash and crystalline calcite			
929		KOL.T.13.05	Ixcanrio-composite	Crystalline calcite and white calcite	Sparite (PV1)	Type 3	
931		SUF.T.26.00	Actuncan-composite	Ash and crystalline calcite	Ash (PV7)	Type 1	
932		SUF.T.37.03	Boleto-composite	Gray calcite	Peloid (PV3)	Type 5	
934		SUF.L.17.00	Boleto-composite	Crystalline calcite			
935		HOL.T.49.16	Aguila-composite	Gray calcite			
936		HOL.T.49.17	Actuncan-composite	Crystalline calcite	Sparite (PV1)	Type 4	
937		ST.20.22	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
939		ST.08.02	Aguila-composite	Gray calcite			
940		KOL.T.10.02	Boleto-composite	Gray calcite			
941		SUF.L.08.00	Boleto-composite	Crystalline calcite	Sparite (PV1)	Type 2	
942		KOL.T.02.07	Aguila-composite	Gray calcite			
943		HOL.T.49.04	Boleto-composite	Gray calcite and white calcite	Peloid and bioclasts (PV4)	Type 5	
944		HOL.T.63.14	Aguila-flaring	Crystalline calcite			
945		HOL.LT.63.01	Boleto-composite	Crystalline calcite			
946		HOL.LT.63.01	Boleto-composite	Gray calcite and white calcite			
948		KOL.T.10.02	Aguila-composite	Gray calcite	Peloid (PV3)	Type 5	
949		KOL.T.03.03	Aguila-composite	Gray calcite			
955		HOL.T.49.23	Aguila-composite	Gray calcite			

**Raw Data for Sherds Used in this Study cont'd**

956		ST.21.13	Sierra-flaring	Ash and crystalline calcite	Sparite (PV1)	Type 3	X
961		HOL.T.49.13	Aguila-flaring	Gray calcite			
962		HOL.T.49.13	Aguila-flaring	Gray calcite			
963		HOL.T.49.13	Aguila-flaring	Gray calcite			
964		HOL.T.49.13	Aguila-flaring	Gray calcite			
965		HOL.T.56.01	Aguila-flaring	Gray calcite			
966		HOL.T.56.01	Aguila-flaring	Gray calcite			
968		HOL.T.56.01	Aguila-flaring	Gray calcite			
969		HOL.T.56.01	Aguila-flaring	Crystalline calcite and white calcite	Sparite (PV1)	Type 3	
97		SUF.T.37.03	Sierra-flaring	Crystalline calcite			
972		HOL.T.56.01	Aguila-flaring	Gray calcite			
975		HOL.T.56.01	Aguila-flaring	Crystalline calcite			
976		HOL.T.56.01	Aguila-flaring	Crystalline calcite	Sparite (PV1)	Type 2	
977		HOL.T.56.01	Aguila-flaring	Gray calcite			
98		ST.08.55	Sierra-flaring	Crystalline calcite			
980		HOL.T.49.04	Aguila-flaring	Gray calcite	Peloid and bioclasts (PV4)	Type 5	
981		HOL.T.49.04	Aguila-flaring	Gray calcite			
986		HOL.T.49.07	Aguila-flaring	Gray calcite			
99		ST.08.55	Sierra-flaring	Crystalline calcite and orange sherd	Sparite and sherd (PV2)	Type 3	
993		HOL.T.49.16	Aguila-flaring	Gray calcite and white calcite			
995		HOL.T.49.23	Aguila-flaring	Gray calcite			
996		HOL.T.49.04	Aguila-flaring	Gray calcite			
997		HOL.T.49.14	Aguila-flaring	Crystalline calcite and white calcite	Sparite (PV1)	Type 3	
	c5641	BLDG. B. RM.8	Sierra-flaring				
	c5651a	BLDG. B. RM.8	Sierra-flaring				
	c5651b	BLDG. B. RM.8	Sierra-flaring				
	c5650	BLDG. B.RM 8 V	Ixcanrio-composite				
	c5657	BLDG. B. RM. 9	Ixcanrio-composite				

**Raw Data for Sherds Used in this Study cont'd**

	c5659	BLDG. B. RM. 9	Ixcario-composite				
	c5663	BLDG. B. RM 10	Boleto-composite				
	c5664	BLDG. B. RM 10	Boleto-composite				
	c5683	BLDG. B RM 7	Aguila-composite				

APPENDIX H: WHOLE VESSEL CATALOGUE (2000-2007 SEASONS)

*Whole Vessel Number:* SF#(HOL.GII.STR.F.L.6.0)

*Context:* HOL.GII.STR.F.L.6.0

*Type-Variety:* Altamira Fluted: Altamira Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium grained, carbonate, buff/yellow (10YR7/3) paste. Major inclusion is crystalline calcite with the addition of gray calcite, grog, and burnt organics. No evidence of paste core.

*Surface finish and decoration:* Exterior surface is well smoothed and highly polished. A large cream or tan colored fire cloud appears near the base of the vessel. The vessel has wide vertical gadrooning on the exterior extending from just above the base to just below the outcuring neck. Color is red (10R4/8). Interior is well smoothed, highly polished, and red (10R4/8).

*General Form:* Recurving vase with modified medial flange, outcurving neck, direct rim, and rounded lip. Base could be flat.

*Rim Diameter:* 26cm

*Lip Thickness:* 7.09mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#( SUF.STR.2.LT.01)

*Context:* SUF.STR.2.LT.01

*Type-Variety:* Aguila Orange: Aguila Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, buff colored (10YR8/4) paste.

Inclusions include crushed volcanic ash, slightly larger pieces of volcanic tuff, and mica. A small light gray paste core is present on the interior and exterior of the cross section.

*Surface finish and decoration:* Exterior is generally well smoothed and polished, but with a chalky feel or texture. Color is a red-orange (2.5YR4/8). Fire cloud and rootlet marks are present. Interior is well smoothed and highly polished with a hard glossy feel or texture. Color is orange (2.5YR5/8). Rootlet marks are present.

*General Form:* Bowl with flaring sides, direct rim, and rounded lip.

*Rim Diameter:* 23cm

*Lip Thickness:* 5.04mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.08.34.02.01

*Context:* ST.08.34

*Type-Variety:* Dos Hermanos Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine texture, carbonate based, and buff colored (2.5Y8/2) paste.

Major visible inclusion on the microscopic level is crystalline calcite with very sparing amounts of gray calcite. No evidence of paste core.

*Surface finish and decoration:* Exterior surface is well smoothed, polished and glossy. Color is red (10R4/8). No signs of fire clouds or crazing, but rootlet marks are present. Interior surface is also well smoothed, polished, and glossy. Color is red (10R4/8). No signs of fire clouds or crazing, but rootlet marks are present.

*General Form:* Bowl with composite sides, direct rim, rounded lip, and basal flange. Vessel probably has a ring base.

*Rim Diameter:* 30cm

*Lip Thickness:* 6.71mm

*Height:* ----

*Illustration:* H.1



Figure H.1 SF# ST.08.34.02.01, Dos Hermanos Red: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# SUF.L8.01.03.01

*Context:* SUF.L8.01

*Type-Variety:* Balanza Black: Balanza Variety

*State of Preservation:* Whole and restored

*Paste, firing, and temper:* Fine textured, carbonate based, black or dark brown paste (10YR5/2).

Major inclusion is fine-grained crystalline calcite. A large black firing core on the interior and exterior of the cross section is visible.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and glossy. Color is black (10YR3/1). Interior is well smoothed, well polished, and glossy. Color is also black (10YR3/1)

*General Form:* Pot-stand with flaring sides, direct rim, and rounded lip.

*Rim Diameter:* 5cm

*Lip Thickness:* 3.4mm

*Height:* 13.54

*Illustration:* ----

*Whole Vessel Number:* SF#(ST.17.39)

*Context:* ST.17.39

*Type-Variety:* Nitan Composite: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed volcanic carbonate (no signs of carbonate inclusions, but reacts to HCL), and buff (10YR8/3). Major inclusions are crushed volcanic glass fibers and some larger pieces of tuff with an occasional burnt piece of organic material. A large gray paste core is visible in the center of the cross section.

*Surface finish and decoration:* Exterior surface is poorly smoothed and unslipped, color is buff (2.5Y8/2). No signs of fire clouds, rootlets, or crazing. Interior is poorly smoothed, unpolished, and slipped an orange-red (2.5YR4/8). Rootlet marks are present.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 17cm

*Lip Thickness:* 6.1mm

*Height:* 5.4cm

*Illustration:* ----

*Whole Vessel Number:* SF#(SUF.STR.2.LT.01)

*Context:* SUF.STR.2.LT.01

*Type-Variety:* Nitán Composite: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed volcanic and carbonate (no signs of carbonate inclusions, but reacts to HCL), and buff to yellow in color (10YR8/4). Major inclusions include crushed volcanic fibers, larger pieces of tuff, and mica. Paste core is present.

*Surface finish and decoration:* Exterior surface is poorly smoothed, unpolished, and unslipped. Color is buff (10YR8/3). Interior is poorly smoothed, unpolished, and slipped an orange-red (2.5YR4/8). Rootles marks are present

*General Form:* Bowl with flaring sides, rim is beveled on the exterior, and lip rounded.

*Rim Diameter:* 28cm

*Lip Thickness:* 8.01

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# SLT.01.03.02.01

*Context:* SLT.01.03

*Type-Variety:* Aguila and Buff: Polished Incised Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), and buff (10YR8/3). Major inclusions include crushed glass fibers, larger pieces of tuff, and an occasional piece of crystalline calcite. No firing core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished and buff in color (10YR8/4). Interior surface is the same. A thin red band of slip or paint is present on the lip. Three incised lines encircle the basal flange of the vessel. Modeling in the form of small lumps also appear on the flange.

*General Form:* Bowl with composite sides, direct rim, squared lip, basal flange, and ring base.

*Rim Diameter:* 33cm

*Lip Thickness:* 6.79mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(CIV.T.30.04)

*Context:* CIV.T.30.04

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR7/4) paste. Major inclusions include crystalline calcite, grog, and burnt organics. A paste core is present in the cross section.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished, and slipped red (10R4/8). A fire cloud is present on the lower wall and base of the vessel. The interior is also well smoothed, well polished, and slipped red (10R4/8). No fire clouds are present, but crazing marks are visible.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 38cm

*Lip Thickness:* 9.92mm

*Height:* 8cm

*Illustration:* H.2

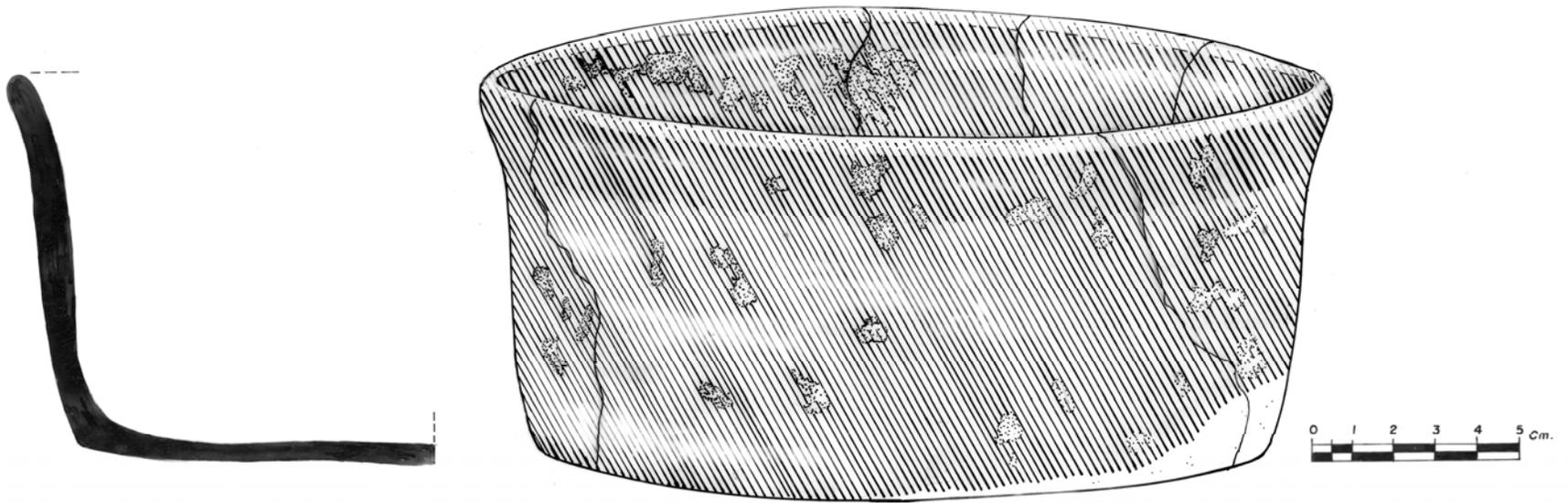


Figure H.2 SF#(CIV.T.30.04), Sierra Red: Sierra Variety

*Whole Vessel Number:* SF#(SUF.L.08.01)

*Context:* SUF.L.08.01

*Type-Variety:* Nitan Composite: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, volcanic based, and buff to yellow in color (10YR7/4). Major inclusions include crushed glass fibers, mica, and larger pieces of volcanic tuff. No paste core is visible.

*Surface finish and decoration:* Exterior is poorly smoothed, unpolished, unslipped, and buff (10YR7/3) in color. Interior is poorly smoothed, slightly burnished, and orange (5YR5/8). Some rootlet marks are present.

*General Form:* Bowl with flaring sides, direct rim, squared lip, and flat base.

*Rim Diameter:* 32cm

*Lip Thickness:* 6.87mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(SUF.L.08.01)

*Context:* SUF.L.08.01

*Type-Variety:* Nitan Composite: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed carbonate and volcanic based, and buff to yellow in color (10YR7/4). Major inclusions include crushed glass fibers, mica, larger pieces of volcanic tuff, and even burnt organics and shell. No signs of firing core.

*Surface finish and decoration:* Exterior is poorly smoothed, unpolished, unslipped and buff (10YR8/3) in color. Interior is well smoothed, well polished, and slipped red-orange (10R4/8). Some signs of rootlet marks.

*General Form:* Bowl with flaring sides, direct rim, squared lip, and flat base.

*Rim Diameter:* 41cm

*Lip Thickness:* 9.04mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(ST.17.24)

*Context:* ST.17.24

*Type-Variety:* Aguila Orange: Aguila Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed carbonate and volcanic based (no signs of carbonate inclusions, but reacts to HCL), and buff to yellow in color (2.5Y7/2). Major inclusions include crushed volcanic fibers, mica, and larger pieces of volcanic tuff. No signs of paste core.

*Surface finish and decoration:* Exterior is smoothed, polished, and slipped orange (2.5YR5/8) with fire clouds and signs of rootlets. Interior is slightly more well smoothed and polished, but also orange (2.5YR5/8) with fire clouds and rootlet marks.

*General Form:* Bowl with composite sides, direct rim, squared lip, basal flange, and ring base.

*Rim Diameter:* 48cm

*Lip Thickness:* 7.59mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.08.52.01

*Context:* ST.08.52

*Type-Variety:* Lucha Incised: Lucha Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, carbonate based paste, pink (5YR6/3) in color. Major inclusions include small crystalline calcite. A core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black fading to gray or brown in some areas (7.5YR4/4). There are signs of rootlets and fire clouds. Post slip incision appears in the form of what Smith (1955) would consider “simple scroll and related elements”. The incision appears to have been applied post-slip and the scrolls extend down from the exterior lip to the middle of the vessel. Interior is also well smoothed, well polished, and slipped black fading to gray (10YR5/2). Fire clouds are present in some areas.

*General Form:* Bowl with round sides, direct rim, and pinched lip. Base form is unknown.

