Family, 'Foreigners', and Fictive Kinship: a Bioarchaeological Approach to Social Organization at Late Classic Copan

by

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ABSTRACT

In anthropological models of social organization, kinship is perceived to be fundamental to social structure. This project aimed to understand how individuals buried in neighborhoods or patio groups were affiliated, by considering multiple possibilities of fictive and biological kinship, short or long-term co-residence, and long-distance kin affiliation. The social organization of the ancient Maya urban center of Copan, Honduras during the Late Classic (AD 600-822) period was evaluated through analysis of the human skeletal remains drawn from the largest collection yet recovered in Mesoamerica (n=1200). The research question was: What are the roles that kinship (biological or fictive) and co-residence play in the internal social organization of a lineage-based and/or house society? Biodistance and radiogenic strontium isotope analysis were combined to identify the degree to which individuals buried within 22 patio groups and eight neighborhoods, were (1) related to one another and (2) of local or non-local origin. Copan was an ideal place to evaluate the nuances of migration and kinship as the site is situated at the frontier of the Maya region and the edge of culturally diverse Honduras.

The results highlight the complexity of Copan's social structure within the lineage and house models proposed for ancient Maya social organization. The radiogenic strontium data are diverse; the percentage of non-local individuals varied by neighborhood, some with only 10% in-migration while others approached 40%. The biodistance results are statistically significant with differences between neighborhoods, patios, and even patios within one neighborhood. The high level of in-migration and biological heterogeneity are unique to Copan. Overall, these results highlight that the Copan community was created within a complex system that was influenced by multiple

factors where neither a lineage nor house model is appropriate. It was a dynamic urban environment where genealogy, affiliation, and migration all affected the social structure.

This dissertation is dedicated to my mother, Patricia Miller.

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CHAPTER 1: INTRODUCTION

A. Project Background

Cross-culturally, kinship has deep roots in mythology and sociopolitical histories whereby kin affiliation and group membership are central components of identity and structured interactions among individuals and groups. In the case of the ancient Maya, archaeologists have argued that lineage membership was likely expressed in part through co-residence in large residential neighborhoods limited to a specific social unit. Membership in that social unit was accompanied by specific roles and duties to the individual and reciprocally, the individual to the group. In this project, I consider the impact of co-residence and kinship on social structure within the ancient Maya urban center of Copan during the Late Classic (AD 600-822) period through analysis of the human skeletal remains of individuals buried in distinctive neighborhoods that could be based in lineages (e.g., McAnany, 1995) or social houses (e.g., Gillespie, 2000a,b,c; Lévi-Strauss, 1987). This research will address the following research question: What are the roles that kinship (biological or fictive) and co-residence play in the internal social organization of a lineage-based and/or house society?

The concept of lineage has been central to models of ancient Maya social organization (Becker, 2004; Fash, 1983, 2001; Hendon, 1991; Houston and McAnany, 2003; Vogt 1976; Wisdom, 1940), yet the recent reformulation of the lineage model into the house model (Gillespie, 2000a) highlights that the inclusion of members who are not consanguineous kin or long-term co-residents (aside from servants) could suggest that membership within such spatially distinct units is more complex and diverse than traditional evidence has shown. Watanabe agues that while both the house model and lineage model have merit, Mayanists must "build models that define the relevant components of social organization – filiation, descent, alliance, residence – and then theorize how differently patterned relations between these components might yield the institutional groupings we find on (or in the case of archaeology, in) the ground" (Watanabe, 2004:159). By considering both house and lineage based models in this research, the lineage may remain the core of the corporate group or social unit while remaining open to strategies that maintain an estate by incorporating outsiders into the group through the "language of kinship" (Lévi-Strauss, 1982:174; see Gillespie, 2000a:476).

The primacy and centrality of kinship in cross-cultural studies of social organization and structure, especially from the early structural-functionalist perspective, has shaped anthropology as a discipline whereby analyses of social structure and organization often assume, *a priori*, a kinship relationship. This research aims to understand how individuals presumably residing and buried in neighborhoods, or patio groups, were affiliated by considering multiple possibilities of fictive and biological kinship, short or long-term co-residence, and long-distance kin affiliation (e.g., Watanabe, 2004). By exploring the role of kinship within residential units through a careful analysis of archaeologically contextualized human skeletal remains, the internal structure of ancient Maya neighborhoods can be more clearly understood than by solely using material culture and stylistic markers of social identities, which may be subject to preference, style, philosophies, and political manipulation (Sackett, 1985; Wiessner, 1985, 1990). The indelible signs of heritage and residence recoverable from human remains document individual relationships, group interactions, and group identities in unique ways. The skeleton cannot be distorted, exaggerated, or misrepresented and highlights the interplay of genealogy with the social and cultural signatures of identities (see Stojanowski, 2010; White et al., 2009). A better understanding of the biological and social factors and mechanisms that influence and create the kinship system can benefit anthropology as a discipline since the kinship concept has been and remains foundational to anthropological studies of social organization cross-culturally; the proposed research in particular explores kinship through an empirical and theoretically inclined methodology applicable to past and present societies.

This research investigates social organization using multiple lines of evidence and a previously neglected source of information on Maya kinship, the human body. Biodistance analysis and radiogenic strontium isotope analysis are combined to identify the degree to which individuals buried within unique ancient architectural groups in Copan, were (1) related to one another and (2) of local or non-local origin. These factors were assessed to understand the nature of the relationships among individuals given the perceived centrality of lineage, biological kinship, and social kinship in ancient Maya social organization. Copan is an ideal place for this study because of its continual occupation from the Early Preclassic to the Postclassic periods, its role as a major Maya urban center during the Late Classic period (600-820 AD), and the extensive excavations that have produced one of the largest skeletal collections in the Maya area, including individuals from multiple but distinct regions within an urban environment. The Copan Maya provides an ideal case in which to investigate how genealogy, affiliation, and migration affected the socially constructed 'kinship system' (Radcliffe-Brown, 1930-31). Following from the conjunctive approach (Fash and Sharer, 1991), this project focuses on human skeletal remains within archeological context to provide a more nuanced picture of the internal social configuration of ancient Maya social groups, spatial neighborhoods, and communities.

B. Chapter Summaries

Chapter 2 begins with an introduction to the site and history of Copan, which is located on the southeastern edge of the region defined as Mesoamerica and referred to by the ancient Maya as the place of the Southern lords or *kaloomte*, a place that marked the southernmost extent of the realm (Tokovinine, 2008). Copan is well known because of its sculptures and monumental architecture in the principal group

Chapter 3 presents the materials and methods undertaken in this project. Two methods, applicable to both of the models outlined in Chapter 3 and 4 and focused on human skeletal remains, were used to investigate social organization. By consulting their skeletons, I was able to observe the place of origin and phenotypic relationships of those buried in the same neighborhood and to look for clues from the burial context for any cultural or regional affiliations. The research goal of this project is to assess affiliation based not solely on biological relatedness or place of origin, but both simultaneously. It is the intersection of two lines of evidence, biological and biogeochemical data, which prove useful and allow me to approach an old question in a new way. Each of the predicted scenarios outlined in this chapter depends on the combination of these two lines of evidence and can be applied at the household, patio, neighborhood, and site level.

Additionally, Chapter 3 presents the sample from the Copan Valley. Given that neighborhoods are spatially distinct, and have social significance in their inferred co-residence and shared space, archaeologists have been interested in the level of affiliation and diversity amongst those individuals buried beneath the floors of the rooms in the residences in a particular neighborhood. Each of these neighborhoods has groups within them, which can be further subdivided into patios as units of analysis. Based on date and location, the total sample size was 727 individuals, 359 of which come from the largest architectural group of Sepulturas Group 9N-8 – thought to be an ethnic enclave of non-Maya and migrant peoples (Diamanti, 1991; Gerstle, 1988; Rhoads, 2001). Of the 727 burials available, 305 were selected for inclusion in the study, based on preservation, context, archaeological date, and developmental age. Of the 305 individuals included in the biodistance analysis sample, 121 individuals were chosen at random for strontium isotope analysis. An additional 20 samples from previous studies were also included, and strontium isotope values were obtained for 46% of the sample, in addition to the biological dental data.

Chapter 4 moves into a discussion of different forms of inheritance, kinship, and social relationships. In the case of the Maya, the lineage model, as proposed by Sanders (1989), states that elite administration focuses on male relatives but allows for affinal kin and to be part of the essential lineal core residing in connected neighborhoods. The problem with this perspective is that it assumed that groups at Copan are, by nature, administrative, sociopolitical, and patrilineal – a somewhat static model. Whereas the house model is more open and flexible, arguing that social units "perpetuate themselves through the transmission of its name, its goods, and its titles down a real or imaginary line, considered legitimate as long as this continuity can express itself in the language of kinship or of affinity and, most often, of both" (Lévi-Strauss, 1987:174).

Chapter 5 focuses on the first line of evidence included in this study, radiogenic strontium isotope analysis, and the theoretical background to studies of ancient migration. Biogeochemistry is based on the principle that elements in an individual's primary food and water are incorporated into his or her bones, teeth, and other tissues during growth and development. By understanding geological variability, the issue of averaging in the diet, and incorporating material and cultural context, isotopic data reveal likely locations for an individual's place of origin and are effective at excluding other regions.

Despite extensive research on isotopic variability in the Maya world, researchers have not had the ability to assess the extent to which non-Maya populations contributed to the growth of Copan and other peripheral sites or how they may have interacted with "Maya" residents. So-called non-Maya populations have been identified at Copan through material culture (e.g., Canuto and Fash, 2004). Chapter 5 presents a new baseline with which movement can be inferred within the Maya region and beyond into central Honduras in the region of the Lenca, Chontal, Tolupan, and Nahua language-speakers.

Chapter 6 turns to the second line of evidence in this study, human skeletal morphometric variability, or biological distance, which is a well-established part of physical anthropology. Biodistance studies can examine the variations in bone or tooth shape, size, or form as a means to define or identify patterns of genetic relatedness within or among populations in the past (Buikstra et al. 1990). Biodistance analysis regards dental metric and morphological traits as phenotypic proxies, or the expression of the traits that are in the underlying genetic signals, or genotype. Chapter 6 outlines the history of biodistance analysis from both a global and a Mesoamerican perspective, summarizing recent work on metric and statistical analysis of human skeletal remains.

The statistical background to the tests employed here are discussed in detail and include: Principal Components Analysis, Mahalanobis Distance, Analysis of Variance, Canonical Discriminate Analysis, a Mantel Test, and Euclidean Distances.

Chapter 7 presents the results of this study and discusses the complexity of Copan's social structure within the theoretical models proposed in this research. The strontium results show surprising diversity. Many of the values that have been used to identify individuals from the heart of the Maya region (e.g. Hodell, 2004; Price et al. 2010; 2014) –those of the Petén or the Maya mountains – are repeated in Honduras. This suggests that interpretations of ancient migration into Maya cities must consider additional sources for migrants, especially from culturally or ethnically non-Maya regions. The percentage of individuals with potentially non-local $^{87}Sr/^{86}Sr$ values varied by neighborhood, some with only 10% of the sample while others approached 40%. This suggests an increase in potentially non-local persons who were integrated into the community and added to the gene pool, thus creating further biological diversity within the city.

The biodistance data results demonstrate that there are statistically significant differences between neighborhoods, between patios across the site, and even between patios within the same neighborhood. Statistical comparisons of the patios at Copan divided them into one of six groups that demonstrate biological affiliation: (1) the neighboring Bosque and Cementerio patios, (2) all Sepulturas patios, (3) Group 9N-8 Patio A, (4) Salamar, (5) Ostumán, and (6) Rastrojón. Canonical Discriminant Function Analysis (CDA) separated the site into four clusters: (1) Bosque and Cementerio, (2) Sepulturas, Sepulturas 9N-8, and the Copan Valley, (3) the Hinterland sites of Ostumán and Rastrojón, and (4) Salamar. These results suggest that ancient Copan was structured by biological affiliation but that potentially non-local individuals were readily integrated into the social fiber of the community. A brief comparison of inter-individual Euclidean distances in conjunction with radiogenic strontium isotope values suggests impressive social and biological diversity within the social organization of Copan patios and neighborhoods. Overall, these results highlight that the Copan community was created within a complex system that was influenced by multiple factors. Geneology, affiliation, and migration all affected the social structure of the ancient city.

In summary, flexible models of social organization and kinship systems elucidate the past by embracing "anomalies" and diversity within archaeological samples. The adoption of the "house society" models for ancient Maya society by Gillespie (2000 a,b,c, 2007), Joyce (2000), Hendon (2000, 2010), Hodder (2010) and others demonstrate that Levi-Strauss was prescient in his approach to the meaning and structure of kinship, community, and society; at least, in the Maya world.

At a dynamic frontier city such as Copan, the distinction between Maya and non-Maya may not be as dichotomous as the archaeological evidence has suggested. This changes our understanding of the social organization of the ancient city, specifically suggesting a diverse urban environment with extensive contact with central Honduras. Further, this signals urban diversity and highlights that Copan was a frontier city where migration was ubiquitous and not be limited to the elite or royal segment of society. Social organization at Copan was complex and moves beyond the proposed and popular lineage and house models. "Outsiders" were regularly integrated into the social groups within patios and exemplifies that the Copan society was a diverse community that maintained social cohesion for reasons beyond kinship or place of origin.

CHAPTER 2: THE COPAN MAYA

A. The Area

Mesoamerica encompasses Belize, Guatemala, parts of Mexico, El Salvador and Honduras and has a long history of occupation by an array of complex societies such as the Olmec, Teotihuacanos, Maya, Zapotec, Mixtec, Pipil, Lenca, Xinca, Coatzacalcos, and Aztecs.

Within Mesoamerica, the Maya area covers a 324,400 km^2 region that roughly includes southeastern and Yucatán Mexico, Belize, Guatemala, western Honduras, and northwestern El Salvador. It is bounded by the Gulf of Mexico and Caribbean to the north and the Pacific Ocean to the south. The eastern and western boundaries are difficult to define, however, as they are delineated by transitional cultural zones between Maya and other indigenous peoples. The Maya occupied a zone of considerable environmental diversity with tropical rainforests and Petén lakes at the low elevations of the central lowlands, cool cloud covered mountain landscapes in the southern highlands, interspersed arid terrain, coastal zones, rich alluvial soils, and large plains with scrub vegetation. Given the expanse of the Maya world and its environmental variability, it is naturally divided into three components **(Figure 1),** with unique ecozones that have influenced the development and power of sociopolitical centers: (1) the Pacific coastal plain and foothills (sites like Izapa, El Baúl), (2) the highlands, a large region that includes the southern volcanic zone (Cerén), the northern highlands (Kaminaljuyú, Iximché), and the metamorphic northern lowlands, and (3) the lowlands that include southern lowlands (Yaxchilan and Palenque), the central Peten lowlands (Tikal, El Mirador), and the northern Yucatecan lowlands (Uxmal, Chichén Itzá, Cobá). The origins of ancient Maya culture can be traced to at least as early as 500 BC in the Lowlands and Maya societies fluoresced in various regions until the Spanish incursions in the 15th century. Today, more than 6 million Maya people continue to live in their historical regions.

The focus of this research is the center of Copan that existed within the transitional zone of the eastern limit of the southern highlands and southern lowlands. The site flourished between approximately AD 426 and 822. Copan is uniquely situated at the southern periphery of the ancient Maya world and at the frontier to Central America. Among the ancient Maya, Copan's dynastic rulers were known as the *nohol chan naah yook k'in*, which directly translates to "South Sky House Support/Foot of the Sun" but is more commonly cited as "Lords of the South" (Tokovinine, personal communication, 2014). The "South Sky House" symbolized the southern point on the quadripartite Maya world; Tikal was responsible for the north, Caracol for the east, and Palenque for the west. Copan also served as the intermediary between the Maya world and the societies to the east. The diverse cultural traditions and ancestries in modern Honduras are impressive and the ancient Copan Maya likely had significant biocultural interactions with peoples far distant from those in the heartland of the Maya realm.

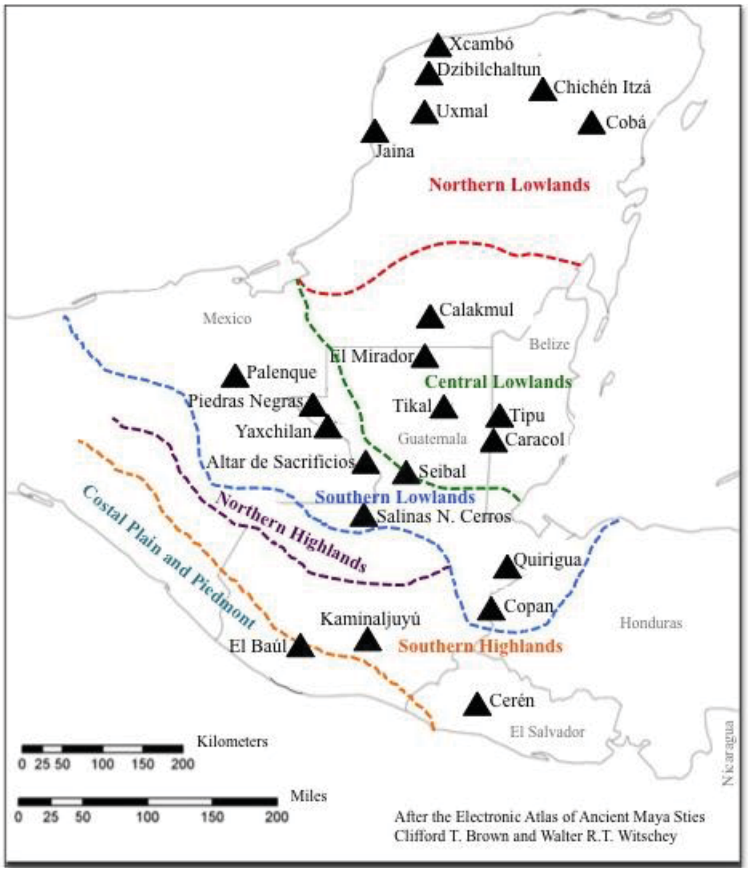

Figure 1: Map of Mesoamerica with major Maya centers, including Copan (After EAAMS by Bron and Witschey, 2008)

B. Copan Valley: Study Area and Study Sample

Ancient Copan was nestled in a fertile and dynamic valley in western Honduras approximately 14 km east of the modern border with Guatemala. The diverse environment of the Copan Valley provided rich resources to support the center, its residential neighborhoods, and dispersed outlying settlements. Archaeological evidence demonstrates that Copan was densely populated, with approximately 20,000-40,000 residents as the site reached its apogee between the 5th and 9th centuries AD (Fash and Agurcia Fasquelle, 2005; Webster, 1999; Wolf, 2014, personal communication). The city was centered on a monumental Principal Group with settlement extending for 24 km^2 in the Copan Valley and into the surrounding mountains **(Figure 2)**.

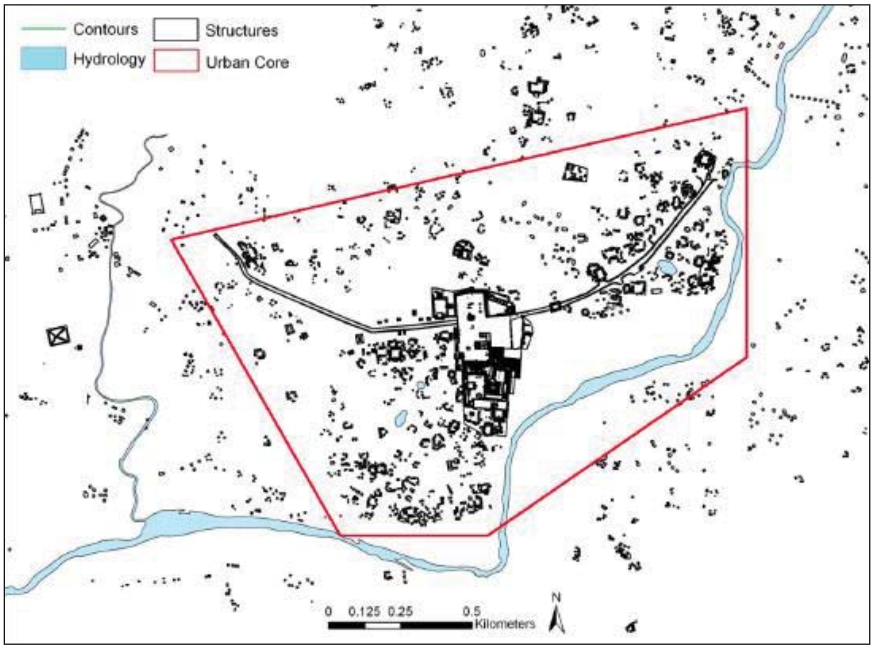

Figure 2: The Copan Valley and urban core as defined by Richards-Rissetto (2008, 2010) and MayaArch3D at University of New Mexico. With permission from Richards-Rissetto (2010: Figure 2.2).

B1. Physical setting

The Copan Valley is sweeping and topographically diverse. It is located at the margin of the southern Maya highlands and is a series of alluvial valley pockets amongst rugged mountains. Copan sits at an elevation of 600 masl and experiences wet and dry seasons different from most of the Maya world (Fash, 2004; Wingard, 1992:92-96). The ancient city is bisected by the Copan River that flows westerly into present-day Guatemala where it meets the Montagua River. The area is further crosscut by the Sesesmil River as well as substantial seasonal *quebradas* (ravines) that descend from the surrounding mountains, providing drainage creating a pattern of numerous distinct land formations and residential zones.

The site's nucleus was centrally located in relation to ancient Copan's sprawling settlement in the 'Copan Pocket,' which measures 12.5 km in length and 4 km in width (Fash and Agurcia Fasquelle, 2005) (**Figure 3**). The Copan Valley as a whole includes four additional pockets at elevations between 590 and 700 m (above sea level) that contain soils ideal for agriculture (Reed, 1998) and are part of several ecological zones that the ancient Maya exploited and settled. It boasts alluvial areas on the valley floor, piedmont slopes, low foothills, and mountains that remain ideal for constructing agricultural terraces (**Figure 3**) and half of the valley was used for agriculture by the Late Classic period with nearly 70 km^2 of high quality arable soils (Reed, 1998).

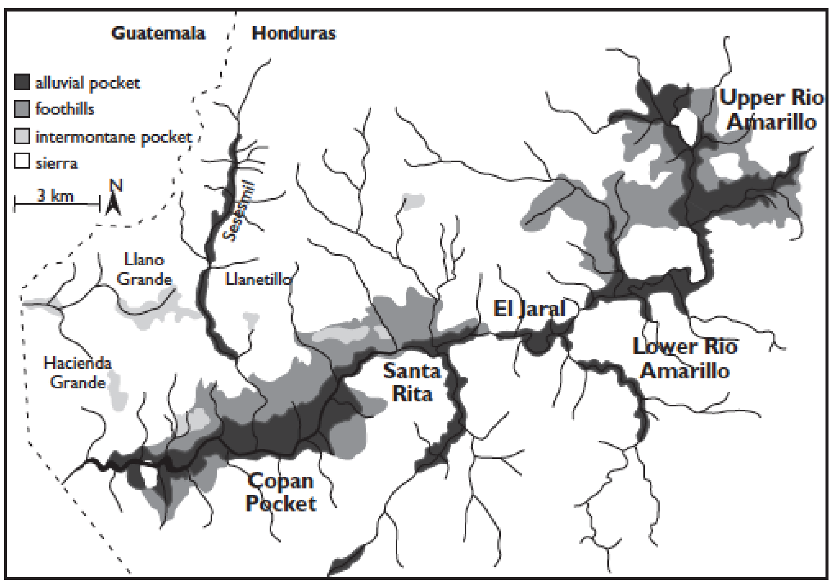

Figure 3: Copan and surrounding pockets. From Reed (1998) after Freter (1994), see also, Webster (2000:15).

B1a. Geology of the Copan Valley

Copan is situated in a small region of Paleozoic (541 to 252 million years ago) deposits (Hodell, 2004). Northern Honduras and southern Guatemala lie on folded marine clastic and limestone ranges extending from the Yucatan platform in the Chiapas-Guatemalan Depression, a major tectonic zone of Paleozoic and Cenozoic metamorphic schists, gneisses and granite substrates (**Figure 4**) that continue into Guatemala and central Honduras. The region is dominated in the east by the Montagua fault in Guatemala that consists of deep valleys of broken or folded rocks and is located just north of the Montagua, Jocotan-Chamelecón and Ulua valleys. These valleys are found within the Honduras Depression, which is bound on the north and the east by the Caribbean-North American tectonic plate (Rice, 1993; see also Dengo, 1975).

The Montagua valley is markedly different from other areas of Central America and contains more sandstone, marble, construction, and quarry resources (Rice, 1993; see also West, 1964). The Copan Valley lies within this larger valley between volcanic cliffs and sedimentary hills. The limestone and siltstone basal units date to the Cretaceous (136-164 million years ago) and Paleozoic periods with more recent regional shifting and resettling during the Early Tertiary period (approximately 64 million years ago) (Fash, 2004; Turner, 1983). These phases were followed by a series of volcanic ash deposits, which facilitate temporal identification of archaeological deposits and mark sociopolitical changes. For example, ash deposits associated with the eruption of the Ilopongo volcano in El Salvador (AD 200-250) are thought to have contributed to the depopulation of the southeastern Maya region, massive emigration, and the emergence of Classic Maya centers (Sharer, 1969; Sheets et al., 1990).

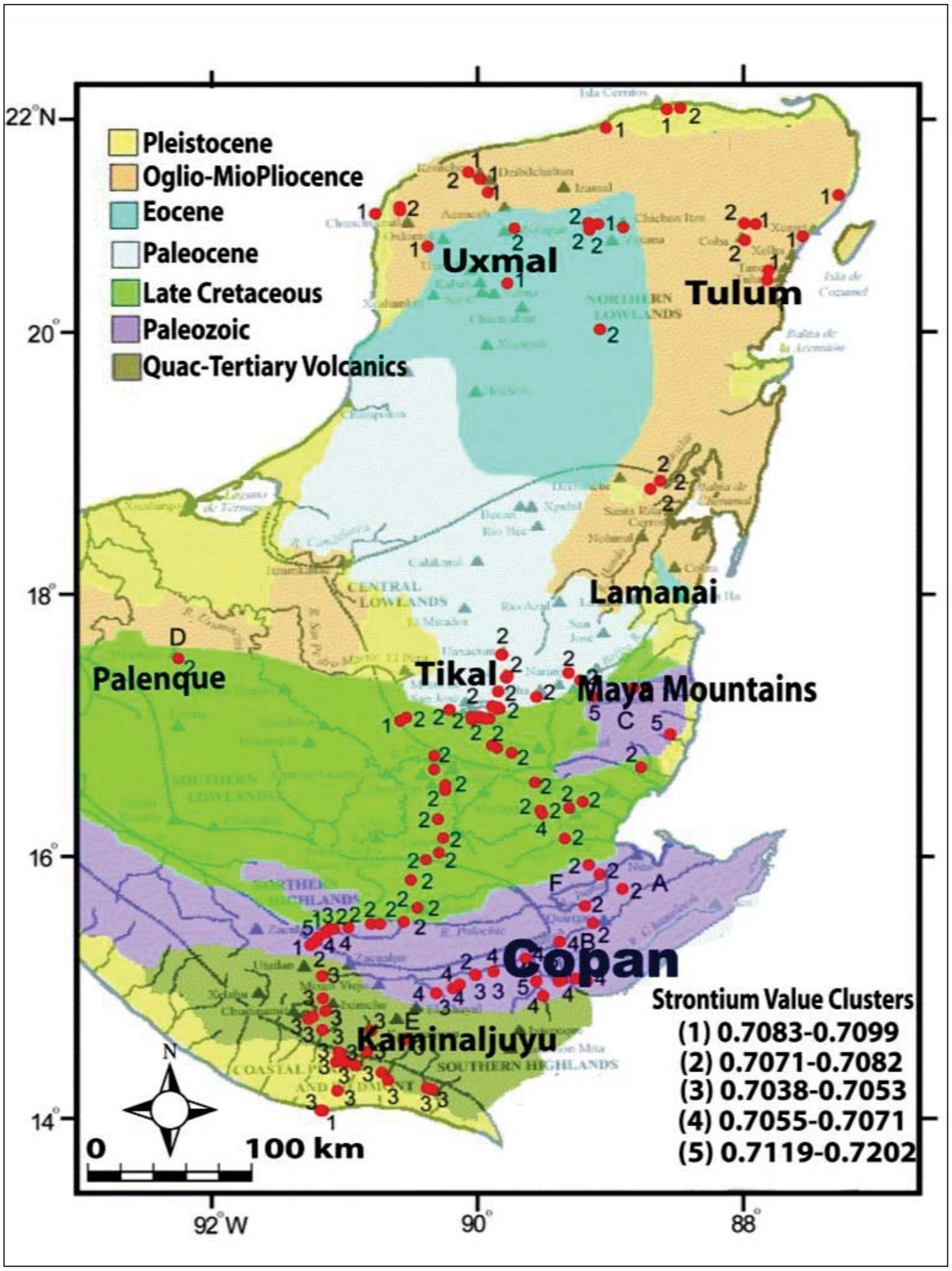

Figure 4: Mesoamerican geological zones and $^{87}Sr/^{86}Sr$ from Hodell et al. 2004.

Within the Copan Valley, there existed an array of raw materials that facilitated the development of the city for the ever-growing urban population through expansive trade and agricultural pursuits. The raw materials for ground stone tools such as *manos* and *matates* (basalt and rhyolite), chipped stone tools (chert and jasper), sculpture, plaster and massive construction efforts (mined limestone and volcanic tuff), and ceramics (at least two clay sources are known) are all found within the valley (Gonlin, 1993; Reed 1998; Turner et al., 1983). The other resources on which the ancient Maya depended, such as obsidian, jade, salt, feathers, were accessible through short river trade routes to the Maya heartland and in the interior of Honduras (Fash, 2001).

B1b. Natural resources: raw materials, plants and fauna

Numerous dietary resources were available to the Copan populace. Generally, the Classic period Maya derived protein and nutrients from plants such as maize, maize/honey gruel (*atole*), *ayote*, beans, tree fruits (palm, *ramón*, avocado, cacao), nuts (*coyol*), and root crops (manioc, yams), in addition to meat resources from monkeys, peccaries, armadillos, tapirs, birds, deer, turkeys, and dogs (Gonlin and Dixon, 2011; Lentz, 1991; Reed 1998; Wright, 2006:89-92). Residues associated with animal protein have also been found in archaeological excavations, which have revealed that the ancient Maya at Copan ate white-tailed deer, turkeys, peccaries, ocelots, puma/cougars, jaguars, owls, domestic dogs (though, consumption of dogs remains a matter of debate), fresh water snails, water and land mollusks, and sea urchins (Lentz, 1991; see Reed, 1998).

B2. The case of Copan and site history

B2a. Settlement

Permanent settlement in the Maya region likely began with the first horticulturalists in Mesoamerica. The earliest evidence for human occupation in the

Copan Valley dates to the Early Preclassic period and extends well into the Postclassic period, over 2500 years of periodic occupation from 1400 BC-AD 1250 (Andrews and Fash, 2005; Fash, 1983; Freter, 1988; Hall and Viel, 2004; Leventhal 1979; Manahan, 2003). Fash (2001) argues that Copan's proximity to useful resources, like granite, limestone, water, and sources for prestige goods, were primary reasons for the initial settlement of the valley. Others have suggested that it relates to the Copan Pocket's sacred landscape (Ashmore, 1991; Brady and Ashmore, 1999), cosmology (Aveni, 2003), or perhaps worldview (Tourtellout, 1993).

The earliest ceramic evidence from Copan suggests that lineages became focal social institutions during the Preclassic between AD 100-250 with ties to the Pacific Coastal/Piedmont region. Archaeobotanical evidence, however, suggests that people were not extensively using the valley until approximately AD 250 (Hall and Viel, 2004; McNeil, 2010). Certainly, the valley may have been occupied by dispersed groups prior to these dates but it was certainly after AD 426 and the arrival of K'inich' Y'ax K'uk' Mo' that the Copan polity emerged as a Classic period center (Fash and Stuart, 1991; Schele, 1992; Sharer et al., 2005).

Since 1930, the Copan Valley has been the subject of surveys by the Carnegie Institute, Harvard University, the University of New Mexico, and Colgate University, among others (Fash 1983; Willey and Leventhal, 1979; Longyear, 1952; Maca, 2002; Richards-Rissetto, 2010; Sanders and Webster, 1981; Willey et al., 1978). As a result, the valley has provided ample data for multiscalar regional studies. Such studies have sought to categorize and divide the valley in five different way that focus upon physical geography, archaeology, or cultural anthropology. The five divisions include: (1) the entire valley, (2) five physiographic zones (floodplains, low northern terraces, northern foothills, southern foothills and terraces, and the western portion of the pocket), (3) the central religious core (Principal Group, Bosque, Sepulturas) and the Hinterlands residential zones (Los Zapos, Ostumán, San Rafael), (4) twenty-one sub-communities, known as *sian otots* and equivalent to Spanish *aldeas* or villages (Fash 1983; Willey and Leventhal, 1979, 1981; Fash and Davis-Salazar, 2006; Plank, 2003; Richards-Rissetto, 2010), centered around q*uebradas* (**see Figure 5**) and (5) approximately six hundred patio groups or sites (Fash, 1983; Willey and Leventhal, 1979; Richards-Rissetto, 2010).

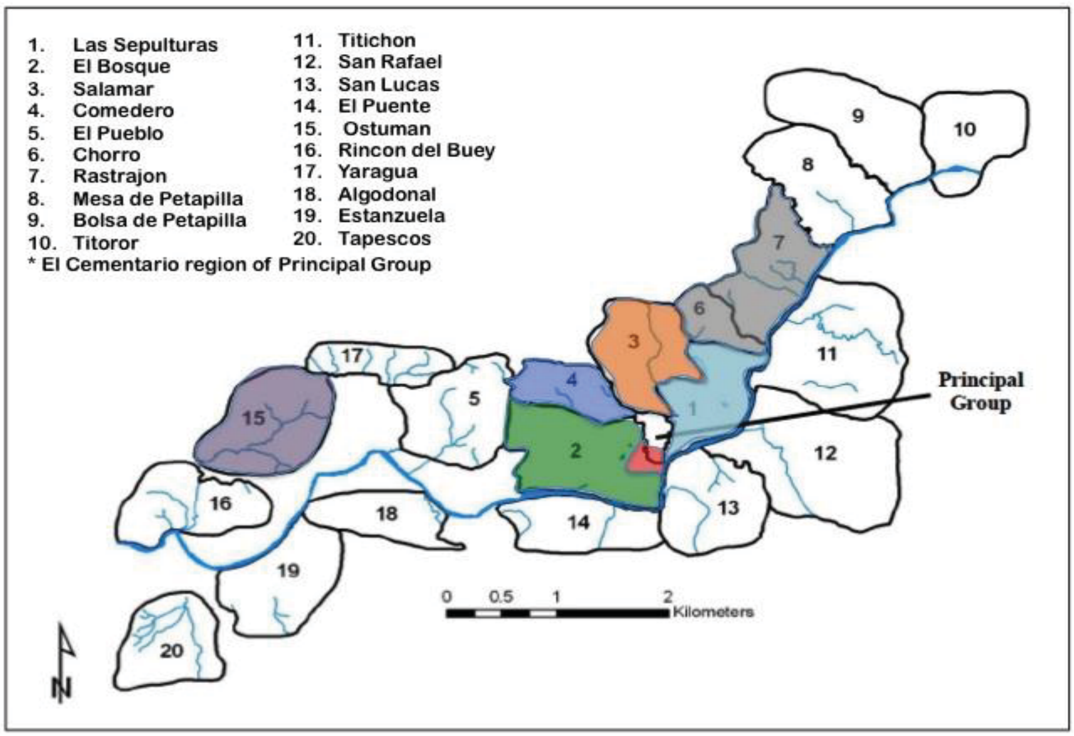

Figure 5: Copan river and *quebradas* that divide the valley into distinct land formations and sociopolitical spheres. Sampled regions are highlighted. Used with permission from Richards-Rissetto 2010, Fig. 2.9.

B2b. Dynastic history

The monumental architecture, inscriptions, and stelae found throughout the valley and Principal Group document Copan's history as a major Maya polity. Its dynastic history began during the early 5th century and continued until the so-called collapse after AD 822, but its maximum occupation likely peaked during the Late Classic period from AD 600-900 (Fash, 2001). The dispersed settlements observed by Hall and Viel (2004) began to shift to more concentrated, dense settlements by the final phases of the Middle Classic Period (AD 400-600) on the valley floor and in the northern foothills of the valley. During the Late Classic period (AD 600-820) inscriptions on monuments and buildings record the lives and activities of sixteen distinct rulers (**Table 1**).

Dynastic rule at Copan began in AD 426 with the arrival of K'inich Y'ax K'uk' Mo', a king whose long reign and 'foreign' origin are described on Stelae 10 and 12, Altar Q, the Xukpi Stone, and MotMot marker (Schele et al., 1994; Stuart and Schele, 1986; Stuart, 2004). While the earliest rulers at Copan laid the foundation for the Acropolis, less is known about Rulers 3-10 as most monuments were incomplete, fragmented, or had been incorporated into subsequent Classic or modern era constructions (Stuart, 2004). Much of what is known of early dynastic rule at Copan comes from inscriptions dating to the 7th and 8th centuries during the reigns of Rulers 12, 13, and 15. The reign of Ruler 12 (Smoke Imix) in AD 628, marked Copan's development into a complex city-state of 20,000 residents (or more) and the location of the Classic period southernmost royal family of the Maya world (Tokovinine, 2013). Smoke Imix marked the limits of the valley with Stelae I, 1, 2, 3, 5, 6, 10, 13, 19, and 23, Altars K, H' and I', and the original Hieroglyphic Staircase (Fash, 1983; Fash, and Stuart, 1991). By the time of his rule, Copan controlled a rich source of jade through the vassal state of Quiriguá and traded widely for luxury and utilitarian goods by exploiting the surrounding rivers (Ashmore, 2013; Fash and Sharer, 1991; Looper, 1999; Sharer, 1978). Power then passed to the 13th ruler, Waxaklahun U'bah K'awil, who is credited with much of Copan's sculpture that has earned it the reputation as the Athens of the New World (Herring, 2005).

Ruler 13 erected more stelae than any other ruler, striving to increase and/or maintain Copan's power within the region, although his attempts at grandeur ultimately resulted in his death at the hands of the neighboring Quiriguá lords in AD 738 (Ashmore, 2013; Fash, 2001; Fash and Stuart, 1991; Sharer, 1991).

Rulers 14 and 15, however, had relatively short reigns. Ruler 15, K'ak' Yipyah Chan K'awil, commissioned the longest written text in Mesoamerica, the Hieroglyphic Stairway the western façade of Structure 10L-22 (Fash, 2001; Fash and Stuart, 1991). In AD 763, the Copan populace, under the direction of the 16th and final great ruler (K'inich K'inich Yax Pasaj Chan Yopat) experienced increasing strife, competition, and unrest (Fash, 2001, Lentz, 1991; Miller and Houston, 1987, Sanchez, 2005; Storey, 1992, Webster, 2002). In AD 775, K'inich Yax Pasaj Chan Yopat commissioned Altar Q, which was placed in front of Structure 10L-16. Its sculpted façade depicts themes of warfare and outlines Copan's dynastic history in which Yax' K'uk' Mo' is shown symbolically handing the baton of power to K'inich Yax Pasaj Chan Yopat. In the text and in the elaborate dedicatory offering, K'inich Yax Pasaj Chan Yopat was attempting to harness the power of the dynastic founder by illustrating his connection and descent from the Copan dynasty (Fash, 2001, Taube, 1992, Schele and Freidel, 1990).

Table 1: Copan periods, ceramic phases, and rulers (after Bill, 1997; Fash, 2001).

Period	Ceramic Phase	Dates	Political Ruler
Pre-Classic	Rayo	1200 BC - 900 BC	
	Gordon	900 BC - 600 BC	
	Uir	600 BC - 300 BC	
	Chabij	300 BC - AD 100	
	Bijac	AD 100 - AD 400	
Early Classic	Early Acbi	AD 400 - AD 500	*K'inich Y'ax K'uk Mo'* (26 Feb 426 - 437)
			K'inich Popol Hal (30 Nov 437 -)
			Ruler 3
			K'al Tuun Hix (485 - 495)
			Mayal Jol (495 - 500?)
	Late Acbi	AD 500 - AD 600	Ruler 6
			B'alam Nehn (9 Dec 504 -)
			Wil Ohl K'inich
			Zak (30 Dec 551 -)
			Tzik Balam (26 May 553 - 26 Oct 578)
			Butz' Chan (30 Apr 563 - 23 Jan 628)
Late Classic	Acbi/Coner Transition	AD 600 - AD 650	*Smoke Imix* (8 Feb 628 - 18 June 695)
	Early Coner	AD 650 - AD 700	*Waxaklahun U'bah K'awil* (9 July 695 - 1 May 738)
	Middle Coner	AD 700 - AD 750	*K'ak Joplaj Chan K'awil* (11 June 738 - 4 Feb 749)
	Late Coner I	AD 750 - AD 820	*K'ak' Yipyah Chan K'awil* (18 Feb 749 -)
			K'inich Yax Pasaj Chan Yopat (2 July 763 - 6 May 820)
	Late Coner II	AD 820 -	*U Cit' Tok'* (10 Feb 822 -)
Terminal Classic	Coaj		
Post-Classic	Ejar		

The final monument dedicated at Copan, Altar L, remained unfinished and marks the failed attempt at accession of K'inich Yax Pasaj Chan Yopat's successor, U Cit' Tok', potentially the 17^{th} ruler, and the end of Copan dynastic rule in AD 822.

B3: Copan Archaeology

Copan has a long history of archaeological research programs that began in the mid-nineteenth century. These studies have characterized the Copan Valley as a nexus of human activity since the Preclassic (2000 BC-AD 250) and into the Postclassic (AD 820 - 1200) periods. However, despite this long history of occupation, research usually centered on the site at its Classic period apogee from AD 426-800.

Spanish explorers first visited the site in the 16^{th} century (Garcia de Placios 1983[1576]) and recorded the local name of the ruins, *Copan*. By the mid 19^{th} century, at least two expeditions of amateur archaeologists, Colonel Juan Galindo (1834) and John Lloyd Stephens and Fredrick Catherwood (1841), had conducted basic reconnaissance, mapping, and drawing of the site. Alfred Maudslay, with the British Museum, followed these early expeditions and focused on documenting stelae, altars, and sculptural elements at Copan (1899-1902) and throughout Mesoamerica. Formal investigations at Copan were initiated in the 1890s, with the four explorations of Harvard's Peabody Museum of Archaeology and Anthropology Expedition, one of which included Maudslay. The Peabody Expeditions carried out excavations on the monumental architecture in the Principal Group (10L-4, 10L-26 and the Hieroglyphic Stairway, 10L-32, and 10L-41) and in a large house mound located in the Cementerio region (10L-36). Another major contribution by the Peabody expedition was the first map of the archaeological remains in the Copan Valley (Gordon, 1896, 1898). Interest in Copan then expanded with subsequent work on inscriptions by Morley (1920), Trick (1939), Stromsvick (1941), chronology by Longyear (1952), and excavations by Nuñez Chinchilla (1952) among others. The 1930s and 1940s also saw the involvement of the Carnegie Institution of Washington, which outlined the techniques for archaeological investigation and conservation at Copan and in the Maya region.

In the 1970s, Dr. J.A. Cueva, Nuñez Chinchilla's successor as director of the Instituto Hondureño de Antropología e Historia (IHAH), initiated the return of Harvard's involvement in the Copan Valley by inviting Gordon Willey (who in turn invited Robert Sharer and William Coe) to formulate a long-term research and conservation trajectory for the site (Fash, 2005; Willey et al., 1976). Willey and Leventhal created detailed maps of the site and the Harvard Typology (Type 1-5) discussed later. Major collaborative international projects began in the late 1970s and 1980s and revolutionized our understanding of Copan. During these decades, universities began projects at Copan, including the Pennsylvania State University, with expeditions led by William Sanders and David Webster, and Tulane University, which conducted its work under the direction of E. Wyllys Andrews V. The current understanding of the site and context necessary for this dissertation's hypotheses, derive largely from the work of these and other projects, including: the Copan Archaeological Project (PAC I and II) directed in its various phases by Claude Baudez, William Sanders, and David Webster; the Acropolis Archaeological Project (PAAC) directed by William Fash (sub-projects were directed by Ricardo Agurcia Fasquelle, Rudy Larios, Robert Sharer, and E. Wyllys Andrews V.); and the many projects under the direction of IHAH (Andrews and Fash, 2005; Baudez, 1983;

Fash, 1983a,b, 1991, 2005; Sanders, 1986, 1990; Webster et al., 2000). These projects provided the opportunity for doctoral students and established scholars to explore research focused on ceramic typology (Bill, 1997, 2004; Viel and Cheek, 1983; Viel, 1993), epigraphy (Riese, 1986; Tokovinine, 2008), the Acropolis architectural sequence (Andrews and Fash, 2005; Becker, 1983; Sharer et al., 2005), pollen and botanical studies (Abrams and Rue, 1988; McNeil, 2006; Rue, 1987), residences, (Hendon, 1988; Gonlin, 1993: Freter, 1992; Webster, 1989), and skeletal remains (Buikstra et al., 2004; Gerry, 1993; Lentz, 1991; Reed, 1994, 1998; Reed and Ferrell, 1997; Storey, 1985; 1992, 1999, 2005, 2007; Whittington, 1989, 1991, 1992; Whittington and Reed, 1997; see Chapter 3 for further discussion of Copan bioarchaeology).

The settlement studies, especially those by Willey and Leventhal (1979), served to define settlement patterns at Copan and to create an architectural group typology from 1 to 5, with the Principal Group being the only example of a Type 5 site (see also, Fash and Long, 1983). According to Willey and others, these types were indicative of social status: Type 1 represented low status occupants or the retainers of the elite residential complexes, Type 2 being sub-elite, and Types 3 and 4 characterizing the elite and royal components of society (Andrews and Fash 2005; Baudez in Fash 1983; Willey and Leventhal 1979; Sanders 1989). Surveys at Copan have mapped more 1,425 sites of all types, which consist of more than 4,500 associated structures (Webster, 1989). Of the 49 Type 3 and 4 sites that exist in the Valley, 45 were occupied during the Late Classic, ten have been subject to thorough archaeological investigation, and nine are included in this research (6N-1, 8L-10, 8L-12, 8N-11, 9M-22 A and B, 9N-8, 10E-6, 10L-2, 11E-2).

Type 1 sites consist of three to five simple structures and earthen/undressed stone platforms arranged around a single small plaza that measure between 0.25 and 1.25 m in height (example, Group 9M-24). Type 2 sites have six to eight structures, at least one of which is between 2.5 and 4.0 m in height and faced with dressed stone, centered on one or two plazas. Type 3 sites are much like Type 2 sites but have more dressed stone and structures that reach 4.75 m in height (example, 9M-22). Type 4 sites are the largest in the typology (excluding the Principal Group which is Type 5) and are complex structure compounds build upon multiple plazas with mounds that are up to 10 m in height. The structures typically are made of dressed stone, have corbelled vaults, sculpture, and stuccoed facades (as is seen in the 9N-8 residential complex).

Table 2: Harvard typology of architectural groups at Copan

Typology	Number of Structures	Size of Structures (m)	Type of Stone	Number of Plazas	Example
Type 1	3-5	0.25-1.25	Undressed	Single	9M-24
Type 2	6-8	At least 1 2.5-4.0	At least 1 dressed	Two	9M-22B
Type 3	6-8	2.5-4.75	Dressed	Two +	9M-22A
Type 4	8+	Up to 10	Dressed, corbelled vaults, sculpture, stuccoed facades	Three+	9N-8 Patios A-M
Type 5	10+	10 +	Dressed, corbelled vaults, sculpture, stelae, altars, stuccoed and painted facades	Four +	Copan Acropolis 10L

However, the work of Heather Richards-Rissetto (2010) showed that equation of site typology with the social status of the occupants was not a Maya convention, but it rather can be considered an archaeological construction. In her work, she argued that social connectivity and interaction were based in regions of the site (**Figure 5**), not in the social status reflected in the residential typology. Residential groups identified by Richards-Rissetto (2010) as having high levels of social interaction are included in this study. The burials included in this research are drawn from structural compounds (see

Figure 2) identified within the typology detailed above and are described in detail in Chapter 3.

B3a. Copan bioarchaeology

The residential groups that surround the regal-ritual center have been the focus of long-term archaeological investigation at Copan. Within the patios and structures of these groups, the Maya interred their dead beneath house floors, plazas, construction fill, in domestic middens, as offerings, and for a select few, in large tombs. As the projects at Copan investigated architecture and the growth of the development of the site, burials were regularly encountered in routine excavations as a result of the propensity of the ancient Maya to inter their dead in domestic contexts.

Interest in skeletal remains from Maya sites began in the mid 19th century with early explorers to the region (Stephens, 1843) who collaborated with medical doctors or early physical anthropologists to study these ancient bones. From the 1930s to 1970s the analysis of skeletal remains was largely relegated to appendices or short reports (see Buikstra, 1997; Danforth et al., 1997) and viewed as anecdotal or supplementary to traditional archaeological data (Webster, 1997). By the 1990s, Whittington and Reed's volume on ancient Maya skeletal remains (1997) demonstrated that bioarchaeology was integral to understanding the ancient Maya. While the number of comprehensive studies of sites has grown exponentially across the Maya area in the past two decades (e.g. Aubry, 2009; Freiwald, 2011; Jacobi, 2000; Scherer, 2004; Wright, 1994; Wrobel, 2003), the following review will focus solely on the Copan Valley as it relates to this project.

B3a. Inventory and conservation

The Copan skeletal collection is impressive in size (n=1,118) and has been studied to address numerous topics, which in recent decades include ancient DNA and genetics (Reed and Ferrell, 1997; Rhoads, 2002), diet (Gerry, 1993; Lentz, 1991; Reed 1997, 1998), body modification (Guilbert, 1943; Tiesler Blos, 1998), activity (Ballinger, 1986), and general health and disease (Whittington, 1989, 1991, 1992; Whittington and Reed, 1997). R. Storey has conducted impactful research on paleodemography (1985, 1992, 2007), the health of women, children, and elites (Storey, 1992, 1994, 1997, 1998, 2005), and nutrition (Storey, 1999). Her work facilitated the initial organization and inventory of the ever-growing Copan skeletal collection during the 1980s and 1990s.

The development and maintenance of the Copan skeletal collection remains a massive undertaking that spans 40 years of collaborative research. Appendix A details the excavation, cleaning, inventory, and a selected research history of the burials included in this study and highlights the dedication of Storey in building the Copan collection. A number of skeletal remains have been consolidated using Paraloid B72 by Storey or at the behest of individual projects and reconstructed by Storey, her students, or other researchers (see Appendix A) whose projects required reconstructed skeletal remains.