*Rim Diameter:* 17cm

*Lip Thickness:* 3.49mm

*Height:*

*Illustration:* ----

*Whole Vessel Number:* SF# ST.08.05.02.01

*Context:* ST.08.05

*Type-Variety:* Nitan Composite: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, buff colored (2.5Y7/3) paste. Major inclusions include crushed glass fibers, mica, and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is poorly smoothed, not polished, and unslipped. Color is buff (10YR8/2). Interior is poorly smoothed, lightly burnished, and slipped orange (2.5YR6/8). Some rootlet marks are present.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 13cm

*Lip Thickness:* 7.19mm

*Height:* ----

*Illustration:* H.3



Figure H.3 SF# ST.08.05.02.01, Nitan Composite: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF#(ST.08.05.01)

*Context:* ST.08.05.01

*Type-Variety:* Aguila Orange: Aguila Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, mixed volcanic and carbonate (no signs of carbonate inclusions are present, but reacts to HCL), and buff (10YR8/4). Major inclusions include crushed volcanic glass fibers, mica, and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior is smoothed, polished, and slipped orange (2.5YR5/8). Signs of rootlets and fire clouds are present. Interior is slightly better smoothed and polished with the same slip color (2.5YR5/8). Rootlets and fire clouds are also present.

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, and ring base.

*Rim Diameter:* 49cm

*Lip Thickness:* 8.98mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# HM.LT.01.00.02.01

*Context:* HM.LT.01

*Type-Variety:* Boleto Black-on-Orange

*State of Preservation:* Whole, but in pieces

*Paste, firing, and temper:* Paste is fine textured, carbonate based, and buff in color (2.5Y8/2).

Major inclusion is gray calcite. No core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange (5YR6/8) with painted circumferential black bands on the lip and vessel walls. Black semi-circles decorate the basal flange. Rootlet marks are present. Interior is well smoothed, polished with signs present in the form thick burnishing marks, and slipped orange (2.5YR5/8). One black band encircles the upper wall of the vessel at the rim. Signs of rootlets and crazing are present.

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, and ring base.

*Rim Diameter:* 24cm

*Lip Thickness:* 7.41mm

*Height:* ----

*Illustration:* H.4

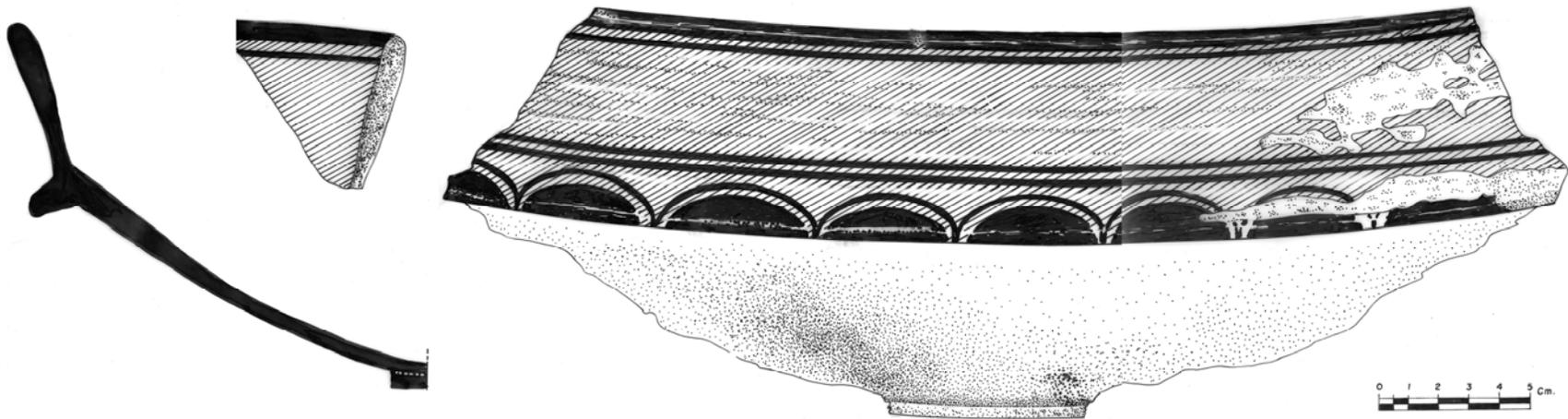


Figure H.4 SF# HM.LT.01.00.02.01, Boletto Black-on-Orange: Variety Unspecified

*Whole Vessel Number:* SF# HM.LT.01.00.02.05

*Context:* HM.LT.01

*Type-Variety:* Actuncan Orange Polychrome: Variety Unspecified

*State of Preservation:* Whole, but in two large pieces

*Paste, firing, and temper:* Paste is fine textured, volcanic, and buff (10YR7/4). Major inclusions include crushed volcanic glass fiber, mica, and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange-yellow (7.5YR6/6). Lip is painted red (10R4/8) with spaced groupings of vertical black lines. Main design panel consists of “reverse angles” (Smith 1955) in red and black and dotted black lines all on the orange slipped background. There are signs of rootlet marks. Interior is well smoothed, well polished, and slipped orange (5YR5/8). Red and black bands encircle the rim. Rootlet marks also appear on the interior.

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, and ring base.

*Rim Diameter:* 23cm

*Lip Thickness:* 6.47mm

*Height:* ----

*Illustration:* H.5

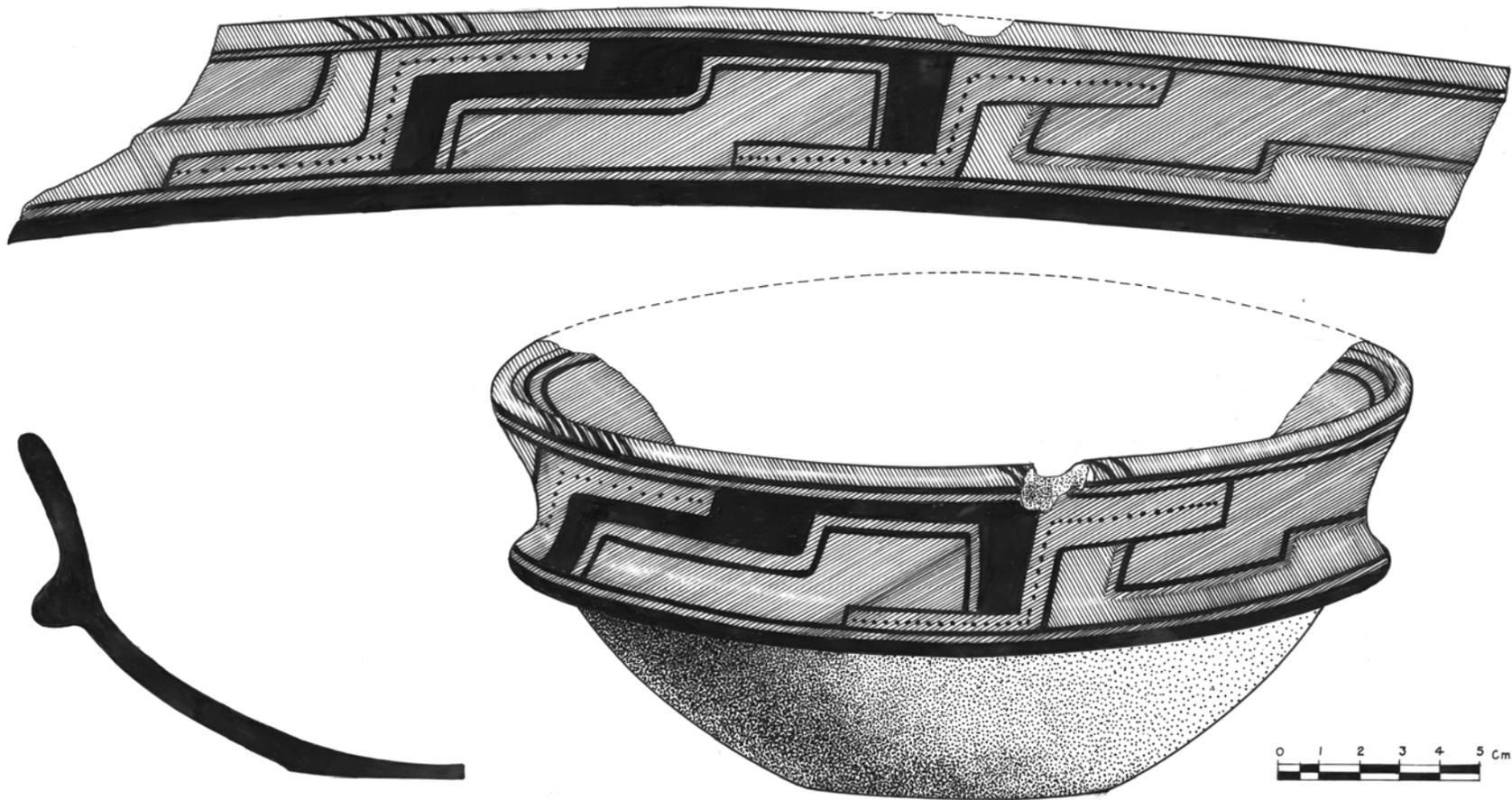


Figure H.5 SF# HM.LT.01.00.02.05, Actuncan Orange Polychrome: Variety Unspecified

*Whole Vessel Number:* SF#(CIV.L.06.00)

*Context:* CIV.L.06.00

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured paste, carbonate based, and yellow (10YR6/4) in color. Major inclusions include crystalline calcite and grog. No paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished, and red (10R4/8). Craze marks and fire clouds are present. The interior is also well smoothed, well polished, and red (10R4/8). Craze marks are present.

*General Form:* Bowl with composite sides, interior thickened rim, squared lip, lateral angle, and flat base.

*Rim Diameter:* 34cm

*Lip Thickness:* 13.94mm

*Height:* 7cm

*Illustration:* ----

*Whole Vessel Number:* SF#(CAR.STR3.LT.01)

*Context:* CAR.STR3.LT.01

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Whole, partially restored

*Paste, firing, and temper:* Paste is medium textured, carbonate based, and yellow to orange in color (7.5YR6/6). Major inclusions include crystalline calcite and grog. A paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished, and slipped red (10R4/8). Cream or tan colored fire clouds extend up from the base. The interior is well smoothed, well polished, and slipped red (10R4/8). Crazing marks are visible.

*General Form:* Bowl with composite sides, interior thickened rim, rounded lip, lateral angle, and flat base.

*Rim Diameter:* 45cm

*Lip Thickness:* 13.69mm

*Height:* ----

*Illustration:* H.6

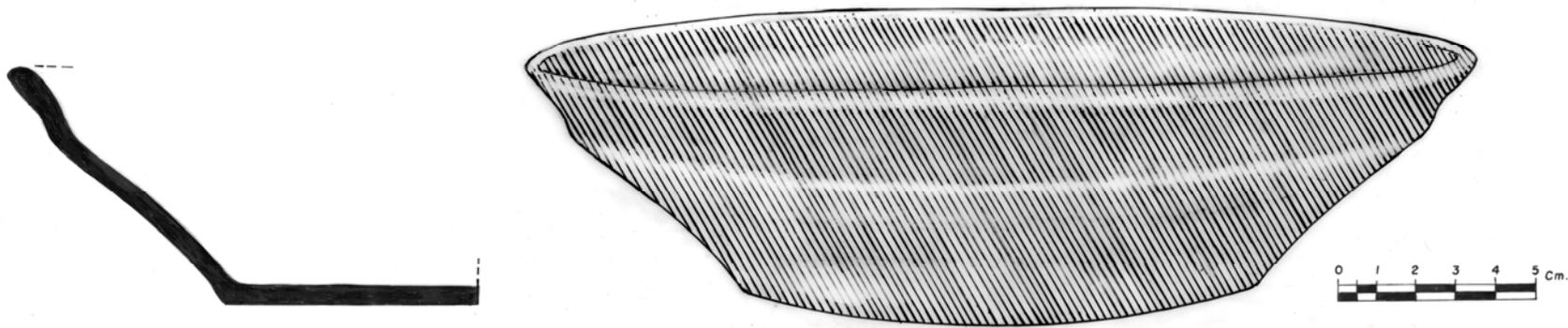


Figure H.6 SF#(CAR.STR3.LT.01), Sierra Red: Sierra Variety

*Whole Vessel Number:* SF#(ST.08.08.01)

*Context:* ST.08.08.01

*Type-Variety:* Aguila and Buff: Polished Variety

*State of Preservation:* Whole, partially restored

*Paste, firing, and temper:* Paste is fine textured, mixed volcanic and carbonate, and buff (2.5Y8/2) in color. Major inclusions include crushed volcanic ash, mica, larger pieces of volcanic tuff, and few pieces of sparitic calcite. A paste core is present.

*Surface finish and decoration:* Exterior is well smoothed and well polished. Color is red (10R4/8). Cream colored fire clouds and rootlet marks are present. Interior is unslipped or possesses a cream or buff colored underslip, but well smoothed and highly polished. Color is 10YR7/4. The buff color appears to be an underslip upon which the red-orange slip is applied to the exterior.

*General Form:* Bucket with vertical walls, horizontal everted rim, rounded lip, and potentially flat base.

*Rim Diameter:* 27cm

*Lip Thickness:* 6.35mm

*Height:* 17cm

*Illustration:* ----

*Whole Vessel Number:* SF# HM.LT.01.00.02.02

*Context:* HM.LT.01

*Type-Variety:* Boleto Black-on-Orange

*State of Preservation:* Whole, partially restored

*Paste, firing, and temper:* Paste is fine textured, carbonate based, and buff (10YR8/3) colored.

Major inclusion is gray calcite. A paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange (2.5YR5/8). A black lip band extends down the exterior rim. One black circumferential band decorates the rim while two decorate the lower register. Black semi-circles decorate the basal flange. The interior is well smoothed, well polished, and slipped orange (2.5YR5/8). The black lip band extends slightly onto the interior vessel rim. One black band decorates the interior rim.

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, and ring base.

*Rim Diameter:* 35cm

*Lip Thickness:* 8.78mm

*Height:*

*Illustration:* ----

*Whole Vessel Number:* SF#(CAR.STR.3.T1)

*Context:* CAR.STR.3.T1

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (7.5YR7/6) paste. Major inclusions include crystalline calcite and grog. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped red (2.5YR4/8). A large cream or tan fire cloud appears on the base of the vessel and extends up the exterior wall. Interior is also well smoothed, well polished, and slipped red (2.5YR4/8). Fire clouds are present.

*General Form:* Bowl with composite sides, direct rim, rounded lip, z-angle basal break, and flat base.