Given the incredible number of burials that were excavated during PAC I and PAC II, Storey initiated the Copan Project (CP) numbering system for burials at Copan in March, 1983. Each burial was assigned a unique “CP” number that would be permanently linked to the archaeological provenience information. When multiple individuals were recovered from the same burial, each was assigned a unique CP number. Storey has continued this project for three decades and as of June, 2004, Storey and her students have documented, inventoried, and enumerated each bone fragment for 582 burials in the Copan collection. Storey's original unpublished inventory is housed in the library in Copan and an electronic database exists at the University of Houston.

In 2004, in cooperation with A. Maca and J. Buikstra, I initiated an inventory and re-housing project of the Copan skeletal collection and isolated human remains. To date 783 burials have been included in the Copan Burial Database: 502/585 burials with a CP number, 142 burials without a CP number, and 127 burials that are housed at the Harvard's Peabody Museum of Archaeology and Ethnology. An additional 145 burials have been identified that need to be included in the inventory. Isolated human remains from 361 non-burial contexts and 260 isolated faunal remains have been catalogued. Burials from Op. 64 (PROARCO) have not been available for inclusion in the inventory but approximately 200 burials exist from those excavations. In total, the Copan skeletal collection includes approximately 1,118 individuals and 361 isolated remains.

The re-housing project referenced in Appendix A occurred from 2004-2013 with funding from the PAPAC Project (Maca, 2004-2006), Arizona State University (2008-2010), and the National Science Foundation (2012-2014, BCS-1207533) with the laboratory assistance of M.T. Cantillano, L.A. Cuellar, and C.E. Rodriguez Lopez. During the inventory, bags were replaced, each burial was catalogued, and each element received a tag with provenience information and a count/weight of the fragments that comprise the bone. In 2012-2013, each element of each burial was re-bagged in 2 or 4 mil Ziploc® quality bags, placed in a new hard plastic boxes, and organized according to Operation (Op.) and burial number. An air conditioner and dehumidifier were installed in the Copan Osteology Laboratory to maintain the collection at 25^{o} C and 55% RH.

Figure 6: Re-housing of the Copan Skeletal Collection. Box color is alternated according to archaeological project (Operation) number (e.g. Op. 4=green, Op. 5= blue, Op. 6= green).

B3a2. Health and paleopathology

The health of the ancient Maya has been a focal point of study at Copan, especially witnessed by the work of Whittington, Storey, and Storey's students. Storey participated in numerous excavations in the Valley, especially at Las Sepulturas, and has consulted on various other projects while she worked to clean and house the Copan collection. Storey has conducted numerous analyses on health, especially as it relates to elite status and infant mortality in the Las Sepulturas group in Copan's urban core where she has identified a disproportionately high number of children and women interred within the complex (Storey, 1985, 1992a,b, 1994, 1997, 1998, 1999). Storey has also discussed the health of Copan's elite and royal class (Storey, 2004) and suggests that Late

Classic Copan burials indicate that the elite suffered from non-specific stress markers such as porotic hyperostosis, periosteal reactions, and cribra orbitalia in similar frequency as to Copan's non-elite.

The non-elite, or low-status, component of Late Classic Copan was the focus of Whittington's doctoral (1989) and subsequent work (Whittington, 1991, 1992, 1999; Whittington and Reed, 1997). Whittington selected the Ostumán group, located outside of the Copan's urban core, and conducted excavations (Op. 45 and 46) that recovered skeletons included in this study. Like Storey, based on non-specific stress markers in bone and teeth, Whittington concluded that the non-elite suffered from nutritional stress in the same frequency as the elite but that infections were less prevalent in rural communities. Approximately, 60% of the population had some form of periosteal reaction during the Late Classic (Whittington, 1989).

Two of Storey's students explored health and disease at Copan for their Master's theses. First, Padgett (1996) explored the relationship of status, residence location, and incidence of infection during the Late Classic at Copan. The distribution of lesions among the elite and non-elite led Padgett to conclude that poor health and nutrition were ubiquitous at the end of the Late Classic. Further, an urban residential location, instead of status, was correlated with a greater severity and higher incidence of infection. She suggests that the population was severely affected by staphylococcal, streptococcal, viral, and fungal infections, in addition to gastroenteritis, parasites, and treponematosis. Second, Keng (1997) focused primarily on the Las Sepulturas group and the non-specific stress markers of porotic hyperostosis and cribra orbitalia and concluded that residence location, instead of sex, age, or status, affected the severity of skeletal lesions.

Along with paleopathology, studies of stature were conducted at Copan to assess a decline in health during the Late Classic period. The first, albeit small, study (n=5), was by Longyear (1952) who argued that stature decreased from the early to later periods at Copan. Danforth (1994) included Copan in a regional study of stature and likewise concluded that there was a decline in stature from the Early to Late Classic periods.

B3a3. Activity

Paleopathological studies cite activity and diet as components of the environmental effects that can impact individual health, disease, and frailty; however, several studies have concentrated specifically on diet and/or activity. Lee (1995), another student of Storey, examined differential access to food within the Sepulturas residential zone. Lee inferred activity and access to dietary resources by quantifying the robusticity and sexual dimorphism of post-cranial elements of the Sepulturas residents. Access to food was not correlated with sex or status but physical activity was markedly different between low and high social statuses. High status females were the most sedentary, medium status individuals had marked upper body strength, and lowest status females demonstrated robust musculoskeletal markers in the legs. For males, the highest status group were most active with their upper body, medium status were the most sedentary, and the lowest status males were only slightly less robust than the high status males.

Ballinger (1999) also focused on activity and employed morphometric techniques to assess cross-sectional cortical bone geometry of humeri of individuals from Late Classic samples at Copan and Altar de Sacrificios and a historical sample from Tipu, Belize. Ballinger concluded that males were only 10% larger than females for both time periods and that activity patterns did not change between the two time periods for females while males became less robust in the historic period.

B3a4. Diet

Reed made the primary contributions to the study of diet at Copan through stable isotope analysis of carbon and nitrogen isotopes (Reed, 1994, 1998; Reed and Zeleznik, 2002; Whittington and Reed, 1997). In his doctoral work, Reed examined the bone collagen stable isotope composition across the Copan Valley and found significant difference between males and females, regardless of age, sex, status, or burial location, and dietary differences between elite and low-status males (Reed, 1998). Reed suggests that social behavior, as determined through diet, was strongly affected by sex and weakly by social status. Copanecos, he argues, had a diet that consisted of few animal foods and a high proportion of maize. In subsequent work with Whittington (Whittington and Reed, 1997), the authors examined dental pathologies and stable carbon and nitrogen isotopes, where Late Classic individuals had a higher frequency of lesions attributed to anemia than Middle Classic individuals but concluded that such differences were not significant between urban or rural, Type 1 or Type 2 sites, or pre- or post- Collapse periods. Whittington and Reed, however, did find a significant difference between males and females in the consumption of maize.

B3a5. Cultural body modification

Tiesler Blos (1999) conducted a biocultural study of body modification, both dental and cranial, of 94 ancient Maya skeletal collections, including Copan. Tiesler Blos identified 134/146 cases of dental modification and 84/109 cases of cranial modification. While she did not find patterns of modification by sex, age, or residential group at Copan, her results suggest that Copan demonstrated unique forms of body modification when compared to other Maya sites. During the Late Classic, 72% of the population had cranial modification and demonstrated a tabular erect form that modified the occipital in a way that was unique to Copan. Additionally, Type B5 dental modification (a notch in the mesial or distal corner, see Romero Molina, 1970), was more common at Copan than any other site and was linked to the god of wind, God 'IK.

In the most recent large study of the Copan skeletal collection, Rhoads (2002; see also discussion in Chapter 6) investigated cultural body modification, non-metric, and metric dental traits throughout the Copan Valley to assess ethnicity and biological affiliation within the Copan Pocket. Rhoads concluded that Copan did not have an ethnically Lenca population, as had been previously proposed for the site (Gerstle, 1987; Gerstle and Webster, 1990) and that the patterns of cultural body modification, cranial or dental, did not pattern in any statistically meaningful way across the site.

B3b. Copan chronology

The dates for archaeological phases at Copan are driven by ceramic seriation (**Table 3**). The widely accepted and landmark work of four researchers will form the basis for the dating in this dissertation (Bill, 1997, 2004; Fash, 2001; Viel, 1993; Willey et al., 1994). The Preclassic period is defined by five ceramic types that are often represented by roughly made vessels and include the Rayo (1200-900BC), Gordon (900-600 BC), Uir (600-300 BC), Chabij (300 BC – AD 100), and Bijac (AD 100 - 400). The

Early Classic is divided into two Acbi phases; Early Acbi (AD 400-500) and Late Acbi (AD 500-600) and encompasses the reigns of Rulers 6-11. The Late Classic is defined by the Acbi/Coner Transition, formerly called Bico, (AD 600-650) and Coner phases that are subdivided into Early Coner (AD 600-700), Middle Coner (AD 700-750), Late Coner I (AD 750-820) and Late Coner II (AD 820 - ?) ceramic phases and mark the reigns of Rulers 12-16. The Terminal and Postclassic are represented by the Coaj and Ejar ceramic types, respectively. Grave furniture and material culture are used to determine the ceramic phase and date for each burial included in here, most of which date to the Coner phases.

Table 3: Copan ceramic classification (after Bill, 1997; see also Viel, 1993). Dates are as follows: Acbi (AD 400-600), Bijac (AD 600-650), Coner (AD 650-820), see Table 1.

Tradition	Group	Type	Variety	Subvariety	Ceramic Phase
Antonio Utilitarian .... (Locally made)	Hijole	Hijole Unslipped	Hijole	-	Bijac and Early Acbi
		Mascova Red	Mascova	-	Bijac
	Antonio	Antonio Burnished	Antonio	Baño	Early Acbi, begins in Bijac, transitions to Coner
	Arroyo	Arroyo Red	Arroyo	-	Late Acbi
			Claro	-	Acbi and Acbi/Coner transition
			Rayado	-	Acbi/Coner transition
		Burdalu Red	Burdalu	-	Acbi
		Sopi Incised	Sopi	-	Acbi
			Ofelia	-	Acbi
			Cocorico	Cocorico A	Acbi
				Cocorico B	Acbi
			Punctado	-	Acbi
	Sepultura	Sepultura Unslipped	Sepultura	-	Coner
		Sisero Red	Sisero	-	Coner
		Titichon Red and Brown	Titichon	-	Coner
			Brunido	-	Acbi/Coner Transition

Zico Utilitarian …………… (Locally made)	Zico	Zico Unslipped	Zico	-	Late Coner I
		Casaca Striated	Casaca	-	Late Coner I
			Molina	-	Coner
			Medido	Temprano	Coner
		Lorenzo		-	Late Coner I
	Raul Orange	Raul Red	Raul	-	Late Coner I
			Sencillo	-	Early Coner
			Masica	-	Coner
	Mapache	Mapache Ground	Mapache	-	Acbi to Acbi/Coner transition
		Aquina Brown	Aquino	-	Acbi
		Ricardo Composite	Ricardo	-	Acbi to Early Coner
		Cola Incised	Cola	-	Acbi
Jicatuyo (Honduran) Utilitarian …………… (Not locally made, Central Honduras)	Reina	Reina Incised	Reina	-	Acbi and Coner
		Adan Red-on-Buff	Adan	-	Late Acbi to Coner
		Juanita Incised	Juanita	-	Coner
	Favela	Favela Red-on-Beige	Favela	-	Acbi to Acbi/Coner transition
	Cementerio	Cementerio	-	-	Acbi and Early Coner
		Zigoto	-	-	Acbi and Coner
Polished Black/Brown… ………… (Likely locally made but Central Maya Influence either in style/ manufacture)	Melano	Melano Black/Brown	-	-	Acbi to Acbi/Coner transition
		Conpermiso Red-on-Brown	-	-	Acbi to Acbi/Coner transition
		Luisiana Incised	-	-	Acbi
		Usupar Incised	-	-	Acbi to Acbi/Coner transition
		Suri Fluted	-	-	Acbi
		Unnamed Modeled	-	-	Acbi
	Calamar	Calamar Cream	-	-	Characteristic of Acbi
		Sovedoso Negative-Painted	-	-	Late Acbi to Early Coner
		Champona Incised	-	-	Late Acbi to Acbi/Coner transition
	Surlo	Surlo Orange/Brown	Simple	-	Coner
			Blanco	-	Coner

		Madrugada Modeled-Carved	-	-	Early to Middle Coner
		Ardrilla Incised and Excised	-	-	Acbi/Coner transition to Middle Coner
		Tasu Fluted	Macanudo	-	Coner
			Sacomán	-	Early to Middle Coner
		Besal Incised	Besal	-	Early Coner
			Leonardo	-	Earl Coner
		Sesesmil Incised	Sesesmil	-	Late Coner I
			Facissé	-	Late Coner I
		Topsi Hematite Red	Copa	-	Acbi/Coner transition to Early Coner
			Topsi	-	Coner
		Rifis Polychrome	-	-	Early Coner
Cream Paste …………… (Likely locally made but shared between El Salvador and Copan region)	Chilanga	Chilanga	Chilanga	-	Characteristic of Late Acbi
			Osicala	-	Late Acbi to Late Coner I
		Arturo Incised	-	-	Acbi/Coner transition
	Gualpopa	Gualpopa Polychrome	Geometric and Mono	-	Characteristic of Coner but begins in late Acbi
			Glyphic	-	Coner but begins in late Acbi
	Copador	Copador Polychrome	CV I - CV XIIV	-	Coner
		Pushton Excised	-	-	Late Coner I
		Pacho Incised	-	-	Late Coner I
Maya Polychrome	Catepillar Polychrome	Copador	-	-	Acbi/Coner transition to Middle Coner
		Gualpopa	-	-	Acbi/Coner transition to Middle Coner
		Chilanga	-	-	Acbi/Coner transition to Coner
Nonlocal Polychrome	Nonlocal Polychrome	Conejo/ Chamelecon	-	-	Early Coner
		Ulua/Yojoa	-	-	Early to Late Coner I

Concerns over temporal assignments have long been debated among Copan archaeologists. These are based upon conflicting interpretations of ceramic phases, dating methodologies, and theoretical models (see Fash et al., 2004 and Webster et al., 2004 for the debate). Ceramic sequences have been published for Copan and place the Coner phase from AD 700-900 (Viel and Cheek, 1983), AD 650-1000 (Viel, 1993), and AD 700-1000 (Willey et al., 1994). The less accepted perspective suggests that Coner ceramics extend into the Postclassic period (see Webster et al., 2004), as opposed to a ceramic phase defined as Ejar by Bill (1997) and Manahan (2003). This hypothetical extension of Coner phase ceramics into the Postclassic is based on obsidian hydration dates, a method that has remained controversial during the past decade (Andrews and Fash, 2005; Andrews and Bill, 2005; Freter, 1992; Webster, 2002, 2005; see Braswell-Freter debates).

B3c. Nature of archaeological investigations

Clearly, the urban core of Copan is the Principal Group (see **Figure 2**). The Principal Group has been intensively excavated, and this has led to a fairly complete understanding of dynastic history and socio-political-religious power at Copan (see Andrews and Fash, 2005). The focus of current research, however, is not on monumental architecture or dynastic lineages; but rather is on the occupants of Copan's residential groups around the city center and in hinterland settlements.

The monumental architecture at Copan has received disproportionate attention, beginning with the earliest explorations of the site. However, during the 1970s, archaeological focus began to shift away from the center to outlying residences, stimulating excavations that illustrated ancient Maya residential patterns. Copan neighborhoods have been identified archaeologically through spatial analytical techniques as well as archaeological material culture (Andrews V. and Fash, 1992; Fash, 1983, 2001; Fash et al., 1992; Freter, 2004; Haviland, 1968; Hendon, 1991; Maca, 2002;

Robin, 2003; Wilk, 1988). These architectual neighborhoods have been archaelogically defined as multigenerational lineage residences (Fash, 1992; Hendon 1991) and, more recently, as social houses (e.g. Lévi-Strauss, 1987) that serve as loci for daily activities from which meaning and identities were constituted (Becker, 2004; Bourdieu, 1973; Earle, 1986; Gillespie, 2000c; Hendon, 1999, 2007; Lok, 1987). The details of these neighborhoods, their material culture, mortuary contexts, and demography will be further outlined in Materials and Methods (Chapter 3).

C. Problems in Maya Archaeology

Research in the Maya region has embraced a variety of topics and methods to interpret the past. Studies focus on a particular type of material culture such as architecture, iconography, hieroglyphic texts, ceramics, lithics, stoneware, figurines, faunal remains, human skeletal remains, or paleobotanical samples. A long-standing question is the origin and development of the Maya from horticultural to state level society. The emergence, function, and collapse of Maya city-states are often investigated through theoretical approaches based on political economy, spatial analysis, sociopolitical organization, and social organization and structure.

Studies of political economy engage with material culture to assess trade networks, interaction spheres, and capital in ancient societies. Sociopolitical organization addresses the inner workings of the political system in an ancient society and how the society inevitably affects and is affected by the operations of the political system. Investigations of social organization and structure are based in sociological theory to understand social status, the realties of life as a commoner or elite, the mechanisms that regulate society, kinship, and power (see Chapter 4). Household archaeology has contributed to our collective understanding of status, mortuary ritual, family and group size, and craft activity (see Chapter 3). Beyond these foundational questions, Maya archaeologists have embraced Postmodernism in projects that investigate gender agency, ethnicity, identity, power, religion, ideology, and standards of beauty and personal adornment. Three problem sets in studies of the ancient Maya are summarized below and others are discussed in the following chapters.

C1. Origin of the Maya and state formation

The earliest occupation of the Maya region which dates to the Paleoindian period (10000-8000 BC) and Archaic period (8000-2000 BC), is still poorly understood despite the identification of sites dating to this period in Belize and on the Mexican Pacific Coast (Joyce, 2003; see MacNeish, 1983; Voorhies et al., 2002). In Honduras, an Early Preclassic (c.a. 1600 BC) site in the Chamelecón River Valley was excavatedd by Joyce and Henderson (2001) and two Preclassic (c.a. 1300 BC) sites (Fash, 2001) and caves (Gordon, 1896) were investigated in Copan's hinterlands. Hall and Viel (2003) identified Middle Preclassic occupation in Copan's El Bosque region but suggest that the Copan River destroyed the perishable structures of early hamlets (see also, Fash, 2001).

While the material evidence is minimal, agricultural villages existed throughout Mesoamerica by 2000 BC and chiefdoms took hold by 150 BC (Hansen, 2001; Joyce, 2003). The Late Preclassic (AD 100-400) witnessed the initial formation of the Maya city-states of Copan, Tikal, and Calakmul and the apogee and collapse of El Mirador (Fash, 2001; Folan et al., 2000; Sharer, 2004). The Early Classic (AD 400-600) marks the beginning of long-lived ruling dynasties at key Maya centers that would reach their apogee during the Classic period.

C2. Spatial planning and settlement

Architecture, space, and layout convey information about a building, group, or city. Mayanists are well aware of the power of space and place and as a result, settlement patterns and site planning are primary research subjects. The degree to which ancient cities were planned remains an active field of debate (Ashmore and Sabloff, 2002; Smith, 2003, 2011; Smith and Novic, 2012). Richards-Rissetto (2010) argues that the idea of a ‘planned’ or ‘unplanned’ city should be abandoned and that spatial organization should be considered from an emic perspective where constructed space is created with a culturally specific meaning. The principles employed in site planning were imbued with political, social, and cosmological meaning at Copan (Ahlfeldt, 2004; Ashmore, 1991; Ashmore and Sabloff, 2002; Fash, 1998; Maca, 2002, Richards-Rissetto, 2010).

Spatial layout may express ideological or sociopolitical meaning that is counter to western notions of orthogonal urban form and high-density urbanism (e.g. Smith, 2007). Regardless, Maya settlements can and should be understood as low to medium-density urban cities and Smith (2011) advocates that Maya residential clusters be considered at the analytical unit of neighborhood (see also, Chapter 4). Ashmore (1981) was one of the first to consider a spatial typology of settlement (e.g. Bullard, 1960) that linked form and function of clusters to the social relationships that they represent. As a unit of analysis, the neighborhood is an ideal location to investigate how social groups cluster in space in time and to evaluate if groups shared attributes like wealth, class, profession, ethnicity, or sociopolitical status (Smith and Novic, 2012; e.g. Diamanti, 1991). Ethnicity is a particularly active question in archaeological neighborhoods (Cowgill, 2004; Gerstle, 1988; Smith, 2011) and has been applied directly to neighborhoods at Copan (Gerstle, 1988; Gerstle and Webster, 1990; Rhoads, 2002).

C3. Sociopolitical models and the collapse

In the Maya region, the problems of social and political organization are common research themes. Social organization and social structure, which are the focus of this research, are discussed in detail in Chapter 4 but a brief introduction to recent models of sociopolitical organization is presented here.

In the first model of sociopolitical organization, the centralized model, economic and administrative power, and their integration into the sociopolitical system, derive from kinship connection or ritual power (see also Chase and Chase, 1994; Demarest, 1996; Fox et al., 1996). Freidel (1988) suggests that the development of the *ahau* concept, the institution of divine Maya kingship, is based on seizing power during the Preclassic when the king was the only person with the supernatural power to communicate with ancestors through specialized ritual. In this political economic model, inclusion and exclusion become political strategies to create and maintain ties through marriage, political alliances, or kinship relationship in what has been termed a corporate group (Blanton et al., 1996).

Second, in the decentralized model, also known as the segmentary state model, kin relations, and lineage ties are seen as the fundamental building blocks of Maya society (Iannone, 2002; Fox, 1987; Fox and Cook, 1996; Fox et al., 1996). Lineage groups were internally stratified maximal lineages with political interests related to the support of their particular corporate group. The heads of the lineage group occupied the most ornate residential structures and maintained sociopolitical power from independent wealth, production, and kin-based support networks (Sanders, 1989; Webster, 1992).

Fox et al. (1996) note that the centralized model is often applied only to the largest and most populated centers like Tikal, Caracol, and Calakmul (e.g. Chase and Chase, 1994). Archaeologists at smaller cities like Copan can more readily test the decentralized model of Maya organization, where kinship would have played a major role in sociopolitical organization where this model has been tested through the excavation of elite residential house complexes (Freter, 2004; Robin, 2003; Sanders, 1989; Webster, 1989, 1992). As a result of these projects, Copan had been characterized as a decentralized segmentary state where a powerful king was increasingly dependent on the support of the lineages that occupied the elite, wealthy, and ornate residences in neighborhoods surrounding the site center (Fash, 2005; Fash, 1994; Fash, 2001; Sanders, 1989; Webster, 1992).

Finally, Marcus (1993, 1995, 2003) proposed the dynamic model in which sociopolitical power regularly fluctuates, social organization was diverse across space and time, and where polities did not depend solely on kinship and/or an ideological king to function. The oscillations in the power structure are now expected in models of sociopolitical organization, which have moved beyond the centralized and decentralized dichotomy. Dynamic and diverse power structures have become evident in hieroglyphic texts (Tokovinine, 2009), household artifact assemblages (Hendon, 1999: Iannone and Connell, 2003), spatial organization (Maca, 2002; Richards-Rissetto, 2010), movement

(Richards-Rissetto and Landau, 2014), migration (Freiwald, 2011; Price et al., 2010; Price et al., 2014), and Classic period burials (Diamanti, 1991; Gonlin, 1994; Webster, 1997).

C4. The "Collapse"

The 9th century "collapse" of Maya cities has been considered within each of the sociopolitical models in Section C3. In the centralized model, the ancient Maya collapse would result from some outside force (population pressure, catastrophic events, or disruptions to the system of trade) and in the decentralized model, internal conflict and lineage competition would result in the collapse of the system. In reality, it is likely a combination of internal and external forces that impacted the sociopolitical system at the end of the Late Classic period.

The proposed causes of the collapse include natural phenomenon or political unrest and it is hypothesized to have occurred in isolated regions or as a single general collapse across the Maya lowlands and highlands. Webster (2002) suggests the collapse was a "perfect storm" brought on by (1) a deteriorating relationship between the Maya to their natural and agricultural resources, (2) warfare and elite competition within and between sites, and (3) the waning belief in and support of the institution of kinship. The issue of regional specificity remains key; researchers in the Petén and Petexbatún suggest that warfare was more likely as agricultural systems were intact, subsistence strategies adaptive, and that the population was in good health (Demarest, 1997; Wright, 1997). The ecosystem of Copan was similarly intact and absent of large-scale deforestation according to lake cores by McNeil et al. (2010). However, paleopathological evidence from Late Classic burials at Copan is rife with evidence of physiological stress (Storey, 1997; 2004). While many Classic period Maya centers were abandoned during the 9th century, Joyce (2003) highlights that Terminal and Postclassic centers like Tayasal, Tipu, and Tulum, among others, thrived for an additional 400-600 years.

C5. Final Comment

The contextualized study of archaeological human remains has made significant contributions to Maya archaeology by providing data on the diet, health, disease, migration, and biological affiliation among the commoner, elite, and royal segments of ancient society. These data have complemented the aforementioned themes and provided a new avenue in which the agency, gender, identity, status, and life-history of an individual or group can be understood.

D. Summary

For more than two centuries, Copan has been the focus of scientific inquiry and each project has added to the history of this dynamic city. The archaeological history of a site as large as Copan is complex and multi-faceted and further detail of each architectural complex is presented in Chapter 3. This chapter offers a very brief description of the Maya polity, the physical features of the Valley, the excavation and provenience history of the site, the history of bioarchaeology and the skeletal collection curated there, and chronology and dating methods that are employed in this research. The chapter concludes with a short summary of key problems in Maya archaeology, several of which are explored in detail in the subsequent chapters.

CHAPTER 3: MATERIALS AND METHODS

A. Introduction

Long-term archaeological research at ancient Maya sites has provided essential information regarding social organization (Blanton et al., 1996; Coe 1975, 1988; Chase and Chase, 1994; Gillespie, 2000, 2001; Manzanilla, 2001; Marcus, 1993; McAnany, 1993, 1995, 1998; McAnany et al., 1999; Piehl, 2005; Pyburn, 2004; Sanders, 1977, 1981; Sharer, 1993). Investigations into prehistoric social organization focus on the form and function of ancient society while applying theoretical models, such as (1) the centralized, decentralized, vs. dynamic models, (2) the lineage vs. house models, and (3) models drawn from ethnographic analogy to feudal Europe and African chiefdoms. In Mesoamerica, the degree of dynastic or centralized political control (Blanton et al. 1996; Chase and Chase 1994; Demarest 1996; Plank 2004) and the impact of such sociopolitical power on the general populace or influential elite groups (Fash, 1994; Freter, 2004; McAnany et. al., 1999; Sanders, 1989; Sharer, 1994; Stuart, 1993; Webster, 1989, 1992) comprise an important part in studies of social organization. Research traditionally engages with material culture, such as, ceramics, lithics, architecture, or skeletal remains to elucidate interaction spheres, trade, population dynamics, social stratification, kinship systems, mobility, and migration.

The archaeological projects at Copan, outlined in Chapter 2, comprise varied methodologies and research agendas. While the questions posed in previous archaeological work at Copan are not the same as the present project, the data derived from the excavations have provided invaluable context for each burial included in this study. Ceramics are the primary type of material culture that is included in this analysis to provide context, including information on the age of burial, individual status, and even clues to place of origin. The ceramic typology at Copan has been carefully refined by Bill (1997) and serves as a reliable means for which to date a burial (**Table 1**). Fortunately, Coner phase (AD 600-820) Copador ceramics are emblematic of the Late Classic period and are found in many Late Classic burial contexts. Moreover, archaeologists at Copan have created typologies that are useful to identify imported vessels and other objects of material culture, like figurines, whistles, jade or obsidian.

The type of burial structure, such as a pit, cist, crypt, or tomb, and burial location provides key contextual information for the status of an individual and membership to a corporate group or house (Weiss-Krejci, 2004). Appendix B details the burial type, when possible, and uses the terminology of pit, cist, crypt, or tomb. (1) A "pit burial" is burial in an oval or circular hole or pit excavated into the earth that was refilled with the same excavated soil after internment. (2) A "cist burial" is burial in a rectangular pit lined with one or more stonewalls made of rough, faced stones or cobbles. Some cists may have a modest capstone but a burial may be classified as a cist without a capstone. (3) A "crypt burial" is burial in a chamber with four defined walls of more than one course of stones. Crypts may be comparable in size to a cists but are accompanied by a floor and a capstone. (4) A "tomb burial" is the most elaborate type of internment and involves burial in a constructed tomb made of dressed tuff blocks organized in regular courses. Tombs often have a rectangular shape, niches for vessels and offerings, and a ceiling made of large capstones or a stone vault.

B. Research Questions and Scenarios

This research addresses the following research question: **What are the roles that kinship (biological or fictive) and co-residence play in the internal social organization of a lineage-based and/or house society?** This question will be addressed using the case of the Copan Maya to identify the internal social structure of ancient neighborhoods. The remains of individuals buried within the confines the neighborhoods described in Chapter 2 are analyzed here to establish the presence of affines, spouses, and immigrants using phenotypic dental traits and biogeochemical values.

The modern Maya exhibit patrilocal residence patterns and patrilineality (Vogt, 1969; 1994), and this pattern has consistently been applied to the ancient Maya through ethnographic analogy (e.g., Carmack and Weeks, 1981; Fash et al., 1992). However, Watanabe (2004) suggests that filiation from either parent may have been employed and manipulated to maintain social units, lands, and ties. Accordingly, data will be collected for both males and females to allow for considerations of alternative residence and inheritance patterns that may be apparent in the house model (e.g., González-Ruibal, 2006). As the ancient Maya were a complex society that exhibited marked social ranking, in-marrying spouses will be differentiated from individuals who came into the house for work or servitude through mortuary context and furnishings (Hodder, 2000; Meskell, 1996; Saxe, 1971).

The expectations for this study are drawn from a matrix of possibilities **(Figure 7)** based on what the biodistance and isotopic data are capable of illuminating. These data will provide the context with which to identify whether the archaeologically defined neighborhoods follow a house (e.g., Gillespie, 2000a) or lineage model. Since households are the minimal economic unit that reflects relationships (Becker, 2004) and a neighborhood or house may include multiple households (Wilk and Ashmore, 1988), households within neighborhoods were considered as a unit of analysis. Within each of the eight neighborhoods, a microanalysis of the households is also considered, based on shared plazas or patios. Given that different neighborhoods may fall into different predicted scenarios, the site is evaluated as a whole and regions are evaluated and interpreted on their own merit with each scenario possible.

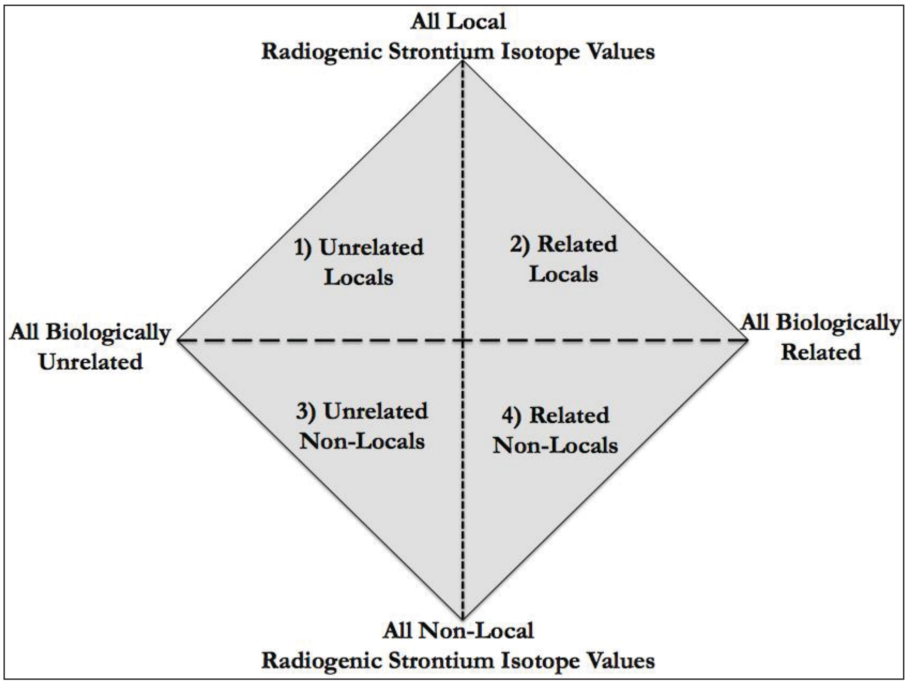

Figure 7: Expectations and scenarios: the research design is grounded in what the data can elucidate, does not propose to be definitive, and allows the possibility of a new model for the ancient Maya.

1) Unrelated "Local" Residents: If individuals within a neighborhood exhibit local radiogenic strontium values and dissimilar phenotypic profiles, then a neighborhood was open to biologically unrelated individuals but insular to endemic individuals. This scenario would suggest that co-residence was tied to affiliation through birth at the level

of the city or region but that kinship or linkage to a common ancestor did not affect membership. This would suggest that a neighborhood was based in affiliation to a place or region, thus likely supporting a house-model.

2) Related "Local" Residents: If individuals within a neighborhood exhibit local radiogenic strontium values and similar phenotypic profiles, then a neighborhood was insular, and affiliation was limited to endemic and biologically related individuals (and their spouses). Scenario Two would provide support for the commonly held model that Maya social organization and co-residence were tied to a common ancestor in a lineage-based model; birthplace and biological affinity were necessary for membership. This scenario would suggest that social organization was based in a unique and distinct social unit predicated by a linkage to a common local ancestor, thus supporting a lineage-model.

3) Unrelated "Non-local" Residents: If individuals within a neighborhood exhibit non-local radiogenic strontium values and dissimilar phenotypic profiles, then a neighborhood was open to non-local and biologically unrelated individuals. This scenario would suggest Maya social organization was open to any person regardless of birthplace or linkage to a common ancestor. Membership then, was predicated neither on kinship nor birthplace suggesting a dynamic urban environment where place of residence and burial were dependent on other aspects of identity and/or affiliation. This scenario would suggest that Late Classic period Maya from various regions were readily moving into neighborhoods at ancient Copan for reasons that may extend to urbanization, economics, or other ritual purposes. In this case, ancient Copan neighborhoods may have been indistinct amorphous units in an urban environment, thus not supporting either the lineage-based or house-based model of social organization.

4) Related “Non-local” Residents: If individuals within a neighborhood exhibit non-local radiogenic strontium values but similar phenotypic profiles, then neighborhoods were open to outsiders but limited to non-endemic but biologically related individuals (and their spouses). Scenario Four would support the interpretation that a Maya neighborhood was open to those with a different birthplace but some connection to a common biological ancestor. Additionally, this would imply that membership was based in kinship even if a kin member was of ‘foreign’ birth. This final scenario indicates that each neighborhood was open to those with a tie to the common ancestor regardless of birthplace suggesting that a particular neighborhood would have had connections with their biological kin in other cities or regions of the Maya civilization, thus, lending more support to the lineage-based model while retaining some elements of the house-based model.

C. The Skeletal Sample and Mortuary Context

C1. Mortuary context

Mortuary structures at Copan are regarded as important components of the spatially bound and socially restricted residential groups. These groups incorporate funerary structures and mortuary contexts into their lived spaces in both domestic and ritual structures to legitimize their link to their ancestors. Meanwhile they still incorporate elements of religious beliefs, worldview, and ancestor veneration into the lived spaces through household shrines and large funerary structures (Gillespie 2001, 2002; Joyce, 2001). Mortuary rituals are viewed here as representing the relationships within and among social units, between survivors and the deceased, as well as political and economic relationships (Gillespie 2001; Hertz 1960). An approach that addresses the role of the individual within a larger and negotiable social structure elucidates how living people understand and produce mortuary sites (Hodder 1982, 1991; VanPool et al. 1999). The approach taken here, blending both the scientific and humanistic approaches in archaeology is of particular use in bioarchaeological studies where we are constrained by the data available but seek to find the "life-history" of an individual under analysis (Buikstra et al., 2004). Skeletal data were collected in conjunction with those from mortuary contexts and interpreted with the associated objects of material culture. These data are then combined with the demographic and skeletal data to assess the life history of individuals, the relationship of those interred within households, and larger neighborhoods. **Appendix B** and **C** details the sample region, structure, location, context, grave type, position, heading, provenience information, cultural body modifications, and grave furnishings.

C2. Age, sex, and sample selection

Data on sex, age, burial context, and cultural body modifications were collected for each burial at the time of the metric biodistance analysis. Age and sex were assessed based on standard osteological methods (Buikstra and Ubelaker, 1994). Provenience information was derived from the skeletal inventory created during previous field seasons at Copan (Miller, 2004, 2005, 2006) and checked against maps, field notes, and reports provided by each archaeological project and housed in the library at the Regional Center for Archaeological Investigations in the modern town of Copan Ruinas, Honduras.

Based on preservation, appropriate burial context information, and biodistance pretreatment criteria, 727 burials were available for the biodistance analysis (**Table 4**). The sample was reduced to 306 individuals based on the presence of adult dentition, preservation, contextual data, and burial furniture. Measurements were taken on left polar maxillary and mandibular (I^1, C^1, P^3, M^1, I_2, C_1, P_3, M_1) teeth with antimere substitution, as necessary.

Table 4: Sample sizes and sites for analysis with available and included individuals.

Region	Geographic Grid Group Designation	Archaeological Operation	Available	Included
Bosque	10J, 10L, 11K, 11L	Op. 4, Op. 4/49	48	13
Cementerio	10L-1, 2 & Mound 36	Op. 48 (1992), Peabody (1892)	80	30
Copan Valley: Hinterlands	3O-7, 4N-5, 12G-6, 18a, 25b, 34a,d, Petapilla, Hacienda Grande	Recovery Projects, Copan Village, Isolated burials	200	20
Ostumán Hinterlands	10E-6 and 11E-2	Op. 45 and 46	10	7
Rastrojón and Chorro Foothills	6N-1, 6N-4, 7M-8	Op. 4, Op. 64	16	10
Salamar Foothills	8L-10, 12	Op. 42	14	11
Sepulturas	8N, 9N, 9M, 10N	Op. 8, 9, 13, 15, 16, 17, 22, 50, Sepulturas	359	224
Total			**727**	**305**

During data collection, individuals were assigned to one of five sex categories: male, female, probable male, probable female, and undetermined sex (**Table 5**). The original sex estimation is available in Appendix B but the sex categories have been reduced to male (male and probable male), female (female and probable female), and undetermined moving forward. Sex was estimated from features of the cranium and pelvis (e.g. Buikstra and Ubelaker, 1994) and measurements of the humeral and femoral head (Buikstra and Mielke, 1985).

Table 5: Initial sex estimation

Sex	Male	Female	Probable Male	Probable Female	Undetermined	Total
Count	59	71	30	27	118	305
% of Sample by Sex	19.3%	23.2%	9.8%	8.8%	38.7%	100.0%

Individuals were assigned to age categories based on dental, cranial, and post-cranial features following Buikstra and Ubelaker (1994). Pelvic age was estimated from the pubic symphysis following the Todd (Todd, 1920) and Suchey-Brooks (Brooks, 1955; Suchey et al., 1988) methods. The auricular surface was assessed following the Lovejoy method (Lovejoy et al., 1985) and when possible, with Milner-Boldsen Transition Analysis (Milner and Boldsen, 2012). Dental wear, development, and cranial suture closure were also assessed (Buikstra and Ubelaker, 1994).

The age categories are as follows: Subadult (SA) birth to 12 years of age; Adolescent (Adol) 12 to 18 years of age; Young Adult (YA) 18 to 30 years of age; Adult (A) 30 to 45 years of age; Mature Adult (MA) 45+ years of age (**Table 6** and **Figure 8**). Individuals between age categories were recorded with a composite score, such as YA/A for an individual between 35-45 years of age. Appendix B details the age subcategories and age range for each individual.

Table 6: Copan sample by age and reduced sex categories

Age	M	F	U	Total	% of Sample by Age
Subadult	0	1	72	73	23.9%
Adolescent	5	7	5	17	5.6%
Young Adult	35	48	11	94	30.8%
Young Adult/Adult	5	3	2	10	3.3%
Adult	38	32	27	97	31.8%
Adult/Mature Adult	0	3	0	3	1.0%
Mature Adult	6	4	1	11	3.6%
Total	89	98	118	305	100.0%
% of Sample by Sex	29.2%	32.1%	38.7%	100.0%	

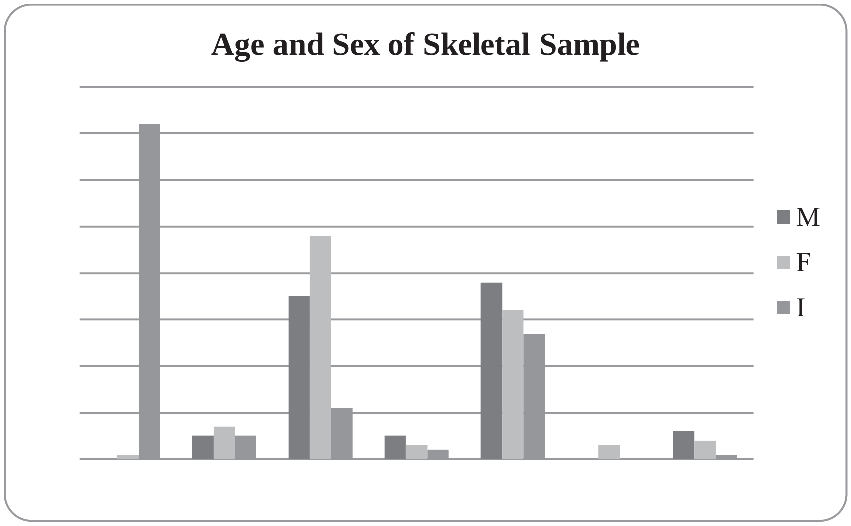

Figure 8: Age and sex of skeletal sample

Between 30-40% of the individuals from any patio group who were included in the biodistance study are also included in the strontium study. While sampling was random across individuals, an effort was made to ensure that all ages and both sexes were represented in the strontium analysis. However, preference was given to individuals with male or female sex estimation. Radiogenic strontium isotope analysis is destructive and costly; studies may often include only 20% of the total burial sample for isotopic analysis (Freiwald, 2011; Knudson, 2004). Based on level of preservation, secure burial context, likelihood of producing biogenic data, 121 burials were randomly sampled across all neighborhoods for strontium isotope analysis. Radiogenic strontium data exist for twenty burials from previous studies of Group 10L-2 (Miller et al., 2007) and the Copan Valley (Price et al., 2010) and those strontium values are included here. The strontium sample included 57/89 males (64%), 50/98 females (51.0%), and 34/118 (28.8%) individuals of undetermined sex. A total of 141/305 (46.2%) individuals who constituted the biodistance sample were sampled for radiogenic strontium isotope analysis (**Table 7**).

Table 7: Skeletal sample by residential group. Previous strontium samples were taken for studies by Miller et al., 2006 for 10L-2 and Price et al., 2010 for all remaining groups.

Region	Group	Male	Female	Und.	Total Biodistance Sample	Total Sr Samples	Total Sr Samples by Sex	Previous Strontium Samples
Bosque	10I-m11	1	0	0	1	1	1M	1
	10L16/17	0	1	2	3	2	1F, 1U	0
	11J-1	0	1	0	1	0	0	0
	11L-11.	2	2	1	5	2	1F, 1U	0
	11L-7/8	2	0	0	2	1	1M	0
	11K-18	0	1	0	1	1	1F	1
	Museum	1	0	0	1	1	1M	0
	Total	***6***	***5***	***3***	***14***	***8***	***8***	***2***
Cem.	10L-1	2	0	0	2	1	1M	0
	10L-2	4	7	18	29	12	3M, 4F, 5U	10
	Total	***6***	***7***	***18***	***31***	***13***	***13***	***10***
Copan Valley	12G-6	1	0	0	1	0	0	0
	18A/25B/ 34D	2	2	2	6	1	1M	0
	3O-7	1	4	1	6	4	1M, 3F	0
	9P-5	1	0	0	1	1	1M	0
	Copan Valley	2	0	0	2	1	1M	0
	Hacienda	1	0	0	1	1	1M	0
	E of town 3/30	0	1	1	2	0	0	0
	4N-5	0	1	0	1	1	1F	1
	Total	***8***	***8***	***4***	***20***	***9***	***9***	***1***
Ostumán	11E-2.	2	1	2	5	3	2M, 1F	0
	10E-5/6	0	1	1	2	1	1F	0
	Total	***2***	***2***	***3***	***7***	***4***	***4***	***0***
Rastrojón Chorro	6N-4	1	0	2	3	3	1M, 2U	0
	7M-4/8	0	1	5	6	4	1F, 3U	0
	7N-20	0	1	0	1	1	1F	0
	Total	*1*	*2*	*7*	*10*	*8*	*8*	*0*
Salamar	8L-10/12	5	3	2	10	6	3M, 3F	0
	CRIA	1	0	0	1	0	0	0
	Total	***6***	***3***	***2***	***11***	***6***	***6***	***0***
Sep.	8N-11	6	5	4	15	7	3M, 4F	0
	9M-24	3	2	2	7	4	2M, 1F, 1U	4
	9M-22A	4	3	2	9	4	3M, 1U	0
	9M-22B	6	3	7	16	8	3M, 1F, 4U	3
	Sepulturas	2	1	2	5	0	0	0
	Total	***21***	***14***	***17***	***52***	***23***	***23***	***8***
Sep. 9N-8	9N-8A	3	4	1	8	3	2M, 1U	0
	9N-8B	3	6	10	19	8	3M, 4F, 1U	0
	9N-8C	2	4	2	7	4	2M, 2F	0
	9N-8D	11	9	11	31	13	6M, 5F, 2U	0
	9N-8E	5	10	12	27	12	4M, 4F, 4U	0
	9N-8F	2	6	10	19	9	2M, 4F, 3U	0
	9N-8H	8	14	11	33	13	5M, 4F, 4U	0
	9N-8I	2	2	1	5	3	1M, 3F	0
	9N-8J	1	0	0	1	1	1M	0
	9N-8K	1	2	5	8	3	1M, 1F, 1U	0
	9N-8M	1	0	1	2	1	1M	0
	Total	***39***	***57***	***64***	***160***	***70***	***70***	***0***
TOTAL		89	98	118	305	141	141	21

D. Sources of Data: Copan Architectural Areas

The research presented here required analysis of previously excavated skeletal samples from distinct neighborhoods or houses occupied during the Late Classic period (AD 600-822), which are curated at the Regional Center for Archaeological Investigations at Copan, Honduras. It includes more than 1,200 skeletons from 130 years of excavation by various entities. The Late Classic component of the Copan skeletal collection was created primarily through the work of Pennsylvania State University and Harvard University. Even though it is the largest collection of skeletal remains in Mesoamerica, the Copan collection suffers from a bias since it largely represents elite contexts and approximates less than 10% of the ancient Copan population (Webster, 2010, personal communication; Wolf, 2014, personal communication). While most burials are drawn from the excavations at large architectural groups, every effort was made to include those from smaller house mound sites in this analysis.

D1. Selection and details of the architectural groups under analysis

To investigate the research questions posed in Chapter 3, seven residential areas of the site were sampled, including the groups within El Bosque (10J, 11K, 11L), El Cementerio (10L, 10L-2, Mound 36), the Copan Valley Hinterlands (3O-7, 18a, 18d, 25b, 34a, 34d, 6N-1), Ostumán (10E, 11E), Rastrojón and Chorro regions (6N, 7M), Salamar (8L-10, 12), and Las Sepulturas (8N, 9M, 10N, and 9N-8 Patios A-M) **(Table 6** and **7, Figure 9)**. The seven areas, identified as neighborhoods or residential areas, have produced the largest numbers of burials, ranging from 10 to 300 burials per area, and are considered representative of the entire site. While a number of these neighborhoods had occupation throughout the Classic period, only Late Classic burials (600-822 AD) are included in this analysis.

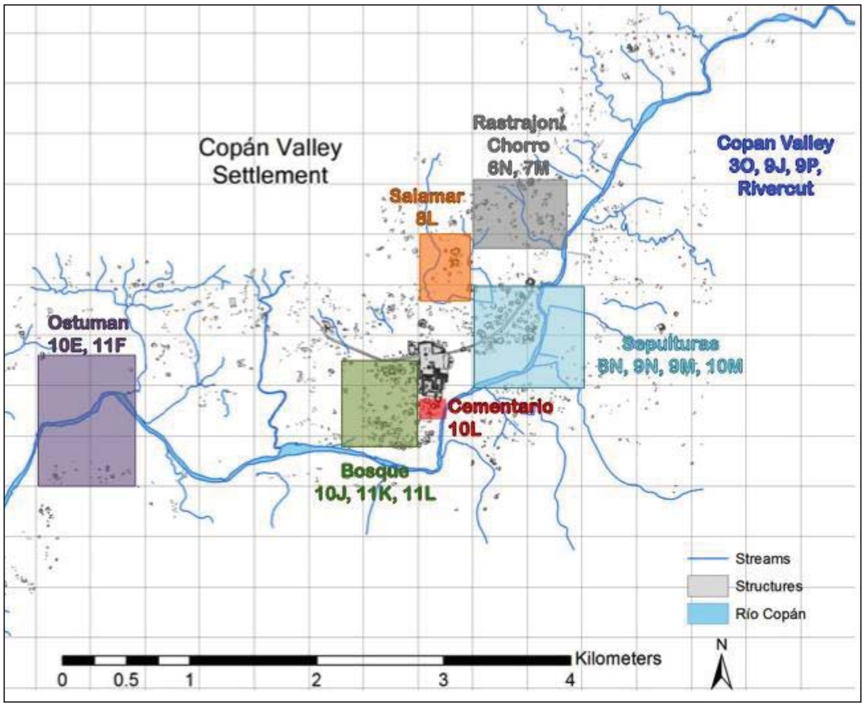

Figure 9: Copan with neighborhoods highlighted. The Principal Group appears in the center of the map. The *sacbe* road extends to the east and west of the Principal Group. Architectural groups include: Bosque (10J, 11K, 11L), Cementerio (10L), Copan Valley (3O, 9J, 9P, Rescate), Ostumán (10J, 10K), Rastrojón/Chorro (6N, 7M), Salamar (8L), and Las Sepulturas (9N, 9M, 10M). After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2: Archaeological groups

Architectural groups, which may include multiple patio groups, are named according to where they are located within 100 x 100 m transects of the Copan Valley as mapped by Baudez and Fash (1978-1980) and Fash and Long (1983) (**Figure 2**). These designations represent a quadrant within a grid with numbers that decrease from north to south and alphabetical letters that increase from west to east.

D2a. El Bosque (10J, 11K, 11L)

El Bosque is the region less than 0.5 km west of the site center, and like Sepulturas, it was occupied by elites during the Classic period. This is evident in the monumental architecture and sculptural elements (**Figure 10**). In addition to rescue projects like "Salvamento el Pueblo" by IHAH after Hurricane Mitch, excavations were conducted by Viel and Cheek (1983) to assess the Early Classic residential area of El Bosque, and Manahan (1995: 11L-77) to research the Terminal and Postclassic collapse of Copan, specifically in reference to ceramic dating, and by Maca (2005-2008) in Group 11K-6, a Type 4 site with residential and ceremonial architecture. The Copan River has affected the Bosque region as it changed course throughout history and cut into residential areas (e.g. 11L-11), removing standing architecture and disturbing material culture. The Bosque region has been subject to several "Rescate" or recovery excavations wherein temporal constraints may impede full documentation of burial contexts. As a result, the Bosque region is considered here as a single group due to limited sample size, diffuse burial distribution, and missing contextual or architectural data (see, **Appendix B** and **C**).