*Rim Diameter:* 25cm

*Lip Thickness:* 8.41mm

*Height:* ----

*Illustration:* H.7

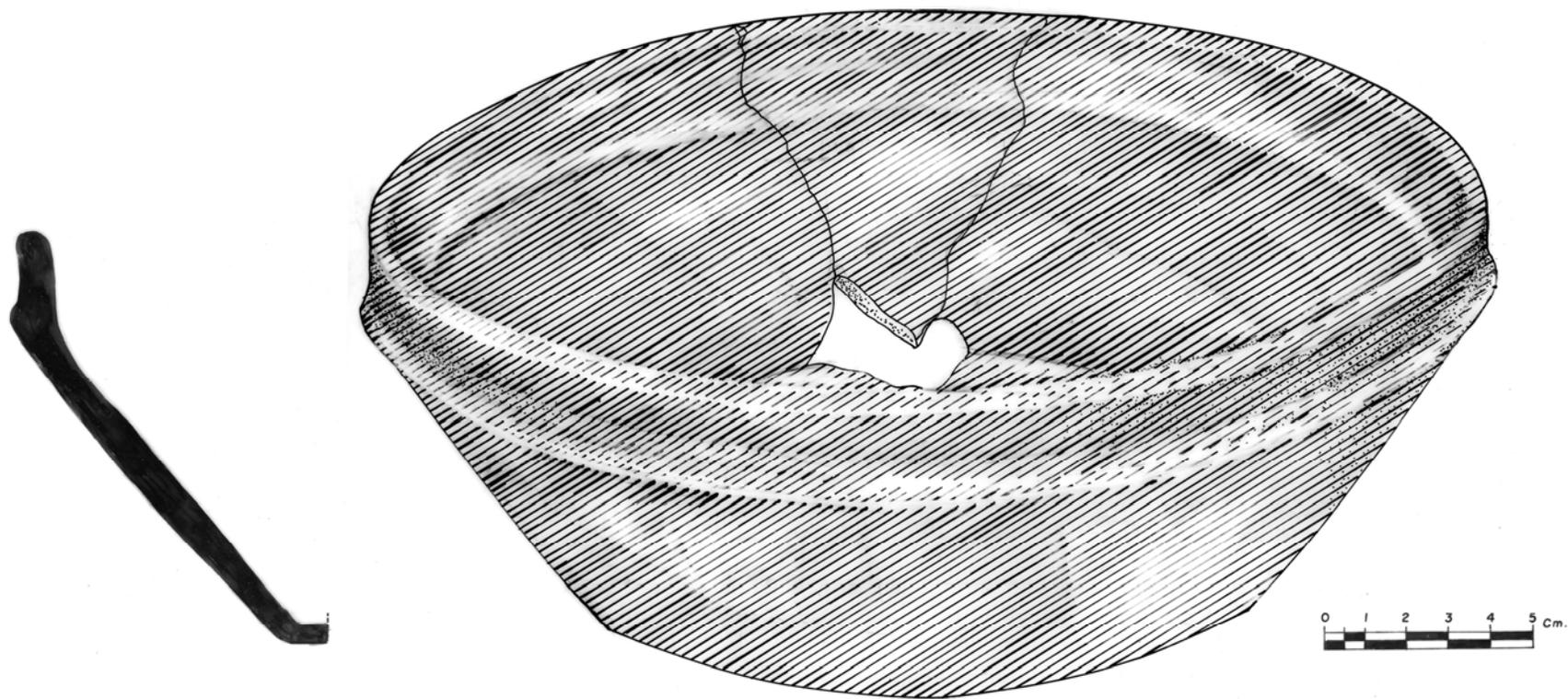


Figure H.7 SF#(CAR.STR.3.T1), Sierra Red: Sierra Variety

*Whole Vessel Number:* SF# ST.08.08.02.01

*Context:* ST.08.08

*Type-Variety:* Lucha Incised: Lucha Variety

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate (no signs of carbonate material, but reacts to HCL), buff colored (2.5Y8/1) paste. Major inclusions include crushed volcanic glass, mica, larger pieces of volcanic tuff, and possibly quartz. A large dark paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished, and slipped black (10YR3/1) fading to gray and sometimes brown. Rootlet marks are present. Main design repeats three times on the exterior vessel wall. The design is an incised trilobed motif composed of three incised scrolls with three droplets motifs below. The motif has been associated with heart sacrifice in some Teotihuacan art. Incision is deep, thick, and performed prior to slipping. Because of the “v” like incision, a pointed tool may have been used to make the designs. Interior is also well smoothed, well polished, and slipped black (10YR3/1).

*General Form:* Bucket with vertical sides, horizontally everted rim, rounded lip, flat base, and hollow slab support scars.

*Rim Diameter:* 28cm

*Lip Thickness:* 8.58mm

*Height:* ----

*Illustration:* H.8, H.9

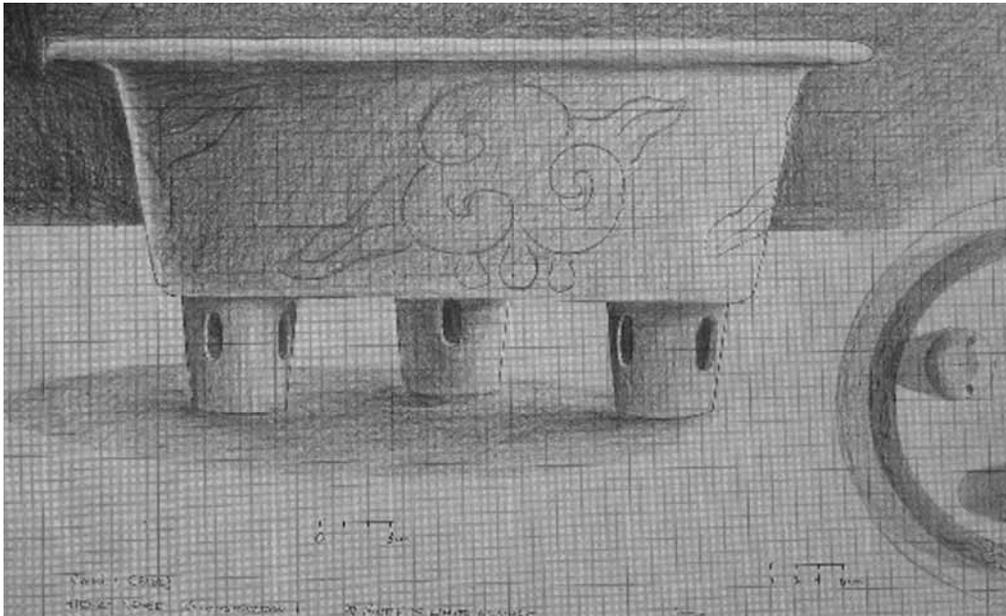


Figure H.8 SF# ST.08.08.02.01, Lucha Incised: Variety Unspecified (drawing by Joel Zovar)



Figure H.9 SF# ST.08.08.02.01, Lucha Incised: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# ST.08.55.02.01

*Context:* ST.08.55

*Type-Variety:* Lucha Incised: Lucha Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, mixed carbonate and volcanic (no signs of carbonate inclusions, but reacts to HCL), buff colored (2.5Y6/2) paste. Major inclusions are crushed fibers of volcanic ash and mica. A paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR3/2) fading to brown and gray. Design consists of post-slip fine line incision in various geometric patterns (“reverse angles”, “u” designs, and triangles). Rootlet marks and fire clouds are present. Interior is poorly smoothed, not polished, and not slipped. Color is buff (10YR7/2).

*General Form:* Apron lid with appliqué handle

*Rim Diameter:* 25cm

*Lip Thickness:* 5.63mm

*Height:*

*Illustration:* H.10



Figure H.10 SF# ST.08.55.02.01, Lucha Incised: Lucha Variety (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF#(SUT.05.09)

*Context:* SUT.05.09

*Type-Variety:* Urita Gauged-Incised: Variety Unspecified

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Fine textured, volcanic, buff colored (2.5Y8/2) paste. Major inclusions are crushed volcanic glass fibers and mica. A paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black but fading to brown (7.5YR3/3). Main design is what could be a series of gauged-incised glyphs or pseudo-glyphs. Some negative areas contain purple-red pigment. A band of screw-heads appears near the base. Fire clouds and rootlet marks are present. Interior is also well smoothed, well polished, and slipped black-brown (7.5YR3/3). Fire clouds and rootlet marks are present.

*General Form:* Vase with vertical walls, flat base, support scars. Rim and lip are unknown because vessel is broken with top parts missing.

*Rim Diameter:* ~25cm (taken from base measurement using diameter chart)

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.11

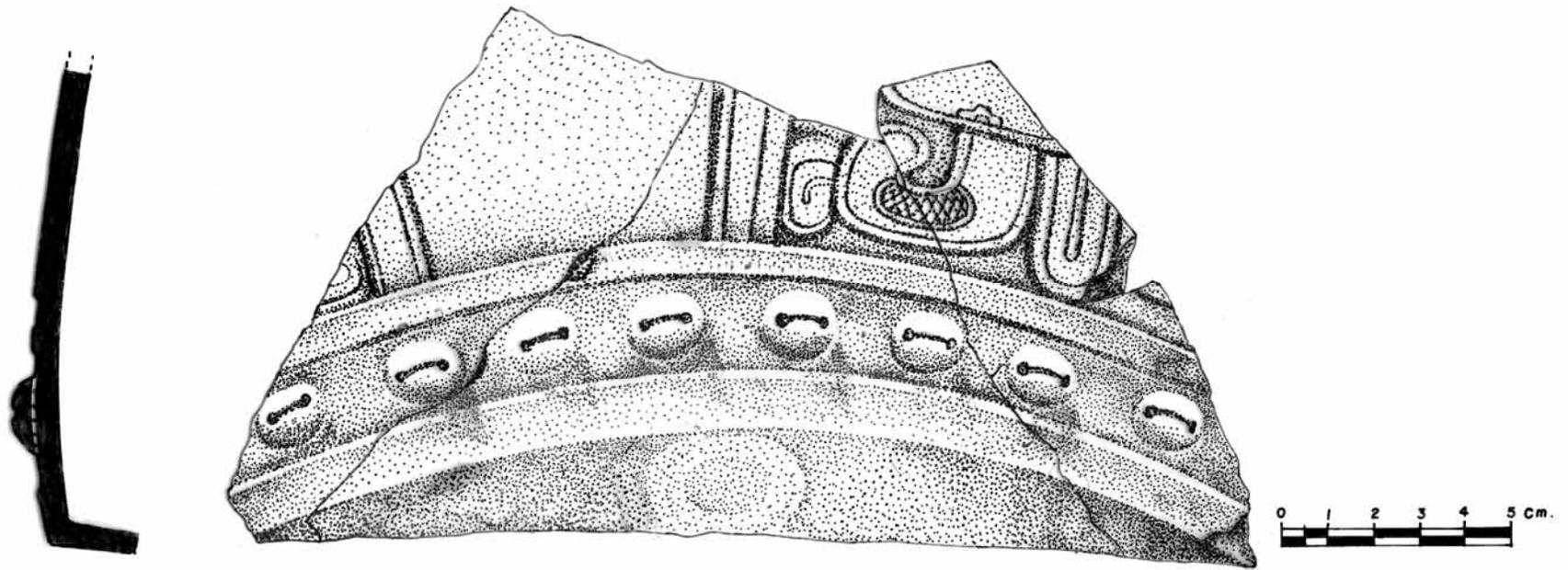


Figure H.11 SF#(SUT.05.09), Urita Gauged-Incised: Variety Unspecified

*Whole Vessel Number:* SF#(KOL.LT.01)

*Context:* KOL.LT.01

*Type-Variety:* Balanza Black: Balanza Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Paste is fine textured, carbonate based, and yellow to buff (2.5Y7/3) in color. Major inclusion is crystalline calcite with some signs of quartz. Firing core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR2/1). Rootlet marks are present. Interior is completely eroded.

*General Form:* Bowl with round sides, spout, direct rim, rounded lip, and flat base.

*Rim Diameter:* 20cm

*Lip Thickness:* 5.52mm

*Height:* 7cm

*Illustration:* H.12



Figure H.12 SF#(KOL.LT.01), Balanza Black: Variety Unspecified

*Whole Vessel Number:* SF#(KOL.LT.01)

*Context:* KOL.LT.01

*Type-Variety:* Lucha Incised: Lucha Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Paste is fine textured, carbonate based, and buff to gray in color (2.5Y7/2). Major inclusion is crystalline calcite. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped a deep thick black (10YR2/1). A band of post-slip fine line incision decorates the rim. Groups of three appliqué buttons decorate the middle vessel wall. Fire clouds and rootlet marks appear. Interior is also well smoothed, well polished, and slipped black (10YR2/1).

*General Form:* Bowl with round sides, direct rim, rounded lip, and flat base

*Rim Diameter:* 21cm

*Lip Thickness:* 5.38mm

*Height:* 6.3cm

*Illustration:* H.13

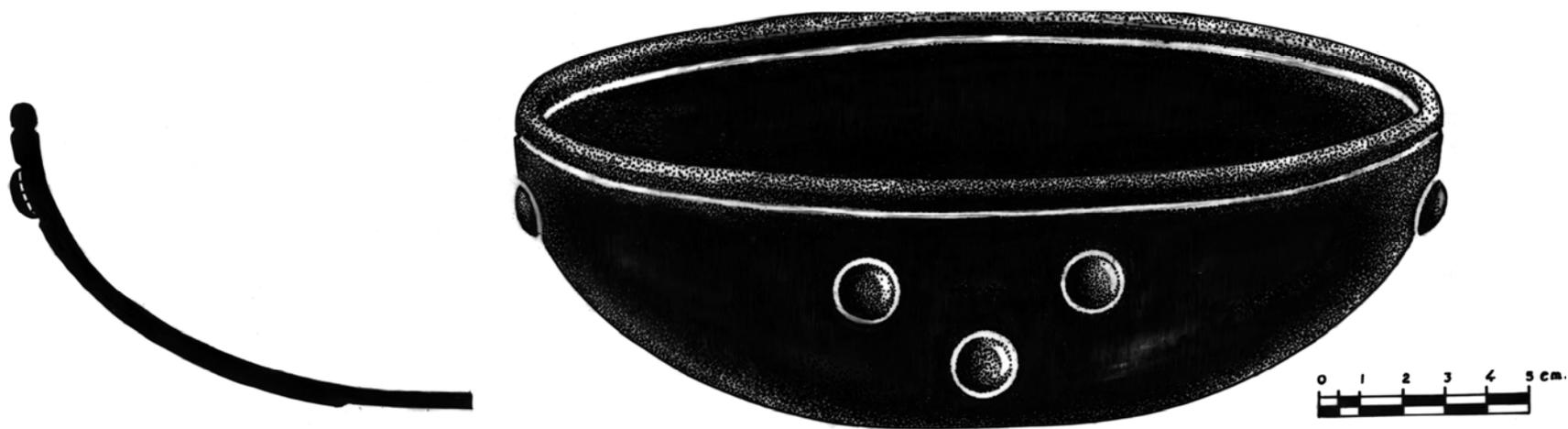


Figure H.13 SF#(KOL.LT.01), Lucha Incised: Variety Unspecified

*Whole Vessel Number:* SF# KLT.01.03.02.01

*Context:* KOL.LT.01

*Type-Variety:* Lucha Incised: Lucha Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate, gray (10YR6/1) colored paste. Major inclusions include crushed glass fibers, mica, larger pieces of volcanic tuff, and minor inclusions of shell and potential gray calcite.

*Surface finish and decoration:* Exterior surface is well smoothed, well polished, and slipped black (10YR3/1). Post-slip fine line incision appears in the form of a band on the exterior rim and a band of chevrons or “u” elements on the basal flange. The interior is also well smoothed, well, polished, and slipped black (10YR2/1). A fire cloud appears on the base.

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, and ring base.

*Rim Diameter:* 27cm

*Lip Thickness:* 6.03mm

*Height:* 7cm

*Illustration:* H.14



Figure H.14 SF# KLT.01.03.02.01, Lucha Incised: Variety Unspecified

*Whole Vessel Number:* SF# CT.08.32.02.01

*Context:* CT.08.32

*Type-Variety:* Eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, volcanic, orange (5YR7/6) paste. Major inclusions are crushed volcanic ash and larger pieces of volcanic tuff. Paste core is present.

*Surface finish and decoration:* Eroded.

*General Form:* Jar with markedly incurving walls, outcurving neck, exterior folded rim, and rounded lip.

*Rim Diameter:* 6cm

*Lip Thickness:* 4.72mm

*Height:* 14cm

*Illustration:* ----

*Whole Vessel Number:* SF# CIV.T.22.12.02.01

*Context:* CIV.T.22.12

*Type-Variety:* Boxcay Brown: Variety Unspecified

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Medium textured, carbonate based, orange (5YR6/6) paste. Major inclusions are crystalline calcite and gray calcite with noticeable ferruginous nodules. Large light paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and brown (7.5YR5/4). Interior is the same.