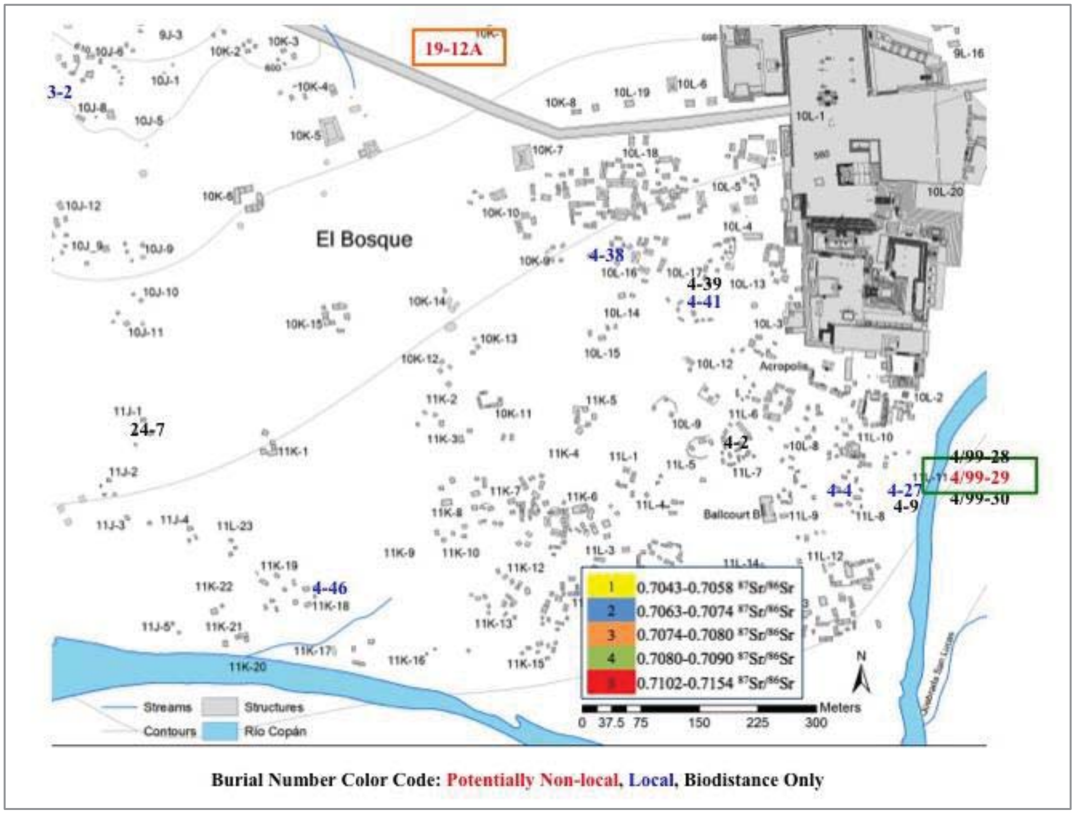

Figure 10:Map of El Bosque sample, Groups 10J, 10K, 11K, 11L. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2b. El Cementerio (10L-2)

The region known as El Cementerio includes Group 10L-2, a Type 4 site located immediately south and adjacent to the monumental ritual and administrative structures of the Copán Acropolis. Affiliated residential groups include 10L-1 (Webster, 1988: Op. 7) and 10L-Mound 36 (Owens, 1891-1892: Op. "Peabody"). Burials from Op. 7 were included but those from 10L-36 were excluded, as they are not stored at Copan but at The Peabody Museum of Archaeology and Ethnology at Harvard University. The Peabody skeletal material at Copan has been previously assessed for biodistance by Aubry (2009) and Scherer (2004) and for the Copan Inventory by the author in 2006. Tulane University excavated the area under the direction of E. W. Andrews as part of the Copan Acropolis Archaeological Project from 1990-1994 (Op. 48, Sub Op: 1, 6, 8, 9, 10, 11, 12, 13, 16). J. Piehl conducted bioarchaeological research on the recovered Tulane human skeletal sample.

The Cementerio region consists of 25 buildings arranged on three large central courtyards. Andrews and Fash (1992) argue that this region of the site offers great insight into public, ceremonial, and royal interaction just before the collapse of the Copan dynasty (AD 700-850). Andrews and Bill (2005) refer to Courtyard A as K'inich Yax Pasaj Chan Yopat's residence and an area where administrative, public ritual and elite activities occurred (**Figure 11**). Courtyards A and B were occupied by a noble family, the ruler K'inich Yax Pasaj Chan Yopat, his less wealthy kin, and their retainers and servants who occupied the modest structures of Group 10L-2.

A presentation by E.W. Andrews at the 2014 Copan Acropolis Archaeological Project (PAAC) conference in Copan, Honduras detailed the most recent interpretations of Group 10L-2, which will be summarized here with his permission (Andrews, personal communication, 2014). The region was occupied from the Protoclassic through the Late Classic Late Coner phase (AD 100-850), but little is known of the first 500 years of occupation. While 10L-2 was unoccupied during much of the Preclassic, the region was settled by a small population during the Acbi phase (AD 400-600) and reign of Ruler 11, when Courtyard A was established by filling in Bijac

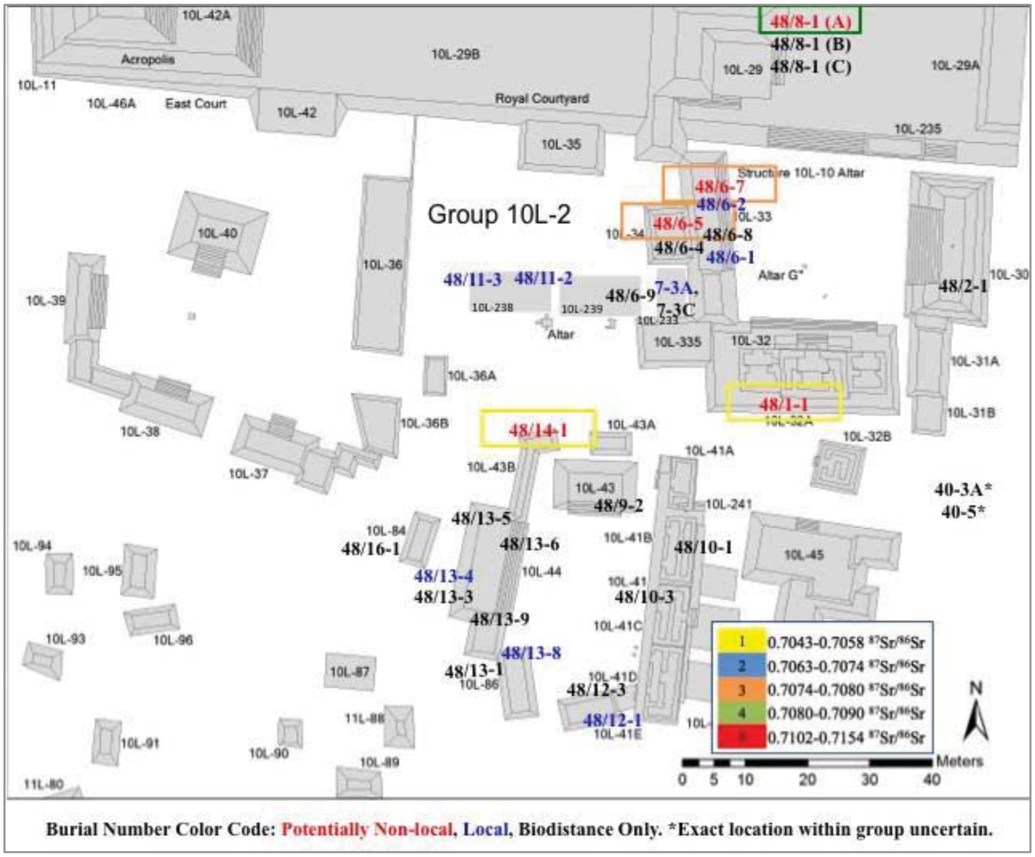

Figure 11: Map of El Cementerio sample, Group 10L-2. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

ceramics and refuse from other Copan neighborhoods over sterile sand and river gravel. Courtyard B was established later than Courtyard A during the Acbi period. During the Early Coner phase (AD 650-700) and reign of Ruler 12, construction and population size in Group 10L-2 increased markedly, slowing during the Late Classic until the Late Coner phase. It was during the Late Coner phase that Ruler 16 initiated the construction of 10L-30 and 10L-32 in Courtyard A and 10L-41A in Courtyard B. After the death of the final ruler, K'inich Yax Pasaj Chan Yopat, the residence was no longer a symbol of administrative and ritual power. It was then abandoned, and it became a repository for refuse by the remaining Copan residents (Andrews and Bill, 2005). Finally, an additional Courtyard C may have existed to the west of Courtyard B but was destroyed by the river in antiquity. An extension of Courtyard B to the east was also lost to the river. As such, Group 10L-2 was likely much larger than its present layout.

D2c. Copan Valley and Hinterlands (3O-7, 4N-5, 9P-5, 12G-6, 18a, 18d, 25b, 34a, 34d)

Burials throughout the Copan Valley were included in the biodistance study to increase sample size and to have a general population with which to compare the distinct residential groups. Richards-Rissetto (2010) defined urban core and hinterland sites for the Copan Valley and argued that interaction between these areas would have been markedly different. The burials included in the Copan Valley sample all represent Hinterland sites and stand in contrast to the expected biological and migration patterns in the clearly defined residential groups in the site core. Group 3O-7 is from the Petapilla or Quebrada Seca region located 2 km to the northeast of the Principal Group and is a small aggregate site of Group 4O-6, 8, 9, and 10, which were excavated by Webster in 1989 (**Figure 12**). Group 4N-5 is also in the Petapilla region and includes only one burial from a midden context (**Figure 13**). Group 9P-5 is located in the San Rafael region to the south of the Copan River in the southeastern portion of the Copan Valley (**Figure 14**). Group 12G-6 is in the Algodonal region in the western segment of the Valley (**Figure 15**).

Webster and Gonlin (1988) excavated several other hinterland and modest residential areas throughout the 1980s to identify residential patterns and “commoner” or “producer” rural household remains: Site 11D-11-2 in the El Jaral alluvial pocket (Op. 30), Site 7D-6-2 at the western edge of the Rio Amarillo East pocket (Op. 31), Sites

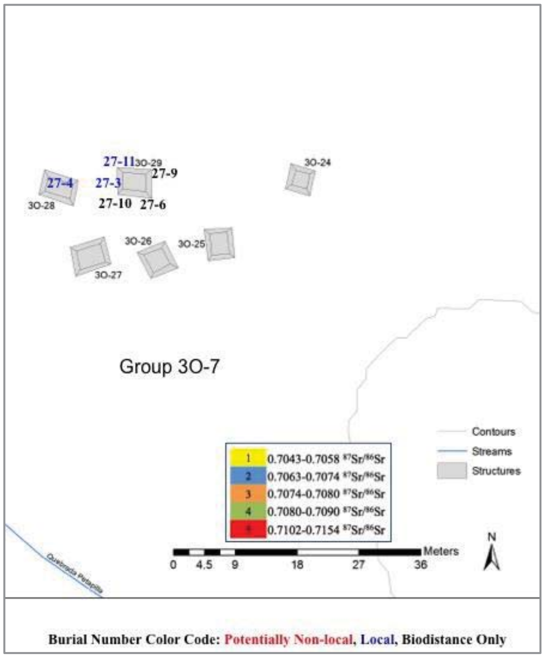

Figure 12: Map of Copan Valley sample, Group 3O-7. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

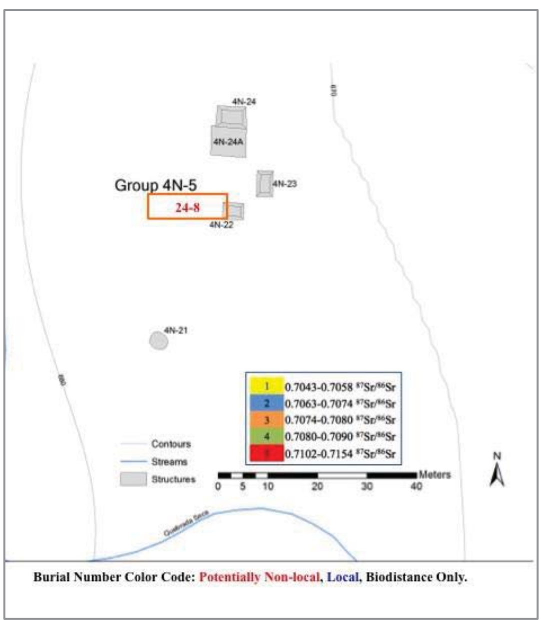

Figure 13: Map of Copan Valley sample, Group 4N-5. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

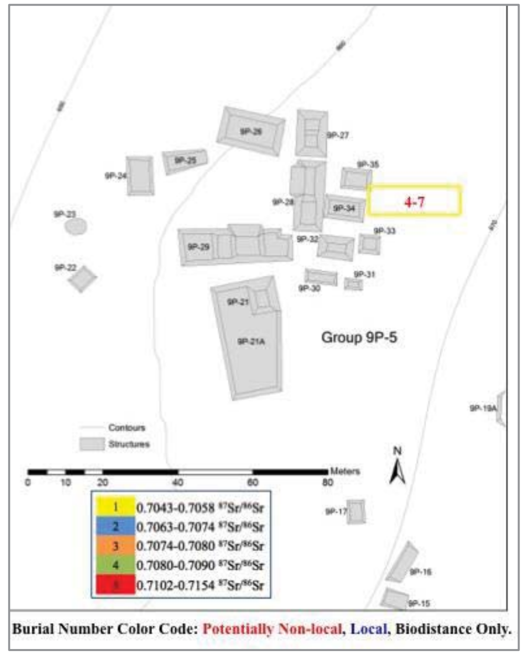

Figure 14: Map of Copan Valley sample, Group 9P-5. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

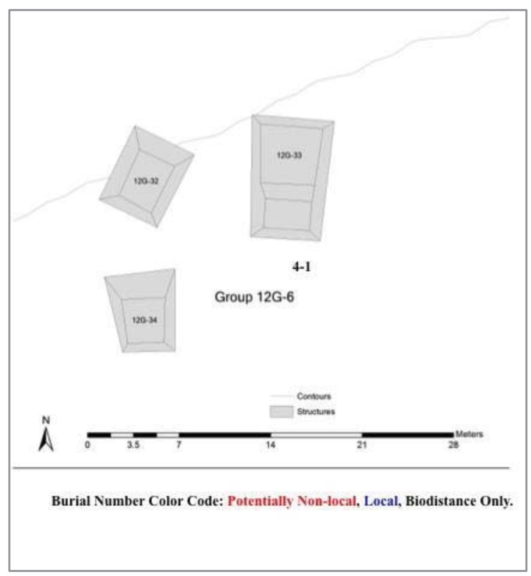

Figure 15: Map of Copan Valley sample, Group 12G-6. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

7D-3-1 in the foothills of the Rio Amarillo East pocket (Op. 32), Sites 34A-12-1 and 2 in the foothills of the Sesesmil River Valley (Op. 33 and 34), Site 32B-16-1 in the steep foothills of the Sesesmil River Valley at an elevation of 950 m (Op. 35), Site 34C-4-2 located 2.2 km north of the Main Group(Op. 36), and Site 99B-18-2 approximately 500 m west of the Rio Gila (Op. 38). Webster and colleagues documented domestic architecture, artifact assemblages, and even specialized structures in households that thrived at the margins of major centers during the Late and Post-Classic (Webster and Gonlin, 1989). Preservation of burials from these groups was generally poor and grave furnishing modest, yet individuals from Site 34D-12-2 and other hinterland sites were able to be included in the present study.

D2d. Ostumán and Hinterlands (10E, 11E)

Ostumán is located on the western end of the Copan Valley, 3.5 km from the site center, and is classified as a hinterland site (e.g. Richards-Rissetto, 2010). Excavations in the Ostumán region (Op. 45 and 46) centered on two contemporaneous sites: the large Type 4 site of 10E-6 (Fash, 1983b; Fash and Long, 1983; Freter, 1988; Whittington, 1989, 1991) and the smaller Type 3 site of 11E-2 (Whittington, 1989, 1991) (**Figure 16**). Whittington (1989, 1991) was the primary investigator of the region.

Group 10E-6 is a Type 4 residential group with two plazas and fourteen structures. The principal plaza measures 37 x 70 m and the secondary plaza is 18 x 19 m. Group 11E-2, called “Los Mangos” by Whittington, is 160 m to the south of Group 10E-6 on the opposite side of the Quebrada Chucte. Group 10E-6 consists of three plazas and eighteen surrounding structures. The principal plaza measures 15 x 17 m, the plaza to the southeast is 10 x 22 m, and the plaza to the southwest is 10 x 23 m. Whittington (1991) argues that Group 11E-2 was primarily residential while Group 10E-6 was higher status as ceramic assemblages included more fine-ware, lithic debitage and bifaces, and imported vessels from the Ulua Valley.

While these groups are in the hinterland like the Copan Valley sample, Groups 10E-6 and 11E-2 contain monumental architecture and are comparable in size, population, and extent of material culture to core groups like 8L-10, 8L-12 in Salamar and 8N-11 and 9M-22 in Sepulturas. Whittington (1991) and Fash (1983) argue that Ostumán is a paired group with a ceremonial and administrative role at Copan. As such, Ostumán is tested as a single residential area distinct within the Copan sample.

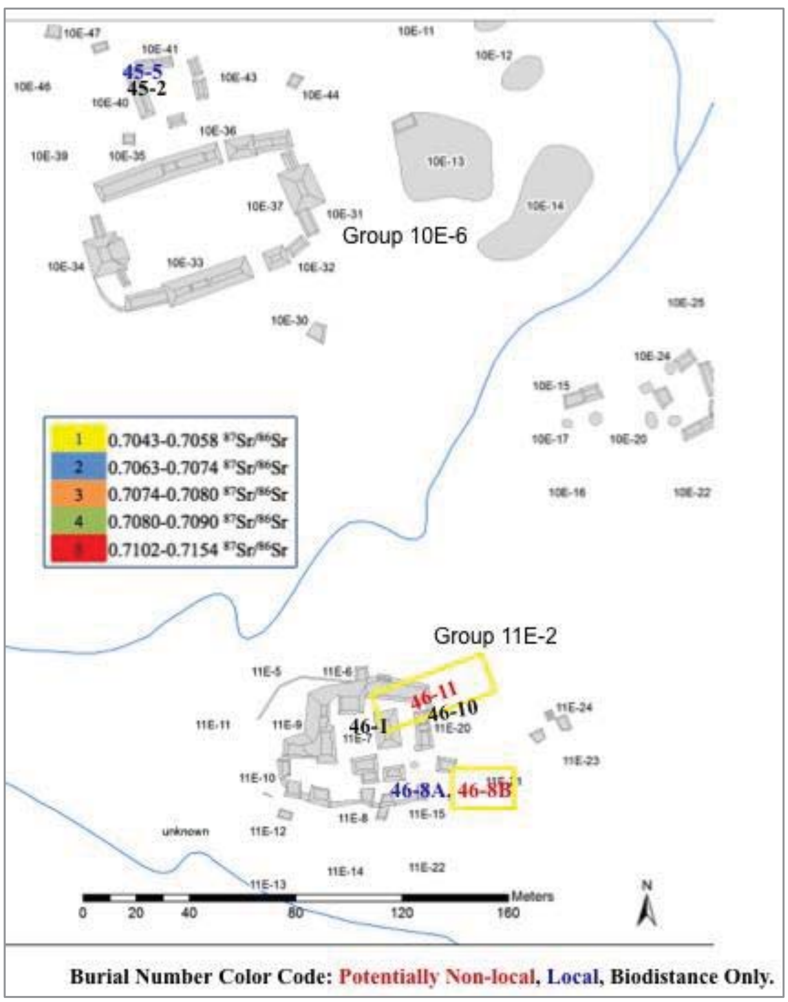

Figure 16: Map of Ostumán sample, Groups 10E-6 and 11E-2. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2e. Rastrojón and Chorro Regions in Northern Foothills (6N-1, 7M-4, 7M-8, 7N-20)

Group 6N-1, also known as Rastrojón (**Figure 17**), is a Type 4 site in the northern foothills, approximately 2 km northeast of the site center. The group is dominated by ritual structures with elaborately decorated sculpted facades, especially Structure 6N-12 with jaguar, serpent, and water iconography. Structure 6N-4 was a residence with occupation as early as the Bijac phase, though the group is Late Classic with early occupation during the reign of Ruler 12 (Fash, personal communication, 2014). Excavations from 2010-2013 by W. and B. Fash and Ramos (Op. 64, Subop: 24) recovered only isolated remains and few intact burials. All burials are included in this analysis.

The Chorro region is in the northeastern foothills of the Copan Valley is approximately 1 km northeast of the Principal Group. This region is dominated by residential groups of varying size and complexity. Excavations in this region occurred during the valley testing and survey program by Fash (1978: Op. 4) and included Group 7M-4 a Type 3 residential site (**Figure 18**), Group a Type 2 residential 7M-8 group, a Type 2 residential site (**Figure 19**), and Group 7N-20, a Type 3 residential site **(Figure 20**). During the survey of the valley, excavations were conducted in the center of plazas within patio groups and the burials included from the Chorro region all derive from the plaza center.

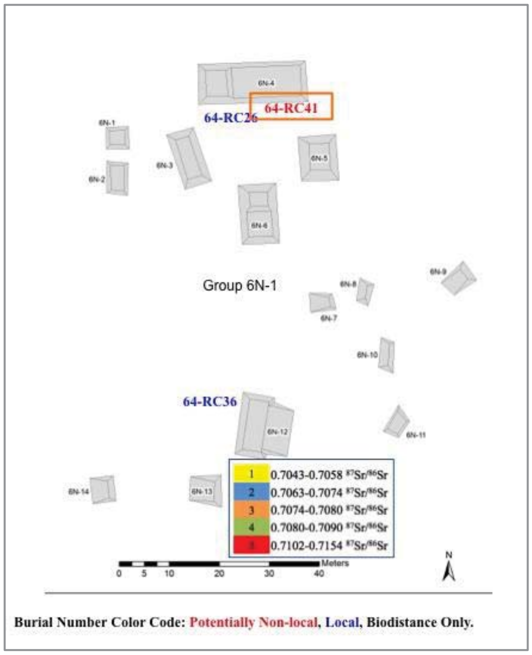

Figure 17: Map of Rastrojón/Chorro sample, Group 6N-1. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

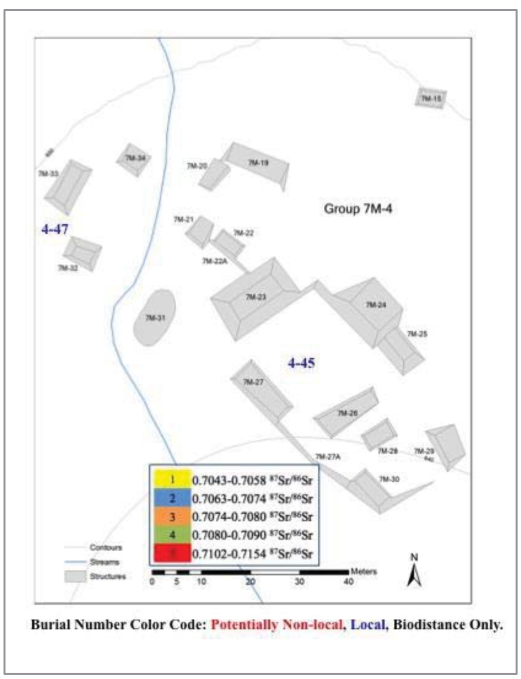

Figure 18: Map of Rastrojón/Chorro sample, Group 7M-4. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

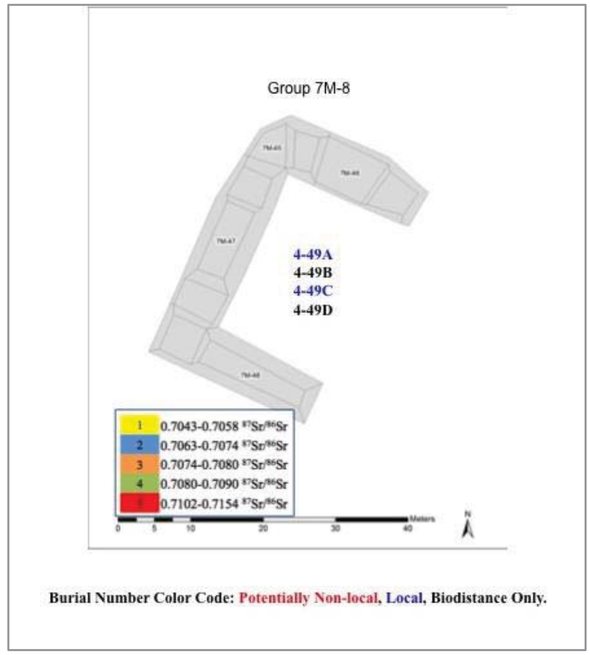

Figure 19: Map of Rastrojón/Chorro sample, Group 7M-8. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

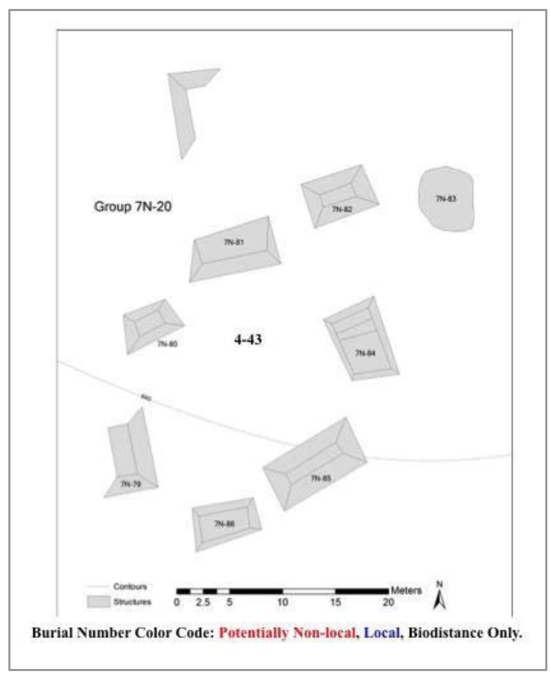

Figure 20: Map of Rastrojón/Chorro sample, Group 7N-20. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2f. Salamar Foothills (8L-10, 12)

The Salamar region is located in the northern foothills less than 1 km northeast of the Principal Group. Groups 8L-10 and 8L-12 are Type 3 and 4 sites, respectively, and are referred to as Copan's "North Group" (**Figure 21**). The area was first identified by Morley (1920) as "Group 6" and described as a small group with elaborately sculptured facades. Fash noted the prominence of the group during the 1986 settlement survey of the Copan Valley, and Freter (1988) conducted excavations in fourteen test pits at the site (Op. 40). Ashmore initiated the Copan North Group Project in 1988-1989 (Op. 42), which focused on the plazas and platforms of the two groups to evaluate site planning, spatial organization, and directional architectural arrangement in relationship to ancient Maya cosmology. All burials recovered from Group 10L-2 were subject to a bioarchaeological analysis shortly after excavation by Carrelli (1990).

Both Group 8L-10 and 8L-12 were occupied during the Late Classic with ceramic assemblages dominated by Coner-complex ceramics (Ashmore, 1991). The groups represent divergent architectural and settlement patterns, and Ashmore suggests that 8L-12 was a private noble residence supported by the occupants of the 18 ancillary modest structures (kitchens, storehouses, and servant residences) that surround the group and are similar to those of Group 9N-8 Patio A (Ashmore, 1991; Webster, 1989). Group 8L-10 is a ritual space, as indicated by the rich sculptural façade of Structure 8L-74 that dominates the plaza on the east. The sculptural elements of 8L-74 are similar in size to the "Scribe's house" of Group 9N-8, Structure 9N-82 and mention two kings - Waxaklahun U'bah K'awil, the 13th ruler of Copan, who was beheaded at the hands of Cauac Sky, the lord of neighboring Quiriguá (Ashmore, 1991; Fash and Stuart, 1991; Schele et al. 1989). According to Ashmore, Group 8L-10 is a ritual space while 8L-12 is the residential compound of a noble that is analogous to Group 9N-8, Patio A.

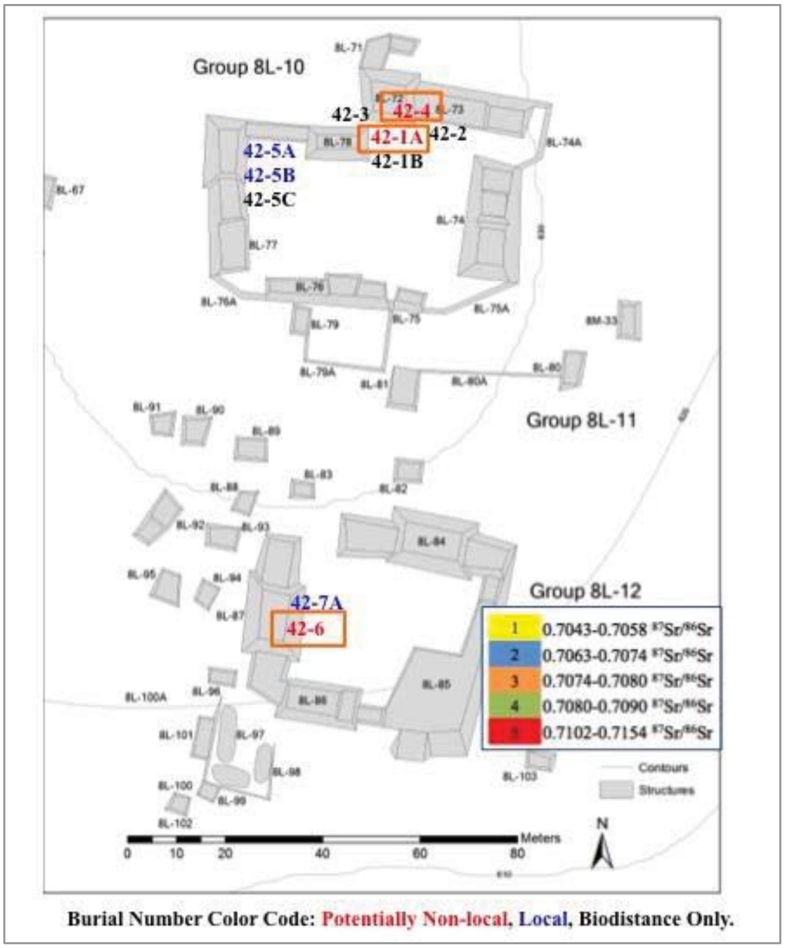

Figure 21: Map of Salamar sample, Groups 8L-10 and 8L-12. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

Finally, the project recovered several tombs (42-1, 42-5, and 42-7) with two occupants, one male and one female, entombed simultaneously on a north-south axis with the female in the north and male in the south of the tomb. While Ashmore (1991) notes that double tombs among the Maya are not unique, they are unusual at Copan, and she suggests that the tombs are representations of transition, the "first mother and father", the moon goddess Ixchél and her link to Waxaklahun U'bah K'awil (colloquially known as 18 Rabbit), and the overarching themes of architectural and spatial symbolism among the ancient Maya.

D2g. Las Sepulturas

The large residential zone of Las Sepulturas is located approximately 600 m east of the Principal Group and is connected to it by an ancient limestone and plaster paved road or *sacbe* (see **Figure 2**). The largest number of burials from Copan comes from Las Sepulturas, due to the long-term excavation of this area, the dense settlement patterns, and the long occupation history from the Preclassic into the Terminal or Post-Classic. Investigators of this region are numerous (see Appendix A) and include Diamanti and Sanders (1982-1983: 9N-8, Patio E, F, and M, Op. 15), Diamanti and Murillo (1983: 9N-8, Patio E, M, Op. 15), Hatch and Sheehy (1981-1987: 9M-22, Patio A/CV26, Op. 10; 9M-22B, Op. 9), Fash and Abrams (1981: 9N-8, Patio A), Fash, Hendon, and Aguilar (1982-1983: 9N-8B, Op. 16), Gerstle and Webster (1982-1987: 9N-8, Patio D, I, K, Op. 17), Gerstle and Webster (1982-1983: 9N-8, Patio H, Op. 18), Hendon, (1983-1987, 1987-1989, 1991-1992: 9N-8, Patio B, Op. 16), Hendon, Agurcia Fasquelle, Fash, and Aguilar Palma (1981-1983: 9N-8, Plaza C, Op. 13), Murillo (1983: 9M-24, Op. 18), Okamura (1982-1983: 9N-8, Patio I, J), Rattray (1983: 8N-11, Op. 14), Webster and Fash (1981: 9N-8, Patio A, Op. 8), Webster (1984: 9N-8, Patio D, Op. 26; 1990: 8N-11, Op. 50; 1997: 8N-11, Op. 63), Widmer (1982-1983: 9N-8, Patio H, Op. 22), and Vasquez (1985: 9N-8, Patio D, H, Op. 28/22).

Group 9N-8 includes a series of smaller sites numbering 9N-1 to 9N-8 that vary in size from Type 1 to Type 4, and additional burials in the Sepulturas sample come from Type 3 and 4 Groups 8N-11 (**Figure 23**), 9M-22 A and B (**Figure 24**), and 9M-24 (**Figure 25**). Group 9N-8 consists of 50 buildings with 130 rooms arranged around 12 patios, 9 of which are contiguous

(**Figure 22**) (Diamanti, 1991; Fash, 2001; Sanders, 1986; Webster, 1989; Webster and Abrams, 1983; Webster et al., 1998). Burials from Group 9N-8 patios A-F and H-M were included in the current study (**Figures 26** to **34**). Multiple buildings surround each patio and those buildings either form an outside boundary for the group or abut the backs of buildings in the adjoining patio. Structures include sleeping rooms (Patio B and D), domestic work (Patio M), kitchens (Patio E), public (Patio F) and ritual activities (Struture 9N-105 in Patio D), and stone, jade, and textile workshops in Patio K and H (Diamanti, 1991; Gerstle and Webster, 1990; Hendon et al., 1990; Fash, 2001).

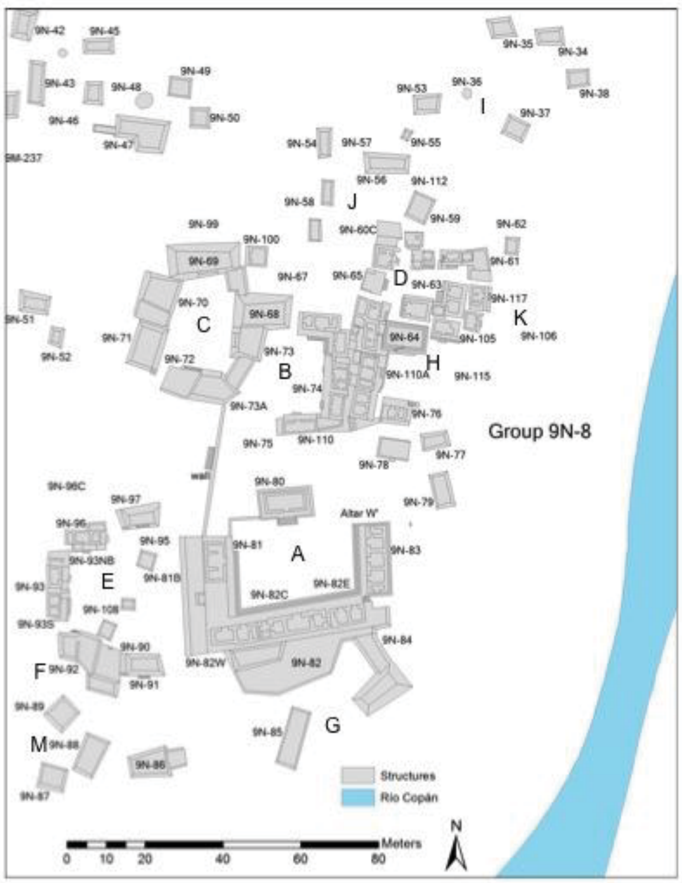

Figure 22: Map of Sepulturas sample, Group 9N-8 showing all patios. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

Interpretations of the Las Sepulturas patios have been varied, suggesting that they are well-defined family units that operated in circumscribed, or closed, space (Patio D: Gerstle and Webster, 1990; Hendon, 1992; Diamanti, 1991), may contain 'foreigner' (non-local) residents in enclaves with imported ceramics (Patio K: Gerstle and Webster, 1990), or are a lineage group (Rhoads, 2002). The ideas about the form and purpose of these groups within the social organization of Copan are drawn from material cultural, epigraphic, or architectural similarities or differences. The inclusion of biogeochemical and biostatistical evidence from skeletal remains of those buried within these patio groups will elucidate the nature and function of these social or residential units.

D2g1. 8N-11

The first Sepulturas region patio discussed here is Group 8N-11, also called the "Skyband Group", a Type 4 sub-royal elite residential compound in Copan's urban core in the Sepulturas area located 850 m northeast of the Principal Group (**Figure 23**). While two burials were excavated by Rattray (1983: Op. 14), excavations have been primarily conducted by the Pennsylvania State University in 1990 (Op. 50) and 1997 (Op. 63) (Webster et al., 1998). Webster and colleagues' (1998) work investigated surface signatures of Copan's elite residential architecture, iconography on architectural benches, relationships to the Copan's royal dynasty, demographic reconstruction, and settlement through spatial, chronological, and functional analysis. The 8N-11 complex is comprised of 24 associated buildings and five large conjoined central buildings arranged around a single courtyard that measures 35 m^2 and is situated at the end of the monumental causeway or *sacbe* that bisects the Copan Valley.

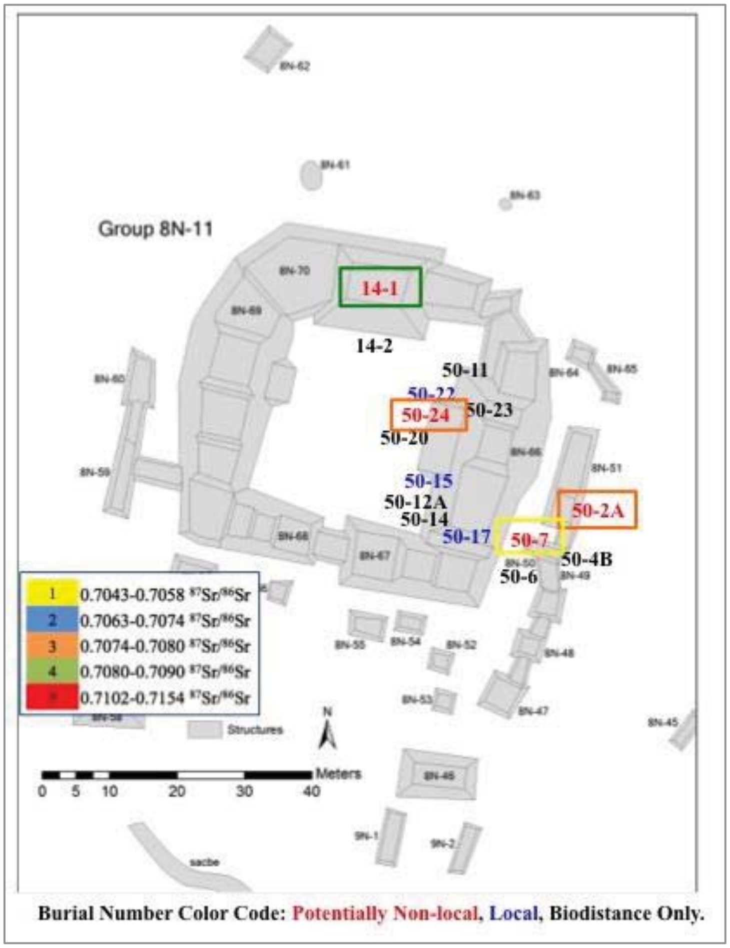

Figure 23: Map of Sepulturas sample, Group 8N-11. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

Most of the structures are residential, apart from Structure 8N-66C, which is ceremonial and demonstrates a façade similar to Structure 10L-32 in Group 10L-2, Courtyard A, with vegetation and water themes (Webster, 1998; also, Andrews, personal communication, 2014). Additionally, Structure 8N-66C contains the "Skyband Bench" that lacks glyphs or dates that could be attributed to the lord of Group 8N-11. According to Webster, Structure 8N-66S is analogous to Structure 9N-82 in Patio A because of the similar floor plan and sculptural façade, though it lacks a carved bench. Nearly 90% of the ceramic assemblage is fine-ware from the Coner phase (AD 650-820) with emphasis on food storage, preparation, and feasting. Occupation may have, however, extended well beyond the collapse of the Copan dynasty in AD 820 (Webster et al., 1998). Twenty-four burials (26 individuals) were attributed to Structures 66, 50, and 51 and few had grave furniture. Webster concluded that Group 8N-11 is primarily residential, as opposed to ritual, in nature and has hallmarks of the elite status of the occupants and political events that occurred in Structure 66C.

D2g2. 9M-22, Patio A and B

Group 9M-22 is a Type 3 residence located 500 m east of the main ceremonial center and less than 50 m from the *sacbe* (**Figure 24**). Patio A is the larger of the two patios and is classified as a Type 3 site and Patio B, when considered apart from Patio A, is a Type 2 site. Excavations occurred from 1981-1987 (Op. 9 and 10) by Hatch, Sheehy, and Mallory (Sheehy, 1991) and recovered 14 burials from Patio A and 16 burials from Patio B.

Patio A is a residential area with clear evidence of food preparation with maize grinding areas and kitchens that supported the northern, eastern, or southern structures. Artifacts are primarily domestic, which contrasts with the formal spatial layout of structures around Patio A. Structure 9M-195 was the primary and most elaborately decorated residence and Structure 9M-197 was primarily ritual in function (Diamanti, 1991). Patio A connected with Patio B through a passage between Structures 9M-192 and 9M-191. Patio B is considerably smaller than Patio A, measures only 15 m^2, and is bordered to the west by the unexcavated Patio C. The primary residence of Patio B is 9M-189 and was a simple residential structure. Patio B is dominated by residential structures with artifacts that suggest a great deal of food processing especially behind Structures 9M-191 N and W and dearth of evidence for craft production (Diamanti, 1991). The ceramic assemblage of Group 9M-22, Patio B includes imported Ulua vessels from the Ulua and Comayagua Valleys in Northwest and Central Honduras which has led the excavators and Diamanti (1991) to suggest that Patio B was a foreign enclave of craft producers, which has also been posited for Patio D in Group 9N-8.

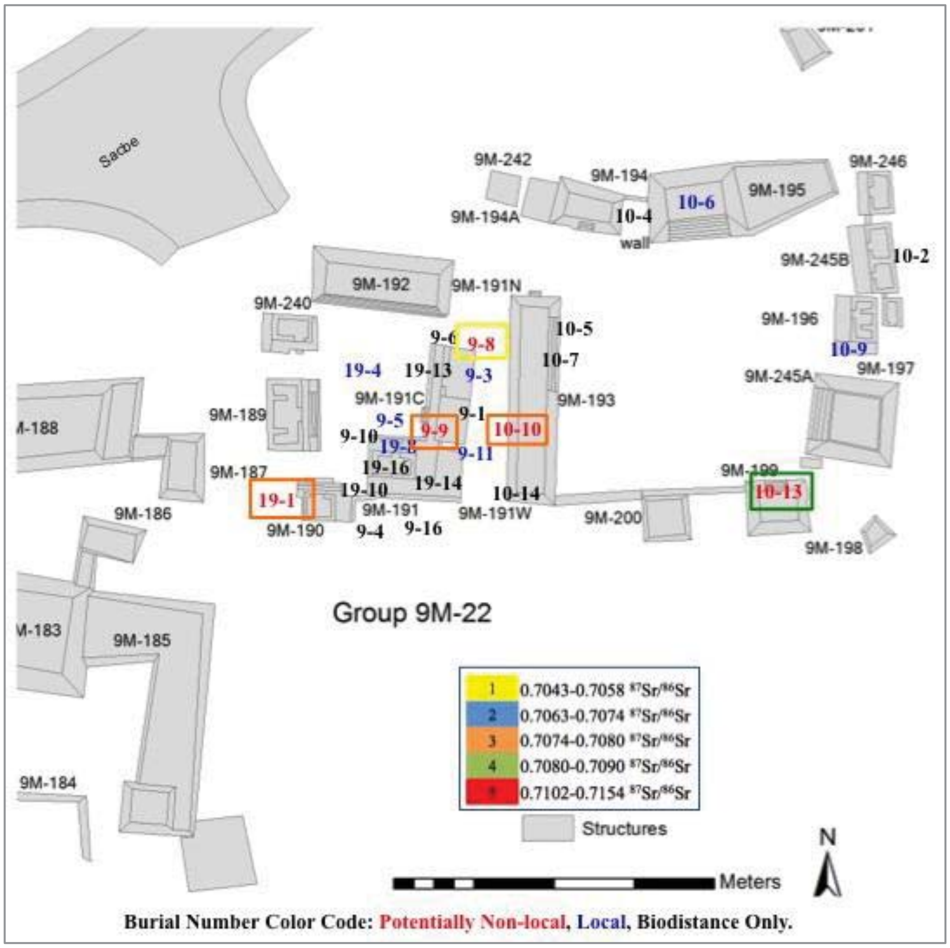

Figure 24: Map of Sepulturas sample, Group 9M-22 Patio A (east) and B (west). After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g3. 9M-24

Group 9M-24 is a modest Type 1 site with low structures organized around a small plaza (**Figure 25**). The group is situated at the midpoint between the larger Type 3 and 4 sites of 9M-22 and 9N-8 in the Sepulturas region. Murillo excavated three residential structures in this group

(1983: Op. 18) and identified the unexcavated structures as locations for storage and food preparation (9M-247). The artifact assemblage at Group 9M-24 includes high quantities of utilitarian ceramics that suggests domestic activities and lithics that are indicative of craft production but not a lithic workshop (Murillo, 1983).

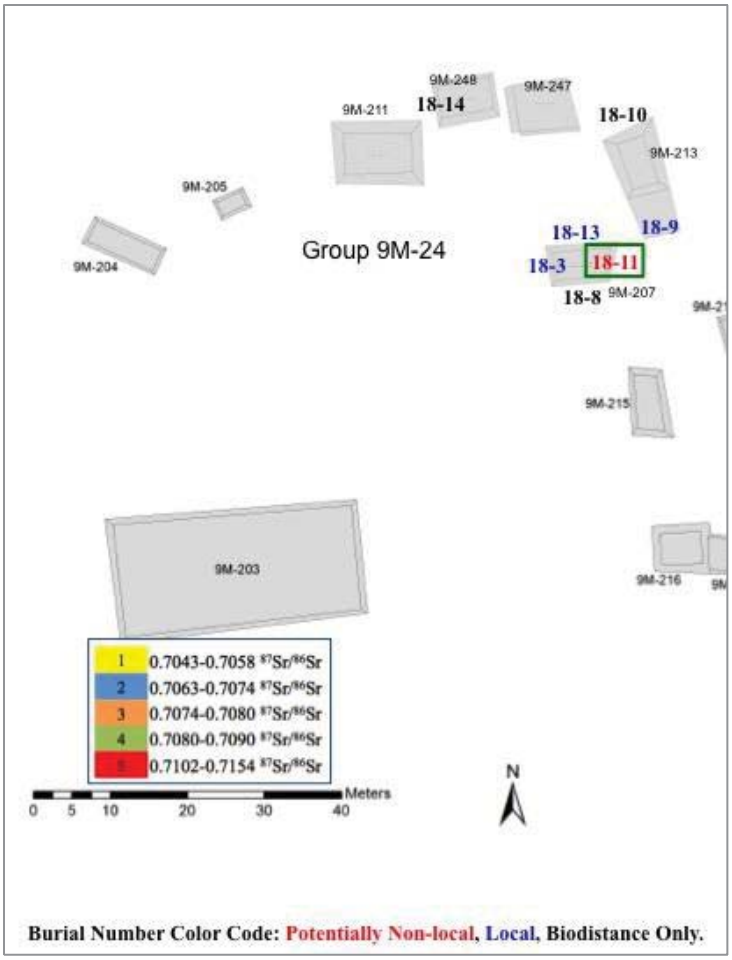

Figure 25: Map of Sepulturas sample, Group 9M-24. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g4. 9N-8, Patio A

Group 9N-8, commonly called Las Sepulturas, is located 600 m east of the Principal Group and borders the Copan River. Patio A is only 6.8 m higher than the Copan River and was the nexus of the group. The highest status residents of Group 9N-8 resided in the finely constructed and elaborately decorated Structures 9N-82 and 9N-83 (**Figure 26**) with dedicated shrines on the west and north margins of the patio in Structure 9N-80 and 9N-81 (Fash, 2001). Webster, Abrams, and Fash conducted excavations in Patio A from 1981-1983 (Op. 8; CV-43) and revealed the well-known "House of the *Bacabs*" (Scribe's House), Structure 9N-82, to which other richly decorated buildings in 8N-11 and 8L-10 have been compared. The structure is primarily residential and the center building is notable for the iconographic sculptural façade and hieroglyphic bench that records the titles and kin affiliations of the lord of 9N-8, Mak' Chaanal, and his role as a courtier to Copan's final ruler, K'inich Yax Pasaj Chan Yopat (Fash, 2001; Webster et al., 1991). Patio A lacks an artifact assemblage or architectural arrangement representative of domestic activity suggesting that ritual and political activities dominated the lives of the elite residents (Diamanti, 1991; Fash, 2001; Webster, 1989).

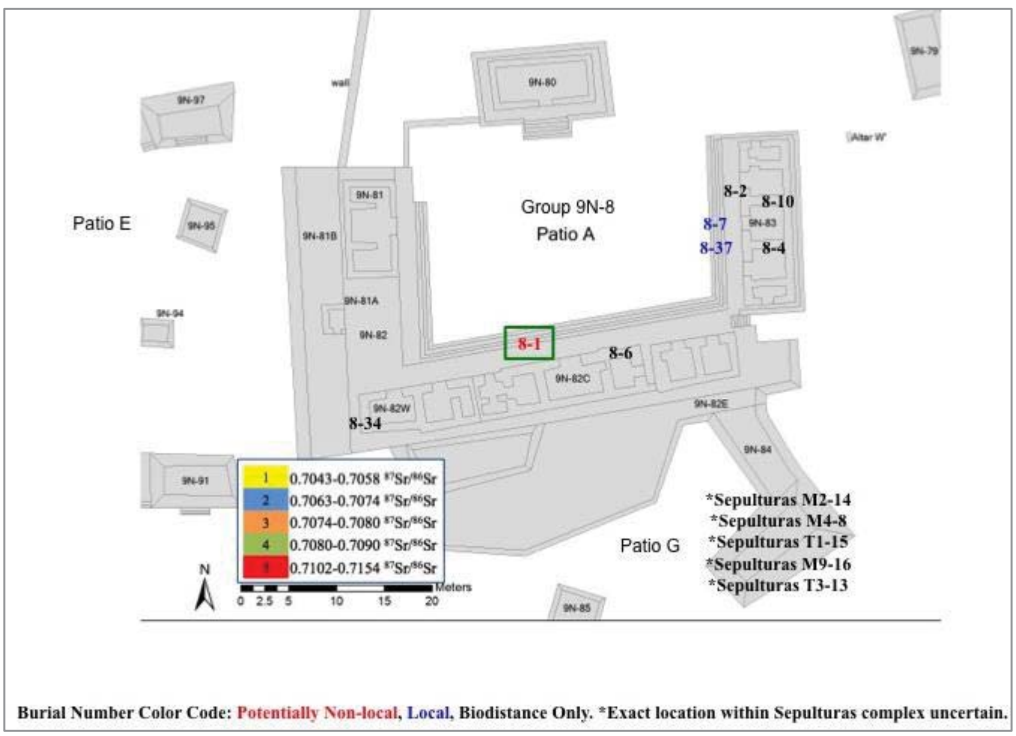

Figure 26: Map of Sepulturas Group 9N-8 sample, Patio A. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g5. 9N-8, Patio B

Group 9N-8, Patio B is directly north of Patio A on the platform that extends from Patio A. Five structures are arranged around a central plaza accessed by a paved causeway and staircase that extend between Patio A and B (**Figure 27**). Assisted by Hendon and Aguilar Palma, Fash initiated excavations in Patio B from 1982-1983 (Op. 16), after which Hendon directed the excavation program of Patio B (1983-1987, 1987-1989, 1991-1992, Op. 16).

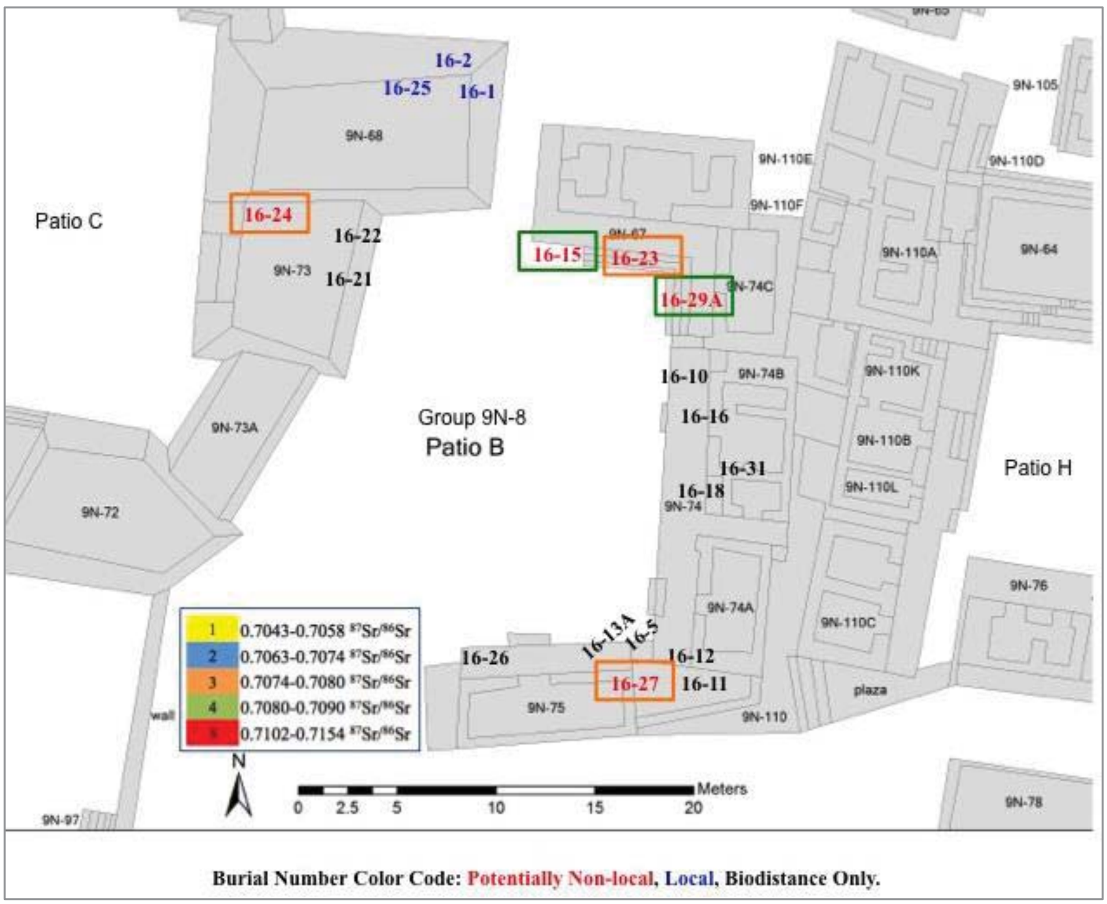

Figure 27: Map of Sepulturas Group 9N-8 sample, Patio B. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

Patio B was primarily residential and Hendon (1990) suggests that Structures 9N-67 and 9N-74 are a single residence occupied by the immediate family of the head of the social group.

Domestic activities and food processing occurred in the middle room of Structure 9N-68 and in the corner between Structures 9N-76A and 9N-75. Diamanti (1991) suggests that each kitchen served the cluster of structures on the west and east sides of Patio B, respectively. Burials in Patio B, were generally without artifacts and oriented in a variety of positions, a pattern that stands in contrast to Patios D, E, H (Hendon, 1991).

D2g6. 9N-8, Patio C

Patio C is situated in the northwest corner of Group 9N-8 and abuts the western edge of the platform that supports Patios A and B (**Figure 28**). Agurcia Fasquelle initiated excavations of Patio C in 1981 (when Patio C was identified as Patio B). In 1982, the patio was designated Patio C and excavations continued by Hendon, Agurcia Fasquelle, Fash, and Aguilar Palma until 1986 (Op. 13).

Patio C is oriented to the cardinal directions and is bordered by five structures. It can only be accessed by two narrow passages between Structures 9N-71 and 9N-72 and 9N-71 and 9N-70. The primary residence of Patio C was Structure 9N-69 and its form was mirrored in the smaller Structure 9N-72. Structure 9N-71 was likely ceremonial in function and Diamanti (1991) suggests that it was a shrine that encompassed an ancestral grave. Patio C was supported by the kitchen and storage platform of Structure 9N-100. The artifact assemblage for Patio C suggests that domestic and lithic craft production (Structure 9N-72) activities were common.

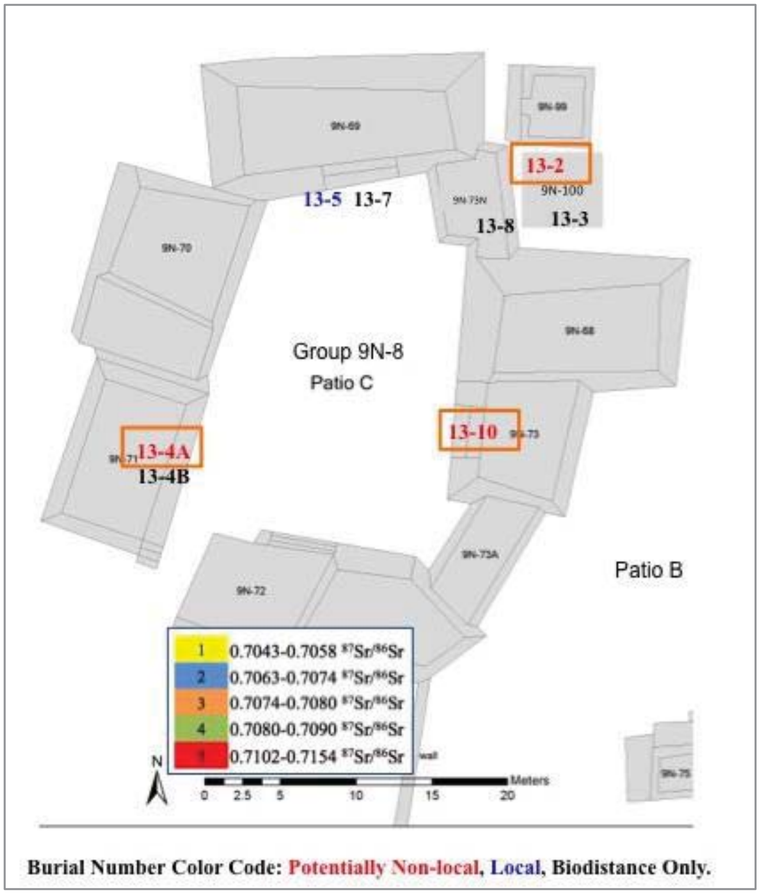

Figure 28: Map of Sepulturas Group 9N-8 sample, Patio C. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g7. 9N-8, Patio D

Patio D is located in the northeastern quadrant of Group 9N-8 to the north of Patio H and the east of Patios I and J and features seven structures densely packed around a small plaza (**Figure 29**). Excavations in Patio D occurred over a period of five years with projects by Gerstle and Webster (1982-1987, Op. 17), Vasquez (1985, Op. 28/22), and Webster (1986: Op. 26). During the Late Classic, access to Patio D was limited to two passages between Structures 9N-61B and 9N-63 to the east and Structures 9N-60N and 9N-112A to the north. The primary residence of Patio D was Structure 9N-63 that was converted from a temple into a residence during the Classic period (Diamanti, 1991).

The crowded appearance, restricted access into Patio D, and a preponderance of imported vessels, figurines, and whistles from the Ulua or Comayagua Valleys in the northwest coast and central Honduras led Gerstle (1988) to suggest that Patio D was an ethnic enclave of ethnically Lenca full-time resident traders or “royal hostages”. Gerstle and colleagues argue that Patio D was an autonomous social unit within Group 9N-8 interrelated by descent forming a lineage that honored ancestors in the ritual Structure 9N-105. Alternatively, this structure may not have been a ritual shrine but instead craft workshop, like the benchless workshop in Patio H (Diamanti, 1991).

The artifact assemblage of Patio D demonstrates that the patio focused on domestic and craft production activities and was supported by kitchen and storage facilities immediately behind Structures 9N-61 and 9N-111 in Patio I. The residents of Patio D, especially those in Structure 9N-61, were likely skilled craftsmen of textiles and jade ornaments during the Late Classic.

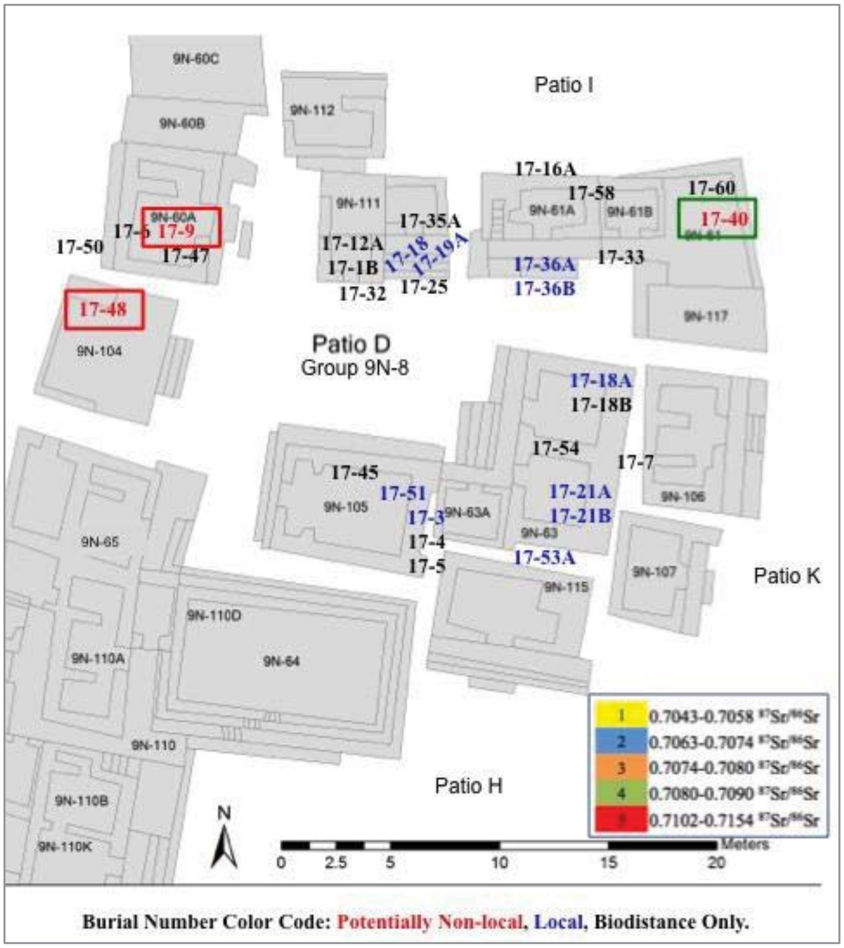

Figure 29: Map of Sepulturas Group 9N-8 sample, Patio D. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map

D2g8. 9N-8, Patio E

Group 9N-8, Patio E is located in the southwestern section of the 9N-8 complex. Like Patio C, Patio E is at an elevation below the platform that supports Patios A and B (**Figure 30**). Unlike other Patios in this group; access to Patio E was open and unrestricted from all directions. Patio E consists of seven structures, three of which are isolated structures that delineate the eastern margin of the patio. Diamanti and Murillo began excavations, under Sanders' oversight, of Patio E (1983-1987, Op. 15); Hatch excavated a single burial from Structure 9N-96 in 1983 (Op. 19), and Webster excavated Structure 9N-92 in 1984 (Op. 26). Patio E was primarily residential in function, with Structure 9N-97 as the primary residence supported by the kitchen in Structure 9N-95. The ceramic assemblage speaks to domestic activities within the patio and light craft production of jade and stone objects in Structures 9N-92 and 9N-93.

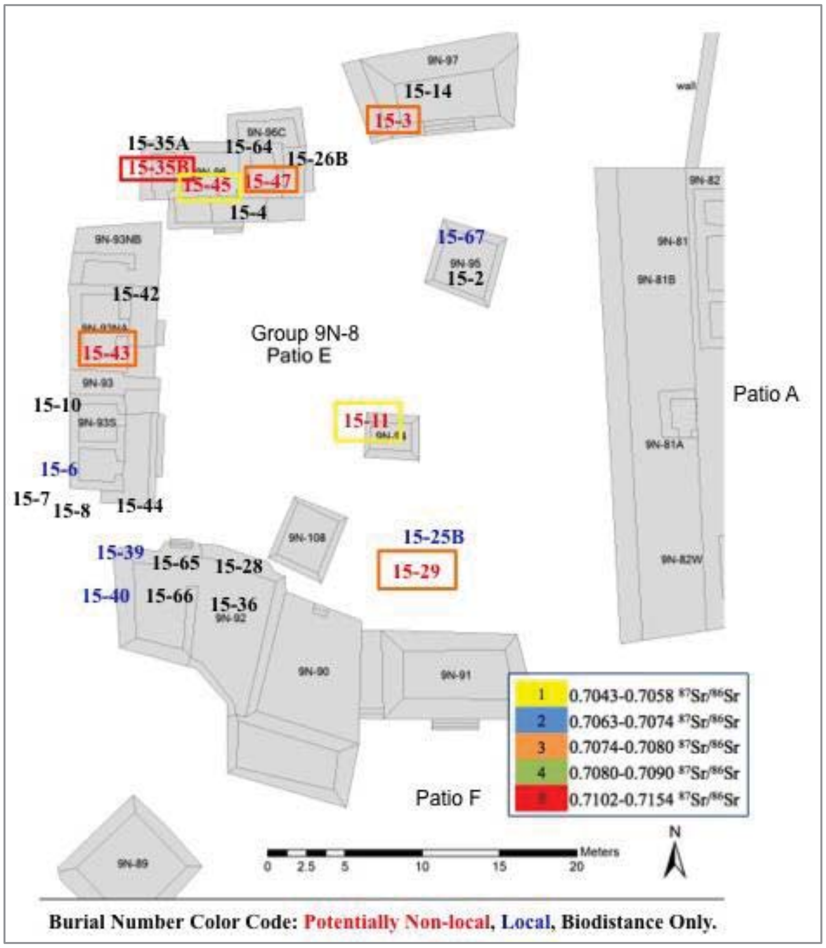

Figure 30: Map of Sepulturas Group 9N-8 sample, Patio E. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g9. 9N-8, Patio F and M

Patio F lies to the south of Patio E in the southwestern area of Group 9N-8 and is bordered on the south by Patio M. Patio F includes three structures (9N-90, 9N-91, 9N-86) around a modest cobble paved patio. (**Figure 31**). Access to Patio F was open to the east but restricted to the west by a wall that extended between Structures 9N-90 to 9N-86. Diamanti and

Murillo conducted excavations under the auspice of Sanders, of Patio F (1982-1987, Op. 15). Structures in Patio F were primarily residential in function with Structure 9N-91 serving as the principal residence of the patio. The southwest room of Structure 9N-90C was a ceremonial space with a craft production area located directly to the south (in the location of Burials 15-17, 15-20, and 15-30). The artifact assemblage of Patio F supports that this patio was residential with textile and bone ornament craft production on the platform terrace of Structure 9N-90S and burials in the midden context of Structure 9N-90N.

Patio M, located to the south of Patio F, is small, was incompletely excavated due to river erosion, and will be discussed with Patio F given their close association. Both Patio F and Patio M extended to the edge of the river terrace that underlies all of Group 9N-8. As a result of the proximity to the Copan River, Patio M is poorly preserved having suffered damage from river erosion. Patio M includes three structures (9N-87, 9N-88, and 9N-89) but Diamanti and Murillo excavated only one structure, 9N-88, in 1987 (Op. 15). This structure featured two residential rooms, one for sleeping, and one for domestic work.

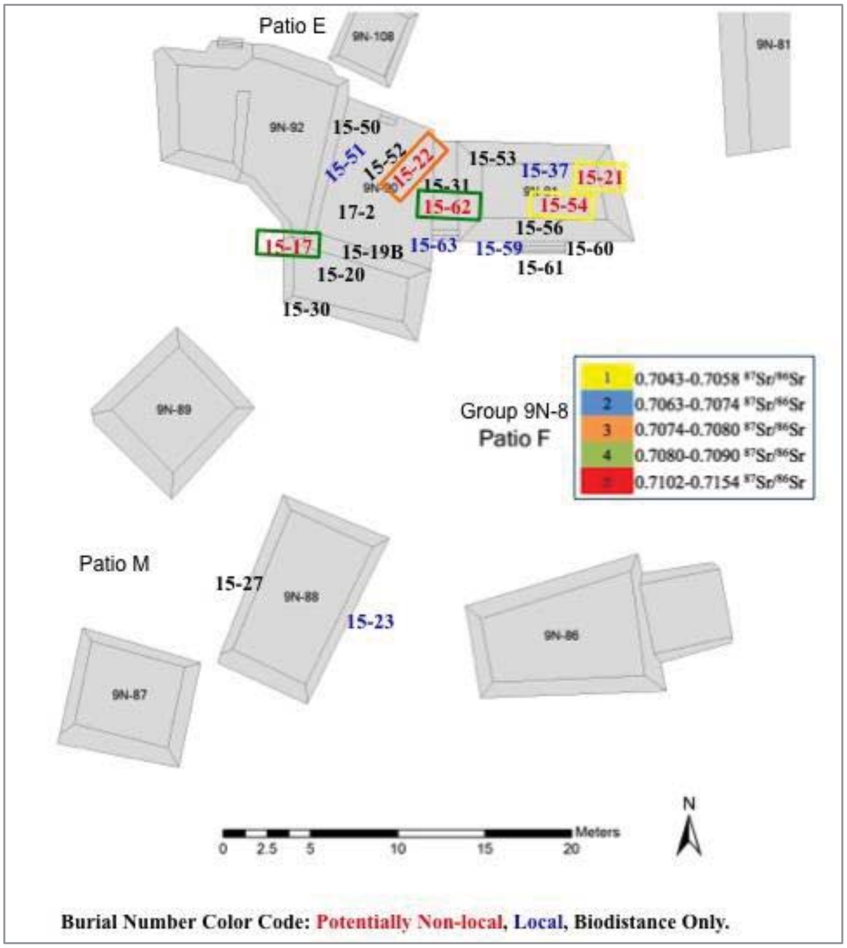

Figure 31: Map of Sepulturas Group 9N-8 Sample, Patio F and M. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g10. 9N-8, Patio H

Patio H is located northeast of Patio A to the west of Patio B and the south of Patios D and K. Four structures surround the partially paved plaza, which was open toward the Copan River to the east after two structures were razed prior to the Late Classic (Diamanti, 1991). Patio H was accessed from the level of the great platform that underlies Patio A and B by a staircase between Structures 9N-110S and 9N-76 and was completely separated from Patio D (**Figure 32**). Excavations of Patio H began in 1982 by Widmer (1982-1983: Op. 22) and were followed by

Gerstle and Webster (1983, Op. 18/22), and Vasquez (1985, Op. 28/22). Structure 9N-110 was the primary structure of Patio H and was primarily residential with some craft production of shell and bone ornaments in the northern and center rooms in the building.

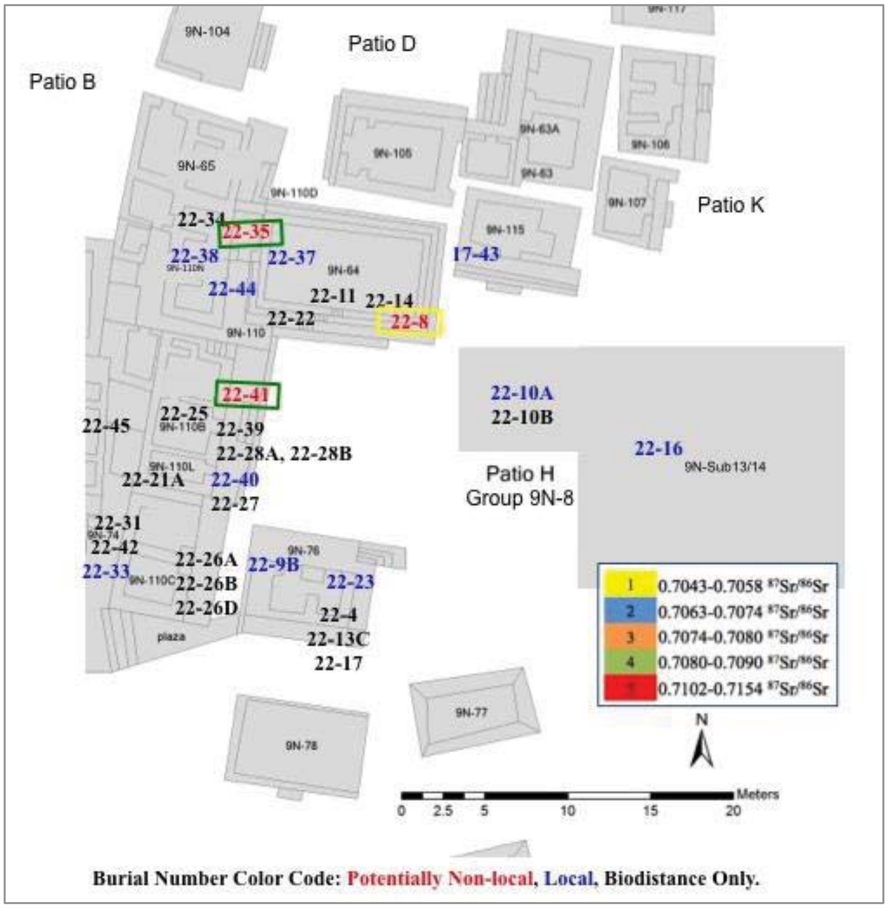

Figure 32: Map of Sepulturas Group 9N-8 sample, Patio H. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

Widmer (1990) and Diamanti (1991) posit that the center or south of Structure 9N-110 could have been the principal residence of the highest status occupants. Structure 9N-64 was originally a high status residence that was converted into a ceremonial structure during the Late Classic. Kitchens and storage facilities in Structure 9N-65, the east room of Structure 9N-76, and possibly Structure 9N-78 supported the residents of Patio H. The artifact assemblage of Patio H demonstrates domestic activities and craft production of shell and bone ornaments in Structure 9N-110C and textiles in the low platform of Structure 9N-11.

D2g11. 9N-8, Patio I and J

Patio I is located immediately north of Patio D at the northern margin of Group 9N-8. Ten structures surround the plaza of Patio I but only four structures were excavated (9N-55, 9N-60N, 9N-112, and 9N-113). Patio I could be accessed from Patio D through a narrow passage between Structures 9N-61 and 9N-111 (**Figure 33**). Excavations occurred from 1981-1987 by Okamura (1983, Op. 21), Gerstle and Webster (1986-1987, Op. 17), and Vasquez (1985, Op. 28). Textile craft production occurred in Structure 9N-112 and Structure 9N-60N was a single room residence.

Patio J is located to the west of Patio I, north of Patio B, and was excavated by Okamura (1982-1983, Op. 21). The patio was largely abandoned during the Late Classic and may have been used as a midden for occupants in the surrounding patios. As a result, only one burial was included in the current analysis and grouped with Patio I.

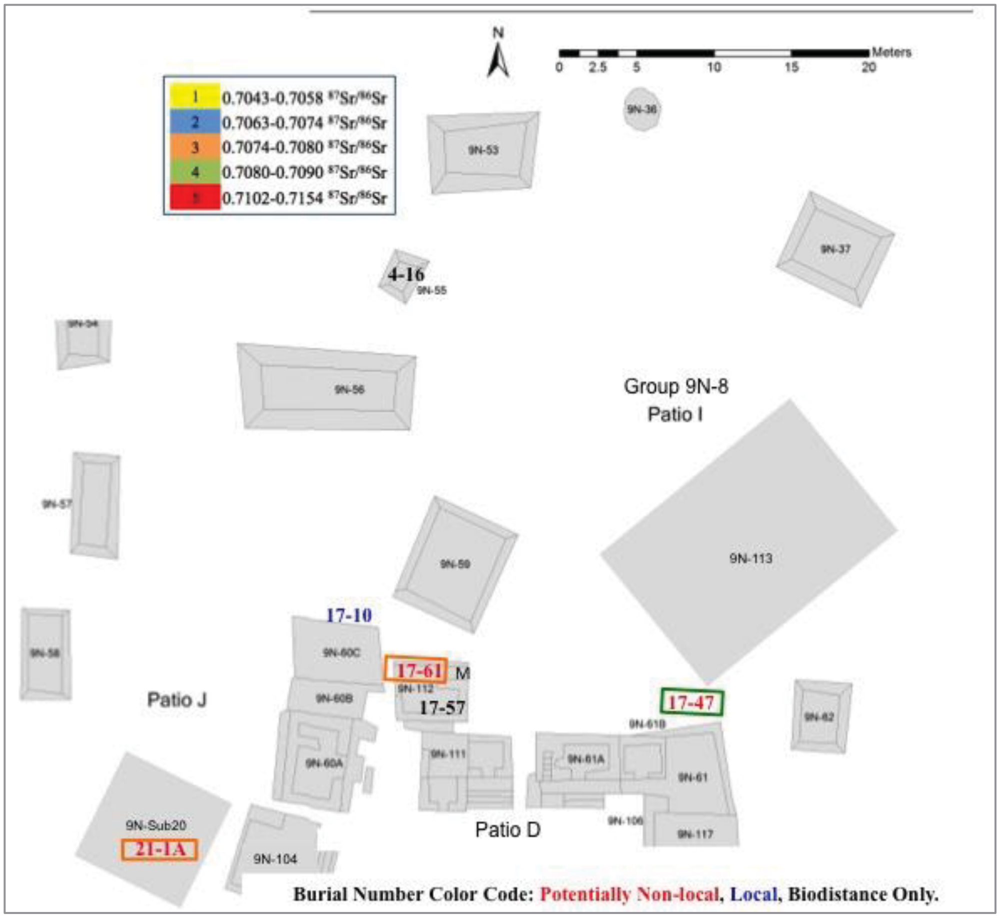

Figure 33: Map of Sepulturas Group 9N-8 sample, Patio I and J. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map.

D2g12. 9N-8, Patio K

Patio K lies at the eastern boundary of Group 9N-8 and faced the Copan River. Patio K was open to surrounding patios and was the main entry point into Patio D. Gerstle and Webster excavated Patio K in 1987 (Op. 17). The two structures of Patio K are not arranged around a patio and may not have formed a functional social group (**Figure 34**). The occupants of Patio K may have supported occupants of Patio H or D. However, as the river cut into the Principal Group demonstrates, Patio K may have extended further to the east with structures that have been destroyed by the Copan River. Structure 9N-105 was residential and Structure 9N-107 was devoted to textile craft production.

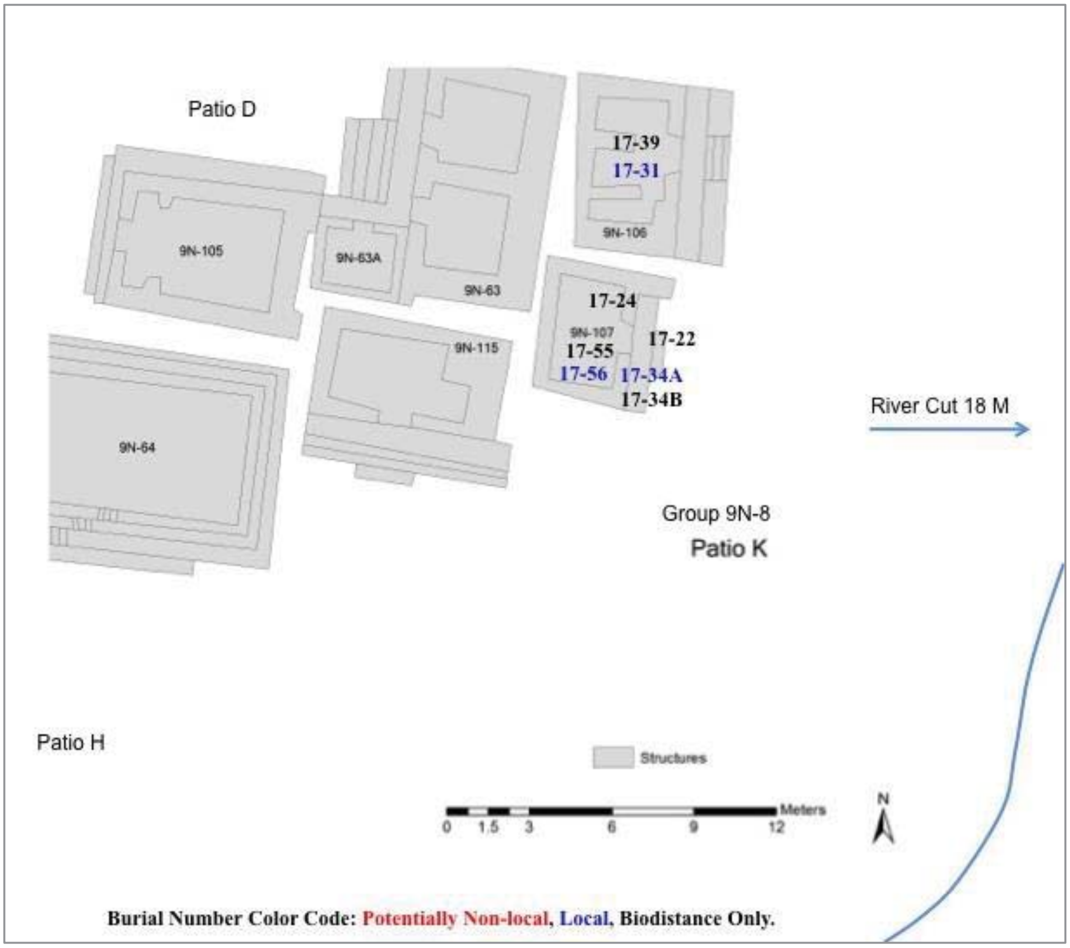

Figure 34: Map of Sepulturas Group 9N-8 sample, Patio K. After K. Landau from Richards-Rissetto's (2010) digitization of the Fash and Long (1983) map

D2g13. Summary of 9N-8

The patterned use of space in Group 9N-8 and the function of patios and structures was the subject of Diamanti's (1991) dissertation. She observed that Group 9N-8 is a residential zone and that despite any differences in spatial organization, patios demonstrated a suite of traits: (1) domestic structures were devoted to storage and food preparation, (2) maize grinding was a primary domestic activity and maize would have composed a large component of the diet, (3) most residential structures had ancillary rooms used for storage, and (4) Group 9N-8 was the heart of craft production of fine textiles and ornaments made of jade, bone, shell, and stone. Diamanti suggests the Patios H, D, and K in the northeast of Group 9N-8 formed an integrated cluster of craft and textile production. Patios H and K had a high quantity of imported Ulua ceramic vessels from the Ulua or Comayagua Valleys in Northwest and Central Honduras but Patio D had the highest percentages of imported Ulua vessels. Diamanti suggests a ceremonial and political cluster at Group 9N-8 that includes Patios A, B, and C, which were the highest status occupants of the region. Patios, E, F, and M were likely a cluster of low status commoner residents that were peripherally attached to Group 9N-8.

E. Methods

Theoretical background, history, and application of radiogenic strontium isotope analysis as it relates to migration and the use of biodistance analysis to trace population interaction and movement are outlined in Chapters 5 and 6, respectively. The methods described here focus solely on the technical details of data collection and sample preparation.

E1. Radiogenic strontium sample selection and preparation

All human samples from Copan were processed by the author under the direction of Dr. Kelly J. Knudson in the Archaeological Chemistry Laboratory (ACL) in the School of Human Evolution and Social Change at Arizona State University. Sample collection occurred on site in Copan from 2011-2012 in accordance with the regulations set by the Honduran Institute of Anthropology and History.

Prior to sampling, all teeth were deemed to be free of pathology, photographed, measured for biodistance analysis, and two plaster casts were made, one for export and one to be stored with the sampled burial in Copan. Samples were preferentially taken from first mandibular or maxillary molar, followed by the third maxillary or mandibular premolar, or mandibular second incisor based on developmental age (further discussed in Chapter 5). After exportation to the ACL, samples were mechanically cleaned using a Dremel MultiPro with a carbide burr and the outermost layer of surface removed to minimize diagenetic contamination (Hoppe et al., 2003; Price et al., 1992; Sillen and Sealy, 1995). Then 15-20 mg of enamel was removed and divided in half with 7-10 mg being placed in a 1.5 ml centrifuge tube and dissolved in 500µL of twice-distilled 5M nitric acid (HNO_3) for radiogenic strontium analysis, while the remaining 7-10 mg were dissolved for elemental concentration analysis.

After samples were cleaned and processed, they were taken to the W.M. Keck Foundation Laboratory for Environmental Biogeochemistry at Arizona State University for purification and strontium extraction. Strontium samples were first evaporated and then re-dissolved in 250µL twice-distilled 5M nitric acid then purified and chemically cleaned through a series of washings with 5M water (H_20) and twice distilled 5M nitric acid in glass columns filled with SrSpec exchange resin. Purified samples were evaporated and re-dissolved in 640µL twice distilled 5M nitric acid and then diluted with approximately 9.36 ml of 5M water for analysis on the Thermo X Series Quadrupole Inductively Coupled Plasma Mass Spectrometer (Q-ICP-MS). After analysis on the Q-ICP-MS, the sample concentrations of the radiogenic strontium were checked and analyzed on the Thermo-Finnigan Neptune multi-collector inductively coupled plasma mass spectrometer (MC-ICP-MS). The samples were run with National Institute of Standards and Technology standard of NIST SRM 987 (Sr carbonate standard = 0.710219) at various dilutions at the outset and then interspersed between every five archaeological samples.

Five dilutions of NIST SRM 1400 (bone ash) and five blank dilutions were included at the end of each run.

E2. Biodistance data collection

Measurements were taken of the mesiodistal and buccolingual tooth cervix (MDCe, BLCe) and mesiodistal and buccolingual tooth crown (MDCr, BLCr) for the upper and lower left dentitions; antimeres were substituted as necessary (Hilson et al., 2005). Only the most mesial tooth from each tooth class (polar teeth) was included (I1, I2 for mandible, C, P3, M1) as these teeth are less subject to environmental variation (Dahlberg, 1945; Garn et al., 1965; Stojanowski, 2005 a,b; Townsend et al., 2009). Cervical measurements at the cemento-enamal junction (CEJ) were employed to maximize the sample size as the cervix of the tooth is not subject to dental attrition (Hillson et al., 2005; see also Stojanowski, 2007). Measurements were taken to the nearest 0.01mm using the dental calipers (Hillson et al., 2005) and recorded in Excel using digital Mitutoyo Interface software to prevent transcription error (**Figure 35**). Crown measurements were taken at the maximum measurement to facilitate comparison with other biodistance studies in the future (see Buikstra and Ubelaker, 1994; e.g. Aubry, 2009; Wrobel, 2004; Scherer, 2004). Pre-treatment criteria, intra-obersver error, and statistical analyses are outlined in Chapter 6.

Figure 35: Paleo-tech Hillson-Fitzgerald calipers used in this study.

Aubry (2009, 2014) noted difficulty with measuring in-situ teeth at the CEJ using the Hillson-Fitzgerald calipers and suggests modification to the measurement locations described by Hillson et al. (2005). I experienced a similar challenge with directly implementing Hillson and colleagues' (2005) methodology, especially while measuring in-situ teeth at the CEJ. As Figures 29 and 30 demonstrate, Hillson et al. (2005) directs that the CEJ measurement should occur at the "most occlusal point of the mesial cement-enamel junction" which is simply not possible when teeth remain in dental alveoli. In situ canines proved nearly impossible to measure following Hillson's methodology. Aubry (2014) has recently published a critique and modification to Hillson's technique. This paper appeared too late for my dissertation data collection; however, I was familiar with the modifications that Aubry (2009:155-160) made during his dissertation research. When I began data collection, I found that my technique was quite similar to that of Aubry (2009) primarily because of the necessity to modify the measurement strategy for in-situ teeth.

Modified maximum BL crown measurements were taken at the maximum expression of the cingulum on anterior teeth, the maximum BL expression of the premolar, and at the maximum BL expression of the mesial molar cusps according to the protocols of Buikstra and Ubelaker (1994) as used by Stojanowski (2001, 2005a) and defined by Hillson and colleagues (2005) (**Figure 36** and **37**). Buccolingual crown measurements on molars were taken at the maximum expression of the mesial cusps (protocone/paracone and protoconid/entoconid) while viewing the tooth's occlusal surface. Mesiodistal crown measurements were taken at the maximum mesiodistal length of the tooth crown when the tooth was positioned as if in situ. This position prevented rotating the tooth, which would produce a reduced measurement due to the rhombus shape of maxillary molars. Mandibular molars were measured in the same way to prevent rotation, though this was less of a problem given the central distal location of the hypoconulid. Calipers were always held at a 90-degree angle to the occlusal surface to avoid rotation of the tooth or calipers. Crown measurements were taken with the fine point of the Hillson-Fitzgerald calipers and I was careful to avoid using the midpoint of the caliper tip for crown measurements to avoiad introducing error.

Mesiodistal cervical measurements were taken at the points of the MD vertical midplane at the cemento-enamel junction (e.g. Aubry, 2014; Hillson et al., 2005; Stojanowski, 2007). As mentioned, in situ teeth posed a unique problem when observing the MD cervical measurement as the caliper tips often would not fit between the teeth to the point specified (e.g. Hillson et al., 2005) and cervical measurements were modified. The cervical measurements were taken from the labial/buccal side of the tooth. For loose teeth, the tooth was positioned as if it were in-situ to facilitate standardization across all loose and in-situ dental measurements. Measurements were taken in line with the cervical margin moving the caliper tips to the midpoint of the mesial half of the CEJ on incisors and canines. For premolars and molars, measurements were taken in line with the midpoint of the CEJ under the buccal cusp(s).

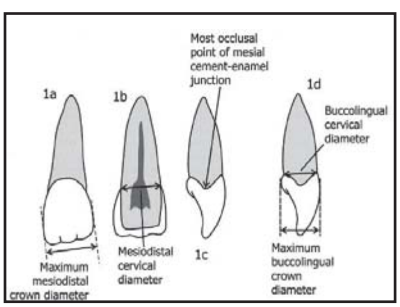

Figure 36: Hillson et al. (2005, Figure 1) incisor cervical and crown measurement definitions. Used with permission from Simon Hillson and Wiley Publishing.

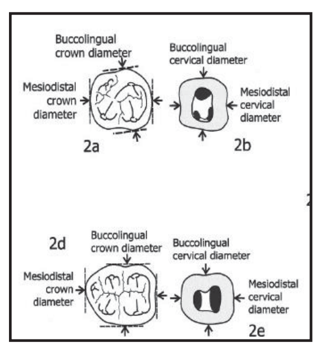

Figure 37: Hillson et al. (2005: Figure 2) molar cervical and crown measurement definitions. Used with permission of Simon Hillson and Wiley Publishing.

F. Summary

This chapter introduced the research question and scenarios that were investigated to elucidate the social organization of the architectural groups described in the Copan Valley. The skeletal sample derives from seven primary areas of Copan that served as residential complexes. Archaeological inquiry has debated the form and function of these groups, specifically as it relates to social organization. The methods described in the final section of this chapter are employed to assess the role of co-residence and consanguineal kinship in Copan's social structure.

Chapter 4: Kinship Concept and Models of Social Organization

A. Brief History of Kinship

Kinship and its role in social structure and organization have been a central theme in anthropological inquiry for nearly a century (Aberle, 1961; Barth, 1959; Connelly, 1979; Eggan, 1950; Ensor, 2013; Evans-Pritchard, 1940, 1951; Fortes, 1953; Gillespie, 2000a,b, 2007; Leach, 1954, 1961; Radcliffe-Brown, 1930-31, 1950; Sahlins, 1961, 2011a,b, 2012, 2013; Southall, 1956; Vogt, 1969). This chapter discusses several features of the kinship concept and its relationship to studies of social organization. A history of the development of the concept of kinship will be briefly reviewed with special attention to pioneering efforts, followed by a discussion of present concepts. Cross-cultural examples of kinship and its role in the structure of society will then be presented from ethnographies of Africa, the Southwestern United States, and Mesoamerica. The cross-cultural examples demonstrate how the complex intricacies of the kinship system are affected by cycling, residence, spatial and temporal relationships, and marriage patterns, among others. The discussion of Mesoamerican kinship will be divided into two sub-sections, first, from the ethnographic perspective and second, the archaeological interpretation of kinship systems. Following the presentation of ethnographic data, the terminology and typology of the kinship concept will be discussed in detail to offer explicit definitions for interrelated and intricate kinship terminology.

A1. The kinship concept and Lévi-Strauss's house

Despite being identified nearly a century ago, the problem of social organization has remained one of the most complex and cross-culturally relevant topics in anthropology. Radcliffe-Brown's 1930-31 monograph on the social organization of Australian tribes opened a line of inquiry distinguishing the 'system of genealogical relationships' from the socially constructed 'kinship system'. By combining the functionalist and structuralist perspectives, he created an approach for describing a society and group from internal and external aspects (Fortes, 1953). Thus, Radcliffe-Brown was the first to define the term social structure, as "a grouping of human beings in relation to one another. But there is a larger structure in which the society and external nature are brought together and a system of organized relations established, in myth and ritual, between human beings and natural species or phenomena" (1930-31:60). Thus, social structure became an observable grouping to be studied from an etic perspective. In the initial identification of social organization, Radcliffe-Brown observed a distinction between the "system of genealogical relationships" and the "kinship system" that is centered on genealogy but is *socially* constructed (1930-31:43). The kinship system then functions in society to play a determinate role in the maintenance of that structure (Fortes, 1953).

Building from Radcliffe-Brown's ideas, Evans-Pritchard's (1940) study of the Sudanese Nuer defined the direction of British and anthropological research worldwide for the next 30 years and has even been called the most influential monograph ever published in anthropology (Barth, 2005). Of particular importance was Evans-Pritchard's descriptions of the structural elements of Nuer society, aspects of status, and corporate groups, which resulted in the study of so-named "lineage societies" (Evans-Pritchard, 1940, 1951; Fortes, 1953; see Radcliffe-Brown and Forde, 1950).

Societies first classified as lineages were subsequently described by the categorical term of "kinship" where the lineage concept was operationalized as a practicable unit for ethnographic analysis. Fortes (1953) was the first to highlight that there are different functions and domains within lineages so that kinship alone was insufficient to explain the nuances within a given society. The politico-jural domain where lineages may serve as political units with jural power within the community stand in contrast to the familial-domestic domain where lineages are simply units of descent and co-residence absent of a political agenda. Though Fortes described these units relatively early in the study of ancient and modern cultures, the political and domestic units have since been described as both inextricably linked and at times, inherently unique (Gillespie, 2000a; Canuto and Yaeger, 2000; Connelly, 1979; Brandt, 2010 personal communication). The link of political and domestic units among the ancient Maya is well known, for example, where political power is nested within lineages, thus centering domestic production and reproduction. This is not always the case as agnatic (or patrilineal male) descent systems can mark territorial units without political organization (e.g. Swat Pathans in Pakistan, Barth, 1959).

Ethnographies that emerged from the British School stressed the primacy of kinship in models of social organization, although the centrality of this concept was variable. In his analysis of the Kachin in Highland Burma, Leach (1954) found that alliances and equality could be created between neighboring patrilineal groups through the political marriages in a system of *gumlao*. This system was difficult to maintain given individual lineage ambitions could create the hierarchical system of *gumsa*. Although Leach found bilateral kinship structure and marriage patterns to be foundational to Burmese society in 1954, his ideas changed in 1961 when he argued that the physical layout of the village and its resources had an equally profound effect on the social form. Leach's 1961 retraction questioned the role of kinship in structural-functionalist analyses of lineage structure. It was becoming clear in Leach's work, and more so in the work of later scholars, that the rules of descent laid out by British theorists for Austronesia, the Middle East, and Africa were insufficient to reconcile the relationship amongst the concepts of descent, lineage, marriage, and dwelling.

Leach (1967) emphasized that change in the social order, according to the earlier models based on African ethnographies, is accomplished through fission wherein a new form is merely a duplicate of the old one. However, he found that in Burma this is not just a re-grouping of the segmentary elements but rather, an emergence of new social structures of a fundamentally different type (Leach, 1967). His work showed behavior of individuals and of social groups that is affected by more than kinship alone (e.g. Schneider, 1968, 1984). Furthermore, the dramatic shift of perspective in Leach's work from 1954 to 1961, highlighted that structure can be fluid, dynamic and unstable, and that ethnographies may not document all aspects of social structure given the features that can change over time or across space.

Akin to Leach, though phrased in different terms, Lévi-Strauss saw a struggle between the surface expressions of culture and the underlying or unseen formative aspects of culture and social structure (Lévi-Strauss, 1987; see also Parkin, 2005). Lévi-Strauss's work emerged from the French perspective of structuralism and his major contribution was distinguishing between the latent or deep structures that pattern human behavior and the manifest expression of these structures in the organization of a society. Lévi-Strauss (1987:185) argued that African social systems, which were "generally considered the favourite domain of unilineal intuitions" in anthropological inquiry, were inadequate models of the segmentary lineage framework. It was difficult to reconcile these lineage models with processes of filiation (the basic relationship of parent to offspring) and the inclusion of non-agnates in lineage membership. The problem of tracking filiation and non-agnate inclusion made it difficult to distinguish lineage from residential units (Lévi-Strauss 1987).

Lévi-Strauss found the analytical distinctions used in the British school, mainly in African kinship studies, misleading. In fact, he argued,

> "One is therefore led to question whether, when anthropologists multiply labels by which to distinguish each shade of difference in systems called patrilineal (but with matrilineal aspects), matrilineal (but with patrilineal aspects), . . . [if] they are not the victims of illusion. These subtle qualifications often belong more to the particular perspective of each observer than to the intrinsic properties of the societies themselves" (1987:187).

Other American and European scholars critiqued studies of social organization frameworks (e.g. Bourdieu, 1977; Keesing, 1970; Kuper, 1982; Leach 1968; and Schneider, 1972, 1984). First, they argued that kinship is created through symbols based on codes of conduct, behavior, and biological relationships; in their opinions, social kinship did not necessarily translate to biological affiliation (Schneider, 1968, 1972). Further, they argued that the aspects of society that Lévi-Strauss found essential to any holistic study are very difficult to study systematically. Only superficial expressions of the deep structures are quantifiable and anthropologists, especially archaeologists, are consequently limited in modeling the past. Lévi-Strauss responded to such critiques with the development of the 'house' as an analytical unit of social structure (1987; see also Gillespie 2000a,b). In his view, the house could reconcile the problem of mapping kinship classificatory schemes onto intangible deep structures like indigenous beliefs or identity. The house was an analytical unit with inherent fluidity that could exist at all levels as opposed to the more strict classificatory units of family, lineage, clan, and tribe (Lévi-Strauss, 1987; see also Gillespie 2000a, b). Thus, the *actions* of people could be better mapped and thus lead to a more clear understanding of the ties between people and the difference between 'practical' versus 'official' kinship (e.g. Bourdieu, 1977). Bourdieu and Lévi-Strauss saw marriage, inheritance, concepts of descent, and residence not as rules but strategies put into practice. The "duality of 'blood' and 'land'" (Lévi-Strauss, 1987:181-2) in the house is a reference to the temporary and permanent social, economic, and ritual relationships among individuals in a collective society (e.g. Gillespie, 2000a). Nevertheless, the house still privileged kinship as the fundamental societal relationship, while adhering to the essentialist orientation that Lévi-Strauss so clearly denounced (Lévi-Strauss, 1987; Gillespie 2000a).

Reminiscent of earlier kinship theorists, contemporary scholars have adopted Lévi-Strauss's critical view of kinship analysis. Most notably, Gillespie (2000a, b, c, 2001, 2004, 2007) argues that ancient Maya kinship should be viewed in terms of houses rather than segmentary lineages. These houses include agnates as well as affines and maintain continuity through the "language of kinship" in tangible and intangible reference to ancestors or alliances (Lévi-Strauss, 1982: Gillespie, 2007). The model has been applied in Indonesia (McKinnon, 1995, 2000; Waterson, 1995), Polynesia (Kirch, 1984, 2000; McKinnon, 1991), Madagascar (Bloch, 1995), Mexico (Sandstrom, 1996, 2000), and Mesoamerica (Gillespie, 2000a,b,c, 2001, 2004; Hendon, 2000, 2001, 2002, 2007; Joyce, 2000; Joyce and Gillespie, eds., 2000). While some have linked the social houses to physical structures (Chase and Chase, 2004; Hageman, 2004; Houston and McAnany, 2003), Gillespie (2007) and colleagues (Beck, ed., 2007; Marshall, 2000; Waterson, 2007) assert that houses are conditional social structures. The house model provides an ethnographic approach to the social relations and practices that create the material culture in archaeological contexts (Joyce, 2007; see also, Gillespie, 2007; Marshall, 2000; Waterson, 2007).