*General Form:* Jar or recurving vase with markedly incurving sides, outflaring neck, exterior thickened rim, rounded lip, and flat base.

*Rim Diameter:* 14cm

*Lip Thickness:* 6.77mm

*Height:* 9.6cm

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.36.02.01.02

*Context:* CT.08.36

*Type-Variety:* Eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Coarse textured, carbonate based, red (2.5YR4/8) paste. Major inclusion is white calcite with some quartz grains. A firing core is present.

*Surface finish and decoration:* Eroded

*General Form:* Jar with markedly incurving sides, outcurving neck, exterior thickened rim, rounded lip, and round base.

*Rim Diameter:* 8cm

*Lip Thickness:* 5.35mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.22.02.02.01.02

*Context:* CT.08.22

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based, buff colored (10YR8/3) paste. Inclusions include crystalline calcite, crushed volcanic ash fibers, and mica.

Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped red (10R4/8). A fire cloud appears on the exterior near the base. Interior is also well smoothed, well polished, and slipped red (2.5YR4/8).

*General Form:* Bowl with outcurving sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 19cm

*Lip Thickness:* 7.87mm

*Height:* 8.8cm

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.49.02.01.02

*Context:* CT.08.49

*Type-Variety:* Joventud Red: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, volcanic, yellow (10YR6/4) paste. Inclusions are crushed volcanic ash, larger pieces of tuff, and sparse mica. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped red (10R4/8). Some fire clouds appear. Interior of neck is well smoothed, polished, and also slipped red (10R4/8).

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* 8cm

*Lip Thickness:* 7.41mm

*Height:* 37cm

*Illustration:* H.15

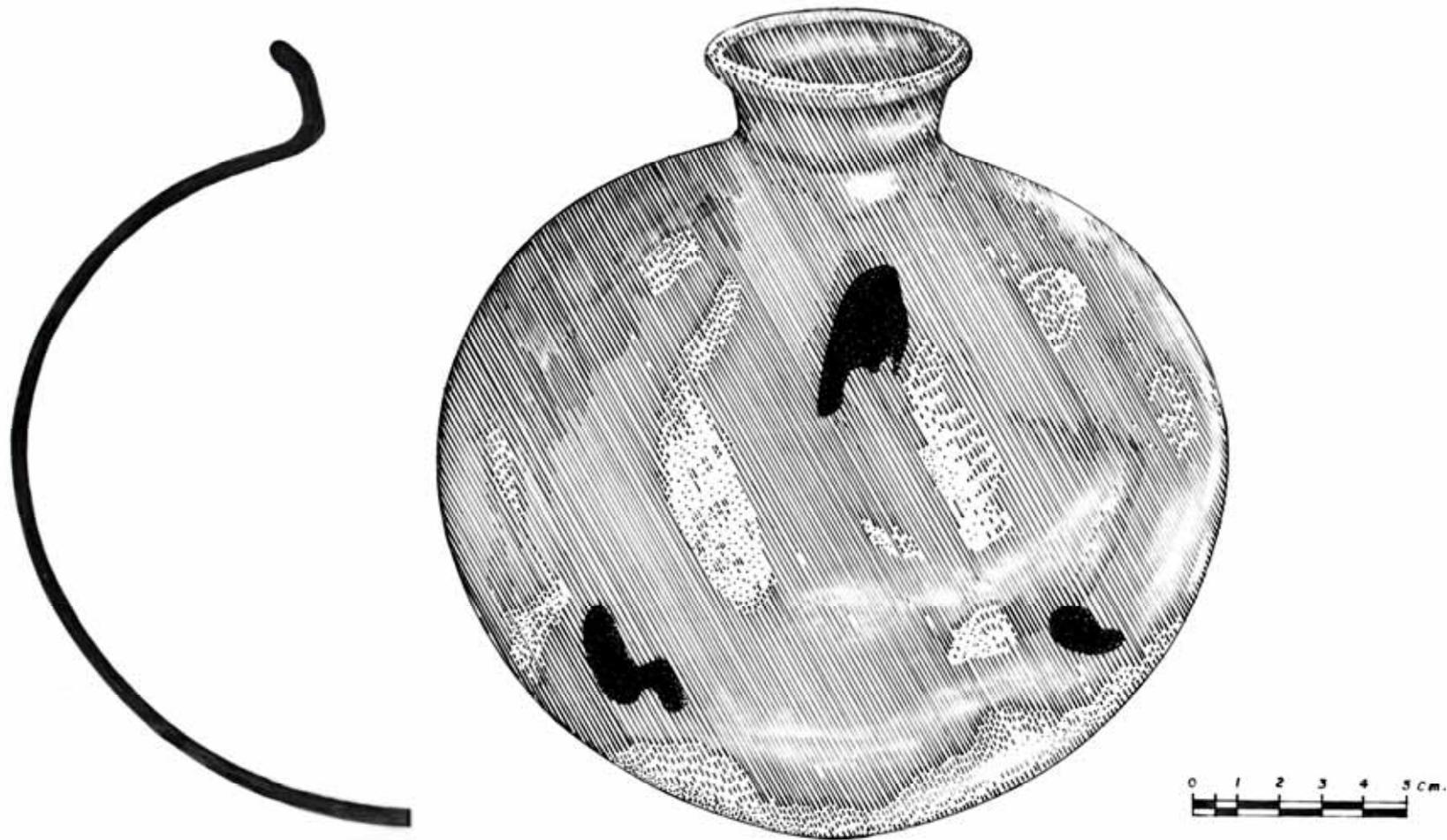


Figure H.15 SF# CT.08.49.02.01.02, Joventud Red: Variety Unspecified

*Whole Vessel Number:* SF# CT.08.47.02.01.02

*Context:* CT.08.47

*Type-Variety:* Chunhinta Black: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, carbonate based, black (2.5Y3/1) paste. Inclusions are crystalline calcite and grog. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR3/1). Interior of neck is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* 7cm

*Lip Thickness:* 7.23mm

*Height:* 35.5cm

*Illustration:* H.16

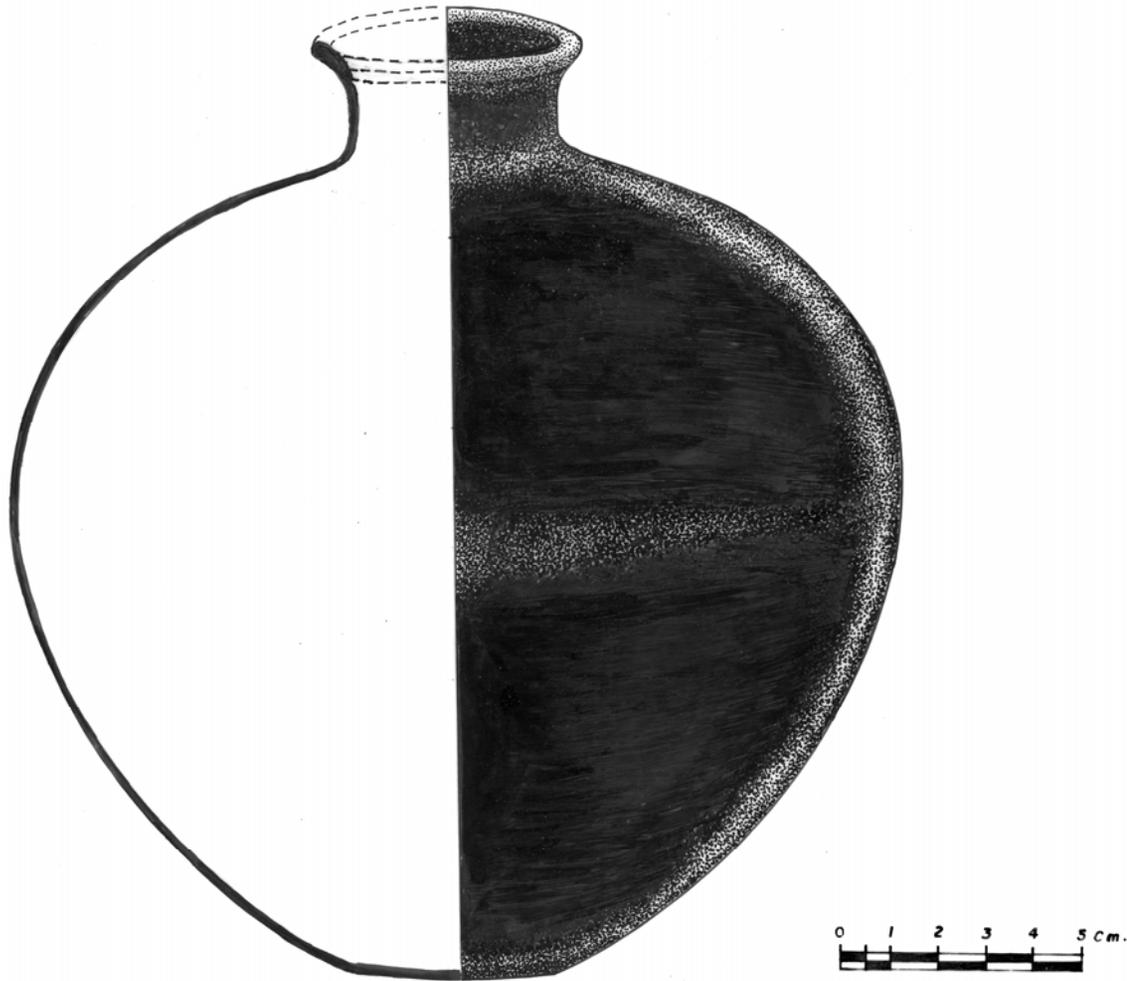


Figure H.16 SF# CT.08.47.02.01.02, Chunhinta Black: Variety Unspecified

*Whole Vessel Number:* SF# CT.08.48.02.01.02

*Context:* CT.08.48

*Type-Variety:* Chunhinta Black: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, volcanic based, yellow (10YR7/2) paste. Major inclusion is crushed volcanic ash. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR3/1). Interior of neck is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* 7cm

*Lip Thickness:* 5.64mm

*Height:* 38cm

*Illustration:* ----

*Whole Vessel Number:* CT.08.59.02.02.02

*Context:* CT.08.59

*Type-Variety:* Chunhinta Black: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (2.5Y6/2) paste.

Inclusions include crystalline calcite, grog, and burnt organics. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR2/1). Interior of neck is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* 8cm

*Lip Thickness:* 6.56mm

*Height:* 37.5cm

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.50.02.01.02

*Context:* CT.08.50

*Type-Variety:* Chunhinta Black: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Coarse textured, carbonate based, orange (7.5YR7/6) paste.

Inclusions include crystalline calcite and grog. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped black (10YR2/1). Interior of neck is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.18.39.02

*Context:* ST.18.39

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR6/6) paste. Major inclusion is crystalline calcite. No paste core present.

*Surface finish and decoration:* Exterior eroded with some patches of red (2.5YR4/8) slip.

Interior appears to have been roughly smoothed, not polished, and unslipped.

*General Form:* Vase with outflaring walls, direct rim, squared lip, and flat base.

*Rim Diameter:* 23cm

*Lip Thickness:* 8.27

*Height:* 14cm

*Illustration:* ----

*Whole Vessel Number:* SF# ST.17.24.01.02

*Context:* ST.17.24

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, volcanic based, yellow (2.5Y6/3) paste. Major inclusions include crushed volcanic ash fibers, mica, and larger pieces of volcanic tuff. No core present.

*Surface finish and decoration:* Exterior is extremely eroded with some patches of red-orange (2.5YR5/8) slip. Interior was roughly smoothed, unpolished, and not slipped.

*General Form:* Jar with markedly incurving walls, outcurving neck, direct rim, and rounded lip.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(ST.17.24)

*Context:* ST.17.24

*Type-Variety:* Unnamed Censer Ware (Early Classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate (no signs of carbonate inclusions, but reacts to HCL), buff (2.5Y8/2) colored paste. No firing core.

*Surface finish and decoration:* Exterior vessel surface is well smoothed, unpolished, and unslipped. Color of fired slip is (10YR7/2). Interior is the same.

*General Form:* Composite censer form with flaring wall, direct rim, and squared lip.

*Rim Diameter:* 23cm

*Lip Thickness:* 5.01mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.17.24.01.01

*Context:* ST.17.24

*Type-Variety:* Aguila Orange: Aguila Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate (no signs of carbonate inclusions, but reacts to HCL), buff (2.5Y8/3) colored paste. Inclusions are crushed volcanic glass fibers and mica. No firing core.

*Surface finish and decoration:* Exterior is well smoothed, lightly polished, and slipped orange-red (2.5YR4/8). Fire clouds and rootlet marks are present. Interior is well smoothed, not polished, and unslipped. Color is buff (10YR8/2).

*General Form:* Jar with markedly incurving sides, vertical neck, direct rim, and rounded lip.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.17.24.01.03

*Context:* ST.17.24

*Type-Variety:* Unnamed Censer Ware (Early classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), buff (10YR8/2) colored paste. Inclusions are crushed volcanic glass, mica, and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, not polished, and unslipped.

The unslipped color is buff (10YR8/1). Interior is the same.

*General Form:* Composite censer form, flaring walls, and squared lip.

*Rim Diameter:* 22cm

*Lip Thickness:* 5.43mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.17.24.01.04

*Context:* ST.17.24

*Type-Variety:* Unnamed Censer Ware (Early classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), buff (2.5YR8/1) colored paste. Inclusions are crushed volcanic glass, mica, and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, not polished, and unslipped.

The unslipped color is buff (5Y8/1). Interior is the same.

*General Form:* Composite censer form, vase with flaring walls, and squared lip.

*Rim Diameter:* 18cm

*Lip Thickness:* 4.91mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(ST.17.12)

*Context:* ST.17.12

*Type-Variety:* Chinja Impressed: Forma A

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (2.5Y6/2) paste. Major inclusion is crystalline calcite. No paste core present.

*Surface finish and decoration:* Exterior from lip to line of fingernail impressions is well smoothed, polished, and slipped red-orange (2.5YR5/8). A row of fingernail impressions encircles the vessel approximately one quarter down the vessel surface. Below the impressions, the surface is poorly smoothed with raking marks, not polished, and not slipped. Interior is relatively well smoothed, polished, and slipped orange-red (2.5YR6/8).

*General Form:* Bowl with incurving sides, direct rim, rounded lip, and unknown base.

*Rim Diameter:* 41cm

*Lip Thickness:* 5.06mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.20.02.01

*Context:* ST.20.02

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, mixed volcanic and carbonate based, buff (10YR6/4) colored paste. Inclusions are gray calcite and crushed ash fibers. Mica is rare, but present. No core present.

*Surface finish and decoration:* Exterior of vessel is smoothed, polished, and slipped an orange red (2.5YR5/8). Interior is eroded.

*General Form:* Bowl with incurving sides, interior thickened rim, and rounded lip.

*Rim Diameter:* 36cm

*Lip Thickness:* 7.21mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.17.12.01

*Context:* ST.17.12

*Type-Variety:* Unnamed Censer Ware (Early Classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), buff (10YR8/4) colored paste. Inclusions are crushed volcanic ash fibers, larger pieces of volcanic tuff and mica. Paste core is present.

*Surface finish and decoration:* Exterior surface is well smoothed, not polished, and unslipped.

Color is 10YR8/2. The interior is identical, but with a color of 10YR8/3.

*General Form:* Composite censerware form, flaring sides, direct rim, and squared lip.

*Rim Diameter:* 20cm

*Lip Thickness:* 6.14mm

*Height:*

*Illustration:* ----

*Whole Vessel Number:* SF# SUF.L.08.01.02.01

*Context:* SUF.L.08.01

*Type-Variety:* Unnamed Late Classic Polychrome

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, buff (10YR6/6) colored paste.

Inclusions are crushed ash fibers, larger pieces of tuff, and mica. A paste core is present.

*Surface finish and decoration:* Exterior surface is largely eroded, but it appeared to be well smoothed, well polished, and with an orange slip (2.5YR5/8). Interior is eroded.

*General Form:* Plate or bowl with composite sides, direct rim, rounded lip, basal flange, and support scars.

*Rim Diameter:* 38cm

*Lip Thickness:* 8.06mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# SUF.T.23.55.02.01

*Context:* SUF.T.23.55

*Type-Variety:* Unnamed Polychrome (Late Classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured paste, volcanic based, orange (7.5YR6/6) in color.

Inclusions are crushed volcanic ash fibers, larger pieces of volcanic tuff, and mica. A paste core is present.

*Surface finish and decoration:* Eroded

*General Form:* Plate with flaring sides, direct rim, rounded lip, concave base, and support scars.

*Rim Diameter:* 33cm

*Lip Thickness:* 5.18mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# SUF.T.37.03.02.01

*Context:* SUF.T.37.03

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, carbonate based, yellow (2.5Y7/3) paste. Major inclusion is crystalline calcite. A paste core is present.

*Surface finish and decoration:* Exterior surface is eroded, but patches of red-orange (2.5YR6/8) slip remain. Interior is identical.

*General Form:* Vase with insloping sides, direct rim, and rounded lip.

*Rim Diameter:* 6cm

*Lip Thickness:* 5.23mm

*Height:* ----

*Illustration:* H.17



Figure H.17 SF# SUF.T.37.03.02.01, Tinaja red: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.T.65.02.01.01

*Context:* HOL.T.65.02

*Type-Variety:* Trapiche Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is very fine, volcanic based, and orange (5YR5/6). Major inclusions are crushed fibers of volcanic ash and some quartz. A thin paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, and lightly polished, with black (2.5Y3/1) slip. Interior is the same with the addition of deep straight-line striations on the base. The lines do not crisscross, but were applied at different angles.

*General Form:* Bowl or small plate with incurving sides, direct rim, rounded lip, concave base, and three hollow supports.

*Rim Diameter:* 19cm

*Lip Thickness:* 5.39mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# HOL.T.65.02.02.01

*Context:* HOL.T.65.02

*Type-Variety:* Unnamed Miniature Vessel

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is medium textured, carbonate based, and yellow (2.5Y7/3).

Major inclusion is crystalline calcite. No core is present.

*Surface finish and decoration:* Eroded

*General Form:* Vase with recurving sides, direct rim, and rounded lip. Base unknown.

*Rim Diameter:* 6cm

*Lip Thickness:* 2.99mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# HOL.T.66.02.02.01

*Context:* HOL.T.66.02

*Type-Variety:* Cambio Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is medium textured, carbonate based, and dark brown (10YR4/3). Major inclusion is crystalline calcite. A paste core is present.

*Surface finish and decoration:* Exterior is roughly smoothed, not polished, and unslipped. The color of the unslipped paste is 10YR7/4. Interior finishing is the same with the color 2.5Y8/1.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, and grooved or notched lip. Base unknown.

*Rim Diameter:* 11cm

*Lip Thickness:* 7.59mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# SUF.L.08.01.02.02

*Context:* SUF.L.08.01

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, volcanic based, and orange (7.5YR6/6). Major inclusions are crushed volcanic glass fibers and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped red (10R4/8). Interior is eroded.

*General Form:* Vase with insloping walls, direct rim, and rounded lip. Base unknown.

*Rim Diameter:* 15cm

*Lip Thickness:* 3.19mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# SLT.01.03.02.02

*Context:* SLT.01.03

*Type-Variety:* Orange Polychrome: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, volcanic based, and yellow (10YR6/4). Major inclusions are crushed volcanic glass and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange (2.5YR5/8). Eroded red and black elements are barely visible. Interior is also well smoothed, well polished, and slipped orange (2.5YR5/8). Simple circumferential bands of black and red encircle the rim.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 24cm

*Lip Thickness:* 5.92mm

*Height:* ----

*Illustration:* H.18



Figure H.18 SF# SLT.01.03.02.02, Palmar Orange Polychrome: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.T.24.10.03.01

*Context:* HOL.T.24.10

*Type-Variety:* Unnamed Polychrome (Late Classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is fine textured, volcanic based, and yellow (10YR6/6). Major inclusions are crushed volcanic ash fibers, larger pieces of tuff, and mica. No core is present.

*Surface finish and decoration:* Exterior surface is slightly eroded, but was well smoothed, polished, and slipped orange. Main design appears in red and fine black lines. Birds fly on a background of red horizontal stripes. Interior is eroded.

*General Form:* Vase with insloping sides, direct rim, rounded lip, and base form unknown.

*Rim Diameter:* 14cm

*Lip Thickness:* 5.15mm

*Height:* ----

*Illustration:* H.19

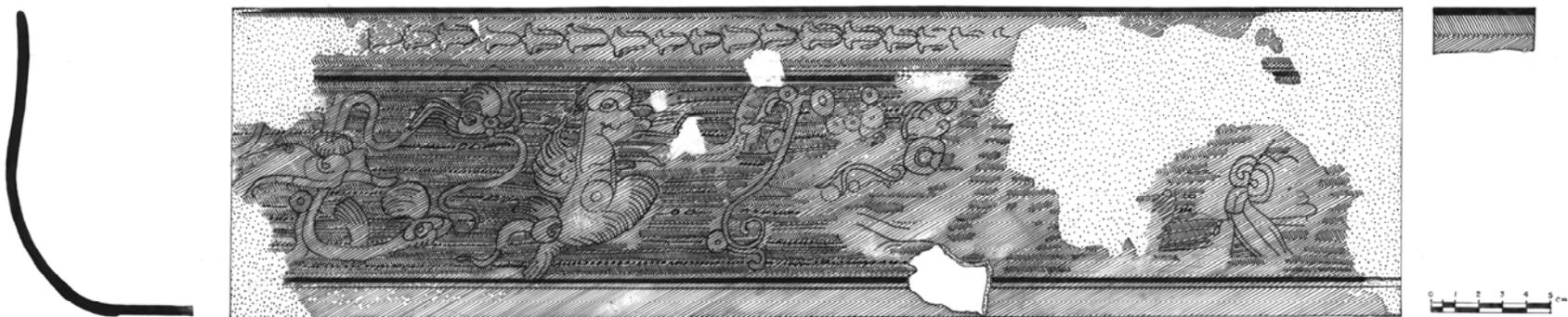


Figure H.19 SF# HOL.T.24.10.03.01, Unknown Late or Terminal Classic Polychrome

*Whole Vessel Number:* SF# CT.08.56.02.01

*Context:* CT.08.56

*Type-Variety:* Unknown

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste medium textured, carbonate based, and yellow (10YR7/4).

Major inclusions are gray calcite and crystalline calcite. No firing core is present.

*Surface finish and decoration:* Eroded.

*General Form:* Unknown due to fragmentary nature.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.08.83.02.01

*Context:* ST.08.83

*Type-Variety:* Quintal Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is medium textured, carbonate based, and gray (5YR7/1).

Major inclusion is crystalline calcite. No core is present.

*Surface finish and decoration:* Exterior surface is smoothed, not polished, and unslipped. Color is buff (2.5Y7/1). Interior is the same with color 10YR7/1.

*General Form:* Jar with markedly incurving sides, vertical neck, exterior thickened rim, and rounded lip. Base unknown.

*Rim Diameter:* 18cm

*Lip Thickness:* 9.32mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# ST.09.02.02.03

*Context:* ST.09.02

*Type-Variety:* Cameron Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), orange (7.5YR7/6) paste. Major inclusions are crushed volcanic fibers and larger pieces of volcanic tuff. No paste core.

*Surface finish and decoration:* Exterior is well smoothed, well polished, slipped an orange-red (2.5YR5/8), and decorated with fine line pre-slip bands of incision. Interior is well smoothed, well polished, and slipped orange (7.5YR7/6).

*General Form:* Vase with insloping sides, direct rim, and squared lip. Base unknown.

*Rim Diameter:* 14cm

*Lip Thickness:* 5.84mm

*Height:* ----

*Illustration:* H.20



Figure H.20 SF# ST.09.02.02.03, Cameron Incised: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# CT.08.60.02.01.02

*Context:* CT.08.60

*Type-Variety:* Unknown

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, mixed volcanic and carbonate based, yellow (2.5Y7/2) paste. Major inclusions are gray calcite, crushed volcanic fibers, and some mica. Paste core is present.

*Surface finish and decoration:* Eroded

*General Form:* Plate with flaring sides, direct rim, squared lip, and flat base.

*Rim Diameter:* 17cm

*Lip Thickness:* 5.48

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(HOL.T.23.10)

*Context:* HOL.T.23.10

*Type-Variety:* Cameron Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Very fine texture, mixed volcanic and carbonate based, orange (7.5YR6/6) paste. Major inclusions are crushed volcanic glass fibers with few grains of white calcite. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange-red (2.5YR5/8). Fine-line pre-slip incision takes the form of horizontal bands on the rim and vertical tick marks on the basal ridge or flange. Interior is also well smoothed, well polished, and slipped red (10R4/8).

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, flat base, and three support scars.

*Rim Diameter:* 32cm

*Lip Thickness:* 5.72mm

*Height:* 9cm

*Illustration:* H.21



Figure H.21 SF#(HOL.T.23.10), Cameron Incised: Variety Unspecified (photos by Francisco Estrada-Belli)

*Whole Vessel Number:* SF#(HOL.TL23.10)

*Context:* HOL.TL23.10

*Type-Variety:* Cameron Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Very fine textured, volcanic and carbonate mixed (no signs of carbonate inclusions, but reacts to HCL), orange (7.5YR7/6) paste. Major inclusion is crushed volcanic ash fibers. No paste core.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange-red (2.5YR5/8). Fine-line pre-slip incision takes the form of horizontal bands on the rim and vertical tick marks on the basal ridge or flange. Interior is also well smoothed, well polished, and slipped red (10R4/8).

*General Form:* Bowl with composite sides, direct rim, rounded lip, basal flange, flat base, and three support scars.

*Rim Diameter:* 28cm

*Lip Thickness:* 6.1mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# HOL.T.35.04.02.01

*Context:* HOL.T.35.04

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR7/2) paste. Major inclusion is crystalline calcite. No paste core is present.

*Surface finish and decoration:* Exterior is smoothed, lightly polished, and slipped red (2.5YR4/4) from the lip extending down the rim. The rest of the exterior is left unslipped and unpolished. Interior is well smoothed, well polished, and slipped red (2.5YR6/2).

*General Form:* Bowl with round sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 18cm

*Lip Thickness:* 7.9mm

*Height:* 6.7cm

*Illustration:* ----

*Whole Vessel Number:* SF# ST.08.80.01.05

*Context:* ST.08.80

*Type-Variety:* Quintal Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Coarse textured, carbonate based, orange (5YR6/6) paste. Major inclusion is crystalline calcite. Paste core is present.

*Surface finish and decoration:* Exterior surface is smoothed, not polished, and not slipped.

Color is buff (10YR8/2). Interior is the same.

*General Form:* Bowl or lid with flaring walls, exterior folded rim, and grooved or notched lip.

Flat base with strainer holes.

*Rim Diameter:* 17cm

*Lip Thickness:* 7.37

*Height:* 6.2cm

*Illustration:* H.22



Figure H.22 SF# ST.08.80.01.05, Quintal Unslipped: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# SUF.T.11.05.02.01

*Context:* SUF.T.11.05

*Type-Variety:* Cambio Unslipped: Variety Unspecified

*State of Preservation:* Whole

*Paste, firing, and temper:* Coarse textured, carbonate based, gray (10YR6/2) paste. Major inclusions are crystalline calcite and quartz. Paste core is present.

*Surface finish and decoration:* Exterior is roughly smoothed, unpolished, and unslipped. Color is buff to yellow 10YR7/3. Interior is the same with a color of 10YR6/3.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, and pie-crust lip. Base is round.

*Rim Diameter:* ---

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.23

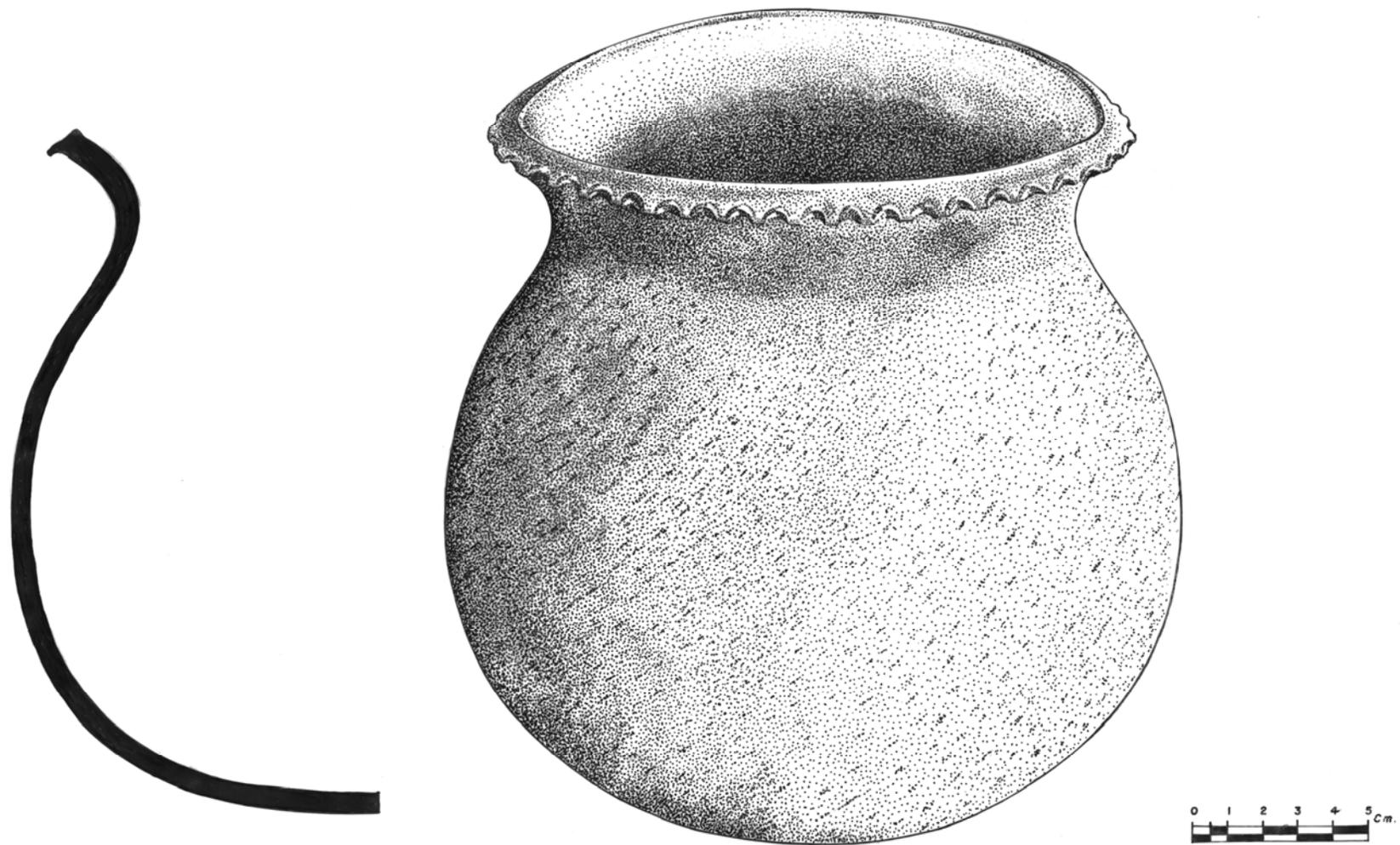


Figure H.23 SF# SUF.T.11.05.02.01, Cambio Unslipped: Variety Unspecified

*Whole Vessel Number:* SF# HOL.T.62.19.02.01

*Context:* HOL.T.62.19

*Type-Variety:* Unnamed Red and Buff Carved

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed carbonate and volcanic based (no signs of carbonate inclusions, but reacts to HCL), yellow (10YR7/4) paste. Major inclusions are crushed volcanic glass fibers, larger pieces of volcanic tuff, and mica. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, polishing is difficult to tell because of the eroded nature of the vessel, but it was possibly moderately polished. The lip and rim are slipped or painted red (10R4/8). The rim contains a band of carved and incised repeating pseudo-glyphs. Carving was performed post-slip as the negative areas show the yellow-buff paste below. Under the band of carved pseudo-glyphs the remainder of the cylinder is fluted with many, relatively thin, vertical lines. Color is buff (10YR8/2). Interior is also well smoothed, the rim is slipped red and polished. The remainder of the interior is unslipped and buff (10YR8/2) in color.