The current applications of kinship theory and models of social organization built upon the early conventions of social organization are creating nuanced understandings of past and present cultures. By embracing variability in reconstructing past societies, archaeologists can recognize internal differentiations within social structure and forms of attachment in social groups across generations (Gillespie, 2007; e.g. Hendon, 2007; Joyce, 1999). The life histories of house members manifest in material changes to residences through burial, grave furniture, and links to ancestors and create an enduring biography for a house apart from the physical architecture or residential space (Bloch, 1995; Gillespie, 2002, 2007; McAnany, 1995; Waterson, 2000) in a “genealogy of place” (McAnany, 1995:65). This study follows such a perspective and assesses burials interred on house land to investigate the continuity and construction of ancient Maya society.

A2. Kinship terminology and typology

In the development and application of kinship theory, anthropologists have employed specific nomenclature to describe the relationships observed cross-culturally in kinship systems. The terminology describes relationships that resemble universal commonalties and serve as the basis for social structure (Edmonson, 1957; Greenberg, 1990; Lévi-Strauss, 1969; Parkin, 1997; Schneider, 1968, 1972; Wallace and Atkins, 1960). The following section offers the definitions of many of the terms in this chapter and highlights their meanings, their relationships to each other, and the problem of typology in kinship terminology. Definitions are drawn from the work of those that originally developed these terms and those who have more recently clarified terminology (Aberle, 1961; Barth, 1959; Edmonson, 1957; Evans-Pritchard, 1940, 1951; Fortes, 1953; Greenberg, 1949; Leach, 1954; Lévi-Strauss, 1969; Parkin, 1997; Radcliffe-Brown, 1950; Schneider, 1968; Schneider and Homans, 1955; Wallace and Atkins, 1960; Wilson, 1957).

The primary relationship in all studies of kinship is that of the filiation, or parent to child, which is subdivided into the patrifiliation (father to child) and matrifiliation (mother to child). When filiation relationships are traced from generation to generation through time, the filiation relationship becomes that of descent. Unilineal descent (based in only one biological sex) is then divided into patrilineal (aganatic descent) if traced through the father and matrilineal (uterine descent) if traced through the mother. If descent is not explicit and both sexes are given equal importance, it is described as bilateral (cognatic) descent, in which matrilateral and patrilateral kin of all genders are important relationships across generations. There is a significant distinction between bilateral and duolineal (bilineal or double) descent. In double descent, individuals are associated with their patrilineage and matrilineage but not with both of their mother's or father's two lineages. Essentially, "a man has rights and interests through his father's mother" in cognatic descent but would not enjoy the same in double descent (Keesing 1970:75; in Ensor, 2013). Anthropologically, the pattern of descent dictates the associations within society and identifies the social type as it relates to ideological categories, constructs, and marriage patterns.

Unilineal descent groups can then be categorized as clans or lineages. Lineages have a lesser vertical depth meaning that the relationships between all members are traceable and known. Within matrilineal or patrilineal clans, relationships extend beyond the individual members of the group and are traced through a common (historical, distant, or mythical) ancestor. Each lineage can be further divided into maximal, minimal, major, or minor segments, depending on the size and generational depth of the segmentation (e.g Evans-Pritchard, 1940; Sahlins, 1970). This system resembles a branching but entangled tree in which alliances are relative and changing, as exemplified by Pathans, in Swat, and the Nuer where it is "me against my brother, my brothers against my cousins, cousins against the clan, clan against the tribe, tribes against the world" (Barth, 1954, 1973; Godlier, 2011). Descent groups can be localized, in the same place, or dispersed in several places or more broadly throughout a community. Bilateral descent groups, (also called demes or ramages), can develop into unilineal conical clans with hierarchy depending on the segment extent or size of the group. Clans and lineages can be named in a variety of ways based on a totem or emblem, from an eponymous ancestor, a place, or remain unnamed. The basic distinction between the agnatic and cognatic descent groups is due to the mode of descent and differential marriage patterns. For example, unilineal descent groups tend to be exogamous where marriages occur outside of the group while bilineal filiation is amorphous with endogamous marriage patterns.

The criterion for membership in a group may extend beyond simple descent where residence or some combination of the two may form the core of affiliation (e.g. Gillespie 2000a,b; McAnany, 1995). Cognatic descent, for example, and its more fluid design regarding residence and membership distinguish it from descent models that hinge solely on birth. The picture of descent becomes more complex where descent may be considered as meaning almost a "recruitment by birth into, and membership of, descent groups where they occur, and more generally to the nature of the particular recognition given to ego's vertical ties in defining his or her own status" (Parkin, 1987:22). Inheritance can be directed, flexible, or complex. It can occur before or after death of the estate owner, can be remunerated to the eldest child (primogeniture) or the youngest child (ultimogeniture) based on gender. Property can pass onto the eldest daughter if there are no sons in a patrilieaneal society and pass to the youngest child in a primogeniture system if the older child failed to participate or fulfill roles within the corporate group. Issues such as the corporate descent group, with its own rights and duties of all members to each other, inheritance, and succession, alliances, adoption, fostering, and flexible residence rules show that the basic typological models first presented in this section, can only with some difficulty assess the behavior and social evolutionary processes within any community, regardless of size.

A3: Critical summary

Cross-cultural comparisons of kinship terminology, social organization, and classifications (i.e. state vs. non-state, corporate vs. network, etc.) are meaningful ways to establish universal concepts though the limitations are apparent to critics (Fortes, 1953; Gillespie, 2000a; Leach, 1961; Levi-Strauss, 1969; Pauketat, 2007; Sahlins, 2012). Kinship studies remain difficult as the social and political organization of ancient societies is subject to marked variability in structure, description, size, and population. Communities do not change uniformly across space and time with variation in the development and maintenance of features like social reproduction, subsistence production, self-identification, social recognition, inter- and intra- site patterning, as well as, marriage, residence, and size. Communities, places, and peoples are defined by the histories that created them (e.g. Ashmore, 2004; Canuto and Yaeger, 2000; Hendon, 2007; Joyce, 2000; Pauketat, 2007), are socially constructed, and are also tied to physical and biological tractable remains in the archaeological record. The systematic models that form the basis of archaeological inquiry are a means to approach a very complex problem. However, it is the variety of institutions, strategies, and societies (e.g. deviations from the systematic models) that truly can elucidate the past.

B. Kinship in Cross-cultural Perspective

Ethnographers, such as Radcliffe Brown (1930-31), Forde (1939), and Murdock (1949), in the early 20th century were explorers who systematically tested the models of social organization, using kinship as a foundation, to develop cross-cultural comparisons. While some were more influential than others, all were pioneers that formed the foundation of cultural anthropology. This section will present several case studies of ethnographic research, the results, and the impact of the ethnographic models. A survey of African ethnographies will be discussed first, followed by a global survey of kinship-based social organization, and will conclude with examples from the Southwest and Maya regions of the New World.

B1: Global Summary

Early ethnographers and theorists laid the foundations for anthropological inquiry about social structure and kinship. One such example is *African Systems of Kinship and Marriage* (Radcliffe-Brown and Forde, 1950) where the abstractions identified independently by Radcliffe-Brown (1930-31) and Forde (1939) were systematically applied cross-culturally by contributors. This volume presented a survey of kinship systems from the African continent where groups and their structures were the focus, instead of focusing on *ego* – a singular individual from whom all descent was traced. By changing the paradigm, it became clear that social structure and social function are correlative and must be understood through direct comparison with other diverse systems. Subsequent anthropological discussions re-focused on the political structures superimposed on kinship in clan and lineage systems (Aberle, 1969; Geertz and Geertz, 1975; Godlier, 2011; Leach, 1962; Lévi-Strauss, 1969). These political manifestations affected all levels of relationships within the administrative and/or territorial unit.

Extending from the African scholarship, cross-cultural surveys of social organization provide a rich understanding of the past and demonstrate the diversity and flexibility of kinship, descent, residence, and organizational rules. Murdock's (1949) landmark discussion of cross-cultural kinship systems and social organization demonstrated that all aspects of social structure are subject to dramatic shifts but that kinship terminology and the rules of descent are the slowest to change. He argued that the nuclear family was a cultural universal consisting of parents and their biological and adopted children. In his model, this type of family unit provides organizational support and serves as an intermediary between the individual and the larger community.

Aberle (1961) systematically tabulated Murdock's cross-cultural kinship data to elucidate global patterns of social structure (**Table 8**). Patrilineal descent systems are the most common worldwide and are especially frequent in Africa and Eurasia. This emphasis on patrilineality contrasts sharply with North and South America where bilateral descent is most common. It is important to note, however, that matrilineal kinship is more likely in indigenous North American groups than anywhere else. Finally, duolineal (double) descent type, when present, is most common in Africa and Oceania regions as opposed to any other region.

Table 8: Descent systems by region (After Aberle, 1961, Table 17-2)

Type	Patrilineal	Bilateral	Matrilineal	Duolineal	Total Surveyed Relative to Area
Africa	77, 31%	10, 5%	17, 20%	12, 43%	116, 21%
Circum-Mediterranean	43, 17%	31, 15%	4, 5%	1, 4%	79, 21%
East Eurasia	64, 26%	14, 7%	5, 6%	1, 4%	84, 15%
Insular Pacific	28, 11%	34, 17%	22, 26%	14, 50%	98, 17%
North America	19, 8%	67, 33%	24, 29%	0, 0%	110, 19%
South America	17, 7%	48, 23%	12, 14%	0, 0%	77, 14%
Total	**248, 100%**	**204, 100%**	**84, 100%**	**28, 100%**	**564, 100%**

Segmentary lineage systems have often been characterized in both African ethnographies[1] and, most recently, in Mesoamerica vis-à-vis ethnographic analogy as the ideal model to interpret past societies. But such lineages[2] vary greatly in the larger scale of complexity "from the temporary coalitions of almost egalitarian, only incipiently ranked polities, whose wider political structure depends more upon the degree of outside pressure precipitating alliance formation to segmentary states" (Fox 1987:5). Given the relatively low percentage of cross-cultural examples of patrilineal group segmentation (**Table 9**), an over-emphasis on this kinship type may be a mistake, and obscure complex and diverse kinship patterns (Aberle, 1961; Murdock, 1949).

While the previous examples are analogous in certain features to many areas of the world, ethnographic examples were considered from indigenous groups in the Southwestern region of North America as an initial comparison to cultures in Central and South America. The complexity of the layering of affiliation and identities in Southwestern groups, marriage and residence rules, and differential power structures, provide a frame of reference for cross-cultural comparison in the New World.

While most societies cross-culturally are patrilineal (**Tables 8** and **9**), matrilineal kinship is more common in the Southwestern United States and creates distinctive social

[1] Segmentery lineages were first identified among the Alur of Africa by Southall (1956). He argued that there was a degree of specialized political power held by lineages but it was only maintained within politically systems that had structural oppositions to an "absolute central authority able to monopolize the use of force" (Southall 1956:257).

[2] The segmentary lineages identified (e.g. Evans-Pritchard, Nuer, 1940; Fortes, Tallensi, 1945) were often what Fox (1987) describes as "tribal level" with individuals interested in the control and maintenance of their own land holdings. These lineages then can create a unified segmentary lineage under threat from outside or during expansion or migration, which were uneasy, mechanical, and transitory (Fox, 1987).

structures, making men less central than women to system maintenance and organization and creating rules of residence and land holdings unique from many other social organization types. The three main constraints of matrilineal kinship structure dictate that (1) women are the primary caretakers of children; (2) adult men have authority over women and children; and (3) descent group exogamy is required (Schneider, 1968). Unlike a patrilineal system where authority and place are tied to the male lineage, a matrilineal system dictates that the meaning of place, as well as land holdings, is traced through women, although some authority remains with men.

Table 9: Patrilineal and matrilineal descent systems (After Aberle, 1961, Table 17-14).

Type of Descent	Patrilineal	Matrilineal	Total Observed by Descent System
Segmentary Lineages	35, 14%	1, 1%	36, 11%
Lineages	42, 17%	9, 11%	51, 15%
Dispersed Descent Group of Two (+) Lineages with Common Ancestor	144, 58%	45, 54%	189, 57%
Phratries	10, 4%	7, 8%	17, 5%
Exogamous Moieties	10, 4%	16, 19%	26, 8%
Agamous Moieties	3, 1%	3, 4%	6, 2%
Not Ascertained	4, 2%	3, 4%	7, 2%
Total	**248, 100%**	**84, 100%**	**332, 100%**

Eggan (1950) offered a comparative study of the social structures of the southwestern Pueblos and concluded that common linguistic and cultural backgrounds facilitated greater than expected variation within Pueblo subsistence strategies. The Western Pueblo underwent significant borrowing and diffusion. The observed commonalities between the western Pueblos likely increased due to the level of contact between groups and encouraged shifting social configurations. Hopi society exhibited a pattern of organization with maneuverable management groups (Connelly, 1979). In this system, the status and prestige of a group stems from the origin myths wherein the first peoples to arrive to an area are afforded the greatest power while later-arriving groups receive descending levels of status. This is a “flexible instrument of stability” (Connelly, 1979:54) wherein small households are established within obligatory kin groups nested within larger management groups. In the face of large increases in population and segmentation, the Hopi system sanctioned the creation of new household and management groups through an almost mechanized process of separation and reformation that left kinship affinity intact. Admission was always given to close kin but could be, and was, granted to non-kin, through petition, apprenticeship, marriage, and ceremony. The system is fluid and flexible in response to an unstable environment; “Hopi social organization in its management of small units of human association provides linkages in kinship that in their practical effect serve to communicate cultural information, to reassure identity, to promote a measure of sharing, and to assure continuity” (Connelly, 1979:54). The complexity of social groupings in the Southwest, represent shifting and adaptive strategies to maintain social structure while operating under flexible and changeable rules of membership.

B2: Maya

There is no singular type of Maya social organization or system of kinship. The Maya are and were complex and demonstrate marked diversity within and between sites and regions. This research is focusing on the Copan Maya at the intrasite level (within a single archaeological site) but the analysis must be couched within the larger context of archaeological and ethnographic studies of ancient and modern Maya social systems. Comparisons have been drawn between the ancient Maya and other Mesoamerican cultures, feudal England, and African chiefdoms. These analogies, while informative, are limiting as proposed models of social organization. Watanabe argues that Mayanist archaeologists must "build models that define the relevant components of social organization – filiation, descent, alliance, and residence – and then theorize how differently patterned relations between these components might yield the institutional groupings we find on (or in the case of archaeology, in) the ground" (2004:159).

B2a: Ethnographic examples

Maya ethnographers have found support for the foundational and symbolic meaning of kinship across the Maya region (e.g. Vogt 1976; Wisdom 1940) where social organization has been described as fitting into the segmentary lineage model of a segmented state [3]. For the Quiché Maya, Carmack (1981) describes patrilineal descent groups of subordinate and major lineages with exogamous marriage customs where major lineages occupied large central sites and subordinate lineages resided in countryside centers (Tedlock, 1982; Ximenez, 1929). Independent of the size of the group, having membership in a group was critically important to social distinctions and the construction of ancient and modern Maya society[4].

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[3] Identified by Carmack and Weeks (1981) by so-called "forged alliances" between the Quiché Maya and the migrant ethnic Chontal-derived peoples. However, these were never explicitly referred to by name and Edmonson (1982) argued that these lineage alliances were fractious and based on the ritual time units of the *tun* (360 days) and *katun* (20 *tuns* or 7,200 days).

[4] Elite Classic and Postclassic Maya society was shown as organized according to principals of lineal descent, but significantly, few have investigated the formative roots of these social conventions (McAnany, 1995).

It is in these lineage systems that a focus on the territorial aspects of life emerges and is maintained through ancestor veneration (e.g. McAnany, 1995). This is documented ethnographically by Redfield and Villas Roja (1962) and suspected archaeologically by McAnany (1994) and Carmack and Weeks (1981)[5], among others (Chase and Chase, 1994; Gillespie, 2001, 2002; McAnany, 1995; Welsh, 1988). In the segmentary lineage model, genealogical distance dictates social and spatial ties, access to resources, and geographical distance throughout life[6] (Carmack and Weeks, 1981; Fox, 1987). If lineage is related to the social aspect of long-term resource sharing, then collective proprietary rights develop and create an allied group perpetually tied to a specific and strategic property (McAnany, 1995; e.g. Chase et al., 1990; Sahlins, 1961). The Maya system of residence is anchored in relationships to the ancestors and "stands as witness to the validity of the rights, privileges, and responsibilities of its current occupants" providing the space for the "curation, transformation, and regeneration of enduring social personae" (McAnany, 1995:58). The landscape is transformed and modified over time by means of territorial inheritance to serve the needs of both the dominant and subordinate lineages (Fitzsimmons, 2009). The hierarchy of lineages and their origins were recorded at the time of Spanish conquest by then Bishop Diego De Landa (Tozzer, 1941). Each lineage

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[5] While it is suspected archaeolgoically, it is prudent to avoid an ad hoc analogy from the historical present into the Maya past.

[6] The archaeological examples from the Maya Postclassic (AD 900 -1100), however show crosscutting spacio-genealogical relationships, suggesting that the behavioral reality is quite different (Carmack and Weeks 1981; Fox 1987).

was ranked according to the antiquity of its pedigree and their primacy of power was based on first occupation[7].

B2a1. Zinacantan

The ethnographic case study of the patrilineal Tzotzil at Zinancantan in Highland Chiapas by Vogt (1969) demonstrates the complexity of Maya social structure. The most basic unit in Zinacanteco social structure is the domestic group consisting of kinsmen who live together in a single house compound and share a single food supply. This social unit does not have a name in Tzotzil Maya but domestic units can be distinguished by saying “the house of” or “the houses of” a particular male personage. At one point in time, most domestic groups appear to have been patrilocal family units forming segments of localized patrilineages. Daughters may marry men who have no chance of inheriting land from their patrilineage and those men are brought to live in the wife’s patrilineage houses. In another case, if a father only has daughters, sons-in-law are brought into the resulting in patterns of matrilocality. The occurrence of residence patterns in the localized patrilineage group, named *Paste?*, can be found in **Table 10**.

Table 10: Zinacantan residential marriage patterns (After Vogt, 1969, Table 3).

Location	Patrilocal	Matrilocal	Neolocal	Total
Number	199 couples, 81%	41 couples, 17%	6 couples, 2%	246 married couples

The most crucial relationships in the patrilineage are between the father and his sons and his male siblings. Older sons usually live within 200-300 meters of their father’s

[7]However, the descent lines of noble families were thought to be deeper and more venerable than those of commoners and justified better and more access to goods and resources (McAnany, 1995).

house and will inherit subdivided pieces of agricultural property. The house and main holdings of the father, however, are passed to the youngest son who cared for the parents for longer than older children. The members of the patrilineage form the core of the relationships for the control, maintenance, and inheritance of lands and houses, as well as the exercise of jural authority. The genealogical connections can be traced within the localized patrilineages and reach back at most four generations. As McAnany (1994) has highlighted, members of a descent line will live on land originally settled by and inherited from ancestors. Although the patronyms of a particular patrilineage and the precise names of ancestors are forgotten after four generations, the system of patronymics remains and maintains functional importance in the social structure. The presence of ancestors maintains the social house even as direct biological or lineage connections are forgotten (e.g. Lévi-Strauss, 1987; Gillespie, 2007).

Zinacantan is organized spatially into a series of hierarchical units that influence marriage patterns, mate choice, and name (**Figure 38**). The basic unit of social organization is the residence group, also called a patriclan or *SNA*, and usually occurs under a single patrlineage. The direct translation of *SNA* is "the house of" (Vogt, 1969). The next largest lineage is the Waterhole Group (similar to phratries and sometimes called *Parahel*), which included two to thirteen *SNA*s. At times, Waterhole Groups maintain some jural authority. A Hamlet is the largest subdivision and contains one or more Waterhole Groups and each Hamlet has a *Presidente* who carries out the orders given at the main ceremonial centers to all Zinacantecos in the Hamlet, Waterhole Groups, and SNAs.

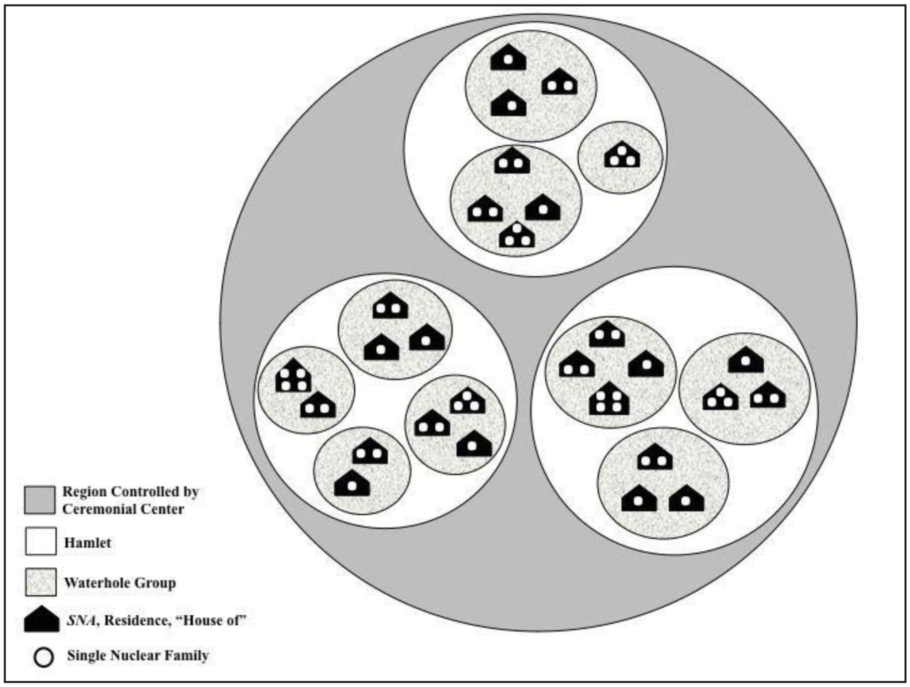

Figure 38: Abstraction of Zinacantan spatial and social organization.

The spatial relationship of the lineage groups structures social interaction, such as marriage. Individuals with the same patriclan (*SNA*) cannot marry but individuals can exchange spouses between patriclans (*SNA*s) within the same Waterhole Group. Mates can be interchanged freely among Waterhole Groups unless there are *SNA*s within each of the Waterhole Groups that share the same indigenous (not Spanish imposed) surname. Of the 246 couples mentioned above, 120 wives came from the same Waterhole group as their husband, 75 from a different Waterhole Group but within the same Hamlet. In short, 80% of marriages occur from within the same Hamlet with the remaining 20% coming from the closest Hamlets.

A distance of only 100-200 meters separates most *SNA*s from each other, while the majority of Waterhole Groups are only 300-1000 meters apart and includes an average of 10-523 people. Hamlets are located ½ to 2 km apart and each hamlet contains

121-1227 people. In Zinacantan, the ceremonial center functions as the center of the universe and serves 21 Hamlets. An important dimension of Zinacantan patterns relates to this work; despite these small dimensions, kinship and other domestic structures become very complex. To further complicate the situation, through the ritual practice of *compadrazgo* (fictive kinship, an institutional relationship, or co-parentage/co-sponsorship), people can be bound in social relationships where relatives are "created." This practice is of particular use to individuals who may lack wide-ranging or distinguished lineage affiliations, property, or other fictive or real kin affiliation[8]. *Compadrazgo* can also be used to reinforce existing biological kinship networks. This relationship becomes one of genuine kinship and, at times, can be even more secure than biological affiliation, which Vogt (1969) cites as often complicated by property disputes.

If marriages were determined by similar spatial and social groupings within ancient Maya cities, a level of insularity would develop within neighborhoods (analogous to Vogt's hamlets) within an urban center (**Figure 39**). Most marriages would occur within the same neighborhood with a preference for marrying within patio groups located within those neighborhoods. Over generations, this pattern would produce a form of social organization with marked similarity in skeletal traits through the matri- or patri-lineage in an effort to maintain the property, titles, and social relationships of the neighborhood (hamlet). This is the pattern that has been hypothesized for ancient Maya social structure. As other chapters have highlighted, the Zinacantan pattern does not hold when the biogeochemical and biodistance data are examined. Nevertheless, it is

[8] A similar pattern has been observed among the Hopi in the Southwest (Connelly, 1979).

important to consider an additional ethnographic example to highlight the diversity of social organization within modern, and by extension, ancient Maya groups.

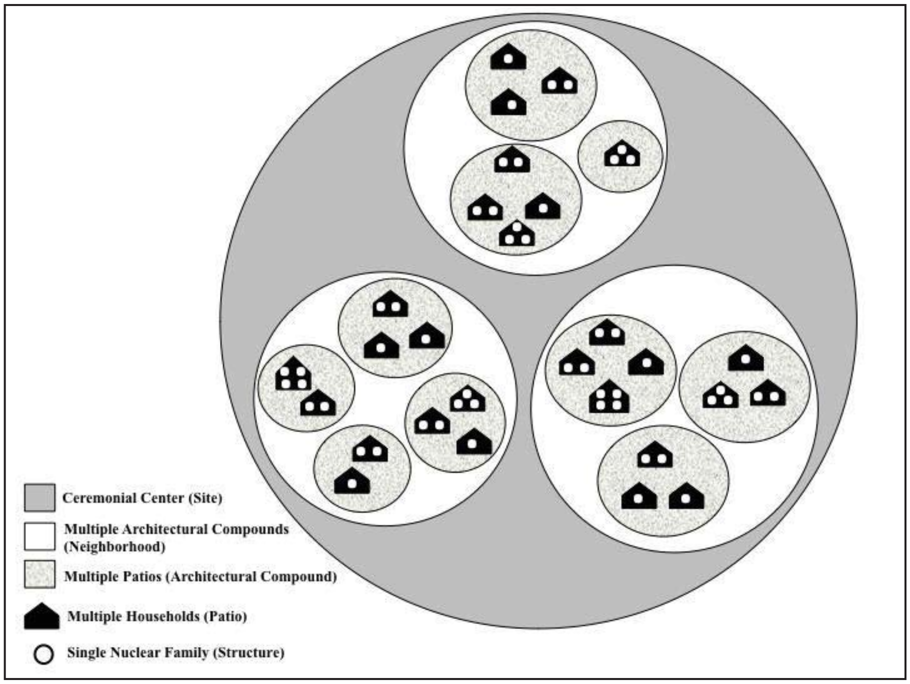

Figure 39: Analog of Zinacantan patterns to ancient Maya architectural groups.

B2a2. Chan Kom Maya

Redfield and Villa Rojas's (1962) study of the Chan Kom Maya from Quintana Roo in the Yucatan Peninsula highlighted some variation from the kinship system of the Tzotzil Zinacantan Maya of Chiapas described by Vogt (1969). Archaeologically, major differences are evident between sites, and it seems there are major ethnographic distinctions as well. Like Zinacantan, Chan Kom maize is central to all life, but individuals do not own land. Rather land is collectively owned by the village (*ejido*) and one may only temporarily "own" land during the time of cultivation. Furthermore, houselot ownership is contingent upon an individual's membership within a community and their participation in communal maize production. In Vogt's observations, most households (33/45, 73%) were single-family units, only ten (22%) were multiple family households, and extended domestic units were only found in two households (4%). A typical family is a man and wife with seven unmarried children, three married sons and their spouses, and children of the married children. These nineteen people are considered one socioeconomic unit and household, unlike the broader patriclan observed among the Zinacantecos. One important point not mentioned by Vogt (1969) but noted by Redfield and Villa-Rojas (1962) is that polygyny is very uncommon. Such marriages are in violation of custom and the second wife never produced children, which would maintain a close biological affiliation of the offspring within the domestic and social units.

While both the Tzotzil Zinacantan and Chan Kom are Maya groups, there is marked variation in patterns of social organization. The Zinacantan model of social organization and the features presented by Vogt (1969) is widely regarded as a good model from which to approach the past (e.g. Gillespie 2000a,b, 2001, 2002). However, Spanish influence has without question affected the social structure in ways that Vogt admits cannot be parsed from his observations. The unique type of collective ownership of land and importance of co-residence among the Chan Kom Maya give pause to consider if there is a Western bias in what was reported, if Spanish influence had a differential effect across the Maya area, or if such variety was a natural occurrence among the modern (and ancient) Maya. The homogeneity in social structure and residence highlight how ethnographic analogy must be carefully applied to archaeological contexts. The variety observed in the Maya world, though recorded much later in the 20th century, is similar to differences noted ethnographically throughout Africa, Polynesia, and especially the Southwest. This is the challenge posed to anthropologists. Fortunately, new methodologies allow for new approaches and understandings to a long-standing problem.

B2b: Archaeological

Archaeologically, ancient Maya houses are constructed around common patios inhabited by multi-generational social groups that identify with a particular space and ancestral history (Hendon, 1991, 2002, 2007; Gillespie, 2000a, 2004, 2007). These social groups have been interpreted as patrilineages (Haviland and Moholoy-Nagy, 1992; Hopkins, 1988; McAnany, 1995) that serve as the locus for daily activities and the context from which meanings are constructed (Bourdieu, 1973; Earle, 1986). McAnany (1995) argues that leadership roles were institutionalized within a particular macrofamily or lineage organization (like Vogt's hamlets) but were not necessarily hereditary. According to Roys (1967), after a lineage was established it was maintained through the patriline. It was patronymic although society was not strictly patriarchal. In fact, the mother's *naal* (or name) was also recorded. Likewise, among nobles the term *almehen* (noble) was a combination of the *al* or "women's offspring" and the *mehen* or "men's progeny" (Roys, 1967). As Carmack and Weeks (1981) have observed amongst the highland Quiché Maya, the titles of lineage heads vary, suggesting the existence of elite and non-elite lines. Both Coe (1965) and Roys (1957) have posed that the specific title of *hol op* or "head of the mat" represents the most important and politically powerful lineage in an area. The Yucatán Maya employ the title of *ah kuck kab,* which represents a council head (Roys, 1943; Tozzer, 1941) or a principal (Coe, 1965) or a wealthy commoner (Coe, 1965). All of this suggests that within the ancient Yucatec Maya political system there were offices and titles for recognized and supposedly important lineage heads that may or may not be high-ranking nobles. McAnany argues that "although the specific roles of the *ah kuch kab* are not altogether clear, this position demonstrates an institutionalization of the lineage in the political process" (McAnany, 1994:24). Lineages were not simply elite or non-elite but rather richly textured with internal variation in social status, wealth, and relationship to the common ancestor.

Vogt (1969) argues that if lineage was as fundamental for the ancient Maya of all socio-economic levels as in modern Zinacantan (and not reserved for only the most upper, ruling, or aristocratic lineages) then lineage is a powerful tool that can be used to infer ancient Maya social structure. Vogt extends his analysis to draw analogies from his ethnographic study to that of the ancient Maya (**Table 11**) stating,

> "We can, I think, make certain inferences concerning prehistoric Maya social structure. First, the house groups described by archaeologists were probably patrilocal extended families living around courtyards. These units would have been composed of a man and his married sons who cooperated in agricultural work; their wives would be imported from other lineages living nearby. We can also infer that groups of these extended families lived together in small clusters, which were localized patrilineages that controlled and transmitted rights to land. In turn, the localized lineages were probably grouped into larger units, which one might call patriclans or phratries that probably controlled and transmitted rights to important waterholes, cenotes, or other sources of water. Finally a series of the patriclans would have shared a ceremonial center with pyramids" (1969:592).

Vogt may be correct in his analogies, given that his observations and archaeological correlates have been considered by researchers studying the Maya (e.g. Fash, 1991; Gillespie, 2000a,b,c; Joyce, 2000; McAnany, 1995; Smith, 2011), but direct application of the historical present on the Maya past must be done with caution.

Table 11: Classic Maya and Zinacanteco settlement pattern comparison (Vogt, 1969, T.15)

Vogt's ancient Maya correlation	=	Vogt's description of Zinacantan Tzotzil Maya	=	My correlation for the Copan Maya	=	Smith (2011) correlation for ancient Maya
House Group	=	Patrilocal family in fenced house (Household)	=	Domicile (Structure)	=	-
Cluster	=	Multi-family patrilineage/clan (*SNA*)	=	Extended family or lineage (Patio)	=	Group of households in close proximity
Cluster Group	=	Group living around a single waterhole (Waterhole Group)	=	Multiple distinct extended families (Architectural Group)	=	Classic Maya house clusters that maintain a shrine
Hamlet with Minor Ceremonial Center	=	Multiple Waterhole Groups (Hamlet)	=	Multiple patio groups (Neighborhood)	=	Collection of house clusters
Major Ceremonial Center	=	Zinacantan Center	=	Copan Acropolis and Territories (Ceremonial Center)	=	-

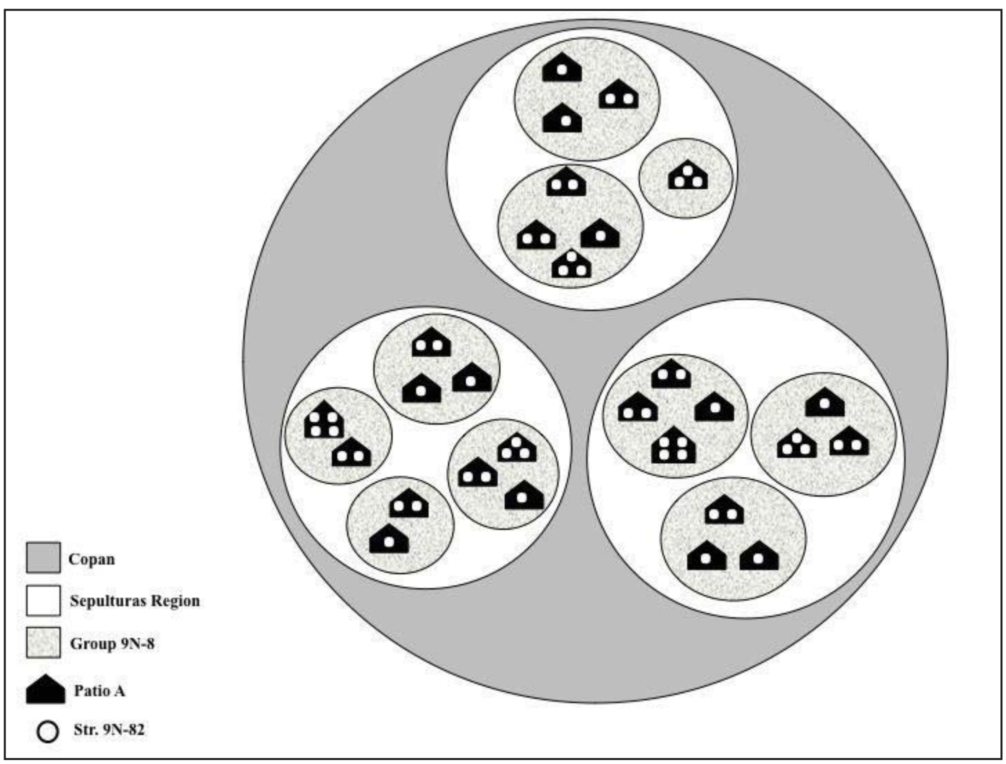

Figure 40: Analog of Zinacantan patterns to Copan architectural groups

In summary, the examples from the past and contemporary Maya display some variety depending on region, space, and time in terms of the role of kinship in the type of social organization. If the model described by Vogt (1969) and in **Table 11** were applied directly to Group 9N-8 Patio A it would pattern as shown in **Figure 40**. The differences and similarities between the Chan Kom and the Zinacantan Maya have provided a context within which the ancient populations can be better understood. This section has shown the centrality and importance of kinship in Maya social organization (e.g. Gillespie, 2000a,b,c; McAnany, 1995).

C. Kinship and Residence in Models of Maya Social Organization

C1. The neighborhood

As was discussed above, the neighborhood is a central component in reconstructing the past at Maya sites and is central to testing models of house and lineage structure. The multi-faceted nature of prehistoric social organization has created a complex problem for archaeologists with recent work focusing on a smaller unit of analysis of the society, the neighborhood (Smith, 2010, 2011). Neighborhoods hold spatial and social significance for their residents (Smith, 2010), such that several aspects of social identity, kin affiliation, class, or occupation may be tied to one's neighborhood (Becker, 2004; Gillespie, 2000c; Joyce, 2000). This has been most clearly demonstrated at the urban center of Teotihuacan (Clayton, 2005; Cowgill et al., 1984; Cowgill, 1997; Widmer and Storey, 1993), where archaeological evidence shows that individuals were residing in clearly delineated neighborhoods based on their association with others in that neighborhood. This has been investigated through the analysis of human skeletal remains at Teotihuacan, where neighborhood residents were associated through mortuary ritual, place of origin, and kinship (Storey, 1991; White et al., 2001; Widmer and Storey, 1993).

C2. Lineage and the house for the ancient Maya

As the cross-cultural ethnographic examples have shown, kinship often centers on lineages and descent groups but it remains difficult to operationalize models to systematically study social organization. Such ethnographic approaches to understanding archaeological evidence remain challenging and may offer little (e.g. Binford 1968:13) or a great deal depending on how well contextualized those interpretations are (Gillespie, 2007). The ethnographic concept of the house simultaneously refers to residence and a social unit and provides a useful framework to explore the nature of social groups within physical contexts. In the case of the house and lineage models that are the foci of this research, a house can represent a social group (Lévi-Strauss, 1969, 1982, 1987), lineage (Barraud, 1979 in Gillespie, 2007), or kinship and co-residential units (Gillespie 2000a, b, 2007; Helms, 1998) and varies cross-culturally.

Gillespie (2000a,b,c, 2001, 2002, 2007), recognizes that ancient Maya kinship likely had a form of lineage organziation but argues that these lineages should now instead be viewed as social houses. The house is defined here as a deeply rooted organized social unit wherein relationships of consanguinity (related by descent) and affinity, real or fictive, are used to legitimate coherence and perpetuity (e.g., Gillespie, 2000a, 2007; Lévi-Strauss, 1982, 1987). This nuanced perspective of social organization replaces the perceived requisites of membership of co-residence and consanguineal relationships as described by Vogt (1969) with a broader and more inclusive social house (e.g. Gillespie, 2007; Hendon, 2007).

In the house model, kinship and co-residence are then seen not as requirements but rather strategies that can maintain house identity, economic autonomy, and political power of a social group in a dynamic urban environment (Gillespie, 2000a, 2007). While residence and blood kinship would be foundational to a house, they would not necessarily be mandatory for all members. Instead, a broader more inclusive social house is capable of changing with the social and political climate. Individuals may be included, or even recruited, into a house depending on the needs of that house at a particular time and their presence, apart from any consanguineal relationship, contributed to the perpetuity of house identity. The presence of recruited, adopted, or fictive kin suggests a flexible social structure that is strategic and responsive to sociopolitical tensions and transformations (e.g. Connelly, 1962). The continuation of the social house would be of paramount importance and could supersede structural rules related to residence or marriage that would exclude outsiders (e.g. Vogt, 1969).

These houses can be maintained with ties to a particular territory or space, but they are mainly social entities that serve as loci for daily activities from which meaning and identities were constituted (Becker, 2004; Bourdieu, 1973; Earle, 1986; Gillespie, 2000c, 2007; Hendon, 1999, 2007; Lok, 1987).They are maintained anywhere from two or three generations to several hundred years, as was the case at Copan (see Fash, 1992; Hendon, 1991). As highlighted in Chapters 2 and 3, Copaneco Maya neighborhoods have been identified archaeologically through material culture and spatial analysis (Andrews and Fash, 1992; Fash, 1983, 2001; Fash and Sharer, 1991; Freter, 2004; Haviland, 1968;

Hendon, 1991; Maca 2002; Robin, 2003; Wilk, 1988). In the greater Copan Valley, Wisdom (1940) documented that for the Ch'orti Maya the orientation and boundaries of the physical house mimic both the cosmic and human form;it is imbued with a soul or *ch'ulel* (Nash, 1970; Vogt, 1969) through ties to the resident's ancestors. Additionally, Wisdom observed that the Ch'orti Maya maintained family burial plots within their individual neighborhoods or physical houses thus curating links to their ancestors. This practice allowed the souls to be passed to succeeding generations within that house (Thompson, 1930; Vogt, 1969; Watanabe, 1990) maintaining the physical and social house (Gillespie, 2007; Waterson, 2000). Intra-house burial is a form of ancestor veneration and curation that is bound in the social and historical memory of the house over generations (Gillespie, 2000b). The house does not need to be occupied by the living or function as a domestic structure for the burial to hold power; the ancestor may be ever present marking ritual power, titles, or the place of origin of all house members (Waterson, 1995; Kirch, 2000). The practice of burying the dead within the physical house also provides the framework necessary to research the internal social organization of ancient Maya neighborhoods from human skeletal remains (McAnany et al., 1999) as those buried within the spatial limits of the house are believed to be members of and closely associated with that house.

D. Summary

The very concept of social organization and the models that are used to understand the form and function of ancient and modern societies are exceedingly complex. Social groups are variable; they may regularly recruit new members, exclude outsiders, form based on a perceived ancestral history, be maintained through biological kinship relationships, and transform depending on the sociopolitical climate and over time (Boon, 1990; Gillespie, 2007; Joyce 2004; Waterson, 1995). There are limitations with even the most nuanced approaches. This chapter has summarized the great variety of constructions of social organization from a cross-cultural perspective. These examples contextualize the case of the ancient Maya and outline how to approach the problem of social organization by engaging with those that directly participated in the social structure of ancient Copan through human skeletal remains. The social theory highlighted in this chapter, integrated with the archaeological data and methods described in Chapter 3 can approach the complexities inherent in kinship systems and social organization in a new way by empirically testing the affiliations within social and residential groups.

CHAPTER 5: MIGRATION IN ANCIENT POPULATIONS

What is migration? The answer would seem to be straightforward – moving from a starting point to an ending point or crossing a sociopolitical boundary – but the realities of migration are far more complex. Migration can mean movement of an entire population displaced against their will by social strife, forced migration in cases of slavery or captivity, residential relocation to a new city or state for a career or economic gains, permanent or temporary relocations, chain migration, circular or seasonal migration (Anthony, 1990; Geisen, 2004; Hoerder, 2004; Tilly, 1978). Each type of movement impacts communities, individuals, natural resources, and social, political, and religious systems. Migration occurs throughout history, in each country, on every continent, and within every culture. Observations of migration in the modern era emphasize how polarizing migration can be within a social context; it has come to the forefront of political discourse, particularly in the United States, where legislation defines what it means to *belong* or *to be* American or who is included in or excluded from social programs. Migration does not occur in a vacuum. It is individual and societal, personal and political, simple and complex. Migration is defined here as a "one-way relocation to a different environment by at least one individual" (Cabana and Clark, 2011:5) while also considering that it can occur at the local, global, temporary, or permanent level and is influenced by one's life history and life-course (e.g. Knudson, 2011).

This chapter begins by introducing the importance of migration as a concept in anthropological discourse. Bioarchaeology has incorporated archaeological chemistry to explore this concept, and this chapter presents a discussion of migration in various global regions in the past using biogeochemical data. In this section, Mesoamerica and the ancient Maya areas are discussed in detail from both a methodological and theoretical standpoint. Migration has also been explored with physical anthropological data on peopling of the New World, mitochondrial DNA and biological distance which is presented in Chapter 6. Each of these contributions will be briefly represented here. The correlation of radiogenic strontium values with migration in the past is examined within the framework of strontium geochemistry. Finally, baseline data for the Maya and central Honduran regions will be explained in relation to the biogeochemical data in this study. The baseline for the Maya region is drawn from published data and the newly collected Honduran baseline is presented for the first time.

A. Movement, Migration, and Residence

Early ethnographers detailed the traditions, languages, material goods, and territories that defined and structured cultural groups in Africa and Polynesia (Evans-Pritchard, 1940; Firth, 1936; Fortes, 1945; Gluckman, 1955; Radcliffe-Brown, 1952; Rivers, 1914). With the descriptions of society, immigration became part of the discourse as foreign peoples brought cultural change (Thomas and Znaniecki, 1927; Richards, 1939; Wirth, 1928; van Velsen, 1960) manifested by foreign goods becoming part of the local economy, diversification of languages and cultural traditions, and the presence of non-local temporary or permanent migrants. Migration is a demographic process that affects social organization and the basic aspects of interaction and relationships in a society, including resource availability, residential decisions, marriage patterns, access to wealth or prestige, and identity. Interpretations of material culture suggest that non-local artifacts represent traded prestige goods or were the property of foreign peoples who brought change to the social structure and created inconsistencies or anomalous traits in the archaeological record (Adams et al., 1978; Anthony, 1997; Cameron, 1994; Chapman, 1992; Childe, 1951; Rouse, 1986: Snow, 1995). However, material culture is an indirect means to examine and identify mobility as goods may arrive independently from people through trade, exchange, or other indirect means that are independent of the manufacturer or place of origin. A level of esoteric knowledge or meaning and power may be imbued in objects possessed by migrants (e.g. Helms, 1988) and archaeologists have recognized the importance of foreign objects or people in archaeological context (Rouse, 1986).

In archaeology, models may ignore population movement (Dewar, 2000; Montgomery, 2002) or underestimate the level of migration in a population (Curet, 2005; Snow, 1995; Storey, 1992). Researchers, however, have recently considered the inherent complexity of migration in its many forms (Adams et al. 1978; Anthony 1997; Chapman, 1997; Freiwald, 2011; Knudson, 2004) and have discussed migration in ancient contexts based on the predictable forms of migration (Anthony, 1997; Tilly, 1978; Smith, 2014).

The difficulty in interpreting migration from a material cultural perspective is that the presence of artifacts can be evidence of a great many scenarios: a foreign population residing in an ethnic enclave traded goods, locally-made goods in a foreign style, and/or individual temporary, long-term, or permanent migration (Haury, 1958; Rouse, 1986; Spence, 1996). Individual or population movement is driven by any number of factors, including climate change and subsistence strategies (Chen et al., 2008), imperialism and colonialism (Townsend, 2000; Tung, 2008), (re-)settlement or community fissioning (Anderson and Gillam, 2000; Cameron, 1995; Killgrove, 2010; Snow, 1995; Varien, 1999), socio-economic-political maneuvering (Blitz, 1999; Hoerder, 2004; Pauketat, 2003) and slavery, imprisonment, or victims of sacrifice (Knudson et al., 2004; Price et al., 2006, 2012; Webster, 2000). Archaeological context and data from physical anthropology provides the means by which migration can be identified for an individual, but the meaning for that person remains enigmatic. The social implication of the migration event(s) on individual identity is far reaching: Did the migrant wish to return to a homeland? Was (s)he part of the society? Was (s)he considered a permanent resident? What was her/his role within the community? (Ek, 2006; Freiwald, 2011; Helms, 1988; Krejci, 1995; McAnany, 1995; Weiss-Krejci, 2006).

B. Identifying Migration

Studies of radiogenic strontium isotopes from human skeletal remains have been widely used by bioarchaeologists in these and other regions and provide evidence of various migration patterns by comparing isotope values of the tooth enamel and bone with those of the burial location and potential non-local places of origin (Bentley et al., 2003, 2007; Buikstra et al., 2004; Buzon et al., 2007; Ezzo et al., 1997; Freiwald, 2011; Killgrove, 2010; Knudson, 2004, 2011; Price et al., 1996, 2000, 2002, 2010; Spence, 1996; White et al., 2007; Wright et al., 2005). Migration can also be identified using trace elements (Burton et al., 1999, 2003), sulphur (Richards et al., 2001; Vika, 2009), oxygen isotopes (Bryant and Froelich, 1996; Cerling and Sharp, 1996; Dupras et al., 2001; Evans et al., 2002; Hoogewerff et al., 2001; Sponheimer and Lee-Thorp, 1999; White et al., 2001; Wright and Schwarcz, 1998) and lead isotopes (Bentley, 2001; Knudson et al. 2001; Turner et al., 2009).

At the scale of regional bioarchaeological studies, identification of human migration episodes from oxygen and radiogenic strontium isotope analysis exists for North America (Ezzo et al., 1997; Price et al., 1994b), Africa (Shewan, 2004), the Middle East (Perry et al., 2008), China (Chen et al., 2008), Mesoamerica (Buikstra et al., 2004; Hodell et al., 2004; Freiwald, 2011; Price et al., 2000; White et al., 2004, 2007; Wright, 2005), and South America (Andrushko et al., 2008; Knudson, 2004; Knudson and Buikstra, 2007; Knudson and Price, 2007; Knudson et al., 2004, 2005; Tung and Knudson, 2011; Turner et al., 2009; Slovak et al., 2009).

Temporally, the use of radiogenic strontium isotope research is now widely applied and has been employed to understand the Colonial period (Cox and Sealy, 1997; Price et al., 2012), hominin habitats (Britton et al., 2011; Horn et al., 1994; Richards et al., 2008; Sillen et al., 1995, 1998), the emergence of sedentism during the Neolithic period (Montgomery et al., 2014), and the Bronze age (Evans et al., 2006; Price et al., 2004), seasonality and faunal migrations (Balasse et al., 2002, 2003; Britton et al., 2009, 2011; Hoppe et al., 1999; Pelligrini et al., 2008; Stephan et al., 2012) individual life histories from the past (Buikstra et al., 2004; Hoogewerff et al., 2001; Müller et al., 2003; Price et al., 2010), and even modern human birth places in forensic contexts (Aggarwal et al., 2008; Juarez, 2008; Montgomery and Evans, 2006).

B1. Regional applications of archaeological chemistry in (bio)archaeology

B1a. Europe and China

Migration studies have become increasingly prominent in European archaeological and bioanthropological studies. In the past decade, radiogenic isotope analysis has been widely applied in studies of faunal and human migration, seasonal migrations, climate change, and to assess life in the Neolithic and Bronze Age (Bentley et al., 2003a, Giblin et al., 2013; Grupe et al., 1997; Haak et al., 2008; Haverkort et al., 2008; Montgomery et al., 2014; Price et al., 2001, 2004; Schweissing and Grupe, 2003). Further, isotopic studies address the spread of culture in Neolithic Europe which has been attributed to migration, colonization, and diffusion (Anthony, 1990; 1997; Chapman and Hamerow, 1997), and the distribution of artifact assemblages are attributed to a shift in social structure where mobility became common. The degree or ubiquity of mobility as it relates to the transition to farming and sedentary life is also a key component of European migration studies.

Radiogenic strontium and oxygen isotope analysis of Neolithic cemeteries have been applied to assess the level of in-migration to these early settlements. Price and colleagues (2001, 2004) evaluated the cemeteries of the Linearbandkeramik culture (LBK) (5400-4900 BC) and found evidence of migration to the region by both males and females. This pattern of mobility was not limited to adults during this period; the Neolithic cemetery from Dorset, England (5500-5100 BP) revealed that children regularly migrated over short and long distances (Montgomery et al., 2000). Price and colleagues suggest that movement was central to the spread of agriculture and associated ideas during the Neolithic period.

In a subsequent analysis of the late Neolithic Bell Beaker culture (2800-1800 BC) Price and colleagues (2005) employed radiogenic strontium isotope analysis to evaluate the curious distribution of the Bell Beaker vessel type that is recovered in no discernable arrangement from Scandinavia, Spain, France, Portugal, Germany, Hungary, Slovakia, Austria, British Isles and Ireland. Childe (1950) attributed such objects to a variety of inherently mobile groups (e.g. traders, warriors, missionaries) while others identified them to be high-status imports (Harrison, 1980; Engelhardt, 1991). Price and colleagues (2005) determined that residential mobility was significant and common in Europe between 2500-2000 BC, especially among females in the Bell Beaker culture.

Likewise, migration in Neolithic China (7000-4000 BP) was common across all age and sex categories but primarily driven by environmental conditions that regularly changed sea levels and caused flooding of the large delta plains of the Yellow and Yangtze Rivers (Stanley and Chen, 1996; Chen et al., 2008). Migration was a circular pattern of settlement and abandonment with groups regularly returning to the periodically dry river deltas as their livelihoods depended upon fishing, hunting, wet-rice cultivation, and rain-fed agriculture (Chen et al., 2008; Li et al., 2007). No singular model of movement or migration is apparent for the Neolithic period. Migration occurred across age and sex demographics and a significant proportion of sample populations migrated at least once during life within the European and Asian continents (Bentley et al., 2003a, 2007; Giblin, 2011; Giblin et al., 2013; Grupe et al., 1997; Price et al., 2001, 2004).

B1b. South America

In the past two decades, archaeological studies of South America have made important strides in the identification of human migration and diaspora through analyses of material culture and architecture (Blom, 1999; Goldstein, 2005; Janusek, 2004; Owen, 2005; Varela and Cocilovo, 2000) and bioarchaeological approaches that engaged with archaeological chemistry have elucidated long-standing questions of migration previously only addressed through material culture.

The Lake Titicaca basin on the border of Peru and Bolivia, home to the major center of Tiwanaku, was a nexus of migrants as a result of state integration strategies of diaspora communities (Janusek, 2004). Material culture supports this assertion (Blom, 1999; Tung, 2008). Skeletal evidence, primarily forms of cranial modification, suggested that ethnicity and regional affiliation were central to individual identity (Blom, 1999, 2005; Torres-Rouff, 2003). Knudson (2004, 2008) addressed these (bio)archaeological questions at the Middle Horizon (AD 500-1000) site of San Pedro de Atacama by sampling burials with Tiwanaku artifacts for radiogenic strontium isotope analysis to assess residential mobility. She concluded that none of the non-local individuals were from the Tiwanaku heartland, suggesting that San Pedro de Atacama locals were adopting Tiwanaku artifacts and styles. Knudson and colleagues (2004) evaluated the (possible) Tiwanaku colony of Chen Chen and found Tiwanaku immigrants at the site, consistent with the Tiwanaku-style artifacts from the site. Knudson and colleagues have been the primary contributors to isotopic studies in the Andes and have embraced a variety of cultural questions that focus attention to residential mobility (Knudson and Buikstra, 2007; Knudson and Tung, 2011) but extend isotope research to topics like mummies (Knudson et al., 2005), captives (Knudson and Tung, 2007; Tung and Knudson, 2011), life history of travelers (Knudson et al., 2012), and refinement and innovation in analytical technique (Knudson et al., 2010).

B2. Classic period Maya migration (AD 250-900)

B2a. Migration among Maya sites

Archaeological characterizations of space and place naturally focus on the built environment as representing hierarchical political structure or performance (Andrews and Bill, 2005; Houston and Stuart, 2001; Inomata et al., 2001, 2006; Martin, 2001; Webster et al., 1998), metaphor or symbolic meaning (Ashmore, 1991; Ashmore and Sabloff, 2002; Schele, 1981), or community or lineage construction and maintenance (Ashmore, 2007; Canuto, 2002; Hendon, 2003, 2009, 2012; Marcus, 2003; Webster and Sanders, 2001). For example, the presence of *talud-tablero* faces on Early Classic Maya architecture is often cited as evidence of Teotihuacan influence or immigrants to Maya cities like Kaminaljuyú, Copan, Dzibilchaltún, and Tikal that affected the emergence of the Early Classic periods at these major centers (Andrews, 1979; Braswell, 2003; Fierer-Donaldson, 2012; Sanders and Michels, 1977; Sharer, 2003). Architectural changes at Central Lowland sites like Seibal, Cancuen, Calakmul, and in Belize are influenced by Yucatecan styles and may be the result of migrating peoples either by in-migration or by circular migration (Demarest, 2006; Folan, 1992; McAnany, 2004; Schele, 1998; Tourtellot, 1993).

In the Southern Highlands at Copan, researchers have emphasized the role of non-local and ethnically non-Maya individuals and groups residing within the city in distinct neighborhoods like those at Teotihuacán (Canuto and Fash, 2004; Gerstle, 1987, 1988). The importance of the Teotihuacán-Copan affiliation began early in the dynastic history of Copan (Coggins, 1988; Stuart, 2004). The celebrated founder of the dynasty, K'inich Y'ax K'uk' Mo', was the center of a so-called ancestor cult that dominated texts on

Copan's monuments throughout the Classic period (Schele, 1992; Stuart, 2004, 2005). He is frequently depicted in Teotihuacán style dress and his tomb was richly furnished with vessels in Teotihuacán style. This extended to the Hunal structure, in which the tomb of K'inich Y'ax K'uk' Mo' was located, which was constructed in a unique central Mexican talud-tablero style and is the only example of this construction type at Copan (Sharer et al., 2005). However, the case of K'inich Y'ax K'uk' Mo' highlights how material culture and architecture are not necessarily accurate indicators of one's place of origin. Oxygen and radiogenic strontium isotope ratios (written as $\delta^{18}O$ and $^{87}Sr/^{86}Sr$, respectively) indicate an origin in the central Petén region with his earliest childhood in the region of the Maya Mountains or in a location with a similar radiogenic strontium isotope value (Buikstra et al., 2004; Price et al., 2010).

Throughout the Maya region there is evidence for elite or royal migration[9]. Like the example of K'inich Y'ax Ku'k Mo', epigraphic evidence suggests that the Early Classic king of Tikal in the Central Lowlands, Yax Nuun Ayiin, was foreign born to a Teotihuacán ruler (Martin and Grube, 2000; Stuart, 2000) and his grave furniture included vessels with Central Mexican motifs (Coggins, 1975). Radiogenic strontium isotope ratios derived from Yax Nuun Ayiin illustrate a local origin within the Tikal region (Wright, 2005a; Price et al., 2008). In the case of Palenque, located at the northern margin of the Southern Highlands, the Classic period ruler Pakal is said to have originated from Palenque and the so-called Red Queen, believed to be his wife Lady Ix Tz'akbu Ajaw, came from a different unidentified site in the region (Schele and

[9] All tombs mentioned have been linked to rulers known from the inscriptions, using multiple lines of evidence but, as always is the case, these identifications are only as sound as the linking arguments.

Mathews, 1991). Price and colleagues (2007) obtained $^{87}Sr/^{86}Sr$ isotope ratios for Pakal and the Red Queen that suggest local origin consistent with the epigraphic evidence. Other instances of short-term migration, travel, fostering, or relocation are documented for elites and royals throughout the Maya region (Culbert, 1991; Martin and Grube, 2000; Schele and Matthews, 1991) especially from Tikal to Dos Pilas (Houston and Inomata, 2001; Martin and Grube, 2000), Calakmul to La Corona (Houston and Inomata, 2001; Martin, 2001), and El Palmar in southern Mexico to Copan and Calakmul (Tokovinine, personal communication, 2013; Tsukamoto, 2014). Epigraphic sources highlight that one's place of origin, be it birthplace or point of embarkation, was central to the life histories of elites and royals. Isotopic data provide a means by which to interpret or falsify origin stories.

Movement regularly occurred among the non-royal segment of society (Freiwald, 2011; Mitchell, 2006; Price et al. 2008, 2010; Wright, 2005; Wright et al., 2009, 2010). Non-local values are often found in 10-15% of the population and in at least one individual in smaller samples. Freiwald (2011) demonstrated that 23% (n=34/143) of Belize River Valley populations from a total of 19 different sites relocated at least once during life in the Classic period, and that migrants were of all ages, and both sexes, and stem from elite and commoner statuses, and rural and urban settlements. At the site of Minanha in Belize, Sutinen (2014) identified a 25% (n=5/20) immigration rate from valleys within 10-20 km during the 1500-year occupation of the site. More broadly within the entire Maya area, regional and intra-site migration has been identified through studies of biological affinity (Aubry, 2009; Cucina et al., 2004; Scherer 2004, 2007; Wrobel, 2003). These small or large-scale episodes of population movement influenced sociopolitical structure and are coterminous with major cultural changes between the Early and Late Classic periods.

B2b. The discourse of distance

The definition of space and place, the sense of belonging to a social group, and identity are complex ideas in the models of ancient and contemporary Maya society. The Classic period Maya, especially the royal segment of society, identified with locations associated with gods or ancestors in particular places, communities, or sacred spaces (Martin, 2000) but may not have conceived of these regions as domains (Tokovinine, 2008). Place names, however, are known for archaeological sites or their components, dynasties, particular geographies, or other features in the natural landscape (Marcus, 1976; Tokovinine, 2008). While landmarks or locations were attributed to certain groups or a 'house of' a particular patriline among the contemporary Zinacanan Maya (Vogt, 1969), these were likely not territorial (e.g. Gillespie, 2007). The meaning of the space and boundaries is complex but there is building epigraphic, biological, and biogeochemical evidence that allows for the investigation of migration in the Maya region and its effect on social and political systems.

The narrative of distance in ancient Maya texts suggests the importance of place of origin, travel, and knowledge of the foreign or unknown. The interchange of goods or the presence of individuals from distant lands can link the known world of those remaining within their homeland to the outside or unknown. The identification of a person or object as foreign or from a distant land imbues that individual or object with a unique symbolically significant identity, as was the case of Copan's dynastic founder, Y'ax' K'uk Mo'. In the case of the individual, the intangible knowledge of foreign outside lands is a specialized knowledge that is limited to the few with the means and ability to transverse the landscape. A person from a geographical distance far from the known center is farther away from the perceived *axis mundi* and thus closer to the different and the unknown (Helms 1988:4). As such, distance is one type of esoteric knowledge due to its unknown nature and may be physically or spiritually dangerous because it requires extra effort and special expertise to experience (Helms 1988:81).

B2c. The current study

At Copan, people were living in dispersed settlements during the Early Classic period (Canuto, 2002; Hall and Viel, 2004). Sharer and colleagues (2004) interpreted a rapid increase in population density between AD 200 and 400 as a mass in-migration of peoples to the Copan Valley. These Early Classic migrants are suggested to have come from the Petén (Longyear, 1952), Kaminaljuyú (Sharer, 1974; Valdes and Wright, 2004), and the Ch'olan Maya region (Fash, 2001). The first discussion of migration into Copan was by Longyear (1952) as a result of excavation of skeletal remains during a testing program by the Carnegie Institution. He hypothesized that the large robust bones he recovered were part of an Early Classic (c.a. AD 400) immigrant population that replaced the more gracile, short individuals that had previously occupied the Copan Valley. In the Sepulturas neighborhood of Copan, archaeologists have proposed that non-Maya peoples occupied certain patios, especially Patio K which "was occupied by foreigners and had non-residential buildings. The first is indicated by imported ceramics and [the] second by the architecture" (Gerstle, 1987, 1990:158). Rhoads (2002) investigated dental metric traits to test if there was a Lenca population at Copan but found general heterogeneity at the site level. The question posed by those working in Group 9N-8 was thoughtful and interesting, but it was difficult to empirically address migration with methodologies available at that time. Today with radiogenic strontium isotopes, migration can be sourced from any number of locations to understand social networks, migration episodes, and in-migration in great specificity.

This study uses radiogenic strontium isotope ($^{87}Sr/^{86}Sr$) analysis of human remains from Copan to assess the social organization of a city located at the Maya frontier. The focus on migration during the Late Classic period (AD 600-820) is similar to studies that have investigated in-migration to large centers, to rural residential communities, as well as reconstruction of life histories and foreign interaction with non-Maya groups (Ashmore, 2007; Buikstra et al., 2004; Canuto and Fash, 2004; Hendon, 2007; Freiwald, 2011; Price et al., 2010). The presence of non-local artifacts and architectural styles suggests that Copan had ethnically non-Maya groups from central Honduras and elsewhere (Aoyama, 2001; Hendon, 1994, 2004, 2007; Gerstle, 1987, 1988; Rhoads, 2002). This pattern may be unique among major Maya centers, but ethnic enclaves have been observed elsewhere in Mesoamerica (Cowgill, 2003; Rattray, 1989; Spence, 1996) where skeletal remains suggest high levels of in-migration (Price et al., 2010). Movement into these regions had a marked effect on social form and tradition and may have been driven by a desire to join an enclave or resulted from foreign recruitment for military or political gain (Clayton, 2013; Manzanilla, 2012; Price et al., 2000; Storey, 1992; White et al., 2004, 2007; Widmer and Storey, 1993).

C. Correlating Radiogenic Strontium Values and Migration

Biogeochemical analysis, focusing on radiogenic strontium isotopes from human remains, can identify migration using the human skeleton (Ericson, 1985; Freiwald, 2011; Knudson, 2004; Knudson et al., 2004, 2007; Price et al., 1994a,b, 2000, 2008, 2010; Wright, 2005). The incorporation of radiogenic strontium isotopic research into studies of kinship and social organization can elucidate the relationships within a residential kin group on the site-specific and regional scales. In this research, it identifies the geographic location from which neighborhood members were included. Further, the incorporation of radiogenic strontium data will test if the assumption of patrilocality is supported, identify if non-local residents or 'foreign' individuals were incorporated into social houses, and explore if individuals who are interred with non-local goods are of local origin.

C1. Strontium geochemistry

Strontium is composed of four naturally occurring isotopes (^{84}Sr, ^{86}Sr, ^{87}Sr, and ^{88}Sr) that vary in a given ecosystem based on the composition of the underlying bedrock (Bentley 2006; Faure 1986; Grupe et al., 1997). The isotopes of ^{84}Sr, ^{86}Sr, and ^{88}Sr are stable while ^{87}Sr is radiogenic and stable forming from the decay of ^{87}Rb with a half-life of 48.8 Giga Anum (48.8 x 10^9 years or 48.8 bya) (Dickin, 1997; Faure, 1991). Knudson and colleagues (2010) have provided clarity in strontium isotope terminology: (1) $^{87}Sr/^{86}Sr$ isotopes utilized for paleomobility studies are based in radioactive decay (^{87}Rb to ^{87}Sr) and should be referred to as 'radiogenic strontium isotopes', (2) $^{88}Sr/^{86}Sr$ isotopes utilized in paleodietary studies are based in mass-dependent fractionation (^{84}Sr, ^{86}Sr, ^{88}Sr) and should be referred to as 'stable strontium isotopes', and (3) the distinction of stable and radiogenic strontium further differentiate these isotopes from radioactive ^{90}Sr and radioisotope ^{89}Sr.

Radiogenic strontium isotopic signatures reflect the geology of any specific region and remain constant relative to the length of episodic changes in geological history (Sillen et al. 1989) though ^{86}Sr can be subject to fractionation as a result of temperature or the chemical and physical properties of the isotope (Knudson et al., 2010). In general, older geological substrates (>100 million years of age) have higher Rb/Sr content and exhibit radiogenic strontium isotope values that are ≥0.710 and young geological units (<1-10 million years of age) have less Rb/Sr content and radiogenic strontium isotope values that are ≤0.704 (Bentley, 2006).

Ericson (1985; see also Krueger, 1985) first advocated the use of bone chemistry, specifically radiogenic strontium isotopes, to study human migration. The isotopic ratios in human bone and teeth reflect the source of food and water in the diet and the ratio of the radiogenic isotopes of $^{87}Sr/^{86}Sr$ vary according to the underlying geology of a region as determined by geological age, elemental composition in bedrock, and overall geological variability. Given that the radiogenic strontium isotope signatures have remained the same for tens of thousands of years, all organisms subsisting on the ecosystem of a particular geological zone will reflect the same radiogenic strontium isotope values ($^{87}Sr/^{86}Sr$).

Radiogenic and stable isotopes (^{87}Sr and ^{86}Sr, respectively) of strontium are useful for studies of archaeological human migration because they (1) are incorporated into bone and dental enamel during life, (2) have no known biological function in the human body and, (3) are not metabolically regulated (Ezzo, 1994). Dental enamel is 96%

inorganic and composed of hydroxyapatite which is an open lattice of calcium, phosphorus and hydroxide ($Ca_{10}(PO_4)_6(OH)_2$). Strontium and calcium have very similar atomic radii, and strontium can substitute for calcium (Ca^{2+} ions) in the hydroxyapatite mineral matrix during tooth development (Carr et al., 1962; Hodges et al., 1950; Kulp and Schulert, 1962; Likins et al., 1960; Nelson et al., 1986; Schroeder et al., 1972). Since tooth enamel does not remodel after formation, radiogenic strontium isotope ratios in teeth reflect different periods of childhood. Radiogenic strontium isotope values then have the potential to reflect an individual's place of residence during tooth formation assuming that person consumed strontium from calcium-rich food grown or raised in the same geological zone in which they lived (Ericson, 1985, 1989; Price et al., 1994a; Sealy et al., 1991; Sillen et al., 1989). Geological baseline data of radiogenic strontium isotope isotopic ratios exist for much of Mesoamerica and have been used to infer residence from archaeological contexts (Hodell et al., 2004; Feiwald, 2010; Freiwald et al., n.d.; Miller and Freiwald, n.d.; Price et al., 2010).

To determine the age at which migration occurred, the development of the tooth crown must be considered as it occurs in stages throughout in utero development and childhood (Hillson, 1996). Enamel formation of the tooth crown begins in utero (Hillson, 1996) and continues throughout childhood. The first permanent molar is the earliest adult tooth to develop. It begins during fetal development at approximately 30 weeks in utero with crown completion at approximately 3 years of age and root completion between 9 and 12 years of age. (Hillson, 1986, 1996). Incisors are the next teeth to form; crowns develop 3 to 4 months to 4 or 5 years of age with root completion by age 10 (Hillson, 1996). Crown development of adult canines begins at 4 to 5 months and is completed by

6 to 7 years of age with root completion at age 12 (Hillson, 1996). Premolar and second molar crowns form from approximately 3 to 7 years of age with root completion by age 15 (Hillson, 1996). The third molar is the final tooth crown to develop from 9 to 12 years of age and root completion occurs by age 21 (Hillson, 1996).

At the microscopic level, dental enamel grows in prismatic cross striations in diurnal increments at a rate of 4-4.5µm/day and Striae of Retzius in weekly to bi-weekly periods (Dean, 2000; Dean and Beynon, 1991; Fitzgerald, 1998; Hillson, 1986, 1996). As such, the incremental growth rates of dental enamel affect the age range reflected in a sample based on the location and surface from which samples were taken. A sample of 15-20 mg of enamel was required for analysis and this quantity represents growth that occurred over a period of months or years. In this study, samples for radiogenic isotope analysis were extracted from dental enamel of developmentally adult teeth of subadults and adults from the buccal (cheek) surface of premolars or molars and lingual (lip) surface of incisors and canines.

C2. Diagenesis

Sample contamination is always of concern when analyzing archaeological human remains because the goal of any isotopic analysis is to recover and analyze isotopic signatures from biogenic rather than diagenetic isotopic ratios (Nelson et al., 1986). Diagenesis can be caused by post-depositional chemical and/or physical changes introduced through the burial environment by groundwater, acidic soils, high temperatures, or complex hydrology (Budd et al., 2000; Chiaradia et al., 2003; Lee-Thorp, 2002; Sillen et al., 1989). Tooth enamel is largely resistant to contamination, which is normally limited to superficial layers (Hillson, 2005; Kohn et al., 1999). The integrity of biogenic strontium in tooth enamel has been repeatedly validated (Chiardia et al., 2003; Hoppe et al., 2003; Koch et al., 1997, Lee-Thorp and Sponheimer, 2003). Biogenic samples will demonstrate a ratio of calcium to phosphorus (Ca/P) of approximately 2.1:1 and only miniscule concentrations of the elemental concentrations of uranium and neodymium; otherwise, diagenesis is suspected (Burton and Price, 2003; Edward and Benfer, 1993; Kohn et al., 1999; Price et al., 1994, 2002). In the current study, all samples exhibited appropriate Ca/P ratios.

C3. Copan diet and strontium

Unlike studies of stable strontium isotopes ($^{88}Sr/^{86}Sr$) of diet and trophic levels, those of radiogenic strontium isotopes ($^{87}Sr/^{86}Sr$) are interested, not in the diet itself, but rather the geologic sources from which an individual derived bioavailable strontium and calcium sources. Radiogenic strontium isotope ratios of human bone or teeth reflect the radiogenic strontium isotope signatures of the region where the strontium consumed during life was cultivated, not of the dietary resources themselves (Bentley, 2006; Burton and Price, 2003; Ezzo, 1994; Faure, 1991, 1986; Knudson et al., 2004; Pollard, 2007; Sillen et al., 1989). Radiogenic strontium isotope ratios ($^{87}Sr/^{86}Sr$) in human bones and teeth reflect the source of the foods consumed, especially those high in calcium that contribute to bone formation.

At Copan, dietary resources are derived from the large and ecologically diverse Copan Valley, which carries a unique radiogenic strontium value apparent in nearly all elements of the valley food web (Price et al., 2010). Generally, the ancient Maya diet consisted largely of plant sources such as maize, maize/honey gruel (*atole*), ayote, beans, tree fruits (palm, *ramón*, avocado, cacao), nuts (*coyol*), and root crops (manioc, yams), in addition to protein resources from monkeys, peccaries, armadillos, tapirs, birds, and dogs (Gonlin and Dixon, 2011; Lentz, 1991; Wright, 2006:89-92). Based on paleo-ethnobotanical data from Copan, Lentz (1991) argues that the Copan diet consisted largely of maize, beans, *ayote*, gourds, and tree fruit. The root crop manioc may have been a large component of the Copan diet despite its absence in the archaeological record (Gonlin and Dixon, 2011). Foods contain differing levels of bioavailable strontium and contribute unequal quantities of strontium based on their calcium content (Burton and Wright, 1995; Comar et al., 1957). Maize is very low in calcium and contributes little strontium unless it is treated with lime or ash, which can increase calcium (and strontium) content by 6-20 times compared to unprocessed corn (Burton and Wright, 1995; Wright, 1994). Meat, unless the bones are consumed, also contributes little strontium and calcium, though 1 g of fishmeal or whole anchovies contributes as much calcium as 500 g of meat (Burton and Wright, 1995). As Lentz (1991) highlighted, a major source of dietary strontium at Copan derived from beans, wild plants, and other cultigens, all of which are high in calcium, and thus strontium (Burton and Wright, 1995).

Wright (2005) suggested that ancient Maya radiogenic strontium values could be artificially raised by the consumption of 6.1 mg of imported coastal salt per day. However, Fenner and Wright (2010) argue that with a new predictive model, it appears that 9.2 g/day of salt would need to be consumed to affect radiogenic strontium values. This is well above the Tolerable Upper Intake Level of 3.8 g/day defined by the US Institute of Medicine. They suggest that agricultural laborers in the tropics may require more salt and could have consumed up to 8 g/day without any deleterious health effects, which was observed in the 1920s in the Yucatan (Fenner and Wright, 2010; see Redfield and Rojas, 1934).

Salt was primarily produced in coastal regions but inland salt production has been identified at Salinas de Los Nueve Cerros, a site at the transition of the Maya Highlands to Lowlands (Woodfill et al., 2014). The radiogenic strontium value for this geological region can range between 0.7071-0.7092. It is unknown what quantity of salt was imported to Copan and if the source was inland or coastal. Thus, the effect of salt on radiogenic strontium values identified for the Copan Region (0.7063-0.7074) is unknown at this time.

D. Baselines

Identifying immigrants and their potential homelands relies on establishing local baseline values for large regions. Traces of radiogenic strontium remaining in the enamel can reflect the geological zone in which the individual spent his/her youth. As such, a baseline of radiogenic strontium values of geological zones within the research area, with which to compare observed radiogenic strontium isotope values from Copan or other regions, is necessary for research on residence change. The geology of the Copan Valley was discussed in Chapter 2 but the diverse geology of Mesoamerica as it relates to the current study will be detailed further here.

D1. Accepted geological baselines for the Maya region

Copan exhibits radiogenic strontium isotope values of $^{87}Sr/^{86}Sr$ = 0.7063-0.7074 and consequently, studies have been used to provide good data from which to infer residence change at Copan and at other major Maya centers (e.g., Buikstra et al., 2004; Krueger, 1985; Miller et al., 2007; Price et al., 2008, 2010). T.D. Price and J.H. Burton at the Laboratory of Archaeological Chemistry at the University of Wisconsin Madison have refined the baseline map for Mesoamerica (**Figure 41**). Their database of Mesoamerican values is drawn from a variety of collaborative projects and integrated those of Hodell and colleagues (2004) and Krueger's (1985) early baseline data.

Hodell and coworkers (2004) identified five clusters of $^{87}Sr/^{86}Sr$ values for Mesoamerica (see **Figure 4**). The first contains Oligio-Mio-Pliocene deposits, and the sites in the northern or coastal portions of the Yucatan Peninsula (Dzibilchaltún, Chichén Itzá and Tulum) with $^{87}Sr/^{86}Sr$ values ranging from 0.7083 to 0.7099. The second region contains late Cretaceous deposits, and includes sites in the Northern, Central, and Southern Lowlands of the Maya region (Uaxactún, Tikal, Dos Pilas, Palenque, Cancuen, Seibal) and has radiogenic strontium isotope values from 0.7071 to 0.7082. The third region contains Tertiary and Quaternary Volcanic and Pleistocene deposits, and sites in the Southern Highlands and Coastal Plains of the Maya region (Kaminaljuyú, Ixtepeque, Utatlan, El Baúl, and Chalchuapa) with radiogenic strontium isotope values from 0.7038 to 0.7053. The fourth region contains Paleozoic deposits, includes sites in the Northern Highlands of the Maya region (Copan, Rio Amarillo, El Puente, Zacualpa), and has radiogenic strontium isotope values that range from 0.7055 to 0.7071. The fifth region contains late Paleozoic rocks exposed in the Maya Mountains of Belize. It includes sites in the Belize region (Lamanai, Caracol, Cahal Pech) and has the highest radiogenic strontium isotope values from 0.7119 to 0.7202.

The baseline data employed here will be drawn from Price and colleagues (2010) and supplemented by Hodell and co-workers' (2004) extensive analysis of water, plant, rock, shell, and soil samples from throughout the Maya region (see Chapter 7). While the extant strontium isotope values are impressive, one will notice a lack of baseline data east of Copan. Potential homelands for migration from the traditionally defined Maya world into Copan could be inferred, but not migration from the east. Non-Maya movement into Copan is certainly not a new idea but one that this research is able to explore empirically for the first time.

Figure 41: Baseline $^{87}Sr/^{86}Sr$ values from LARCH laboratory (Price et al., 2008, 2010:Figure 10), Hodell et al. (2004), and Krueger (1985). Used with permission.

D2. New geological baseline for Honduras

The necessity for a baseline for western and central Honduras was patently clear at the outset of this project as baseline values are missing for the region south and east of the Maya area (**Figure 42**). In the spring of 2012, C. Freiwald from the University of Mississippi and I created a baseline for Honduras from which we could interpret in-migration to Copan from within the Maya world and non-Maya region to the east (Freiwald et al., n.d; Miller and Freiwald, n.d). The sampling strategy targeted non-Maya cultural areas (Henderson, 1977; Metz, 2010), archaeological sites (Creamer, 1987; Dixon et al., 1998; Gerstle, 1988; Hirth, 1988; Wells and Davis-Salazar, 2008), and distinct geological zones (Rogers, 2003).

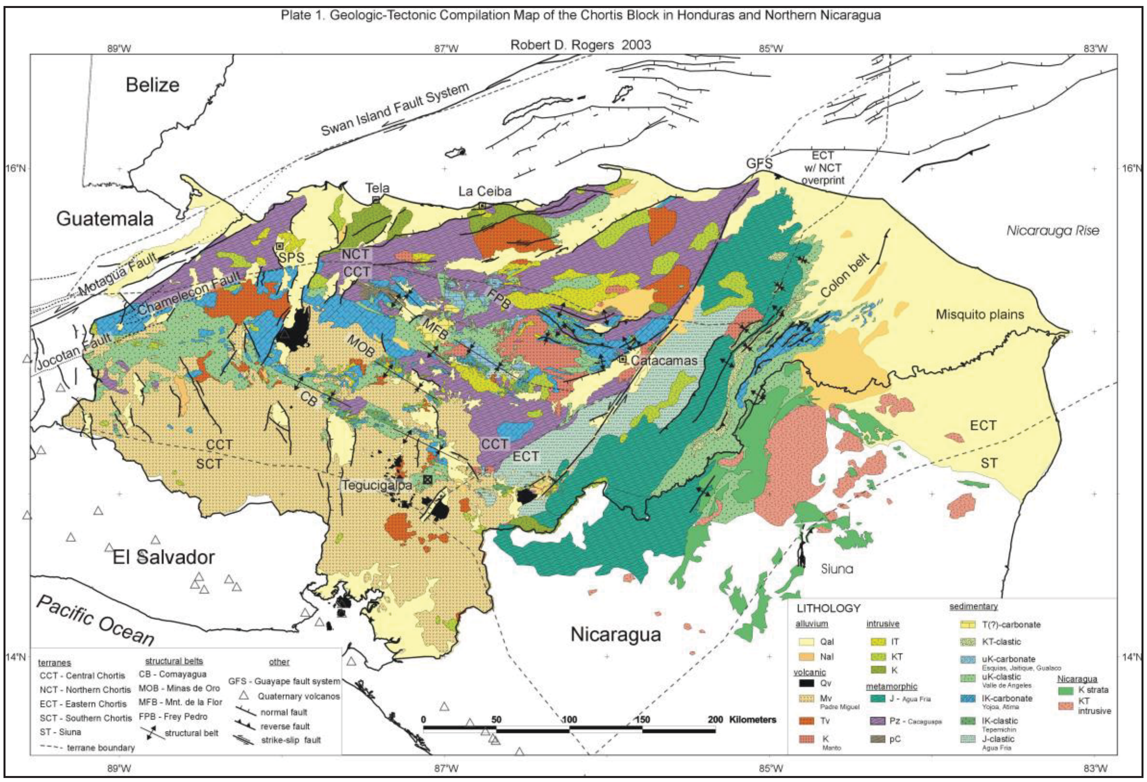

Figure 42: Geological map of Honduras (Rogers, 2003, Plate 1)

Sampling was dependent upon the quality of the roads, especially in the remote areas of the country, and was opportunistic. Sample collection occurred (1) when we crossed into a new geological zone on the map or observed a change in surface geology, and (2) when appropriate skeletonized or desiccated animal remains were observed on the road. A total of 83 water, plant, and animal bone samples from over 50 locations in western and central Honduras were collected. In 2013, we selected twenty-five samples that were most representative of the observed geological variability for analysis (**Figure 43**). Baseline samples were then processed at the Laboratory for Archaeological Chemistry at the University of Wisconsin-Madison in collaboration with J. Burton and T.D. Price.

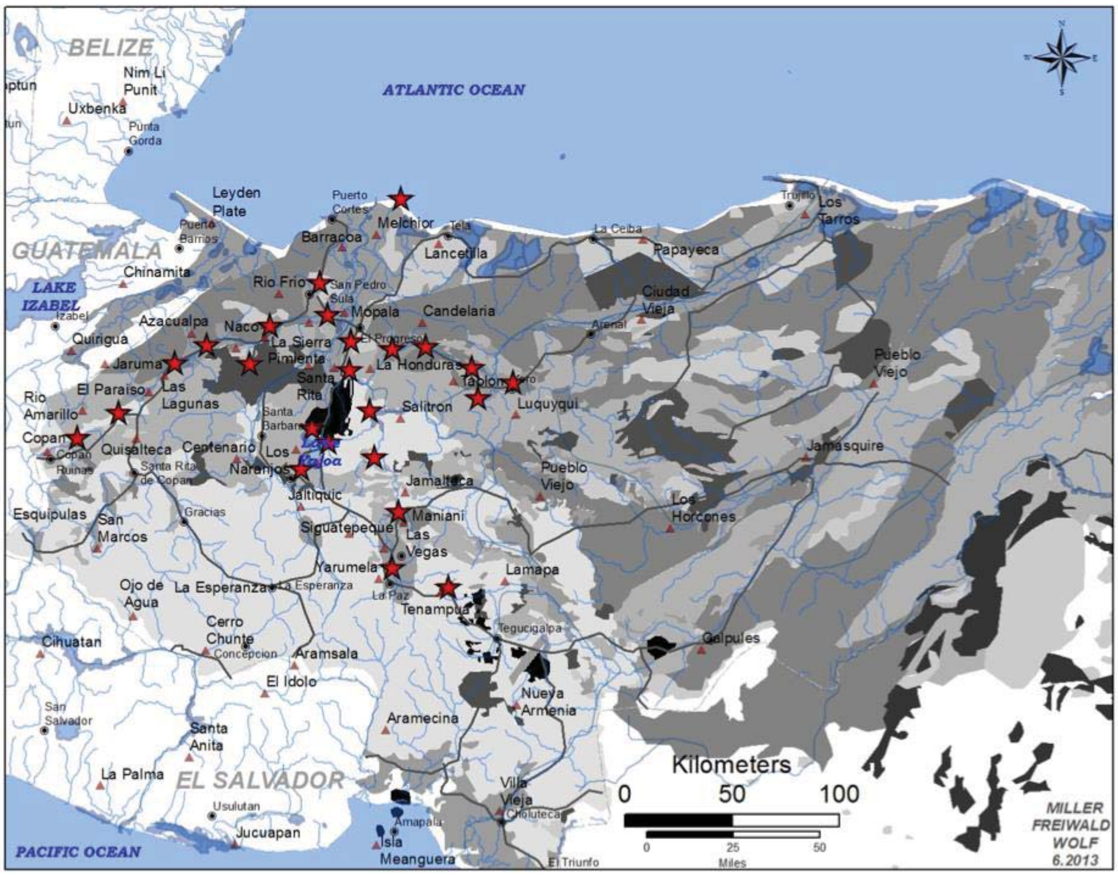

Figure 43: Baseline of Honduras showing geological zones and locations of samples. Map by Miller, Freiwald, and Wolf 2013.

Four general categories of geological zones in Honduras can identified based on the geological zones identified by Rogers (2003): (1) low values from 0.7040 - 0.7050 $^{87}Sr/^{86}Sr$ derived from volcanic bedrock and associated sediments, (2) values ranging from 0 .7060 - 0.7070 $^{87}Sr/^{86}Sr$ in the metamorphic sediments that run east-west across the country along the Chamelecon fault, (3) values in Cretaceous limestone in the 0.7070-0.7080 $^{87}Sr/^{86}Sr$ range, and (4) high values of > 0.7100 $^{87}Sr/^{86}Sr$ found in Paleozoic and older formations (**Figure 44**). The high values of > 0.7100 $^{87}Sr/^{86}Sr$ were only previously known in the Maya Mountains of Belize (Hodell, et al., 2004; Freiwald, 2011). Overall, there is much measureable geologic variability useful for the tracking of movement of humans and animals. Unlike in the Maya region, cultural regions will not have distinct values and there is almost certainly valley-to-valley variation in $^{87}Sr/^{86}Sr$ values (Freiwald et al., 2014; Miller and Freiwald, 2013).

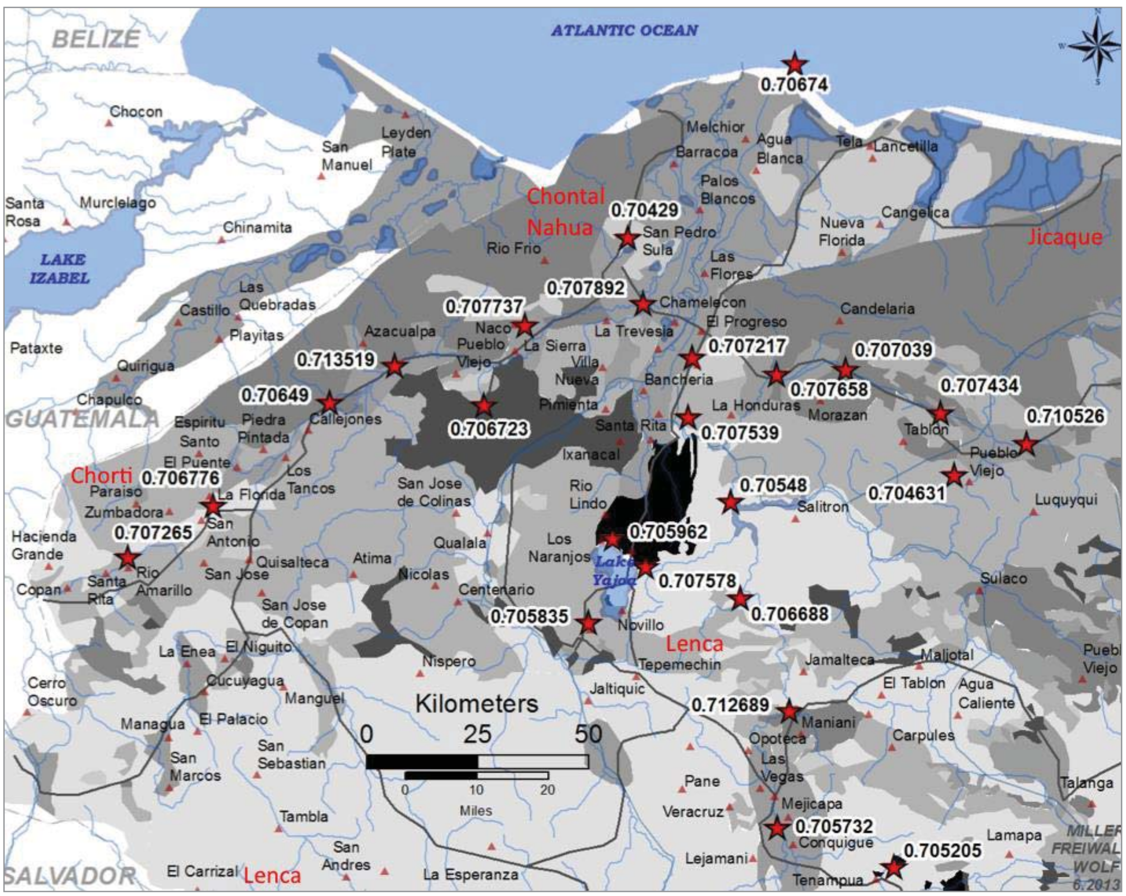

Figure 44: Detail of new baseline values for western and central Honduras. Map by Miller, Freiwald, and Wolf, 2013.

The first category is characterized by the low values from the volcanic formations that range from 0.7043 - 0.7060 $^{87}Sr/^{86}Sr$, similar to those in the southern highlands of Guatemala and on the Pacific coast extending into Chiapas. Volcanic formations spread across southwestern Honduras, most of El Salvador, and the entire Pacific Coast from Guatemala to Mexico. Freiwald (2011) collected samples near Chiapas that have similar values at sites like Izapa (0.7047 $^{87}Sr/^{86}Sr$), Ojo de Agua (0.7047 $^{87}Sr/^{86}Sr$), Abaj Takalik (0.7041 $^{87}Sr/^{86}Sr$) and Cocales (0.7042 $^{87}Sr/^{86}Sr$) in Guatemala (Freiwald 2011; Price et al., 2008). The northernmost low value of 0.7043 $^{87}Sr/^{86}Sr$ may be the result of drainage from the volcanic area along the Ulua River and its floodplain through the Sula Valley into the Caribbean (Freiwald et al., 2014; Miller and Freiwald, 2013).

The second geological zone stretches across the boundary between the Central and Northern Chorti Terranes (Figure 2) and includes five samples with values ranging from 0.7065 – 0.7068 $^{87}Sr/^{86}Sr$, mirroring those Hodell and colleagues (2004) identified at Copan. These would suggest similar bedrock, consisting of fluvial deposits from the coastal plain overlaying metamorphic rocks (Freiwald et al., n.d.; Miller and Freiwald, 2013).

The third geological zone is characterized by values in the 0.7070 $^{87}Sr/^{86}Sr$ range that stretch the length of eastern Honduras in the central and northern portions of the country, areas which are derived from metamorphic sediments. This range is similar to the variation in the northern and central lowlands of Guatemala, situated on the Cretaceous limestone bedrock of the Yucatan Peninsula (Freiwald 2011; Freiwald et al., 2014; Hodell et al., 2004; Miller and Freiwald, 2013; Price et al., 2008, 2010; Wright, 2005a,b, 2012).

The fourth geological zone provides some of the most interesting data. Values that exceed 0.710 have only been observed in Mesoamerica in the geologically unique Maya Mountains of Belize (Freiwald 2011; Thornton Kennedy 2011). Hodell and colleagues (2004) also identified high values in the Metamorphic region of Guatemala, but these have not yet been identified in archaeological studies. In this new baseline, three values were identified with similar high values in samples (1) from the formations to the north of the Yojoa Valley in Paleozoic metamorphic formations (0.7127 $^{87}Sr/^{86}Sr$), (2) near the Guatemala-Honduras border along the Chamelecon Fault in northwestern Honduras (0.7135 $^{87}Sr/^{86}Sr$), and (3) in a Precambrian -Paleozoic outcropping near Yoro (0.7105 $^{87}Sr/^{86}Sr$). These outcroppings are part of the oldest bedrock in the region underlying much of the central-eastern part of the country (Freiwald et al., 2014; Miller and Freiwald, 2013).

The results of the new baseline for Honduras demonstrate that there is considerable geological variation in the substrate and bedrock that would have affected the radiogenic strontium values observed in human, faunal, and plant samples. Additionally, the baseline highlights that $^{87}Sr/^{86}Sr$ isotope values attributed only to regions within the Maya heartland are also found in Honduras in culturally non-Maya areas. Scholars have recently advocated against geo-locating, or identifying a single place of origin (e.g. Juarez, 2008), for an individual based on a radiogenic strontium isotope value in an archaeological context (Burton and Price, 2013; Sponheimer, in press; Wright, 2012). The results of the new baseline for Honduras underscores the complexity of identifying a place of origin from an individual radiogenic strontium isotope value, especially since it is now possible that an individual can be attributed to both the Petén region of Guatemala (0.7080 $^{87}Sr/^{86}Sr$) and the southern extent of Sula Valley in Honduras (0.7078 $^{87}Sr/^{86}Sr$). While the values are nearly identical, these regions represent very different cultural zones and the presence of someone at Copan with such a value indicates contact with very different social and cultural systems.

E. Summary

Migration, movement, and residence are complex concepts imbued with meaning for the individual agents, social groups, and sociopolitical systems. Since Ericson (1985) and Krueger (1985), established the utility of radiogenics strontium isotope analysis, research on the topic of migration has grown exponentially. The studies summarized here, especially for Mesoamerica and South America, reveal that migration was part of the human experience across space and through time. Our collective understanding of the past and the intricacies of the human experience are well informed by empirical data from human skeletal remains. The integration of strontium into dental tissue provides the means by which place of origin can be determined by comparison to known radiogenic strontium isotope ratios derived from geological baselines.

In the case of the ancient Maya, studies investigating migration from a biogeochemical perspective are new but increasingly theoretically inclined. The construction of comparative baselines (Hodell et al., 2004; Freiwald, 2011; Krueger, 1985; Miller and Freiwald, 2014; Price et al., 2008, 2010) is foundational to studies of regional migrations, long-distance migration, and individual life histories (e.g. Buikstra et al., 2004; Freiwald, 2011; Price et al., 2010). These data serve as the background to the theoretically inclined methodology applied in this research and in concert with the biodistance data are powerful indicators of social organization at ancient Copan.

Chapter 6: Biological Kinship and Affiliation in Ancient Populations

Human skeletal morphometric variability, or biological distance (biodistance), is a fundamental component of physical anthropology that engages the long history of research on skeletal morphology and principles of population genetics. Studies have quantified both metric and non-metric dental, cranial and post-cranial traits by evaluating the means and frequencies to ascertain evolutionary processes that shape observed phenotypic variation (Alt and Vach, 1998; see Buikstra, 1972; Corruccini et al., 2002; Droessler, 1981; Pietrusewsky, 2000; Spence, 1994). A primary assumption of biodistance analysis is that the expression of a phenotype can be used as a proxy for genetic relatedness assuming minimal environmental effects (Garn et al., 1979; Falconer, 1981; Jamison and Meier, 1989; Kieser, 1990; Stojanowski, 2004, 2005b). Dental traits are a primary source of data as they are heritable, mathematically tractable, derived from usually well-preserved skeletal tissues, and are effective to infer relationships within and between populations (Alt and Vach, 1995, 1998; Berry and Berry, 1967; Garn et al., 1965; Konigsberg, 1987, 1990a,b; Larsen, 1997; Scherer, 2004; Stojanowski, 2010; Stojanowski and Schillaci, 2006; Townsend et al., 1992, 2009; Turner, 1990, 1992). Bioarchaeologists have examined the variations in tooth shape, size, or form to identify genetic relatedness within or among populations in contextualized models that draw from nuanced social theory (Buikstra et al., 1990; Harpending and Jenkins, 1973; Scott and Turner, 1997; Stojanowski and Buikstra, 2004; Zuckerman and Armelagos, 2011).

This chapter presents the development of biodistance as an analytical method in bioarchaeological research and the assumptions inherent in such studies. The applications of this method are reiterated in the discussion of population variation studies at various temporal and regional scales. Particular attention is paid to Mesoamerica and the ancient Maya from both an analytical and historical perspective. Different approaches to correlating dental data and biological kinship are discussed in detail. Statistical methods and data pretreatment are then described. The statistical tests discussed include: Analysis of Variance and Covariance, Principal Components Analysis, Canonical Discriminate Function Analysis, Mahalanobis Distance, Mantel Test, and Euclidean Distance. The results of these tests are presented in Chapter 7.

A. Biological Distance

A1. The development of biological distance analysis

Physical anthropology has concentrated on studies of taxonomy and observable physical differences between groups with particular concern for evolutionary models of isolation, adaptation, and inheritance. Phenotypic anthropomorphic analysis, the quantification of morphological and discrete anatomical traits, has been used to estimate biological affiliation between individuals and groups. The earliest acknowledged works described soft-tissue variation (Stewart and Newman, 1951), anthropometry (Broca, 1875), racial typologies (Blumenbach 1795; Hooton, 1930; Neumann, 1952), and variation in cranial form among Native North Americans (Morton, 1839). Hrdlička (1908, 1925, 1935) also described physical characteristics of indigenous populations in North America, South America, and Polynesia and took an early interest in the peopling of the New World. Hrdlička's work diverged from his contemporary and subsequent colleagues (e.g. Hooton, 1930; Neumann, 1952) as he moved beyond racial typologies in his explorations of regional variation and began to correlate anatomical function with skeletal morphology (Hrdlička, 1908, 1918, 1934, 1937). Subsequent anatomical analyses of crania (Howells, 1951; Pearson, 1924) were among the first true biodistance studies and contributed to the more than 200 standardized non-metric skeletal traits used today (Hauser and De Stefano, 1989). Current research draws from the methods of these foundational craniometric and non-metric studies, though the modern approach integrates cultural and archaeological context into the research design (Howells, 1973, 1989; 1995; Ishida et al., 2009; Mays, 2000; Relethford, 2004; Sciulli, 1990; Schillaci and Stojanowski, 2005; Spence, 1974; Sutter and Mertz, 2004).

Dental morphological traits were first identified by anatomists and physical anthropologists, some of whom developed standards for data collection from teeth (Dahlberg, 1956; Hrdlička, 1920; Turner et al., 1991; von Carabelli and Lunkaszprie, 1842). Recognizing the importance of dental morphological traits and building upon the features illustrated by Dahlberg in his reference cast series, Turner and colleagues (1991) created the Arizona State University Dental Anthropology System (ASUDAS), which is a comparative collection of 30 dental casts that form the current standard for dental morphology studies (Buikstra and Ubelaker, 1994; Hillson, 1996). Dental traits are also evaluated through detailed measurement of the tooth crown and cervix (Hillson, 1996; Hillson et al., 2005; see also Aubry, 2014; Stojanowski, 2007) and are especially popular in areas with poor skeletal preservation that renders craniometric or morphological analysis impossible.

In bioarchaeology, investigations have addressed cultural questions of the past though rigorous analysis of human skeletal remains (Buikstra, 1977; Buikstra and Beck, 2006; Larsen, 1997). Studies often pinpoint quintessential topics like health, disease, paleodemography, paleopathology, mortuary context, or biodistance (e.g. Armelagos and Gerven, 2003; Grauer, 2011; Larsen, 1997, 2000; Katzenberg and Saunders, 2000; Roberts and Buikstra, 2003; Scherer, 2004; Wright and Yoder, 2003; Wrobel, 2003). Recently, studies have broadened in scope to include socio-cultural subjects like gender, migration, childhood, ethnicity, identity, kinship, and social structure (e.g. Agarwal and Glencross, 2011; Gellar, 2008; Grauer and Stuart-Macadam, 1998; Freiwald, 2011; Knudson and Stojanowski, 2008, 2009; Sofaer, 2006).

Biodistance analysis is a complex approach to biological variation that incorporates sophisticated metric and morphological criteria to examine temporal or geographic patterns in human populations or isolated samples. Such methodology moves far beyond the 19th century typological approaches to human biological variability or "race". While biodistance is not free from problems, owing to complex epigenetic and environmental factors affecting physical expression, quantifiable biodistance models facilitate the understanding of the affiliation between human populations.

A2: Biological distance as a field of study

Biodistance operates under a basic hypothesis from population genetics: groups that exchange mates over a period of time will become more phenotypically similar while those that do not will become dissimilar. Inferences about gene flow are reckoned from the observable similarities (or dissimilarities) in phenotypes through statistical assessment of means and frequencies of traits. The rate at which these phenotypic changes occur is modeled by the effective population size (*Ne*), which is an ideal stable breeding population. The *Ne* has equal sex ratios and is free from the effects of migration, mutation, or selection that expresses drift at the same rate as the study sample (Harmon and Braude, 2010; Wright, 1951; see Stojanowski and Schillaci, 2006). Biodistance measures the effects of gene flow and genetic drift in a sample population using phenotypic variation.

Biodistance analysis includes studies of evolutionary population history or structure with deep time migrations, temporal microevolution, or intra-cemetery analysis (see Stojanowski and Schillaci, 2006). This project concentrates on the intra-cemetery level, and the following definition of cemetery is used: "any aggregate of human remains whose accumulation is intentional or unintentional, and is sufficiently general to include the full range of human burial environments" (Stojanowski and Schillaci, 2006:50). The morphological or metric variation can be measured in a number of ways depending on the question under investigation (Konigsberg, 1987; Konigsberg and Buikstra, 1995; Stojanowski, 2004, Stojanowski and Schillaci, 2006). For example, kinship and mortuary structure analysis identifies members of family groups based on anomalous traits or metric similarities (e.g. Jacobi, 2000; Pilloud and Larsen, 2011; Rhoads, 2002; Stojanowski, 2003). Also, postmarital residence analysis approaches social structure and residence rules based on sex-linked biological variability or aggregate phenotypic variability from the heterogeneity or homogeneity of a particular cemetery (Cook and Aubry, 2014; Konigsberg, 1990a,b; Spence, 1974a,b, 1996; Schillaci and Stojanowski, 2005; Temple and Sciulli, 2005). Moreover, temporal microchronology can be assessed by comparing burial areas within a cemetery at different time periods (Konigsberg, 1990; Stojanowski, 2004, 2005, 2007; Steadman, 1998; Wrobel, 2003). Finally, studies of age-structured phenotypic variation focus on the impact of natural selection on phenotypes as they relate to survivorship in a cemetery sample (Stojanowski and Schillaci, 2006:77). Biodistance analysis is especially appropriate in studies that require multi-scalar analysis of regional or site-specific population histories.