*General Form:* Vase with vertical sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 9cm

*Lip Thickness:* 3.97mm

*Height:* ----

*Illustration:* H.24



Figure H.24 SF# HOL.T.62.19.02.01, Unnamed Red on Buff Carved (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.T.61.13.02.01

*Context:* HOL.T.61.13

*Type-Variety:* Cameron Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), and yellow (10YR6/4) in color. Major inclusions are crushed volcanic glass fiber and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, polished, and slipped an orange-red (2.5YR6/8). Thin pre-slip horizontal lines encircle the rim near the lip. Vertical lines appear on the basal ridge/flange. Interior is also well smoothed, polished, and slipped orange-red (2.5YR5/8).

*General Form:* Bowl or plate with composite sides, direct rim, rounded lip, basal ridge or flange, flat base, and three hollow support scars.

*Rim Diameter:* 28cm

*Lip Thickness:* 6.21mm

*Height:* ----

*Illustration:* H.25



Figure H.25 SF# HOL.T.61.13.02.01, Cameron Incised: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# SUF.T.11.10.02.01

*Context:* SUF.T.11.10

*Type-Variety:* Cameron Incised: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), orange (7.5YR6/6) paste. Major inclusions are crushed volcanic fibers and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* : Exterior is well smoothed, polished, and slipped an orange-red (2.5YR6/8). Thin pre-slip horizontal lines encircle the rim near the lip. Vertical lines appear on the basal ridge/flange. Interior is also well smoothed, polished, and slipped orange-red (2.5YR4/8).

*General Form:* Bowl or plate with composite sides, direct rim, squared lip, basal ridge or flange, flat base, and three hollow support scars.

*Rim Diameter:* 27cm

*Lip Thickness:* 6.44mm

*Height:* ----

*Illustration:* H.26



Figure H.26 SF# SUF.T.11.10.02.01, Cameron Incised: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF#(SLT.01.01)

*Context:* SLT.01.01

*Type-Variety:* Unnamed Polychrome (Late Classic)

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, carbonate based, orange (7.5YR7/6) paste. Major inclusion is crystalline calcite. A paste core is present.

*Surface finish and decoration:* Exterior surface was well smoothed, possibly well polished, and slipped orange (5YR6/8). Design is eroded. Interior surface was also well smoothed, well polished, and slipped orange (2.5YR5/8). Designs are eroded, but were executed in red and black paint.

*General Form:* Plate with flaring sides, direct rim, squared lip, basal ridge or flange, concave base, and three hollow support scars.

*Rim Diameter:* 35cm

*Lip Thickness:* 6.08mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* HM.LT.01.00.02.04

*Context:* SOU.T.27

*Type-Variety:* Chaquiste Impressed: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR6/3) paste. Major inclusion is crystalline calcite. No paste core is present.

*Surface finish and decoration:* Exterior from and down the rim is well smoothed, polished, and slipped red-orange (2.5YR4/4). An appliqué fillet appears approximately a quarter down the exterior wall and is impressed with finger punctations. Below the fillet the vessel is roughly smoothed, unpolished, and not slipped. Interior is well smoothed, well polished, and slipped red-orange (2.5YR4/4).

*General Form:* Bowl with incurving sides, direct rim, rounded lip, base unknown.

*Rim Diameter:* 21cm

*Lip Thickness:* 5.64mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF#(HOL.L.3)

*Context:* HOL.L.3

*Type-Variety:* Zacatel Cream Polychrome: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, red (5YR5/6) paste. Major inclusions are crushed volcanic fibers and larger pieces of volcanic tuff. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped cream (5Y8/1). Eroded designs appear in black and red. Interior is the same.

*General Form:* Plate with flaring walls, direct rim, rounded lip, and flat base. Possibly had supports but the vessel fragments present have no scars.

*Rim Diameter:* 32cm

*Lip Thickness:* 6.26mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# STP.01.03.01

*Context:* STP.01.03

*Type-Variety:* Palmar Orange Polychrome: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, yellow (10YR7/4) paste. Major inclusions are crushed glass fibers and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange (2.5YR6/8). Eroded designs are present in red and black paint. Interior is also well smoothed, well polished, and slipped orange (5YR6/6). Eroded bands appear in black and red.

*General Form:* Plate with flaring sides, direct rim, rounded lip, flat base, and hollow supports.

*Rim Diameter:* 20cm

*Lip Thickness:* 5.64mm

*Height:* ----

*Illustration:* H.27



Figure H.27 SF# STP.01.03.01, Palmar Orange Polychrome: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# ST.09.03.02.01

*Context:* ST.09.01

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, orange (7.5YR6/6) paste. Major inclusions are crushed volcanic glass fibers and larger pieces of volcanic tuff. No core is present.

*Surface finish and decoration:* Exterior is well smoothed, polished, and slipped orange-red (2.5YR5/8). Interior of neck is the same.

*General Form:* Jar with markedly incurving sides, vertical neck, direct rim, and rounded lip.

Base form unknown.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* HAPV72

*Context:* Surface - unknown

*Type-Variety:* Quintal Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR7/3) paste. Major inclusions are crystalline calcite and quartz. No paste core.

*Surface finish and decoration:* Exterior is smoothed, not polished, and unslipped. Color is orange-buff (7.5YR7/3). Interior is also smoothed, unpolished, and not slipped. Color is more buff (10YR7/1).

*General Form:* Jar with markedly incurving sides, vertical neck, exterior thickened or bolstered rim, and rounded lip. Base form is unknown.

*Rim Diameter:* 17cm

*Lip Thickness:* 9.85mm

*Height:* 29cm

*Illustration:* ----

*Whole Vessel Number:* SF# SUF.17.7.57.007

*Context:* SUF.T.23.53

*Type-Variety:* Unnamed Late Classic Orange Polychrome

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Fine textured, volcanic based, orange (7.5YR7/6) paste. Major inclusion is crushed volcanic ash fibers. Paste core present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped orange (7.5YR6/8). Eroded designs appear in black and red paint. Interior is also well smoothed and polished. Color is orange (7.5YR6/8) with bands of red and black on the rim.

*General Form:* Vase with recurving sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 15cm

*Lip Thickness:* 4.03mm

*Height:* 11cm

*Illustration:* ----

*Whole Vessel Number:* SF# STP.01.04.02.01

*Context:* STP.01.04

*Type-Variety:* Sierra Red: Sierra Variety

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR7/4) paste. Major inclusions are crystalline calcite and grog. No firing core present.

*Surface finish and decoration:* Exterior is well smoothed, well polished, and slipped red (10R4/8). A cream or tan fire cloud appears on the base and bottom of the exterior walls. Interior is smoothed, unpolished, and unslipped.

*General Form:* Pitcher with markedly incurving sides, hole for spout, and flat base. Neck and rim are missing.

*Rim Diameter:* Aperture may have measured approximately 8cm (measured using the diameter at the broken neck-break).

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.28



Figure H.28 SF# STP.01.04.02.01, Sierra Red: Sierra Variety (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.T.35.04.02.02

*Context:* HOL.T.35.04

*Type-Variety:* Unammed Modeled Carved

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Medium textured, mixed carbonate and volcanic based, yellow (10YR7/4) paste. Major inclusions are white calcite and crushed volcanic fibers with some mica present. No firing core.

*Surface finish and decoration:* Exterior is well smoothed, polished, and slipped orange-red (2.5YR4/6). Decoration consists of preslip carving. The scene consists of human figures possibly dressed warrior regalia. Interior is well smoothed, unpolished, and unslipped. Color is yellow-buff (10YR7/4).

*General Form:* Vase with vertical sides, rim is not present, flat base with hollow supports.

*Rim Diameter:* ---

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.29



Figure H.29 SF# HOL.T.35.04.02.02, Unnamed Carved (Terminal Classic)

*Whole Vessel Number:* SF# HOL.T.35.02.02.01

*Context:* HOL.T.35.02

*Type-Variety:* Unnamed Late Classic period Orange Polychrome

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), yellow (2.5Y7/3) paste. Major inclusion is crushed volcanic ash fiber. No paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, well polished and slipped orange-brown (7.5YR5/6). Painting is executed in red and black paint, but appears faded or brown, possibly from erosion or over exposure to fire during or after the production process. The main design consists of human figures emptying an upside-down jar. Interior is smoothed, not polished, and not slipped. Color is buff (10YR8/2).

*General Form:* Vase with vertical sides, rim not present, flat base, and hollow supports.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.30

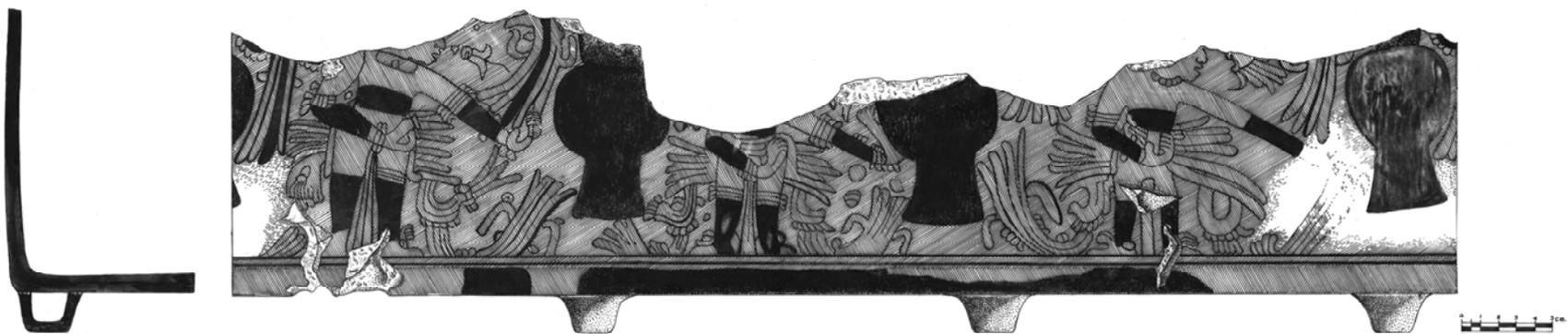


Figure H.30 SF# HOL.T.35.02.02.01, Unknown Late or Terminal Classic Polychrome

*Whole Vessel Number:* SF#(SUF.S.00)

*Context:* SUF.S.00

*Type-Variety:* Zacatel Cream Polychrome: Variety Unspecified

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Fine textured, mixed volcanic and carbonate based (no signs of carbonate inclusions, but reacts to HCL), buff (10YR8/3) colored paste. Major inclusion is crushed volcanic ash fibers with some mica and larger pieces of volcanic tuff. No paste core.

*Surface finish and decoration:* Vessel exterior is well smoothed, well polished, and slipped cream (10YR8/2). Geometric elements appear in red and orange. Interior is also well smoothed, well polished, and slipped cream (10YR8/2). Simple bands of red-orange decorate the rim.

*General Form:* Bowl with round sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 11cm

*Lip Thickness:* 4.25mm

*Height:* 6cm

*Illustration:* H.31



Figure H.31 SF#(SUF.S.00), Zacatel Cream Polychrome: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.LT.13.01.01.02

*Context:* HOL.LT.13.01

*Type-Variety:* Miseria Applique: Variety Unspecified

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Coarse textured, carbonate based, yellow (10YR6/4) paste. Major inclusion is crystalline calcite with some quartz. No paste core.

*Surface finish and decoration:* Exterior is roughly smoothed, unpolished, and unslipped with a yellow-buff color (10YR7/1). Small appliqué spikes decorate the exterior. Interior is also roughly smoothed, unpolished, and unslipped with color 10YR7/3.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 9cm

*Lip Thickness:* 5.2mm

*Height:* 6cm

*Illustration:* H.32



Figure H.32 SF# HOL.LT.13.01.01.02, Miseria Applique: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF# HOL.T.34.03.01

*Context:* HOL.T.34.03

*Type-Variety:* Zacatel Cream Polychrome: Variety Unspecified

*State of Preservation:* Partially restored

*Paste, firing, and temper:* Fine textured, volcanic based, yellow (10YR6/6) paste. Major inclusions are crushed volcanic glass fibers, larger pieces of volcanic tuff, and mica. Paste core is present.

*Surface finish and decoration:* Exterior is well smoothed, polished, and slipped cream (5Y8/1). Geometric designs appear in black with an orange-red rim band. Interior is well smoothed, well polished, and slipped orange (2.5YR6/6) with black and red rim bands.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, flat base, and solid nubbin supports.

*Rim Diameter:* 19cm

*Lip Thickness:* 5.59mm

*Height:* 9cm

*Illustration:* H.33

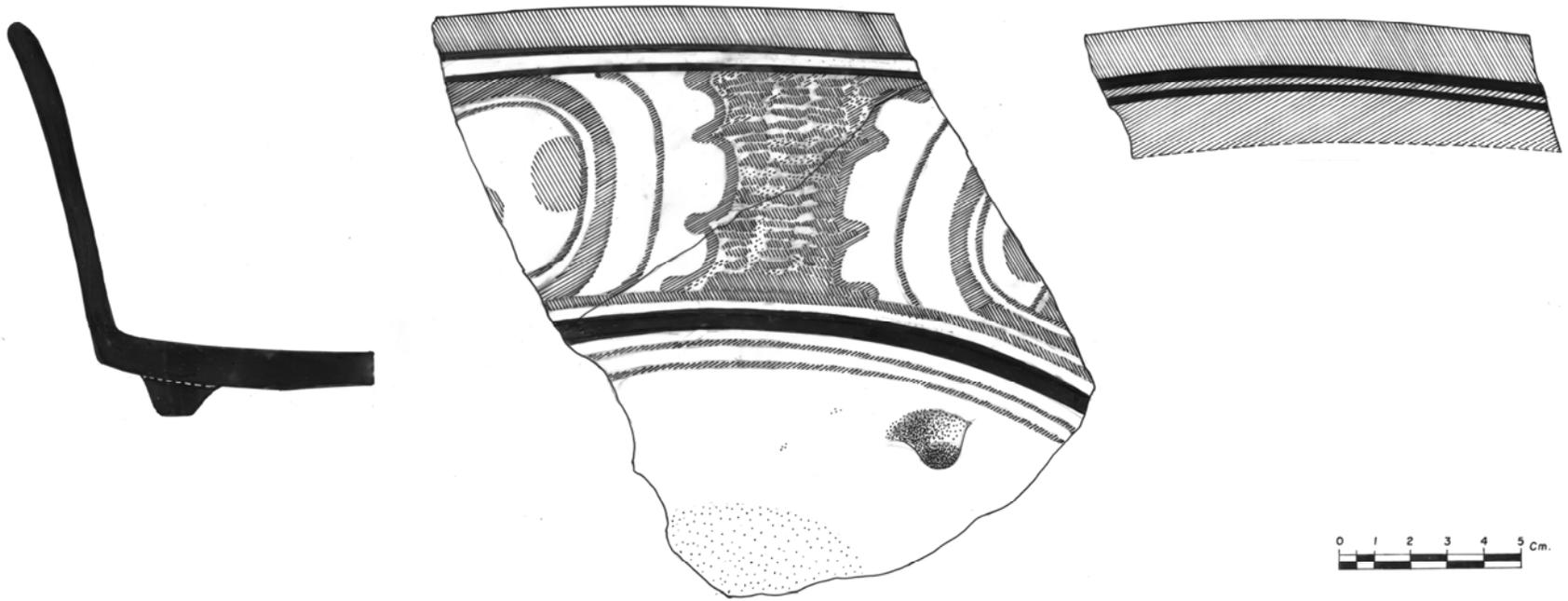


Figure H.33 SF# HOL.T.34.03.01, Zacatel Cream Polychrome: Variety Unspecified

*Whole Vessel Number:* SF# HOL.TP.1.L7

*Context:* HOL.TP.1.L7

*Type-Variety:* Pedregal Modelled: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, mixed volcanic and carbonate based, yellow (10YR6/4) paste. Major inclusions are crystalline calcite, crushed volcanic ash, and some mica. No paste core is present.