A3. Assumptions of biological distance

There are six assumptions central to any biodistance study (e.g., Alt and Vach, 1995; Buikstra et al., 1990; Konigsberg and Buikstra, 1995): (1) Close biological relationships reflect the level of similarity among populations and are usually caused by recent common ancestry or greater gene flow. Relatives will share a strong resemblance in the expressed traits as phenotypic variation is additive. (2) Dissimilarity is driven by genetic drift causing the means of phenotypic data to be less similar between groups. (3) Holding evolutionary constraints constant, gene flow will affect the frequency of alleles within and between populations with geographic proximity and similar environments equally. Such gene flow will result in convergence and may modify population relationships. (4) Natural selection has a limited effect on the phenotypic traits observed (neutrality) and there is little evidence for the selective advantage of some dental traits over others. (5) Phenotypic expressions affected by the environment are minimal and randomly distributed across a population. Consequently, observed differences reflect a population genotype not the environment. (6) The measurable changes in the phenotypic expression of allele frequencies can be calculated mathematically.

Biodistance analysis makes assumptions about (1) narrow sense heritability (h^2), the component of phenotypic variation that is due to the additive effects of genes, which is the only component of variation that natural selection can act upon, and (2) broad sense heritability (H^2), which represents the total phenotypic variation from all genetic (additive, epistatic, dominant, maternal or paternal) effects. Heritability is not an inherent characteristic of a phenotype; rather it is a statistical expression of the variability of a particular trait in a population at a specific point in time (see Stojanowski and Schillaci, 2006). The heritability of both contemporaneous and generational groups is meaningful for considerations of relationships within intra-site cemeteries as they represent both forms of heritability.

Biodistance research is conducted at a local scale to estimate relational patterns between an individual to a family, cemetery, or neighborhood. However, samples in biodistance analysis are not static representations of a population rather, it is an assemblage of archaeological human remains accumulated *over time* that represent an aggregate of a population. Although archaeological skeletal samples represent only a small percentage of a large, once living population (Milner et al., 2007; Wood et al., 1992; Wright and Yoder, 2003), the sample is assumed to be generally representative of the composite biological parent population (Stojanowski and Schillaci, 2006).

In the case of the Copan sample, given that the ancient Maya interred their dead beneath the floors of their houses, in nearby patios, or in funerary monuments (McAnany, 1995; see Wisdom, 1940 and Chapters 2 and 4 for the case of Copan), I assume that those interred within the patio groups or neighborhoods are representative of populations with potential for inter-breeding during the Late Classic period (600-820 AD). Gene flow likely occurred between populations at major Maya socio-political centers and stemmed from migrations due to a myriad of factors including the growth and development of cities and inter-polity connections (Buikstra et al., 2004; Culbert and Rice, 1990;

Demarest, 1992, 1997; Fash and Stuart, 1991; Houston 1993; Jones 1991; Lucero, 1999; Martin and Grube, 1995; Schele and Matthews, 1991; Stuart, 1993). Variability within a site-specific sample would be driven by gene flow instead of genetic drift as in an isolation-by-distance model (see Aubry, 2009; Scherer 2004, 2007; Wrobel, 2003). As the results presented herein will establish, migration was common at Copan and the biodistance sample includes locals and non-locals as defined by radiogenic strontium isotope ratios for each of the residential groups or cemetery under analysis.

A4. Genetic control of dental number, shape, and size

The fields of biology and paleontology have studied dentition in modeling phylogeny, speciation, and evolution in mammals, beginning in the early 19th century (Frankel, 1835; see Alt et al., 1998 for summary). Attention has been paid to the development and differentiation of cusp morphology and placement in mammals according to the Tritubercular (Cope-Osborn) Theory (Butler, 1939, 1941; Cope, 1883) and variability in human populations (von Carabelli and Lunkaszprie, 1842; Hrdlička 1920). In studies of past populations, teeth are a primary source of data because they are often the most well preserved part of the skeleton in archaeological contexts. Additionally, they are known to be highly heritable and well suited to statistical analysis. Finally, teeth do not remodel after formation and are not subject to the same routine changes from age (except for wear) as other skeletal tissues, thus providing reliable estimates of biological relatedness (Kieser, 1990; Scott and Turner, 1997).

Research into mammalian dental morphology has centered on the evolutionary mechanisms that underlie tooth size, quantity, and morphology. The dental formula identifies the number of teeth in each of the different dental classes that include incisors, canines, premolars, and molars (e.g. the Old World Monkey, Ape, and Human anthropoid formula is 2:1:2:3 or 2 incisors, 1 canine, 2 premolars, and 3 molars). The form and count of teeth in each class depends on evolutionary adaptations in functional morphology to diet or other environmental stressors (Hillson, 1996). Likewise, the number of teeth relates to the development of tooth germs in each these fields (Butler, 1939), classes (Dahlberg, 1945), or clones (Osborn, 1973, 1978). Butler argued that each tooth germ had the potential to develop into any tooth and that morphogen signaling molecules directed tooth germs to develop into a particular tooth.

In contrast to Butler's field model, Osborn argued that tooth germs are programmed to develop only into the specific classes of deciduous and permanent incisors, canines, and (pre)molars clones. Dahlberg's classes of teeth are divided into four regions that partitioned the premolars and molars. He also argued that each class has a single tooth that is the most evolutionarily stable in size and shape (Dahlberg, 1945). The most stable tooth in his view is the most mesial tooth known as the polar tooth, with the exception of the mandibular incisor. The effects of fluctuating asymmetry and environmental variation in dental traits are reduced by preferentially studying the more stable polar teeth (Butler, 1939; Dahlberg, 1945; Stojanowski, 2004 a,b). The polar teeth (maxillary: I1, C, P3, M1; mandibular: I2, C, P3, M1) are often the basis of dental studies and this dissertation follows this methodology (Pilloud and Larsen, 2011; Scherer, 2004; Stojanowski, 2001, 2004, 2005a,b; Turner et al., 1991).

Most recently, genetic research into the development of teeth in various species has identified a tooth specific homeobox gene (OHC) that restricts the expression of dental traits in maxillary and mandibular mesenchymal (bone and cartilage) cells (Armfield et al. 2009; Thomas and Sharpe, 1997). These cells are the source of the odontoblasts and ameoloblasts that form the dentin and enamel of the different teeth (Hillson, 1996; Scott and Turner, 1997). The OHC gene can limit the maximum phenotypic expression of a dental morphological trait, thus impacting tooth size and shape at the molecular level.

As these studies have illustrated, the traits that dictate dental shape and size follow a complex polygenic and continuous mode of inheritance (Hanihara, 2008; Hillson, 1996; Kieser, 1990; Scott and Turner, 1997; Stojanowski and Schillaci, 2006). Simple modes of inheritance or single genes do not wholly determine dental morphology and size, since environment plays an important role. Tooth size is also influenced by the intrauterine environment (Bowden and Goose, 1969; Garn et al., 1979), affected by physiological stress (Simpson et al., 1990), under pressure from natural selection (Brace et al., 1991; Calcagno and Gibson, 1988; Hanihara and Ishida, 2005; Kieser, 1990), and has a low correlation to overall body size (Hillson, 1996; Garn et al., 1968; Henderson and Corruccini, 1976).

There has been a reduction in tooth size over the course of human evolution based on natural selective pressures (Bailit and Friedlaender, 1966; Kieser, 1990; Weaver et al., 2007) and cultural adaptation with the advent of pottery, tools, and a transition to agriculture (Brook et al., 2009; Corruccini, 1991; Larsen, 1995; Pinhasi and Stock, 2011). Similarly, changes in tooth size have been documented at various sites and cultural groups as responses to selective pressure, adaptation, and geographic and temporal distance (Larsen, 1995; Sciulli, 1997; Wrobel, 2003). Finally, the environmental or genetic effects on tooth size and asymmetry have been explored in studies of families or between monozygous twins (estimated h^2 = 0.20-0.90) (Corruccini and Potter, 1980; Kaul et al., 1985; Townsend et al., 1986, 1988; Scott and Turner, 1997). In summary, teeth are under stronger genetic control and less subject to environmental influence than skeletal tissues and ideal for longitudinal studies of kinship, affiliation, and relatedness (Larsen, 1997; Scott and Turner, 1997).

B. Studies of Population Variation

B1. Global studies of dental variation

Archaeologists are interested in culture contact, migration, and interaction spheres but are limited by the constraints inherent in the material cultural record. Skeletal traits provide the primary means to assess prehistoric population history. Variation in skeletal traits from archaeological contexts is quantifiable and suitable for inferring affinity within geographically broad or constrained regions (Buikstra et al., 1990; Corruccini, 1972, 1975; Konigsberg and Buikstra, 1995; Pompa and Padilla, 1990; Scott and Turner, 1997; Spence, 1974; Stojanowski and Schillaci, 2006; Ullinger et al., 2006).

Previous investigations of human dental variation include prehistoric and contemporary samples in various regions on a global or large regional scale (Hanihara and Ishida, 2005; Kieser, 1990; Turner, 1986, 1990). A primary line of inquiry derives from the dental characteristics identified by Turner and colleagues (Scott and Turner, 1997, 2006; Turner, 1986, 1990; Turner and Scott, 2007), which are widely used to distinguish different samples based on the diagnostic and dental hallmarks they associated with Sundadonty or Sinodonty. Indigenous American and North Asian populations were said to be characterized by the frequency of certain traits (Sinodont traits include: shoveling, double shoveling, tooth reduction/agenesis, and cusp and root number variations). Identifying the distribution of these traits throughout the Americas was a significant contribution of Turner and colleagues, but his model is not without critics.

Powell (1995, 2005) found that Paleoindian samples from the New World (c.a. 10000-8000 BC) did not cluster with contemporary Native American samples, and instead represented their own Sundadont-like cluster. Haydenblit (1996) observed a similar Sundadont pattern in Central Mexico, and Sutter (1997) identified an intermediate Sundadont/Sinodont form in the Andean region of South America. Powell (2005) also identified divergence between three groups: Paleoindians, Archaic samples (8000–50 BC), and Archaic to contemporary Native American samples. Most recently, Stojanowksi and colleagues (2013) found that Paleoindians from coastal regions share more common traits between each other as opposed to other North American aboriginal groups. These results suggest that there is greater biological diversity than expected within Native American populations over time and that Sinodonty alone does not characterize a Native American type as Turner (1990) had proposed. Even though Turner's basic assumptions about Sinodonty and Sundadonty have been widely critiqued, the dental morphological traits and their variation as identified in the ASUDAS system remain useful for studies about kinship, cemetery structure, family groupings, ethnogenesis, conflict, and cultural change.

The following discussion covers multiple scales of analysis and is organized according to geographical region. To begin, North America has been the subject of long-term investigations utilizing biodistance in the Midwest (Buikstra, 1972; 1977; Sciulli, 1990, 1997; Sciulli and Mahaney, 2001), Southeast (Killgrove, 2002; Stojanowski 2001, 2004, 2005, 2007), Southwest (Durand et al., 2008; Howell and Kintigh, 1996; McClelland, 2003; Schillaci and Stojanowski, 2005; Turner, 1993), and broader studies within the continent (Dahlberg, 1963; Powell and Neves, 1995).

Buikstra (1972) took an early regional approach to assess 1,500 years of prehistory in the Middle Woodland (50 BC- AD 300), Late Woodland (AD 300-800), and Mississippian (AD 800-1500) periods in the Lower Illinois River Valley using metric and non-metric cranial and dental traits. She found that local adaptation, instead of the observed but limited in-migration of Mississippian males, was the appropriate model to explain most biological change in the region. Using dental metrics, Sciulli (1990, 1997; Sciulli and Mahaney, 1991) considered nearly 3,000 years of occupation (3000-350 BP) in the Ohio Valley and identified genetic continuity across groups that occupied the upper Ohio River Valley.

In Spanish Colonial Florida and Georgia, Stojanowski has conducted intra-site and regional biodistance research using dental metric traits over a series of time periods: Pre-contact (AD 1200-1500), Early Mission (AD 1600-1650), and Late Mission (AD 1650-1700). Using a multi-scalar approach that incorporates biological and mortuary data, Stojanowski demonstrates that communities underwent social, cultural, and biological transformations, especially among Guale and Apalachee, as a result of European contact, (Stojanowski, 2001, 2004, 2005, 2013; Stojanowski et al., 2007). However, the degree and manifestation of ethnogenesis, demographic collapse, and migration were variable and largely dependent upon how communities responded to colonization and Christianization (e.g. Stojanowski, 2005).

Contemporaneous with Buikstra's analysis of the Illinois River Valley, Corruccini (1972) was conducting an intra-site study of Southwestern Pueblo sites (Hawikku, Pueblo Bonito, and Puye) and concluded that the groups were significantly different based on dental traits. He attributes these differences to selection and gene flow into the region. Also at the Zuni center of Hawikku, Howell and Kintigh (1996) employed cluster analysis of dental metric data to describe a kin-structured cemetery. However, while their results are often cited as evidence for family-based mortuary structure, there may have been inter-trait correlation in the statistical analysis (Corruccini, 1998). Durand and colleagues (2008), identified migration between Great Houses and smaller sites from Mesa Verde and Chaco Canyon into the Middle San Juan region during the Pueblo III period (AD 1100-1200) through biodistance analysis. The Southwestern region was a region with complex systems of migration and affiliation.

Additional regional studies have been conducted in South America (Corruccini et al., 2002; Delgado-Burbano and Scott, 2010; Sutter, 1997, 2000, 2005), Japan (Hanihara, 1985, 1994, Hanihara et al., 1983, 2005; Komesu et al., 2008), the Middle East and South Asia (Hemphill et al., 1991, 1997; Lukacs and Hemphill, 1991, 1993; Lukacs and Pal, 1993; Sołtysiak and Bialon, 2013; Turner, 1992), Africa (Hubbard, 2012; Irish and Friedman, 2010; Irish and Joel, 2005; Irish and Konigsberg, 2007; Irish and Turner, 1990; Irish, 2014), and Europe (McIlvaine et al., 2014; Pilloud, 2009; Pilloud and Larsen, 2011).

In South America, biodistance has played an important role in bioarchaeological studies and - due to excellent preservation - studies have been complemented by powerful and detailed mtDNA work (Fehren-Schmitz et al., 2010; Lewis, 2007; Lewis et al., 2007). Corruccini and colleagues (2002) combined mtDNA and dental data to identify genetic linkages between tomb occupants at the site of Huaca Loro (ca. AD 1000). Sutter and colleagues (1997, 2004) investigated sites within Azapa Valley, Chile (AD 1000-1476) using dental non-metric traits, and he postulated homogeneity due to minimal gene flow in the region during pre-Inca times. In a comparison with the Moquegua Valley, Sutter suggested that coastal populations were descendants of migrants from the Andean *altiplano* after the social and political disintegration that occurred during the Middle Horizon period (AD 750-1000). However, Lozada and Buikstra (2005) do not agree as their comparison of dental non-metric traits of coastal populations in the Azapa Valley to Tiwanaku colonizers at Chen Chen in the Moquegua Valley revealed significant biological distances. In conjunction with ethnohistorical analysis, they argue that the coastal site of Chiribaya did not develop from the remnants of Tiwanaku society. Rather, Chiribaya derived from other coastal populations that were synchronous with the apogee of Tiwanku's power in the Osmore Valley.

Within Eurasia, biodistance studies have successfully identified migration and population histories at various temporal scales. Two recent studies are particularly relevant for the current project. Pilloud and Larsen (2011) describe data collected for Pilloud's (2009) dissertation from the important early agricultural Neolithic (7400-5600 BC) site of Çatalhöyük, Turkey. An intra-cemetery analysis inspected the social organization of Çatalhöyük for biological patterns of hypothesized kin-based within in a household structure was unrelated to biological affinity with others in the house, that Çatalhöyük social structures were not kin-based as had been proposed, and that membership within the community was accomplished through alternative social principles like ‘practical’ (fictive) kinship.

In Syria, Sołtysiak and Bialon (2013) recently analyzed Bronze Age (3000 BC–AD 2000) skeletons against contemporary groups and determined significant differences between the two populations within the region. They identified minimal gene flow into the region across millennia (3000 BC-AD 1200), only recently (17^{th} century) transformed by Bedouin population replacement. To the east in the Indus River Valley scientists identified a reduction in tooth size during the Mesolithic (8000-6000 BC) with increased agriculture (Lukacs and Pal, 1993), a lack of genetic continuity between Neolithic (6000-2000 BC) populations (Hemphill et al., 1997), and potential trade and migration relationships between groups during both periods (Hemphill et al., 1991). In the neighboring region, Lukacs and Hemphill (1993) compared dental traits of contemporary groups of various ethnic backgrounds and socio-economic statuses from the northwestern Indian-Pakistani border to those from elsewhere on the Indian subcontinent. Within their study, sex differences were smaller within groups than between groups suggesting separation between three distinct ethnic groups. One group in particular (the Guajaratis), showed marked genetic isolation and no affiliation with any other ethnic groups within India, suggesting additional socio-cultural isolation.

Beyond intra-site kinship analysis (Hanihara et al., 1983), inter-site comparisons (Komesu et al., 2008), and global studies of human variation (Hanihara et al., 2005), research in Japan takes a slightly different approach to investigating the origins of living

Japanese peoples. This is accomplished through assessments of dental and cranial traits of ancient human skeletons during the Jomon period (14000-300 BC) that are contrasted against contemporary samples (Hanihara, 1985). Hanihara (1985, 1991) attributes the observed temporal biological changes to cultural adaptations resulting from dietary shifts and immigration from the Asian mainland. Migrants from the continent brought a suite of new genes that transformed dental phenotypes within the region.

African population structure and history has received substantial attention, particularly by Irish, his colleagues, and students in the North (Irish and Friedman, 2010; Irish and Joel, 2005; Irish and Konigsberg, 2007; Irish and Turner, 1990), South (Irish, 2014), and West (Hubbard, 2012). Irish and colleagues are adept at incorporating culture context with statistical techniques in a nuanced bioarchaeological approach to African and global prehistory. Among the Jebel Moyans, Irish and Konigsberg (2007) concluded that the contemporary biological data mirrored the archaeological data where Jebel Moyans show genetic and cultural separation from Northern and Sub-Saharan groups despite regular interaction.

Most recently, Irish (2014) tested the model of long-term biological continuity among South African indigenous tribes using dental morphological traits from Early, Middle, and Late Holocene samples. He identified population continuity in the prehistoric components, except for coastal populations that were slightly divergent due to reproductive isolation. The contextualization of these findings with the modern era reveals that Early and Late populations are statistically different as a result of immigration of Europeans and Bantu-speakers in recent centuries. Hubbard (2012), Irish's student, evaluated population structure of coastal Kenyan and compared biodistance data with genetic (microsatellite repeat variation) data. Important for the current study, while Hubbard noticed correlation between dental and genetic reconstructions of population history at the group level, the trend was not repeated at the intra-family scale. Dental morphological data were not sufficiently sensitive to identify familial relationships. The contextualizing approach and methodological refinement of biodistance research on African samples continually offer significant contributions to the field.

These studies collected dental metric and morphological data to examine migration, cemetery genetic structure, social organization, kinship, demographic or social collapse, and the effects of colonialism and imperialism. In the course of these research programs, analytical techniques have been refined and expanded. Scholars working in these regions have provided major contributions to bioarchaeology and provide some context for the direction of biodistance studies within Mesoamerica.

B2. Mesoamerican studies of dental, cranial, and skeletal variation

B2a. Biodistance and bioanthropology in Maya and neighboring regions (1829-2000)

As previously mentioned, initial investigations into human variation began in the 19th century and fixated on typological classification and documentation in North America (Davis, 1867; Morton, 1839) with a subsequent inclusion of Mesoamerica in the late 19th century with the work of Charnay (1884), Putnam (1872), Sentenach (1898), and Virchow (1888). A selected bibliography of Maya and Mesoamerican biodistance and physical anthropology references is presented in **Appendix E** and forms the basis for the following discussion. The earliest skeletal reports described isolated crania from contexts with generally poor provenience (Boas, 1890; Ernst 1887, 1889; Putnam, 1872). Driven by Morton's *Crania Americana* (1839) and the curiosity surrounding individual skulls, taxonomies of morphological variation and cultural modifications emerged by the early 20th century (Hrdlička, 1911; van Rippen, 1918). The inclusion of odontometric data did not occur until Hrdlička's (1920) and others (Leon, 1901; Mena, 1911) description of shovel-shaped incisors.

In the period from 1930-1970, the foundations of bioanthropological and biodistance studies in Mesoamerica were developed. By 1940, Mexican physical anthropologist Juan Comas began publishing regularly (1940, 1942, 1966) on the Olmec and ancient Maya creating a comprehensive bibliography of the physical anthropology of Mexico and Mesoamerica (Comas, 1942). Simultaneously, Hooton (1940) carefully examined Maya skeletal remains from the archaeological site of Chichén Itzá and found evidence for anemia that he suggested caused the ancient Maya collapse. Hooton's simple observation was an early indication of the important role of skeletal data in archaeological interpretations.

A revolution in biodistance studies occurred in the early 1970s with four studies evaluating human skeletal remains within archaeological context. Analysts began to incorporate rigorous statistical analysis of dental data such as Mean Measure of Divergence (MMD) and Principle Components Analysis (PCA) to systematically test ideas of migration or residence posited by their archaeologist colleagues. Spence's (1974) analysis of cranial non-metric traits identified patrilocal post-marital residence patterns and discrete residential groups at Teotihuacán, Mexico. Spence validated the utility of physical anthropological data to investigate archaeological questions (e.g. Willey and

Shimkin's (1971) hypothesis of Teotihuacán residential structure). Romero-Molina's analysis of dental modification forms (1970, 1986) was the first comprehensive study of cultural body modification that created the typology still used today. Saul (1972) contributed a comprehensive osteobiography of the remains from Altar de Sacrificios wherein he identified an assay of pathological conditions including anemia, infection, growth disruptions, and even scurvy among the sample.

However, it wasn't until Austin's (1972, 1978) research that a true biodistance study was conducted in Mesoamerica. Austin compared the dental microevolution of two Maya communities in the Pasión region (Seibal and Altar de Sacrificios) using dental non-metric traits to test if there was a Late Classic intrusion by a foreign population as proposed by archaeologists (Sabloff and Willey,1967). He concluded that there was biological discontinuity at Seibal, but not at Altar de Sacrificios, in the Late and Terminal Classic periods. Austin attributed this to an influx of an unknown population (likely from Ucanal, see Tourtellot and González, 2004) in the Terminal Classic period (Austin, 1978).

The following decade saw a decline in the number of studies of human skeletal remains in the Maya region due to a complex cultural and political war in Guatemala. However, Pompa and Padilla (1984) maintained a research program comparing dental morphology at the neighboring sites of Chichén Itzá and Jaina to Austin's (1972) data from Altar de Sacrificios. They did not find any biological affiliation between the sites. Instead, they found commonalities in the dental morphology between Jaina and the Lowland site of Altar de Sacrificios showing a trend of long distances migration in the ancient world.

By the mid-1990s, there was resurgence of biodistance studies, partly due to an increase in archaeological projects that included physical anthropologists and bioarchaeologists on the field team. In central Mexico, Christensen (1998) evaluated the population history of the Valley of Oaxaca from the Formative to Contact periods (1600 BC –AD 1521) and concluded that selective pressures resulted in smaller tooth size through time. In Central Mexico at the sites of Tlatilco, Cuicuiloco, Monte Albán, and Cholula, Haydenblit (1996) examined dental morphology with Mean Measure of Divergence (MMD) and concluded that the oldest site, Tlatilco, was the most divergent and represented a different population or greater temporal distance to other sites.

B2b. Large-scale, comprehensive biodistance studies (2000-2014)

Despite the persistent challenges posed by poor preservation and conservation of skeletal remains in the Maya area, current work has moved far beyond description into nuanced and carefully contextualized questions within sites (Jacobi, 2000; Rhoads, 2002), between nearby sites (Wrobel, 2003), or the entire Maya region (Aubry, 2009; Cucina and Tiesler, 2004; Scherer, 2004). The following projects represent the most comprehensive studies of Maya population history and structure using biodistance analysis, and each is framed in archaeological context. The various scales represented in these studies highlight that biodistance analysis is a powerful and adaptable tool with which to understand the past.

B2b1. Intra-site analysis and culture contact

The localized studies by Jacobi (2000) and Rhoads (2002) suggest that meaningful questions about social structure can be addressed for populations in bounded polities or cities. Each study was concerned with the population history and structure of the sample region in the context of social, cultural, and political change. The historical or archaeological context makes evident the complex cultural interactions that occurred at each site during the period under analysis. The biodistance data are especially capable of elucidating the level, and in Jacobi's case – the consequences, of cross-cultural contact and interaction.

In the Maya region, Jacobi (1996, 1997, 2000) bridged social theory, biodistance, and osteological data in the investigation of the Colonial period cemetery at Tipu, Belize. Tipu was a large settlement during the colonial period (AD 1544-1707) and held military significance for the Spanish who were then struggling to gain access to the Maya stronghold at Tayasal in Lake Petén Itzá (see Cohen et al., 1994; Pugh et al., 2012; In press). In his evaluation of the sizeable sample (n=600), Jacobi found that those buried within and beyond the walls of the church represented a homogenous indigenous Maya population. The sample lacked Spanish individuals, suggesting little gene flow between the Tipu Maya and Spanish colonizers of the site.

Like Jacobi, Rhoads (2002) employed biodistance analysis within a single site for a relatively short prehistoric period. She focused on the site of Copan during the Late Classic Period (AD 700-900), a time frame that includes only the Middle and Late Coner I ceramic phases. Rhoads researched population structure of the ancient city within the context of an archaeological model that predicted the presence of a non-Maya enclave at the site (specifically, Lenca peoples in Patio D of Sepulturas Group 9N-8). Rhoads tested an isolation-by-distance model for twenty residential zones spread throughout the site center and distant hinterlands of the Copan Pocket. Sites from both the core and periphery provided the data necessary for Rhoads to assess biological affinity between the elite and non-elite segments of society. She found that Copan was relatively homogenous, represented by only two lineages, and absent of distinct (genetic) ethnic groups or a (genetic) non-Maya Lenca population at the site. However, the two lineages identified by Rhoads may reflect inter-observer error or a bias in the sampling strategy during data collection. She described the lineages as "large toothed" and "smaller toothed" and suggested that dental size alone discriminates these groups, as they were not recognized, as in the morphological data. Given the discontinuity between the metric and morphological data, it may be that these groups are not lineages but rather artifacts of variability in the measurement strategy of Rhoads and her research assistant. Even so, the lack of a proposed Lenca population was a significant find for Rhoads and has continued to impact archaeological ideas at Copan and central Honduras.

B2b2. Inter-site analysis and New World comparisons

Jacobi's (2000), Cucina and Tiesler's (2004), and Wrobel's (2003) studies applied unique methodologies by estimating biological affinity and broad temporal trends in the context of population structure at multiple scales in large but geographically constrained regions. Wrobel's comparison with non-Maya dental samples illustrated the dental traits that are unique to the ancient Maya (what he called the "Maya Dental Complex") among broader evolutionary trends in Paleoindian, Archaic, and contemporary Native American samples.

As described, Jacobi's study (1996, 1997, 2000) is primarily intra-site by design but contextualizes the site within a regional and temporal framework. In a comparison with published data from Maya sites with substantial temporal range (Late Seibal, Lubaantún, Postclassic and Historic Lamanai, and Classic Chichén Itzá). Jacobi concluded that all these sites were significantly different from Tipu and that samples from the Postclassic and Historical periods diverged through time as evident by marked diversity in dental morphology.

In a comparison of the Classic and Colonial periods, Cucina and Tiesler (2004), evaluated sites in the Petén (Calakmul and Tipu) and Yucatán (Xcambó and Campeche). Their results indicated overall biological homogeneity without regional clustering of the samples. However, in the Yucatán Peninsula, temporal changes between Classic and Colonial period samples were evident in dental measurements.

Likewise, Wrobel (2003) conducted a longitudinal study of dental variation in northern Belize from Preclassic through Postclassic periods (300 BC–AD 1500) at three sites (Chau Hiix, Altun Ha, and Lamanai) to estimate regional population history and structure. The scale of his analysis permitted detailed long-term study of each site and inter-site comparison of temporal and morphological trends between sites. He compared the Belize samples to other Maya and non-Maya samples (Southwest Pecos Pueblo, Oaxaca, Aztec, and South American Peruvian and Xingu) and found that Maya dental traits were unique among Mesoamerican populations. The Chau Hiix, Altun Ha and Lamanai Maya were distinct groups within Belize following geographic, political and linguistic divisions where genetic distances between the groups increased over time. Finally, he identified a general reduction in tooth size over time that he attributed to an increasing dependence on agriculture.

B2b3. Regional analysis and inter-site affiliation

The regional investigations by Scherer (2004) and Aubry (2009) were exhaustive studies of the pan-Maya region that considered various geographical zones (e.g. Highland, Lowland, Pacific Coast), social and political affiliations, and archaeological hypotheses in concert with biodistance data. These studies emphasized the power of scale in evaluating individual sites and their neighbors within broader trends of the same cultural complex. Affiliations (or lack thereof) that appear significant at the regional level become less impressive when contextualized within the broader trends for full Maya region and vice-versa.

Scherer (2004; see also Scherer, 2007) explored the population structure at 18 sites, from seven archaeological regions, during the Classic period and concluded that an isolation-by-distance model for Classic Maya society was not supported. Sites that are geographic outliers were also anomalies in the biodistance analysis and include Kaminaljuyú and other sites in the Maya Pacific Coast. A number of the largest cities in the Maya Lowlands, like Tikal and Calakmul, exhibit marked genetic heterogeneity with some affiliation to other sites within the region but not to each other, despite their close geographical proximity. The Pasión zone revealed affinity between Seibal and Altar de Sacrificios but Dos Pilas remains distinct. For Copan Scherer suggested that, while it was a geographically separated from the other sites, it demonstrated genetic affinity with the

Maya area in the Lowlands and Highlands of Guatemala but showed less than average gene flow from other Maya sites. However, he was only able to include the Copan burials stored at the Peabody Museum of Archaeology and Ethnology at Harvard University. The Peabody burials derive largely from Group 10L-2, "Mound" 10L-36 and likely represent the genetic structure of one residential area instead of the site more generally.

Like Scherer, Aubry (2009) investigated 25 sites from central Mexico and the Maya area to test archaeological models of interaction and migration during the Early and Late Classic periods. Aubry found concordance between his biodistance results, derived from dental morphological and metric data, and the archaeological inter-site connections. When Tikal, Kaminaljuyú, and Chichén Itzá were evaluated against Teotihuacán and Tula, sites that were thought to have a close relationship based on archaeological data, Aubry concluded that the sites had small pairwise distances. Sites located on the margins of the Maya world were not part of any statistical cluster and were outliers among Maya sites (Copan, Palenque, Dzibilchaltún, and Xcambó). While he reached the same conclusion about the isolation-by-distance model as Scherer (2004), he found that Copan received noticeable gene flow from non-Maya populations as evident by biological distance estimates that are significantly different from other Maya sites. However, like Scherer (2004), his Copan sample was from the Peabody Museum at Harvard and is likely not representative of the site as a whole.

In summary, keeping with other 19th century studies of skeletal remains, the earliest work in the Maya region described isolated skeletal elements through typological analysis of size and form. Investigators began considering cultural context by the mid-20th century and the 1970s marked the development and regular use of complex methodology and analytical techniques to investigate human skeletal remains. The multi-scalar contributions of these studies are most apparent in the last three decades of the 20th century when skeletal data were statistically quantified within a bioarchaeological approach that embraced cultural context, archaeological and social theory, and regional or inter-site approaches. The final section described the most recent and large-scale studies that built upon a century of previous research on skeletal remains in Mesoamerica.

C. Physical Anthropological Approaches to Migration

Biodistance studies of migration are not *prima facie* concerned with global patterns of variation or the peopling of the Old and New Worlds. However, biodistance studies are usefal at various scales of research including the site, regional, and continental levels. Such studies are relevant to understanding the evolutionary history that influenced the dental morphological and metric traits observed in archaeological samples across the globe. Site specific or intracemetery studies identify regional biological variation and anomalous traits to form the baseline for broader continental or global surveys of biological variation and migration (Stojanowski et al., 2013). This section will present approaches to migration from a physical anthropological perspective and will briefly address the peopling of the New World, mitochondrial DNA, and understanding migration through biodistance.

C1. Migration to New World

Early studies of migration by physical anthropologists centered on morphological features of isolated cranial and postcranial elements to assess similarities between different groups of people in contemporary and prehistoric contexts. Morton (1839) and Putnam (1872) were two of the first scholars to describe Native American crania in detail. These characterizations of cranial or soft tissue features (Stewart and Newman, 1951; Neumann, 1952) were used to create racial typologies based on skull shape correlated with a tribe and/or language family in the New World (Neumann, 1952).

The observed cranial variation was attributed not to physical or evolutionary change but to independent migrations of groups with distinct morphology from the Old to the New World with distinct morphology (Stewart and Newman, 1951). Such independent migrations were developed into poly-racial migration models (Gladwin, 1947) in which six separate migrations brought different groups to the New World (Clovis-Australoid, Folsom-Australoid, Algonquian, Eskimo, Mongoloid, and Polynesian). Contrary to the multi-migration model, other scholars proposed that marked diversity could exist between tribes with a single migration into the New World (Boas, 1912a,b; Hooton, 1930; Virchow, 1988; Wilson, 1857) if skull shape was subject to biological and evolutionary change (Hrdlička, 1935).

The common traits between Native American peoples, especially in the Sinodont dental complex (see Chapter 6), may be the result of a single founding group sharing particular genetic traits that changed over time through genetic drift (Hrdlička, 1920; Malhi et al., 2002; Powell and Neves, 1999; Turner, 1985), result from more than one migration episode that contributed the variety of skeletal and dental traits observed between groups (Haydenbilt, 1996; Steele and Powell, 1994), or represent three waves of migrants from three distinct regions of northeast Asia (Turner, 1985; Tuner and Scott, 2007), among increasingly complex models.

The timing and migration processes that brought people to the New World remain a point of debate. Migration into the New World may have been a singular or multiple event (de Azevedo et al., 2011; Fladmark, 1983; Greenberg et al., 1986; Gruhn, 1987; Neves and Hubbe, 2005; Powell and Neves, 1999; Scott and Turner, 1997; Schurr, 2004) and occurred by land or seacoast (Dixon, 1999, 2011). Thee dates of these migrations are also disputed and range from 24000 cal years BP to 12550 cal year BP. Dates are based in geological (Blaise, 1990), archaeological (Dillehay, 1989, 1997; Meltzer, 1997), linguistic (Gruhn, 1992), and genetic (Brown et al., 1997; Lalueza and Fox, 1996; Lalueza et al., 1997; Kemp and Schurr, 2010; Merriwether et al., 1994, 1995; Tamm et al., 2007; Torroni et al., 1993; Silva et al., 2002; Schurr, 2004) data. Even so, migration into the New World introduced the suite of phenotypic traits observed in the descendant populations in North, Central, and South America.

C2. Migration through mitochondrial DNA

Complementing skeletal and dental traits, mitochondrial DNA (mtDNA) has been evaluated in contemporary populations to assess genetic origins, and thus migration history of North America (Kaestle, 1997, 1998; Kaestle and Smith, 2001; Malhi et al., 2003; Schroeder et al., 2009; Stone and Stoneking, 1993), Central America (González-Oliver et al., 2001; Martínez-Cortés et al., 2010; Merriwether et al., 1994, 1995, 1997; O’Rourke et al., 1992), South America (Lalueza and Fox, 1996; Meriwether et al., 1994, 1997), and Europe (Richards and Macaulay, 2000; Lell and Wallace, 2000; Sykes, 2000). Genetic reconstructions of migration depend upon reliable reconstruction of phylogenetic trees of haplogroups that demonstrate distinctive genetic variants from common ancestry and cluster geographically in potential homelands (Lell and Wallace, 2000; Lorenz and Smith, 1996; Sykes, 1999).

European studies have identified haplogroups H-K, and T-X and suggest pan-European traits beginning in the Upper Paleolithic with some regional specificity (e.g. in Eurasia, Lell and Wallace, 2000; in the Mediterranean, Simoni et al., 2000). Large-scale migration into ancient Central and South America is traced to one of five mtDNA haplogroups, A-D and X that were carried by the founders of the New World (González-Oliver et al., 2001; Lell and Wallace, 2000; Lewis et al., 2007; Schurr, 2004; Torroni et al., 1992). Haplogroup A is the most common but some cases lack all markers of A-D. These are categorized as haplogroups or lineages N, and E (Bailliet et al., 1994; Schurr, 2004; Stone and Stoneking, 1993; Torroni et al., 1993).

Comparisons of Mesoamerican and Southwest American samples report that haplogroup B is more common in Southwestern Amerindians (except for the Navajo and Apache) and is largely absent in other Amerindian and Mesoamerican lineages (Lorenz and Smith, 1996; Kemp, 2006; Kemp et al., 2010; Schurr et al., 1990; Torroni et al., 1993). Elsewhere in North America, genetic similarity exists among Amerindians in the Central Plains and Eastern Woodlands, Western Basin and Northern California, and between the Freemont and Anasazi peoples (Kaestle, 1997; Lorenz and Smith, 1996; Merriwether et al., 1997; O'Rourke et al., 2000).

In the Maya region, sites have a distinctive variety of haplogroups. Haplogroup A was identified in 84% of the sample (n=28) at Xcaret in Quintana Roo and haplogroups B and C dominate the Zapotec sample (González-Oliver et al., 2001). Copan is unique among Maya centers based on a small study (n=9) where haplogroups A and B are absent and C and D are represented in 89% and 11% of the sample, respectively. These results are attributed to Copan's location at the southern Maya frontier and a regular influx of non-Maya peoples migrating into the site (Gozález-Oliver et al., 2010; Reed 1997).

Overall, mtDNA data suggest that there is consistent geographic structuring of genetic variation in North America with marked diversity in the distribution of haplotypes in Central and South America (O'Rourke et al., 1992; O'Rourke et al., 2000). Considering all available data, Schurr (2004) argues for an initial migration into the New World between 20,000-15,000 cal years BP that brought haplogroups A-D, and possibly X, which were subsequently dispersed throughout the North and South American continents and a second expansion in 12,550 cal years BP that brought haplogroup X and potentially added to the existing A-D haplogroups.

C3. Migration through biodistance

Like the morphological studies of cranial form and soft-tissue traits in the peopling of the New World and mitochondrial DNA, dental metric and morphological variation are apt to address large-scale and deep time migration (Hrdlička, 1920; Dahlberg, 1951, 1968; Hanihara, 2008; Scott and Turner, 1997, 2006; Turner and Scott, 2007) and small-scale migrations through intra-cemetery analysis (Stojanowski and Schillaci, 2006).

The inclusion of biodistance data in studies of migration is accomplished primarily by bioarchaeologists contextualizing observed patterns of dental variation within a cultural context (Buikstra et al, 1990; Jacobi, 2000; Pilloud, 2009; Spence, 1996; Stojanowski, 2003a,b, 2010; Sutter, 2005, 2009; Sutter and Verano, 2007). Studies are undertaken at two scales: first, regional studies of various sites and/or cultures in Asia (Temple and Sciulli, 2005); Europe (Hallgrímsson et al., 2004; Mays, 2000); Mesoamerica (Aubry, 2009; Haydenblit, 1996; Scherer, 2004; Willermet et al., 2013), North America (Buikstra et al., 1990; Durand et al., 2010; Konigsberg, 1988; Schillaci, 2003; Schillaci and Stojanowski, 2005; Taylor and Creel, 2012), the Near and Middle East (Ullinger et al., 2005), and South America (Blom et al., 1998; Sutter, 2005). The second scale of biodistance analysis occurs within smaller regions or at the intra-site level engage with cultural questions of increasing specificity, including detailed analysis of individual migration histories. Such work has occurred in Asia (Morita et al., 2012), Europe (Manolis, 2001; McIllvaine et al., 2014), Mesoamerica (Cucina and Tiesler, 2004; Rhoads, 2002; Haydenblit, 1996; Wrobel, 2003), North America (Steadman, 1998), and South America (Rothhammer and Dillehay, 2006; Sutter, 2009).

The inclusion of biological data provides evidence for migratory events as a result of societal pressures. The context of archaeological remains is created within shifting political structures, complex elite relationships and competition, centralized and decentralized organization, and complex forms of migration and affinity. Biodistance data can directly address migration between regions within complex social or political situations.

D. Correlating Dental Data and Kinship

This research focuses on a small-scale analysis at the level of the neighborhood and uses techniques appropriate for intra-cemetery analysis to identify social organization patterns within a single site.

D1. Model-bound and model-free approaches

Biodistance analysis can be structured within two paradigms, 'model-free' and 'model-bound' (Relethford and Lees, 1982; Stojanowski and Schillaci, 2004; see Stojanowski, 2001; Scherer, 2004). Both estimate the population structure or history under the evolutionary processes of gene flow or genetic drift.

The model-free approach bases interpretations on the phenotypic similarity or dissimilarity between populations and relies on gene flow as the primary mechanism for observed phenotypes (Relethford and Blangero, 1990). The model-bound approach estimates parameters for a population based on theoretical, demographic, evolutionary, or genetic models (Relethford and Blangero, 1990). The model-free approach is better at assessing population history while the model-bound approach is better suited to investigating population structure (Harpending and Ward, 1982; Konigsberg, 1988; Konigsberg and Buikstra, 1995; Relethford and Blangero, 1990).

As an example, a model-free approach assumes that genetic distances increase between populations with reduced gene flow and decrease with increased gene flow without specifically defining the mechanism driving the change (Howells, 1973; Irish, 2010; Relethford and Lees, 1982). A model-bound approach addresses population structure by calculating the genetic parameters affecting gene flow, such as migration rates, kinship, population size estimates, or the level of heterozygosity (F_{ST}) (Relethford and Blangero, 1990; Konigsberg and Buikstra, 1995; Powell and Neves, 1999; Wright, 1951).

D2. Pretreatment of dental data

Following the methods described in Chapter 3, dental measurements were collected in this study on the right and left permanent polar teeth of each dental class (Maxilla: I1, C, P3, M1 and Mandible: I2, C, P3, M1). Each tooth was subject to four measurements: buccolingual and mesiodistal crown (CBL, CMD) and buccolingual and mesiodistal cervical neck (NBL, NMD) (after Hillson, 2005; Stojanowski, 2007; Aubry 2014). The sample includes 305 individuals with a total of 64 measurements possible for each individual. Prior to analysis, the data were pretreated and checked for effects that could influence the power and significance of the statistical tests. Appropriate data pretreatments in biodistance studies to reduce non-genetic noise were performed (see Stojanowski and Schillaci, 2006) and are described below.

D2a. Intra- and inter-observer error

Intra-observer error tests were performed on twenty individuals (Op. 48, Group 8L-10 and 8L-12), at the beginning and at the end of the data collection period. The average error was 1.30 ± 0.58% for buccolingual crown measurements, 2.62 ± 0.78% for mesiodistal cervical measurements, and 1.86 ± 0.78% per individual. The following formula was used

$$\frac{|x_1 - x_2|}{(x_1 + x_2) \div 2} \bullet 100$$

Inter-observer error was not calculated here because other researchers either did not study the collection or they do not follow the same methodology of cervical measurements used in this study (see Chapter 3; Aubry, 2014; Hillson et al. 2005;

Stojanowski, 2007). The Copan sample had been subject to metric analysis by Rhoads (2002). However, her study occurred prior to the definition of the cervical and crown measurements used in this analysis (Aubry, 2009, 2014; Hillson et al., 2005; Stojanowski, 2005). Additionally, I used the Paleotech Hillson-Fitzgerald dental calipers, which have a fine point and are specialized for cervical dental measurements. Rhoads (2002) used standard Mitutoyo digital fine point calipers, featuring a comparatively larger point that cannot take the cervical measurements defined in this study.

While inter-observer error was not assessed at Copan, a separate inter-observer error study was conducted at Arizona State University between the author and the other observers on the Gobero skeletal collection housed in the Center for Bioarchaeological Research. The inter-observer error of the author and the other observers averaged 2.61% for buccolingual crown and 6.18% for mesiodistal cervical measurements. The inter-observer error between the two other observers (excluding the author) was 3.21% for buccolingual crown and 8.19% for mesiodistal cervical measurements. This inter-observer error study was designed to judge if error was marked between the author and other bioarchaeologists measuring the same teeth. Error was minimal in the intra-observer study and low for the inter-observer study.

D2b. Age and dental wear

Teeth wear as one ages, most commonly on occlusal and interproximal surfaces. Older individuals exhibit more dental wear, tooth loss, and dental pathologies. Wear therefore can be used as an ageing method in archaeological samples, if certain assumptions about common diets and food preparation methods are made (Buikstra and

Ubelaker, 1994; Lovejoy, 1985; Smith, 1984; Walker et al., 1991). Dental measurements are affected by dental attrition, as the crown may be subject to marked wear at relatively young ages, especially in agricultural populations (e.g. the Maya) dependent on stone-ground grains.

In the present study, dental measurements include both the crown and the tooth cervix at the cement-enamel junction (CEJ) to minimize missing data due to dental wear. The tooth dimensions at the cervical margin are less affected by occlusal and interproximal attrition (Aubry, 2014; Hillson et al., 2005; Stojanowski, 2007). Buccolingual crown measurements are affected by attrition of the occlusal surface and mesiodistal crown measurements are affected by both attrition and interproximal wear (Aubry, 2014; Hillson et al., 2005). If all teeth that exhibited any wear or dentin exposure were removed from analysis, as is standard practice (Hillson, 1996), most of the adults over the age of 25 would have been eliminated from the present study. As an alternative, if individuals exhibited dental wear, cervical measurements were still recorded but crown measurements were excluded as described in Chapter 3. As an extra precaution, a linear regression was performed to verify if there were any age effects on the sample and there was no significant effect ($F = 1.201$, $df = 32$, $p = 0.217$; R^2=0.124).

D2c. Sex effects and sex estimation

As with the rest of the skeleton, sexual dimorphism can affect the size and shape of human teeth (Black, 1978; Garn et al., 1967; Kieser, 1990; Schwartz and Dean, 2005; Scott and Turner, 1997). The case of the ancient Maya is no different (Scherer, 2004; Wright, 1994). The means and standard deviation for each tooth measurement for all sexes is displayed in **Table 12**. While males have larger teeth than females at Copan, there was no statistically significant difference between male (*M*=7.96, *SD*=1.92) and female (*M*=7.71, *SD*=1.91) tooth size, as verified by a two-tailed *t*-test (t=0.56, *df*=60, p=0.57).

Within this sample, there is slight female bias as females outnumber males at a ratio of 1.1:1. In addition to male and female individuals there are 118 individuals for whom sex could not be estimated, due primarily to the large number of subadults in this sample.

The problem of sex estimation in the Maya region is well known and results from poor skeletal preservation of the pelvis, cranium, and even long bones. There has been some success in sex estimation based on femoral and humeral head (Buikstra and Miekle, 1985) and long bone (Whittington, 1989; Wright, 1994; Wrobel, 2003) measurements, especially when compared to other standard sexing criteria (e.g. Buikstra and Ubelaker, 1994). In this sample, I had to decide whether or not indeterminate individuals would be excluded, pooled with either the male or female group, or if all sexes should be pooled. Following previous studies in the Maya region (Aubry, 2009; Rhoads, 2002; Scherer, 2004; Wrobel, 2003), I have elected to pool sexes to increase sample size and to not prioritize either male or female members of a neighborhood in the consideration of social structure at Copan.

Table 12: Means and standard deviation by sex

Tooth	Male	Std Dev.	Female	Std Dev.	Undet	Std Dev.	Total	Std. Dev
XI1CMD	8.71	0.56	8.54	0.63	8.58	0.53	8.60	0.55
XI1CBL	7.41	0.49	7.04	0.56	6.98	1.28	7.15	0.82
XI1NMD	6.75	0.57	6.35	0.51	6.38	0.57	6.51	0.58
XI1NBL	6.85	0.43	6.50	0.41	6.41	1.33	6.61	0.73
XCCMD	8.37	0.45	8.03	0.48	8.09	0.52	8.15	0.51
XCCBL	8.63	0.55	8.14	0.75	8.32	1.39	8.36	0.93
XCNMD	6.34	0.49	5.82	0.52	5.84	0.98	6.01	0.70
XCNBL	8.42	0.54	7.77	0.63	8.04	1.47	8.08	0.92
XP3CMD	7.44	0.89	7.43	0.46	7.20	1.17	7.36	0.86
XP3CBL	9.45	0.55	9.35	0.77	9.07	1.53	9.31	0.98
XP3NMD	5.19	0.39	5.06	0.50	4.98	0.88	5.09	0.58
XP3NBL	8.49	0.72	8.37	0.58	8.25	1.52	8.39	0.92
XM1CMD	10.54	0.62	10.61	0.61	10.35	0.57	10.44	0.59
XM1CBL	11.71	0.80	11.51	0.60	11.56	0.59	11.59	0.66
XM1NMD	7.98	0.55	7.70	0.41	7.90	0.49	7.86	0.50
XM1NBL	11.19	0.54	10.95	0.52	11.06	0.54	11.06	0.54
NI2CMD	6.17	0.40	6.04	0.44	6.09	0.41	6.10	0.42
NI2CBL	4.02	0.32	4.03	0.40	4.11	0.32	4.05	0.35
NI2NMD	6.11	0.40	5.91	0.48	5.98	0.41	6.00	0.44
NI2NBL	7.32	0.43	7.03	0.42	7.09	0.49	7.15	0.46
NCCMD	7.85	0.52	7.49	0.57	7.67	0.51	7.66	0.56
NCCBL	5.97	0.44	5.42	0.55	5.62	0.45	5.66	0.55
NCNMD	7.89	0.46	7.33	0.76	7.74	0.63	7.61	0.69
NCNBL	6.92	0.47	6.98	0.47	6.95	0.42	6.95	0.46
NP3CMD	7.91	0.53	7.79	0.49	7.88	0.59	7.85	0.53
NP3CBL	5.35	2.04	4.95	0.61	5.19	0.43	5.16	1.33
NP3NMD	7.00	0.60	6.80	0.55	7.13	0.45	6.95	0.57
NP3NBL	11.24	1.15	11.23	1.34	11.32	0.60	11.28	0.95
NM1CMD	10.79	0.60	10.54	0.53	10.59	0.57	10.63	0.57
NM1CBL	9.37	0.44	9.08	0.51	9.35	1.28	9.27	0.90
NM1NMD	9.47	0.51	9.18	0.49	9.44	0.51	9.37	0.52
NM1NBL	9.37	0.48	9.20	0.51	9.42	0.53	9.33	0.51

D2d. Imputation of missing data

As with most archaeological samples, data imputation of missing variables was necessary (Aubry, 2009; Powell, 1995; Rhoads, 2002, Scherer, 2009; Stojanowski, 2001). While Bayesian analysis is unaffected by missing data, Principal Components Analysis and Mahalanobis Distance (D^2) required complete data matrices. If individuals with missing data were excluded from analysis, the sample would be so small that statistical significance and power functions could not be computed. If missing values were replaced by the site mean for a variable, within-group and between-group variance may be significantly reduced. Right side antimere substitution for missing variables was used to reduce missing values after a *t*-test determined that there was no significant directional asymmetry. After antimere substitution, individuals with fewer than 5 measured teeth were excluded from data imputation.