*Surface finish and decoration:* Exterior is smoothed, unpolished, and painted red, white, and blue in certain areas. The unslipped color is buff (10YR8/3). A modeled and appliqué face appears on the front of the vessel and looks like a sun god or even “chac” effigy. The vessel has a lid. The interior is smoothed, not polished, and unslipped with buff (10YR8/3) color.

*General Form:* Vase with vertical sides, direct rim, grooved or notched rim, and flat base.

*Rim Diameter:* 17cm

*Lip Thickness:* 8.83mm

*Height:* 27cm

*Illustration:* H.34

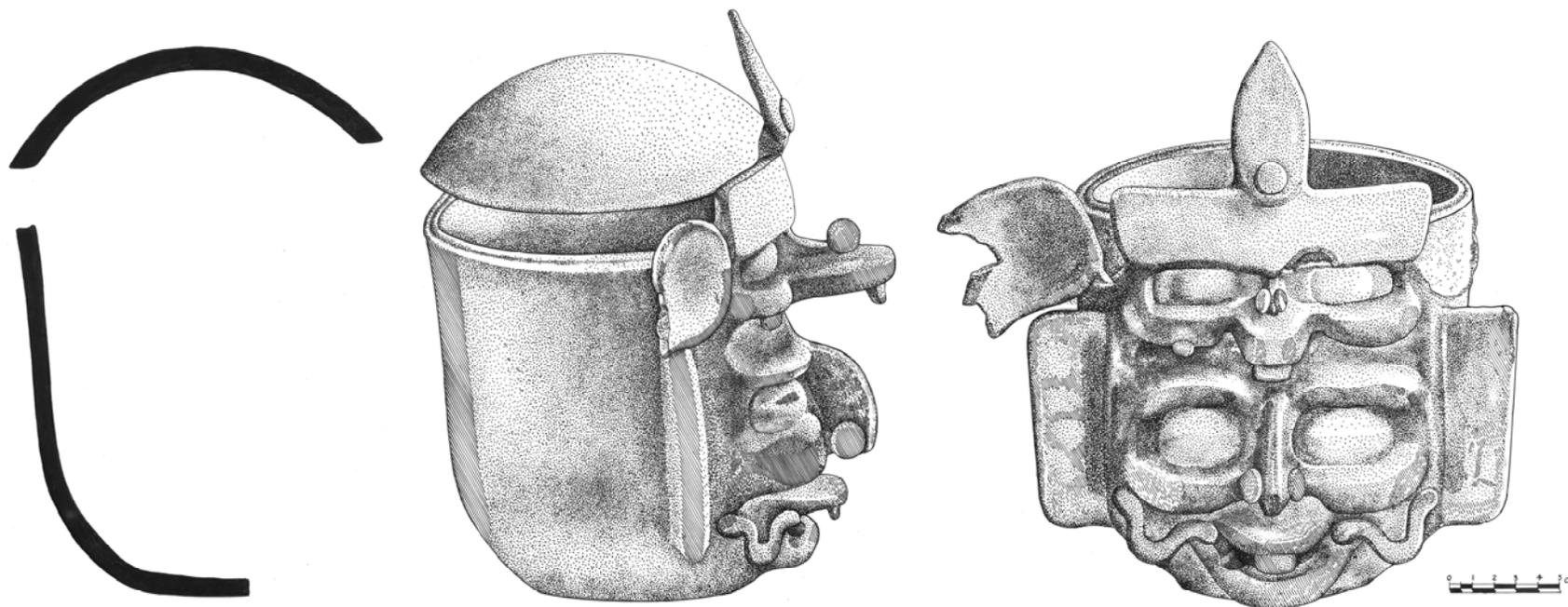


Figure H.34 SF#(HOL.TP.1.L7), Unnamed Modeled and Painted

*Whole Vessel Number:* ----

*Context:* Surface – unknown

*Type-Variety:* Cambio Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is coarse textured, carbonate based, and dark brown (10YR4/2).

Major inclusion is crystalline calcite. No core is present.

*Surface finish and decoration:* Exterior is smoothed, not polished, and unslipped with color 2.5Y6/1. Interior is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, and pie-crust lip.

Base form is unknown.

*Rim Diameter:* 13cm

*Lip Thickness:* 9.35mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# HOL.T.28.33.02.08

*Context:* HOL.T.28.33

*Type-Variety:* Cambio Unslipped: Variety Unspecified

*State of Preservation:* Fragmented

*Paste, firing, and temper:* Paste is coarse textured, carbonate based, and yellow (10YR6/4).

Major inclusion is crystalline calcite. No core is present.

*Surface finish and decoration:* Exterior is smoothed, not polished, and unslipped with color 10YR6/2. Interior is the same.

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, and pie-crust lip.

Base form is unknown.

*Rim Diameter:* 13cm

*Lip Thickness:* 10.09mm

*Height:* ----

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.54.02.01

*Context:* CT.08.54

*Type-Variety:* Unknown - eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (2.5Y7/2) paste. Major inclusion is gray calcite. No paste core.

*Surface finish and decoration:* Eroded

*General Form:* Vase with insloping sides, direct rim, squared lip, and flat base.

*Rim Diameter:* 19cm

*Lip Thickness:* 2.3mm

*Height:* 21cm

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.07.02.01

*Context:* CT.08.07

*Type-Variety:* Unknown - eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, mixed carbonate and volcanic based, yellow (2.5Y7/3) paste. Major inclusions are gray calcite, crushed volcanic ash fibers, crystalline calcite, and some mica. No paste core.

*Surface finish and decoration:* Eroded

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 27cm

*Lip Thickness:* 5.05mm

*Height:* 7cm

*Illustration:* ----

*Whole Vessel Number:* SF# CT.08.52.02.01

*Context:* CT.08.52.02.01

*Type-Variety:* Unknown - eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, mixed carbonate and volcanic based, yellow (2.5Y7/3) paste. Major inclusions are gray calcite, crushed volcanic ash fibers, crystalline calcite, and some mica. No paste core.

*Surface finish and decoration:* Eroded

*General Form:* Vase with insloping sides, direct rim, squared lip, and flat base. Found with lid (HAPV86).

*Rim Diameter:* 13cm

*Lip Thickness:* 5.53mm

*Height:* 16cm

*Illustration:* H.35

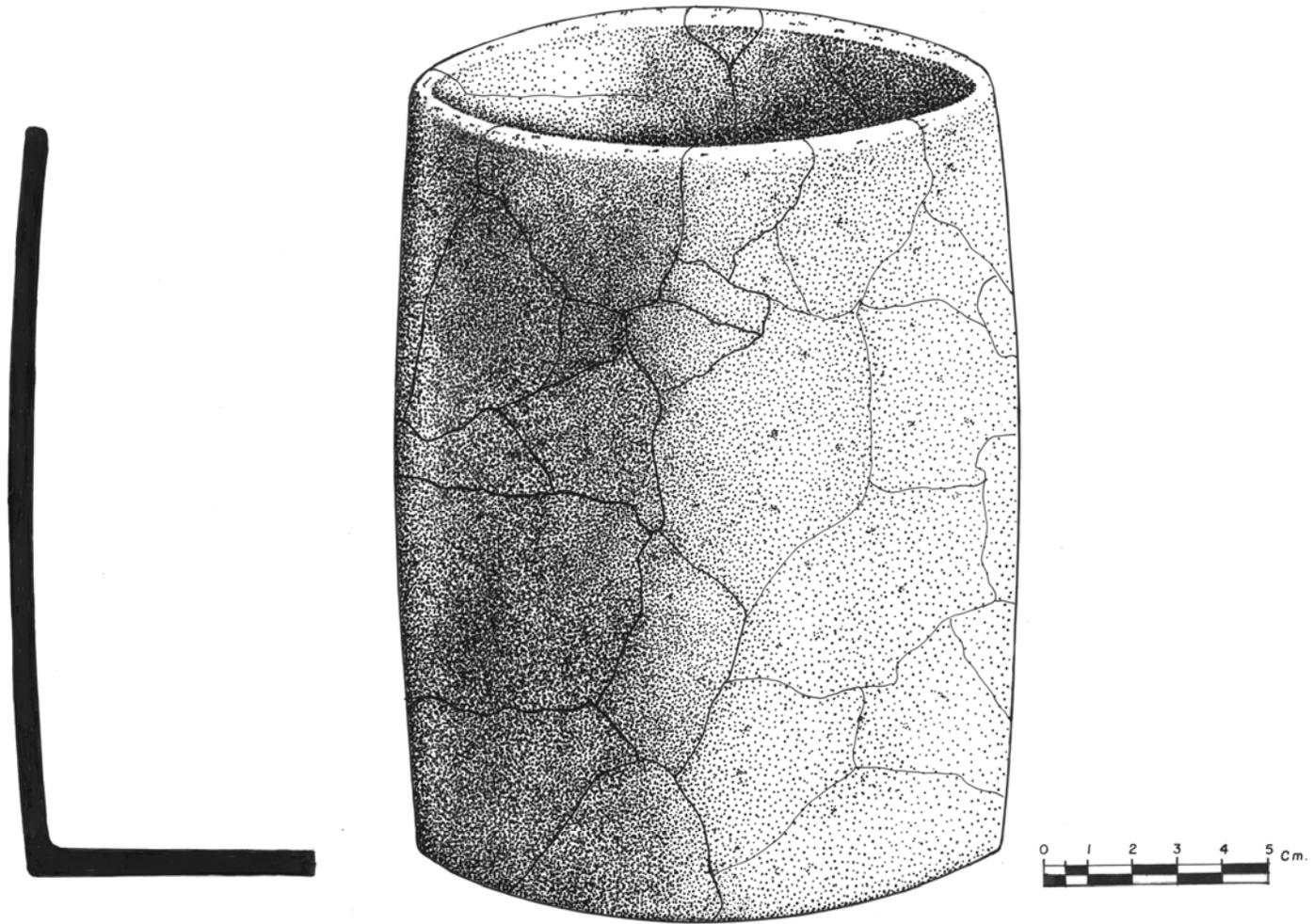


Figure H.35 SF# CT.08.52.02.01, Unknown eroded cylinder

*Whole Vessel Number:* SF# CT.08.52.02.01

*Context:* CT.08.58

*Type-Variety:* Unknown - eroded

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (2.5Y7/2) paste. Major inclusion is gray calcite. No paste core.

*Surface finish and decoration:* Eroded

*General Form:* Lid with vertical sides, direct rim, squared lip, and slightly convex top.

*Rim Diameter:* 18cm

*Lip Thickness:* 8.98mm

*Height:* 5cm

*Illustration:* H.36

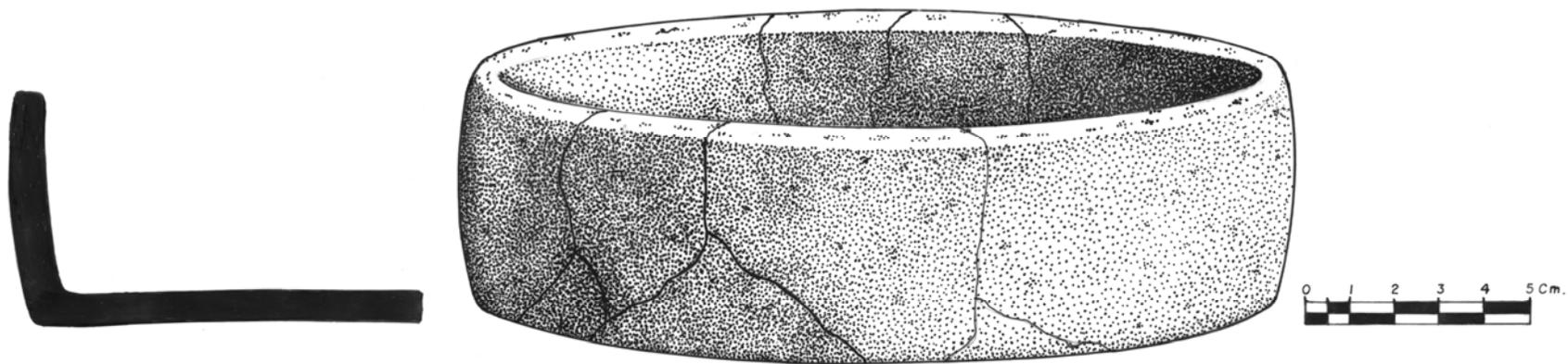


Figure H.36 SF# CT.08.52.02.01, Unknown eroded, possible lid to cylinder vessel

*Whole Vessel Number:* SF#(CIV.S)

*Context:* CIV.S (Surface at Cival)

*Type-Variety:* Unknown - eroded

*State of Preservation:* Whole

*Paste, firing, and temper:* ----

*Surface finish and decoration:* Eroded

*General Form:* Jar with markedly incurving sides, outcurving neck, direct rim, rounded lip, and round base.

*Rim Diameter:* 7cm

*Lip Thickness:* 5.87mm

*Height:* 9cm

*Illustration:* H.37

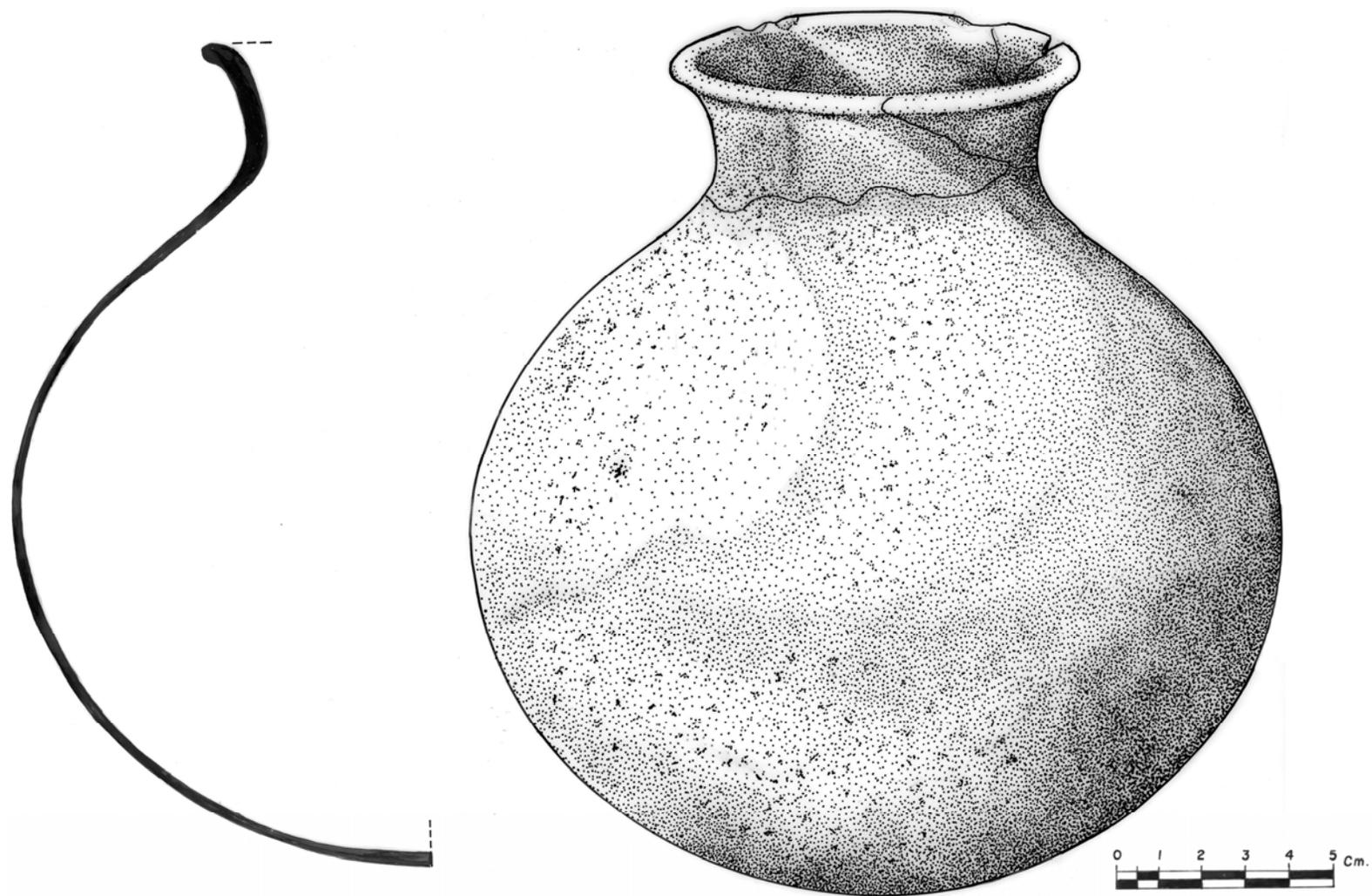


Figure H.37 SF#(CIV.S), Unknown eroded jar

*Whole Vessel Number:* SF# SUF.17.7.57.006

*Context:* SUF.T.17.57

*Type-Variety:* Zacatel Cream Polychrome: Variety Unspecified

*State of Preservation:* Whole

*Paste, firing, and temper:* ----

*Surface finish and decoration:* Exterior is well smoothed, polished, and slipped cream (5Y8/1) with black and orange/red geometric designs. Interior is well smoothed, well polished, and slipped orange (5YR6/6). Simple black and red bands decorate the rim.

*General Form:* Bowl with flaring sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 20cm

*Lip Thickness:* 6.19mm

*Height:* 7cm

*Illustration:* H.38

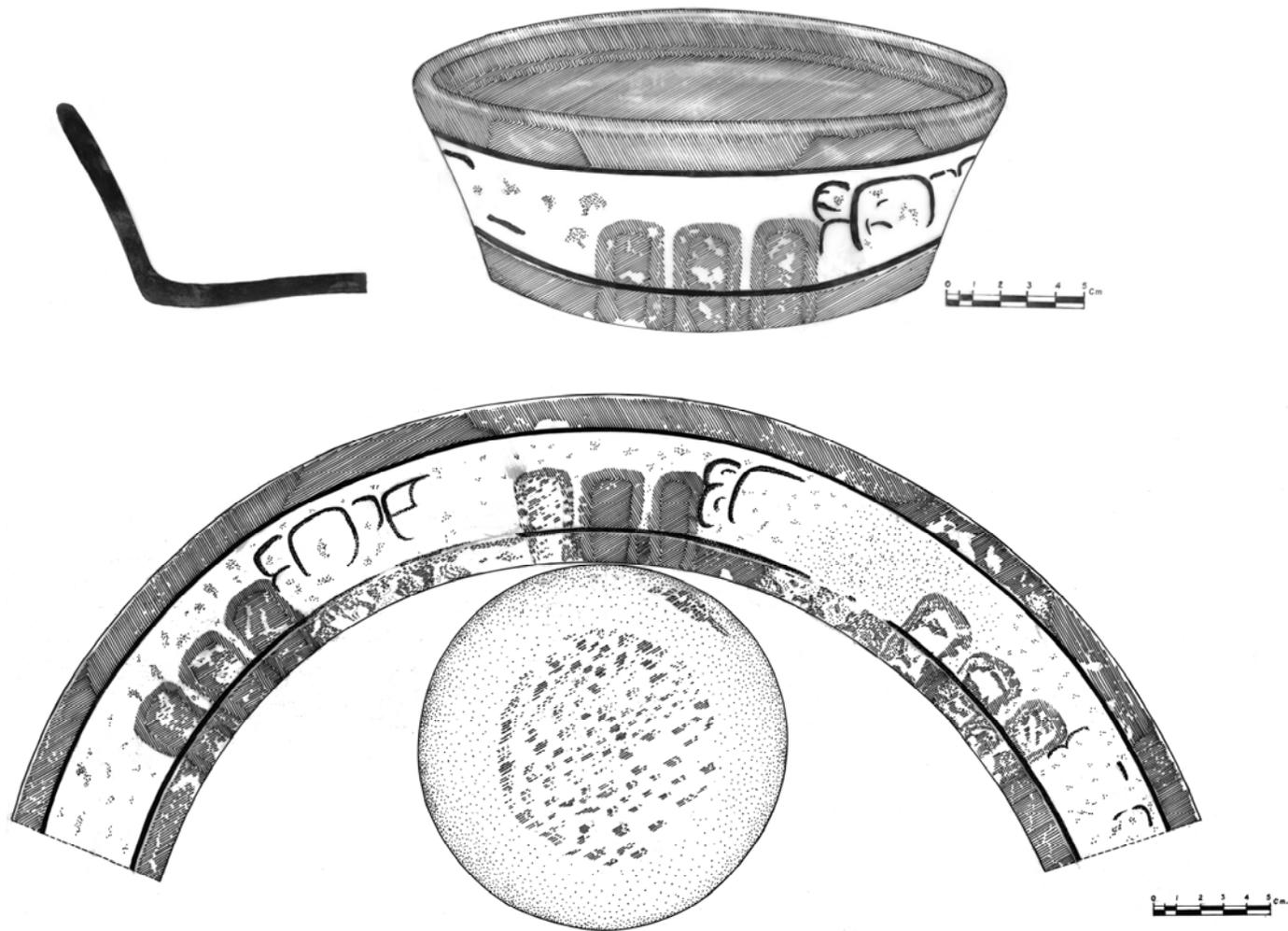


Figure H.38 SF# SUF.17.7.57.006, Zacatel Cream Polychrome: Variety Unspecified

*Whole Vessel Number:* SF# KOL.L.02.08.02.01

*Context:* KOL.L.02.08

*Type-Variety:* Unnamed Modeled Unslipped

*State of Preservation:* Whole

*Paste, firing, and temper:* Coarse textured, carbonate based, gray (2.5Y5/1) paste. Major inclusion is crystalline calcite. No core present.

*Surface finish and decoration:* Exterior is roughly smoothed, unpolished, and unslipped. A generic face appears from simple modeling of a nose, coffee-bean eyes, and ears. The vessel was found with a simple convex lid with small tau-shaped handle. Interior is also roughly smoothed, unpolished, and unslipped.

*General Form:* Vase with vertical sides, direct rim, squared lip, and flat base.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.39

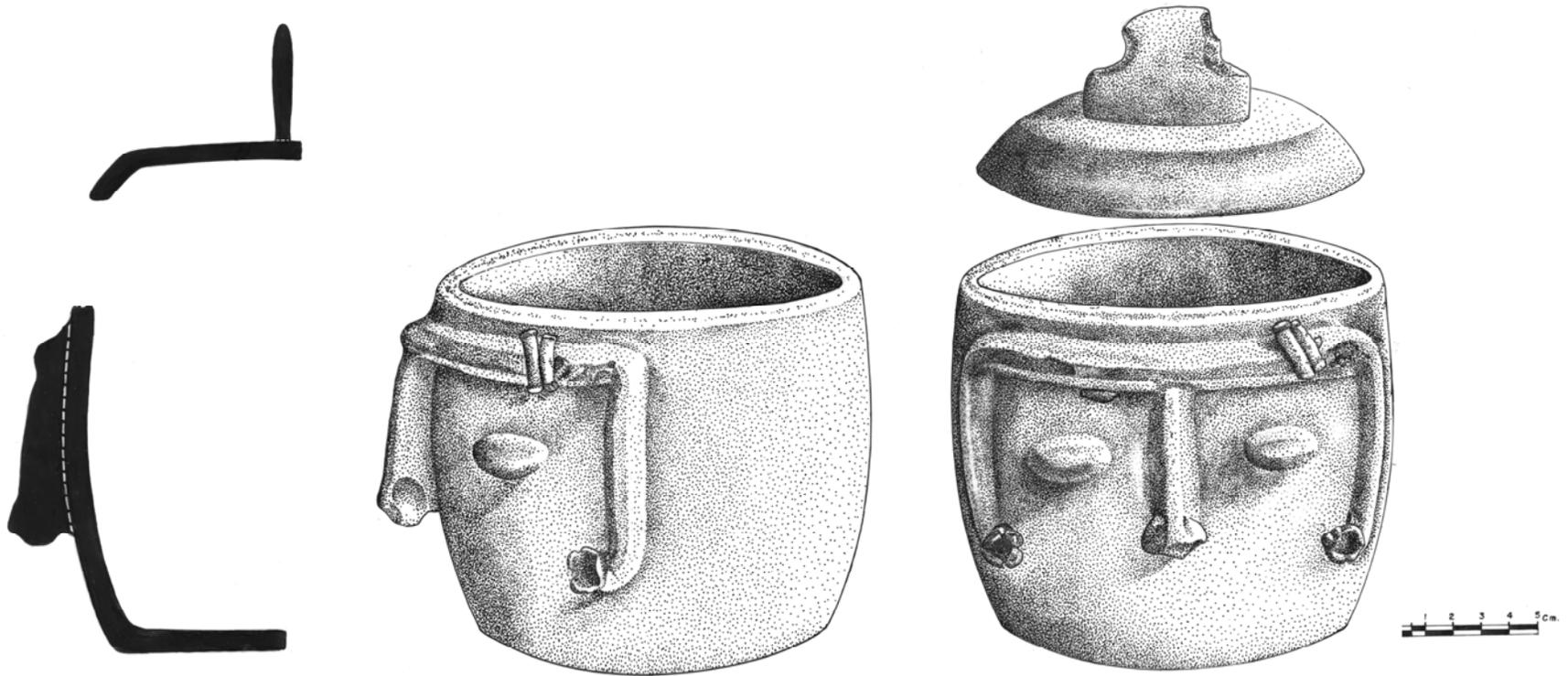


Figure H.39 SF# KOLL.02.08.02.01 Unknown Modeled

*Whole Vessel Number:* SF# HOL.T.41.10.02.01

*Context:* HOL.T.41.10 (Burial 10)

*Type-Variety:* Ixcanrio Orange Polychrome: Ixcanrio Variety

*State of Preservation:* Whole

*Paste, firing, and temper:* ----

*Surface finish and decoration:* Exterior is smoothed, polished (with some burnishing marks), and slipped orange (2.5YR5/8). The main design panel consists of a horizontally oriented weave or matte pattern in black on a light orange background. The design repeats twice. Between each design are simple cross motifs created by single black and red painted lines. Interior is well smoothed, polished, and slipped orange (2.5YR5/8). Simple black and red bands decorate the rim.

*General Form:* Bowl with composite sides, direct rim, rounded lip, concave base, and four large hollow mammiform supports.

*Rim Diameter:* 24cm

*Lip Thickness:* 9.5mm

*Height:* 13cm

*Illustration:* H.40



Figure H.40 SF# HOL.T.41.10.02.01, Ixcario Orange Polychrome: Variety Unspecified (photo by Michael Callaghan)

*Whole Vessel Number:* SF#(HOL.L.02)

*Context:* HOL.L.02

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Whole

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR7/4) paste. Major inclusions are gray calcite and crystalline calcite. No paste core.

*Surface finish and decoration:* Exterior is smoothed, slightly polished, and slipped red-orange (2.5YR5/8). Interior is the same but with color 5YR6/6.

*General Form:* Bowl with round sides, direct rim, rounded lip, and flat base.

*Rim Diameter:* 11cm

*Lip Thickness:* 5.24mm

*Height:* 5.5cm

*Illustration:* ----

*Whole Vessel Number:* SF#(HOL.L.02)

*Context:* HOL.L.02

*Type-Variety:* Tinaja Red: Variety Unspecified

*State of Preservation:* Whole

*Paste, firing, and temper:* Medium textured, carbonate based, yellow (10YR6/4) paste. Major inclusion is crystalline calcite with some quartz. No paste core.

*Surface finish and decoration:* Exterior is smoothed, polished, and slipped red (2.5YR4/4) from the lip extending down the rim. Below the rim the vessel is unslipped. Interior is smoothed, polished, and slipped red (2.5YR4/5).

*General Form:* Bowl with round sides, direct rim, squared lip, and flat base.

*Rim Diameter:* 12cm

*Lip Thickness:* 5.64mm

*Height:* 5.5cm

*Illustration:* H.41



Figure H.41 SF#(HOL.L.02), Tinaja Red: Variety Unspecified (photo by Francisco Estrada-Belli)

*Whole Vessel Number:* SF#(CIV.T.28.111)

*Context:* CIV.T.28.111

*Type-Variety:* Guitarra Incised: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, volcanic based, yellow (10YR5/4) paste. Major inclusions are crushed volcanic glass fibers and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior is smoothed, lightly polished, and slipped red (10R4/8). A single pre-slip horizontal groove-incision appears on the rim. Slip flakes easy from the ash paste. Interior is smoothed, lightly polished, and slipped red (10R4/8).

*General Form:* Dish with incurving sides, direct rim, rounded lip, and very slightly concave base.

*Rim Diameter:* 31cm

*Lip Thickness:* 5.54mm

*Height:* 6cm

*Illustration:* ----

*Whole Vessel Number:* SF#(CIV.08.47)

*Context:* CIV.08.47

*Type-Variety:* Depricio Incised: Variety Unspecified

*State of Preservation:* Whole, restored

*Paste, firing, and temper:* Fine textured, volcanic based, yellow (10YR5/4) paste. Major inclusions are crushed volcanic glass fibers and larger pieces of volcanic tuff. A paste core is present.

*Surface finish and decoration:* Exterior is smoothed, lightly polished, and slipped black. Post-slip fine-line incision appears on the exterior in the form of simple bands and geometric patterns. Slip flakes easy from the ash paste. Interior of neck is smoothed, lightly polished, and slipped black.

*General Form:* Jar with markedly incurving sides, vertical chamfered neck, direct rim, and rounded lip.

*Rim Diameter:* ----

*Lip Thickness:* ----

*Height:* ----

*Illustration:* H.42



Figure H.42 SF#(CIV.08.47), Depricio Incised: Variety Unspecified

APPENDIX I: IXCANRIO ORANGE POLYCHROME PAINTED MOTIFS



a



b



c



d



e

Abstract (a, vertical wavy lines; b, reverse angles, triangles, and dotted line);  
Conventional (c, serpent); Naturalistic (d, macaw; e, weave or mat pattern)

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