Following other biodistance studies in the Maya region that faced similar difficulty with fragmentary skeletal samples (Aubry, 2009; Rhoads, 2002; Scherer, 2004), this study uses the multiple imputation method to compute missing variables. This technique replaces missing values with numerous estimated values (Schafer, 1999). Ideally, the percentage of absent values should be <15%. Imputation was completed in SPSS v.22 using Multiple Imputation with 100 iterations per variable (Mersemme Twister number generator), producing complete datasets that are then combined to create estimates within specified confidence intervals. SPSS v. 22 creates values with data uncertainty that reduces variable correlation and does not influence the covariance structure due to estimates that would reduce variance. After data imputation was complete, the resulting datasets were combined and *t*- and *F*-tests were used to determine whether or not there were statistically significant differences between the means and variances of the original and imputed datasets for each region (e.g. Scherer, 2004). Any measurements with significant *t*-test and *F*-test ($p < 0.05$) values in any of the regions were eliminated. Five measurements were excluded (**Table 13**).

D2e. Data transformation

Allometric effects of tooth size can affect dental traits (Corruccini, 1973). Imputed data were Q-mode transformed following Corruccini (1973), Powell (1995), and Scherer (2004, 2007). The Q-mode correction uses the geometric mean of all measurements for an individual as a unique reference variable to standardize data. Each measurement is then divided by the geometric mean thus eliminating allometric effects of tooth size and differences resulting from sexual dimorphism. Q-mode transformation was performed by hand in Excel.

D4. Statistical Methods

Model-free (PCA, Mahalanobis, etc.) statistical approaches were employed in this study to interpret population history. Given that the goal is to identify units above level of the family, "group" refers to the inhabitants of a neighborhood whose dead are interred within a patio or neighborhood.

Each measurement in the dataset was checked for normality using the Kolmogorov-Smirnov test. All measurements, in addition to those identified by the *t*- and *F*-tests on the imputed datasets, were excluded except for ten measurements. The statistical tests that follow were performed on five maxillary (2 CBL, 1 CMD, and 2 NBL) and five mandibular (2 CBL, 2 CMD, and 1 NMD) measurements (**Table 13**).

Table 13: Dental measurements included and excluded during pretreatment. Ten variables were included in statistical tests.

Measurements Collected	Excluded by *t*- and *F-test* after data imputation	Excluded by Kolmogorov-Smirnov test for normality	Measurements Included
XI1CMD	Excluded		
XI1CBL		Excluded	
XI1NMD	Excluded		
XI1NBL		Excluded	
XCCMD		Excluded	
XCCBL			Included
XCNMD	Excluded		
XCNBL		Excluded	
XP3CMD		Excluded	
XP3CBL		Excluded	
XP3NMD		Excluded	
XP3NBL			Included
XM1CMD			Included
XM1CBL			Included
XM1NMD		Excluded	
XM1NBL			Included
NI2CMD			Included
NI2CBL		Excluded	
NI2NMD		Excluded	
NI2NBL		Excluded	
NCCMD			Included
NCCBL		Excluded	
NCNMD			Included
NCNBL		Excluded	
NP3CMD		Excluded	
NP3CBL		Excluded	
NP3NMD		Excluded	
NP3NBL	Excluded		
NM1CMD	Excluded		
NM1CBL		Excluded	
NM1NMD			Included
NM1NBL			Included

D3a. Analysis of Variance and Covariance (ANOVA)

Analysis of variance (ANOVA) tests were employed on imputed Q-mode transformed data to check for significant differences in the sample means across the neighborhoods. Prior to the ANOVA, the sample was checked for linearity, independence of data and means, and normality using Bartlett's test. An ANOVA is a *F-test* that compares variance among means of *n* samples to pooled variance within samples and follows the simplified formula following Zar (1999) of

$$F = \frac{GroupsMS}{ErrorMS}$$

where Group MS and Error MS can also be expressed as sum of squares and degrees of freedom. Alternatively, the equation can be expressed as

$$F = \frac{s^2_{bg}}{s^2_w}$$

where s^2_{bg} is the between-group variation divided by s^2_w, the within-group variation. Thus, a F value that is significantly larger than "1" indicates that group means are statistically significant.

In addition to ANOVA, the data were considered in a Levene's test (W)

$$W = \frac{(N-k)}{(k-1)} \frac{\sum_{i=1}^{k} N_i(\bar{Z}_{i\cdot} - \bar{Z}_{\cdot\cdot})^2}{\sum_{i=1}^{k} \sum_{J=1}^{N_i} (Z_{ij} - \bar{Z}_{i\cdot})^2}$$

where k is the number of sampled neighborhoods and N is the total sample size, and Z_{ij} represents the mean of the "*ith*" sample. Levene's is particuarlly useful given its robustness against non-normally distributed data, as is a potential issue in the small sample of some of the neighborhoods.

C3b. Principal Components Analysis (PCA)

Principal Components Analysis is a (model-free) multivariate method that reduces the original dataset into new weighted variables known as principal components. PCA uses orthogonal transformation to change the variance-covariance matrix of interrelated variables into individual linear and uncorrelated variables (Manly, 1994). Each variable accounts for a component of variation in the dataset and is ranked by the amount of variation that is explained. The loadings on the first two principal components account for most of the variance in the data set. In the case of dental measurements, size often loads on the first principal component and indicates that dental dimensions (e.g. length x width) may be associated with a particularly large or small phenotype within a sample. Principal components were extracted from the imputed Q-mode transformed dataset in SPSS v. 22, with the Oblimin with Kaiser Normalization rotation method. Principal components were then plotted into three-dimensional space using SPSS v. 22 scatterplots (see Chapter 7).

D3c. Canonical Discriminant Analysis (CDA)

Canonical discriminant analysis (CDA) is a dimension reduction technique that was utilized to evaluate neighborhood membership and discriminate between (*k*) groups. CDA has similar assumptions to ANOVA and prior to CDA, the sample was checked for linearity, independence of data and means, and normality. CDA consists of two steps that build a predictive model for group membership based on linear combinations of predictor values that maximally separate groups. The first step is a *F-test (Wilk's Λ)* that calculates the significance of the discriminant model where variables are defined as above for the *F-test* in ANOVA and λ represents eigenvalues (Zar 1999).

$$F = \frac{GroupMS}{Error\,MS}$$

When Λ is significant, variables are assessed against group centroids using Mahalanobis Distance (D^2) to determine if cases are re-classified by CDA as predicted based on group means. If the test is effective, the CDA classification of cases will yield a high percentage of correct assignments to the groups predicted in the original dataset. CDA was performed in SPSS v. 22.

D3d. Mahalanobis Distance (D^2)

Mahalanobis distance (D^2) is model-free and used to provide a distance measure that calculates the differences in the means relative to the variance for neighborhoods (Mahalanobis, 1936; Manly, 1994). The Mahalanobis distance statistic is commonly employed in biodistance studies, as it controls for the known correlation of dimensional variables of teeth (Garn et al., 1965). Mahalanobis distance measures the differences between the means relative to the variance. The equation for this method to calculate the distance between populations is

$$D^2_v = (x_i - x_j)' v_i^{-1} (x_i - x_j)$$

Where x_i is a vector of k trait means for the population i, and x_j is a vector of k trait means for another population j and v_i^{-1} is the inverse of the within-group pooled covariance matrix for k traits (Manly, 1994). To compare an individual to a population mean, x_i is a vector of k trait means for the individual i, and x_j is a vector of k trait means for population j and v_i^{-1} is the inverse of the within-group pooled covariance matrix for k traits for population j (Stojanowski, personal communication 2008). The test assumes equality between covariance matrices and is necessary for accurate distance measurements. The D^2 statistic can be calculated on incomplete or imputed datasets and this study used the original incomplete dataset using the means and pooled covariance matrices. The test was performed by hand in Excel 2008 and using the XLSTAT Add-In Mahalanobis Distance function under an absolute model with random initial configuration and the Kruskal's Stress test. Results were then plotted in three-dimensional space using Multi-Dimensional Scaling with the XLSTAT Add-In.

D3e. Mantel Test

Following the Mahalanobis test, a Mantel test was performed to test for correlation between the biological and geographic distance matrices (Smouse et al., 1986; e.g., Aubry, 2009; Scherer, 2004; Wrobel, 2003). The geographical distance matrix data stems from approximate spatial distances between neighborhoods at Copan (Fash and Long, 1983; Richards-Rissetto, 2010; Richards-Rissetto and Landau, 2014). The Mantel test randomizes the rows and columns for 1,000 iterations of the Mahalanobis and geographical distance matrices to determine whether or not the correlation coefficients between the distance matrices are statistically different (Smouse et al., 1986). In this conservative test, if the matrices are correlated, the *r(AB)* value will be statistically significant. The test was performed in Excel 2008 using the XLSTAT Add-In Mantel Test function.

D3f. Euclidean Distance

Euclidean distance is the direct distance between two points in a plane, which are measured in the same scale. It is a useful measure to compare metrics of cases across a series of variables in X and Y vectors and has been employed in biodistance studies (Bondioli et al., 1986; Corruccini et al., 2002). The distance statistic $d(x,y)$ is the calculated as the square root of the sum of distances squared in the two vectors, x and y.

$$d(x,y) = \sqrt{\sum_{i}^{x}(x_i - y_i)^2}$$

Euclidean distances were calculated between individuals buried within each patio based on dental metric data. The results of the distance matrix were plotted using multidimensional scaling and similar objects were flagged with a dissimilarity threshold set to 0.95. While some studies use squared Euclidean distances of principal components, this study prefers Euclidean distance to Squared Euclidean distance. Squared Euclidean distance applies more weight to objects that are farther apart and adjusts for differences in scale. The differences in scale identified here by Euclidean distance are meaningful indicators of difference in the dental metric data. The test was performed in Excel 2008 using the XLSTAT Add-In Similarity/Dissimilarity Matrix function. Results were then plotted in three-dimensional space using Multi-Dimensional Scaling in XLSTAT Add-In.

E. Summary

Biodistance, an evolutionary approach based in population genetics, depends on a clear understanding of dental growth and development, the genetic component of phenotypic expression, and the biocultural implication of the statistical analysis of dental measurements. This chapter outlined a brief background of biodistance analysis as a specialty within anthropology. The genetic control of tooth shape and the evolution of tooth fields as they relate to the polar teeth used in this analysis were summarized. The biocultural application of biodistance statistics was discussed at length for the Mesoamerican region after a brief introduction to global studies. Most of this chapter is devoted to a detailed discussion of the statistical methods employed to analyze the sample described in Chapter 3 from Copan, Honduras. The results of the biodistance analysis will be discussed in the following chapter, in conjunction with the strontium isotope data, to answer the research question proposed in this dissertation.

CHAPTER 7: RESULTS AND INTERPRETATIONS

Radiogenic strontium and biodistance are the primary lines of evidence used here to reconstruct the role of kinship and migration in social structure of ancient Copan during the Late Classic period. As the previous chapters have highlighted, each method has been effective at elucidating patterns of population structure and movement in the past. The integration of both methods in this research allows for a detailed and comprehensive analysis of inter-individual, intra-neighborhood, and inter-neighborhood relationships. This chapter presents the results and interpretation of the radiogenic strontium isotope and biodistance analysis. The multi-scalar nature of this project is highlighted throughout the results as different data and statistical tests illustrate various degrees of affiliation within Copan.

The radiogenic strontium data reveal that migration was common, occurring across age, sex, and class categories, and migrants represent a variety of potential homelands. Complementing the radiogenic isotope values, biodistance data reveal that neighborhoods were occupied by biologically diverse groups in the site core but less so in the groups in the hinterland. The affiliation of people interred within patio groups of neighborhoods is more complex. Individuals within several patios show affinity while others show marked dissimilarity. Inter-individual distances of those buried within discrete patios reveal that patios may have been occupied by small biological lineages with other un-related individuals, biological lineages, or completely unrelated individuals.

A. Radiogenic Strontium Analysis Results

The following section outlines the results of radiogenic strontium isotope analysis at Copan. The geology of the Copan Valley and surrounding regions is described in Chapter 2. The methods employed during data collection and laboratory analysis, along with the checks performed for diagenesis, are found in Chapter 3. The new geological baseline for Honduras, highlighted below, is discussed in Chapter 5 along with the background to radiogenic strontium isotope analysis. First, the definition of what is local or non-local according to the radiogenic strontium isotope values is outlined. These definitions are then applied to the Copan dataset with respect to age, sex, burial position, grave furniture, and cultural body modification in the context of the neighborhoods under analysis.

A1. Definition of local and non-local

Radiogenic strontium isotope analysis identified that 10-40% of the Late Classic sample includes individuals with potentially non-local $^{87}Sr/^{86}Sr$ values. These $^{87}Sr/^{86}Sr$ values around found in the underlying geology of the Maya region of Guatemala, Belize, Southern and Yucatan Mexico and in the non-Maya areas of Northern and Central Honduras. These values represent one interpretation of the local range for the Copan Valley following methodology of Tung and Knudson (2011), Price and colleagues (2010), and Wright (2005).

In the following discussion, "local" refers to individuals with $^{87}Sr/^{86}Sr$ values in the range of 0.7063-0.7074 $^{87}Sr/^{86}Sr$, which seems to represent the geological variability of the Copan Valley. Those that are discussed as "non-local" have $^{87}Sr/^{86}Sr$ values that are above or below this "local" range. These "non-local" values may result from (1) averaging of regional geology, (2) averaging of dietary resources, (3) residential mobility – either short or long-term, (4) migration, or (5) some other combination of these factors. So, when an individual is discussed as local or non-local in the following discussion, these caveats should be kept in mind that a non-local $^{87}Sr/^{86}Sr$ value may not always indicate migration.

The definition of local or non-local based on radiogenic strontium isotope values rests on an analysis of local faunal remains ± two standard deviations from the local mean (Price et al., 2002), through descriptive statistics and plots (Wright, 2005), and through breakpoints in the dataset and plots (Tung and Knudson, 2011). The faunal data derived from Krueger (1985), Price and colleagues (2010), and Miller and colleagues (2007, 2013) were combined to define a local range based on the mean ± two standard deviations (**Figure 45**). This method produced a very low estimate of migration at 7% based on 10 outliers, an estimate that appears to be an underestimation when compared to the other methods. Faunal baselines may work well within small samples (Bentley et al., 2004, Knudson et al., 2004; Knudson and Price, 2007). This was the case with the faunal data derived from the baseline by Miller and Friewald (2013; see also Freiwald et al., 2014) (**Figure 46)**. Following the same method as Price and coworkers (2002), the data derived from a regional collection of radiogenic strontium samples in Honduras, estimate that 30% of the sample is non-local (**Figure 47**).

Table 14: Descriptive statistics of radiogenic strontium values from the Copan Burials. The "Min" and "Max" demonstrate the range of $^{87}Sr/^{86}Sr$ values for the Copan region based on each method.

Statistic	All samples	Krueger, Price et al., Miller Faunal Data	Miller & Freiwald Baseline	Wright Trimmed QQ Plot	Wright Local Normal Dist	Tung & Knudson Breakpoints	Price et al. Local range for Humans	Mean of Published Local Ranges	Current Study
Mean	0.7070	0.7069	0.7068	0.7071	0.7068	0.7068	0.7068	0.7067	0.7068
Median	0.7068	0.7067	0.7068	0.7068	0.7067	0.7067	0.7067	0.7067	0.7067
Std. Dev.	0.0012	0.0005	0.0003	0.0008	0.0003	0.0002	0.0003	0.0003	0.0002
Min	**0.7043**	**0.7044**	**0.7060**	**0.7063**	**0.7064**	**0.7058**	**0.7063**	**0.7061**	**0.7063**
Max	**0.7153**	**0.7086**	**0.7076**	**0.7083**	**0.7076**	**0.7075**	**0.7074**	**0.7071**	**0.7074**
Range	0.0110	0.0042	0.0016	0.0019	0.0012	0.0018	0.0011	0.0010	0.0011
Skew	3.067	-0.396	0.647	0.730	0.919	0.274	0.697	-0.442	0.659
S. SE	0.206	0.255	0.354	0.224	0.255	0.228	0.264	0.279	0.266
Kurtosis	19.010	1.065	-0.095	-0.725	-0.241	0.573	0.135	0.929	0.137
K. SE	0.413	0.511	0.707	0.447	0.511	0.457	0.528	0.558	0.531
N	141	136	98	120	92	96	86	77	85
% Local	-	0.96	0.70	0.85	0.65	0.68	0.61	0.55	0.60
% Non- Local	-	**0.04**	**0.30**	**0.15**	**0.35**	**0.32**	**0.39**	**0.45**	**0.40**

Given that the current sample size is substantial (n=141), two additional techniques were employed. First, I followed the method proposed by Wright (2005), who employs descriptive statistics (**Table 14**) of radiogenic strontium isotope values to identify potential outliers through a visual examination of histograms and Q-Q Plots of the total sample. She proposes that individuals that are non-local will be outliers when compared to the mean, median, and the normal distribution of the radiogenic strontium values for a particular site or sample. Once outliers are identified on the Q-Q Plot, the dataset is "trimmed" and re-evaluated for any additional outliers. The initial Q-Q Plot identified ten outliers for $^{87}Sr/^{86}Sr$ values ≤ 0.7052 and ≥ 0.7089. This process was repeated three times, in accordance with Wright's (2005) method.

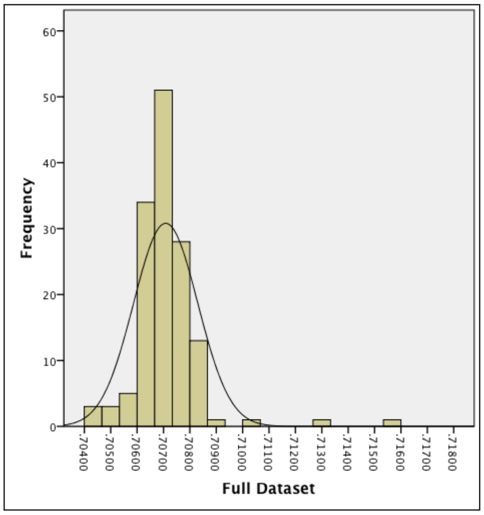

Figure 45: Full Dataset

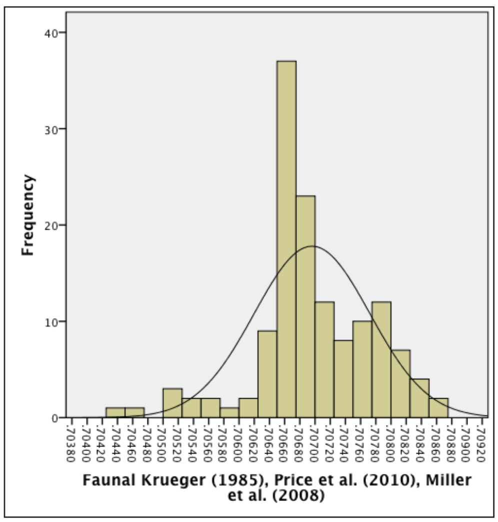

Figure 46: Combined faunal data

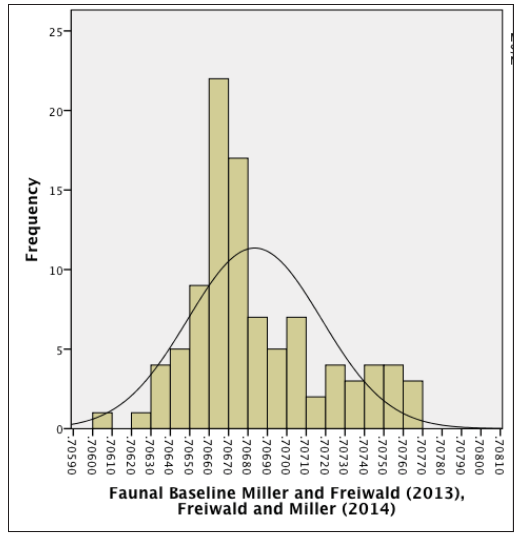

Figure 47: New faunal baseline

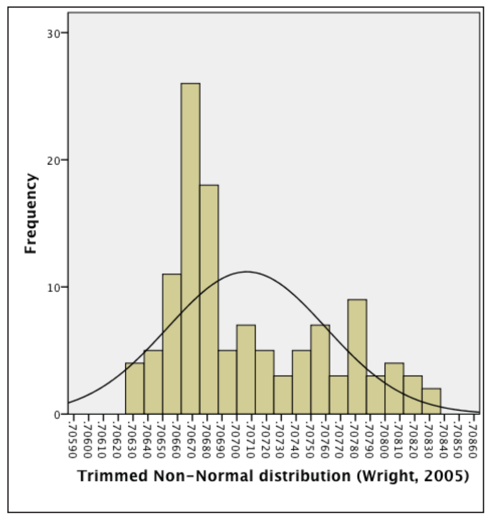

Figure 48: Second trimming of dataset

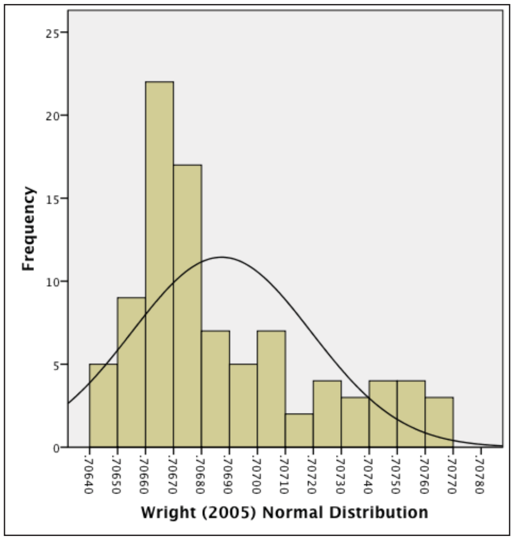

Figure 49: Third Trimming of dataset

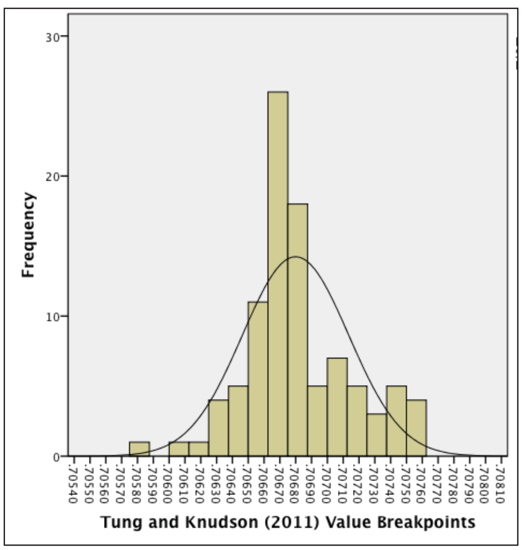

Figure 50: Breakpoints in data with changes >0.0008

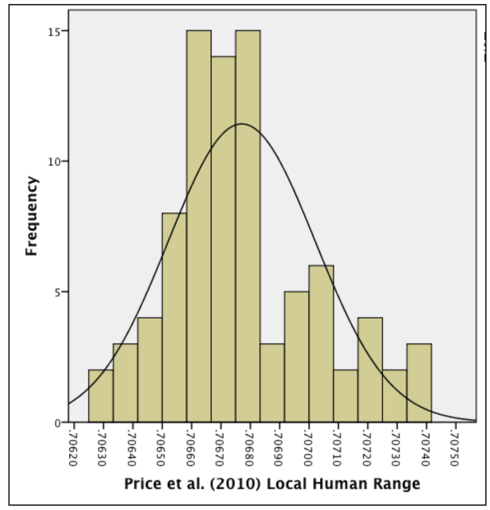

Figure 51: Proposed local range for Copan by Price and colleagues

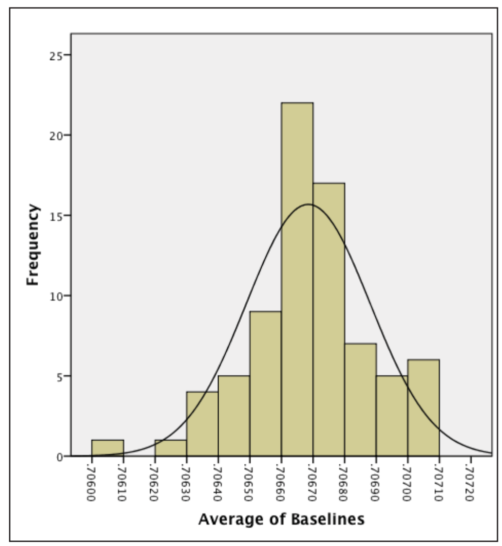

Figure 52: Copan values based on combined ranges for the region in Table 2

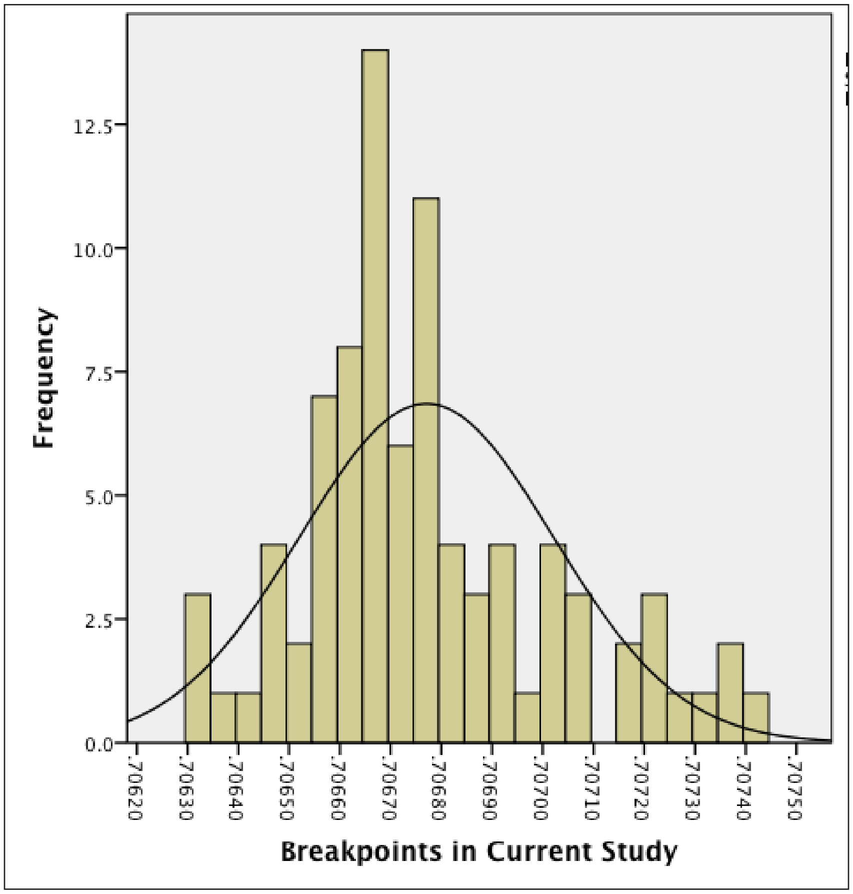

Figure 53: Copan range for this study based on described methods

The "trimmed" dataset had a non-normal distribution (**Figure 48**) and 15% of the sample has potentially non-local $^{87}Sr/^{86}Sr$ values. The Q-Q plot revealed additional outliers which were removed to obtain a histogram that more closely approximated a normal distribution (**Figure 49**), yielding non-local estimates of 35%. It must be noted that outliers in this method, and those with potentially non-local $^{87}Sr/^{86}Sr$ values may not necessarily be non-local individuals and could represent a diet of highly differentiated imported foods, averaging of $^{87}Sr/^{86}Sr$ values from surrounding regions, or a distinct social or economic class.

The second technique was developed by Tung and Knudson (2011) and involves sorting data in ascending order and calculating the difference between each subsequential value. The difference between radiogenic strontium values is often minor (in this case the 5th decimal place is used), <0.00001-0.00003 $^{87}Sr/^{86}Sr$, and large differences represent a discontinuity in the sequence. In the case of this dataset, the discontinuity defining the (potentially) local region occurred between 0.70557-0.70575 $^{87}Sr/^{86}Sr$ (0.00018) and 0.70752-0.70760 $^{87}Sr/^{86}Sr$ (0.00008). Following the Tung and Knudson's (2011) methodology, 32% of the sample was potentially non-local but includes smaller radiogenic strontium isotope values known to reflect regions other than Copan. Additional discontinuities were observed in the beginning and final segments of the data series, which closely approximate the ranges identified for other geological zones (**Table 15**). The range defined by the Tung and Knudson (2011) method resulted in a quasi-normal distribution (**Figure 50**) of radiogenic strontium values.

The Laboratory for Archaeological Chemistry at the University of Wisconsin Madison has compiled an impressive database of radiogenic strontium isotope values drawn from plant, faunal, and human remains. Price and colleagues (2010) published a detailed map of $^{87}Sr/^{86}Sr$ values and define the range for Copan as 0.7063-0.7074 $^{87}Sr/^{86}Sr$. When this range is applied to the current dataset, the distribution of values approximates a normal distribution slightly skewed to the left (**Figure 51**) and designates a sample with up 39% non-local $^{87}Sr/^{86}Sr$ values. In addition to Price et al. (2010), geological regions and radiogenic strontium isotope values have been published using plant and faunal remains (Hodell et al., 2004) and human remains (Price et al., 2005; Wright, 2005). When the minimum and maximum values for each region were averaged across all techniques and methods, the potential distribution of the Copan local values is normal but skewed to the right (**Figure 52**) and truncates values above 0.7072 that are known in the Copan region. This technique estimates that 45% of the sample demonstrates potentially non-local $^{87}Sr/^{86}Sr$ values.

The data were also evaluated using interquartile ranges of the complete $^{87}Sr/^{86}Sr$ dataset. The interquartile range for the human radiogenic strontium values represented in the Copan sample is 0.7066-0.7076 $^{87}Sr/^{86}Sr$, which is slightly higher than the $^{87}Sr/^{86}Sr$ range previously defined for the Copan Valley. However, these values approximate the faunal baseline collected by Freiwald and the author. This technique estimates that 60% of the sample is local to the Copan Valley.

In considering this relatively high interquartile range, it was noted that the data appear to have a bimodal distribution from 0.7063 to 0.7083 $^{87}Sr/^{86}Sr$. These two clusters of radiogenic strontium values represent 119 individuals and encompass two sets of values that have been attributed to different underlying geological zones identified in blue and orange (**Figure 54**; see Zones 2 and 3 in **Table 15**). An ANOVA revealed that the bimodal distribution is statistically significant suggesting that these are distinct groups of $^{87}Sr/^{86}Sr$ values within the Copan sample [Brown-Forsythe $F=348.35(1,63.31)$, $p<0.001$].

Values between 0.7070-0.7080 $^{87}Sr/^{86}Sr$ represent large areas of Mesoamerica, including those in central Guatemala and repeated in central Honduras (as discussed in Chapter 5). The ubiquity of these values makes it difficult to infer the significance of these values in terms of individual life-histories. Even so, given the baseline data from a variety of other studies (see **Table 15**) it seems unlikely that the Copan range extends up to 0.7080 $^{87}Sr/^{86}Sr$. These values may represent an averaging of $^{87}Sr/^{86}Sr$ values from the surrounding regions to the east and west, movement of food resources, movement of people, or the ubiquity of these values in Mesoamerica and across the globe.

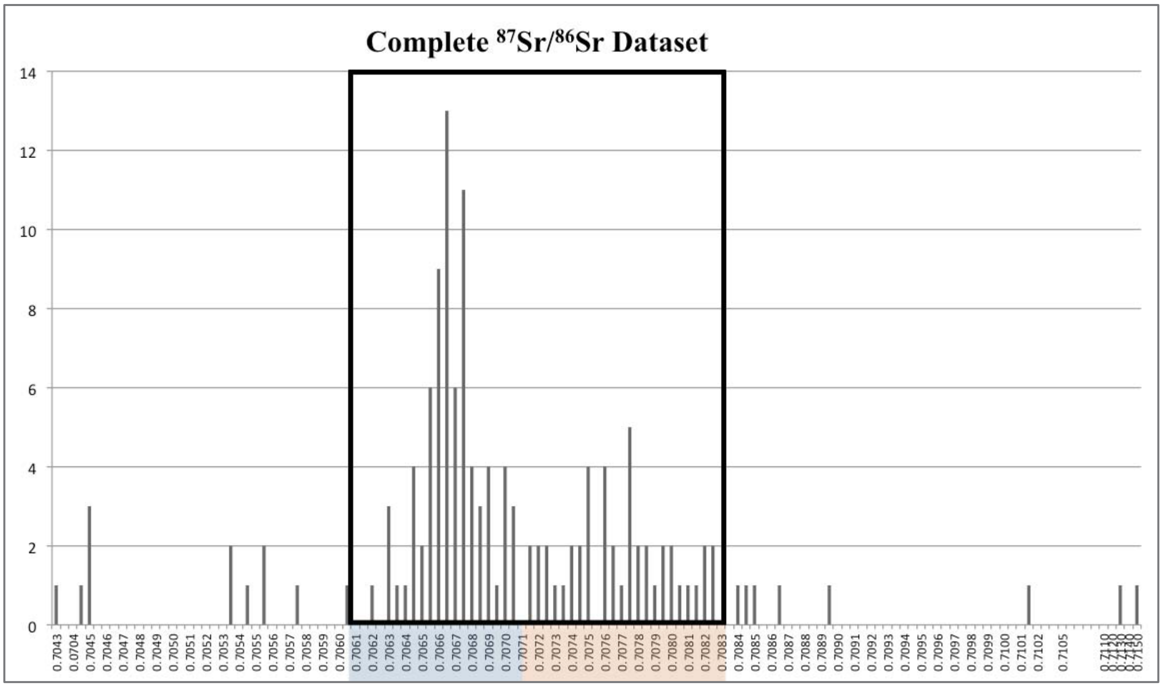

Figure 54: Bimodal distribution of $^{87}Sr/^{86}Sr$ data

The current work considered each method and defines a potentially local range for $^{87}Sr/^{86}Sr$ values, 0.7063-0.7074, which closely approximates Price and colleagues (2010) results. It was estimated by identifying breakpoints in sequential values (e.g. Tung and Knudson, 2011), employing descriptive statistics and plots (Wright, 2005), referencing the published ranges for the Copan region (Price et al., 2008, 2010), and including the new Honduran baseline data. The distribution is relatively normal with a slight skew to the left (**Figure 53**) and includes a minimum of 86 local radiogenic strontium isotope values (**Figure 55**).

Table 15: Radiogenic strontium isotope values by region. The geological zone is represented as (1) Quaternary-Tertiary Volcanic, (2) Cretaceous and Paleozoic Metamorphic, (3) Cretaceous Metamorphic, (4) Oglio-Miocene Pliocene, and (5) Paleozoic Metamorphic.

Zone	Hodell et al. (2004) $^{87}Sr/^{86}Sr$	Wright (2005) $^{87}Sr/^{86}Sr$	Price et al. (2010) $^{87}Sr/^{86}Sr$	Price et al. (2008) $^{87}Sr/^{86}Sr$	Miller & Freiwald Baseline $^{87}Sr/^{86}Sr$	Average $^{87}Sr/^{86}Sr$	Current Sample $^{87}Sr/^{86}Sr$
1	0.7038-0.7053	0.7038-0.7053	0.7040-0.7060	0.7039-0.7053	0.7043-0.7060	0.7040-0.7056	0.7043 - 0.7058
2	0.7055-0.7071	0.7055-0.7071	0.7060-0.7070	0.7062-0.7070	0.7065-0.7068	0.7060-0.7071	0.7063 - 0.7074
3	0.7071-0.7082	0.7071-0.7081	0.7070-0.7080	0.7078-0.7080	0.7070-0.7080	0.7072-0.7081	0.7074 - 0.7079
4	0.7083-0.7099	0.7083-0.7099	0.7080-0.7090	0.7087-0.7090	0.7080-0.7090?	0.7082-0.7093	0.7080 - 0.7090-
5	0.7119-0.7202	0.7120-0.7180	0.7110-0.7120	0.7110-0.7120	0.7105-0.7135	0.7111-0.7152	0.7102 - 0.7154

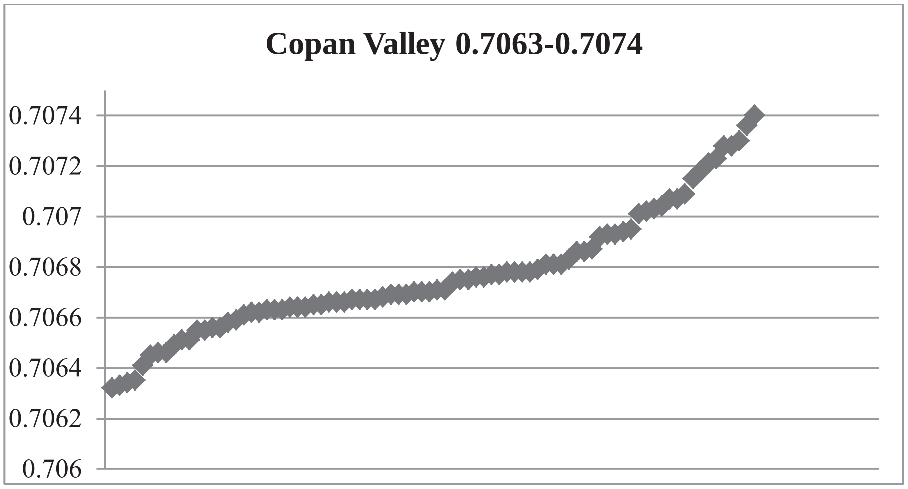

Figure 55: Radiogenic strontium isotope values identifying the 'local' range.

The five geological regions with the range of $^{87}Sr/^{86}Sr$ values outlined in **Table 15** and shown in **Figure 56**, will hereafter be referred to by zone. Zone 1 includes values from 0.7043-0.7056 $^{87}Sr/^{86}Sr$, which have been previously identified in the geological zones that underlie the Southern Highlands and Pacific Coastal regions of Guatemala and recently in Honduras and El Salvador regions. Two values in this sample fall between Zones 1 and Zone 2 (Burial 9-8, 0.7061 $^{87}Sr/^{86}Sr$ and Burial 22-8, 0.7062 $^{87}Sr/^{86}Sr$). Burial 9-8 had been previously categorized as non-local (Price et al., 2010) and is placed with Zone 1 in this study. Burial 22-8 is below the value identified as the lower limit for the local region by the new faunal baseline and breakpoints for the current study, and is also placed with Zone 1. Zone 2 includes values from 0.7063-0.7074 $^{87}Sr/^{86}Sr$ and includes values identified in the geological zones in the Northern and Southern Highlands and Motagua Valley of Guatemala and the Copan Valley region. Zone 3 include radiogenic strontium values that span from 0.7074-0.7080 $^{87}Sr/^{86}Sr$ and is suggested to represent the geological substrates below the Southern and Central Guatemalan Lowlands and now, Northern and Central Honduras.

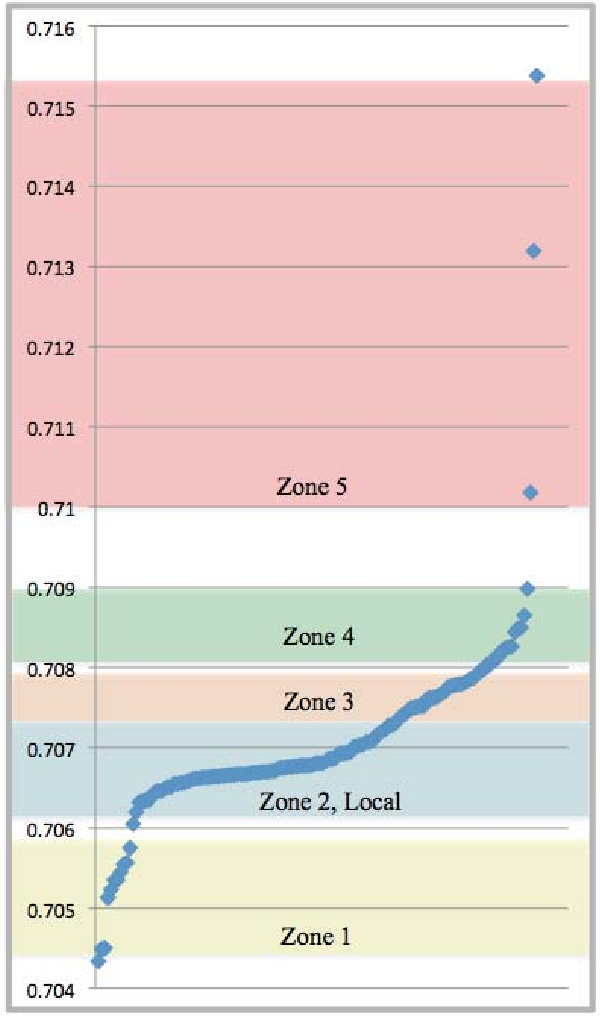

Figure 56: The five radiogenic strontium isotope zones in this study

Zone 4 includes values from 0.7080-0.7090 $^{87}Sr/^{86}Sr$ and has been previously associated with the geology of the Northern Lowlands and Yucatan Peninsula and most recently, has been identified in Northwestern Honduras, especially the Sula Valley. Samples with high radiogenic strontium values (>0.7090 $^{87}Sr/^{86}Sr$) are the least common in this data set and have only been identified in the geological zones of the Maya Mountains of Belize (see Freiwald, 2011), although the baseline data for Honduras have identified such values in the volcanic regions of Honduras near Yoro and Lago Yajoa.

A2. Demographic trends

As Chapter 3 outlined, 305 burials were included in the current study. All were subject to biodistance analysis and 141 were included in the radiogenic strontium analysis. Samples were collected from 121 individuals, and data from previous studies were considered from an additional 20 burials (Miller et al., 2008; Price et al., 2010). According to the proposed local range for radiogenic strontium isotope values for Copan, 55 of the 141 individuals in this study may demonstrate non-local $^{87}Sr/^{86}Sr$ values that could indicate migration, averaging of regional geology, or even a diet exclusive of imported food from the zones previously discussed (**Table 16**). Individuals are found throughout the valley, and depending on the neighborhood, 12-50% of the sample has values that are above or below the $^{87}Sr/^{86}Sr$ range that likely represents Copan.

Table 16: Skeletal sample with strontium samples. Previous strontium samples were taken for studies by Miller et al. (2006) for 10L-2 and Price et al. (2010) for all remaining groups.

Region	Group	Male	Female	Und.	Total Biodistance Sample	Total Strontium Sample	Total Strontium Sample by Sex	Potential Non-local by Sex
Bosque	10I-m11	1	0	0	1	1	1M	0
	10L16/17	0	1	2	3	2	1F, 1U	0
	11J-1	0	1	0	1	0	0	0
	11L-11.	2	2	1	5	2	1F, 1U	1U
	11L-7/8	2	0	0	2	1	1M	0
	11K-18	0	1	0	1	1	1F	0
	Museum	1	0	0	1	1	1M	1M
	Total	***6***	***5***	***3***	***14***	***8***	***8***	***2***
Cementerio	10L-1	2	0	0	2	1	1M	0
	10L-2	4	7	18	29	12	3M, 4F, 5U	1M, 2F, 2U
	Total	***6***	***7***	***18***	***31***	***13***	***13***	***5***

Copan Valley	12G-6	1	0	0	1	0	0	0
	18A/25B/ 34D	2	2	2	6	1	1M	0
	3O-7	1	4	1	6	4	1M, 3F	0
	9P-5	1	0	0	1	1	1M	1M
	Copan Valley	2	0	0	2	1	1M	1M
	Hacienda	1	0	0	1	1	1M	0
	E of town 3/30	0	1	1	2	0	0	0
	4N-5	0	1	0	1	1	1F	1F
	Total	***8***	***8***	***4***	***20***	***9***	***9***	***3***
Ostumán	11E-2.	2	1	2	5	3	2M, 1F	1M, 1F
	10E-5/6	0	1	1	2	1	1F	0
	Total	***2***	***2***	***3***	***7***	***4***	***4***	***2***
Rastrojón Chorro	6N-4	1	0	2	3	3	1M, 2U	1U
	7M-4/8	0	1	5	6	4	1F, 3U	0
	7N-20	0	1	0	1	1	1F	0
	Total	***1***	***2***	***7***	***10***	***8***	***8***	***1***
Salamar	8L-10/12	5	3	2	10	6	3M, 3F	1M, 2F
	CRIA	1	0	0	1	0	0	0
	Total	***6***	***3***	***2***	***11***	***6***	***6***	***3***
Sepulturas	8N-11	6	5	4	15	7	3M, 4F	3M, 1F
	9M-24	3	2	2	7	4	2M, 1F, 1U	1M
	9M-22A	4	3	2	9	4	3M, 1U	2M
	9M-22B	6	3	7	16	8	3M, 1F, 4U	2M, 1U
	Sepulturas	2	1	2	5	0	0	0
	Total	***21***	***14***	***17***	***52***	***23***	***23***	***10***
Sepepulturas 9N-8	9N-8A	3	4	1	8	3	2M, 1U	1M
	9N-8B	3	6	10	19	8	3M, 4F, 1U	2M, 3F
	9N-8C	2	4	2	7	4	2M, 2F	2F
	9N-8D	11	9	11	31	13	6M, 5F, 2U	1M, 2F
	9N-8E	5	10	12	27	12	4M, 4F, 4U	3M, 3F, 1U
	9N-8F	2	6	10	19	9	2M, 4F, 3U	1M, 3F, 1U
	9N-8H	8	14	11	33	13	5M, 4F, 4U	1M, 1F, 1U
	9N-8I	2	2	1	5	3	1M, 3F	1M, 1F
	9N-8J	1	0	0	1	1	1M	1M
	9N-8K	1	2	5	8	3	1M, 1F, 1U	0
	9N-8M	1	0	1	2	1	1M	0
	Total	39	57	64	160	70	70	29
TOTAL		**89**	**98**	**118**	**305**	**141**	**141**	**55**

A2a. Age

Individuals with potentially non-local $^{87}Sr/^{86}Sr$ values were identified in all age categories. The young adult and adult components dominate the potential non-local sample (**Figure 57 and Table 17**). In the case of the subadults, non-local values for radiogenic strontium isotope samples from first molars suggest that migration occurred very early in the life of these children.

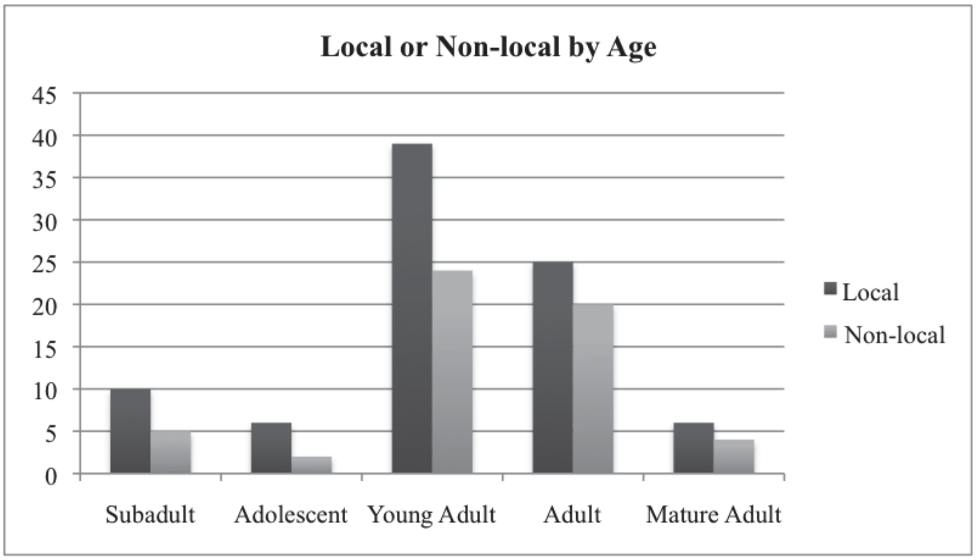

Figure 57: Potential local and non-local groups by age

Table 17: Percentage of non-local individuals in the strontium sample by age and the percentage of local and non-local individuals in the total sample.

Age	Local	Non-local	No Sample	Total	% of strontium sample (n=141)
Subadult	10	5	58	73	*33.3%*
Adolescent	6	2	9	17	*25.0%*
Young Adult	39	24	31	94	*38.1%*
Adult	25	20	62	107	*44.4%*
Mature Adult	6	4	4	14	*40.0%*
Total	86	55	164	305	*39.0%*
% of total sample (305)	*28.2%*	*18.0%*	*53.8%*	*100.0%*	-

The majority of adult and young adult with potentially non-local $^{87}Sr/^{86}Sr$ values (17.7%) have $^{87}Sr/^{86}Sr$ values in the range of geological Zone 3, the Southern Lowlands or Central Honduras (**Table 18**), another 19% were identified with values that are in the range of Zone 4. In the case of the subadults, three children ≤ 3 years of age, and one child 7 ± 2 years of age have values that are potentially non-local to the Copan Valley (Burials 22-8, 9-8, 48/1/413-1, 15-45, and 48/8/249-I). The vast majority of the Copan radiogenic strontium sample demonstrates values that are within the range identified geologically for the Copan Valley.

Table 18: Place of origin of non-local individuals according to age.

	"local" Zone 2 0.70632-0.70740	Zone 1 0.70434-0.7075	Zone 3 0.70741-0.70797	Zone 4 0.70803-0.70898	Zone 5 0.71018-0.71538	% by Age
Subadult	10	4	0	1	0	9.1%
Adolescent	6	0	0	2	0	3.6%
Young Adult	39	4	12	5	3	43.6%
Adult	25	5	11	4	0	36.4%
Mature Adult	6	0	2	2	0	7.3%
Total	86	13	25	14	3	39.0%
% by $^{87}Sr/^{86}Sr$ range	61.0%	9.2%	17.7%	9.9%	2.1%	-

A2b. Sex

This study evaluated sex based differences in $^{87}Sr/^{86}Sr$ values in the Copan sample. Of the possible maximum of 40% of potential non-local individuals identified by radiogenic strontium values, males comprise 43.9% of the sample and females, 44.0% (**Table 19**). There is no significant difference between the males and females with very low or high $^{87}Sr/^{86}Sr$ values and those with local values [Fisher's Exact Test (two-tail), p=0.8423]. As such, the distribution of $^{87}Sr/^{86}Sr$ values are virtually equal between the two sexes, it does not appear that sex impacted patterns of movement into the valley as a whole. Most of the indivdiuals with potential non-local $^{87}Sr/^{86}Sr$ values, more males have values in the range of Zone 4 which is range of values represented in the bimodal $^{87}Sr/^{86}Sr$

data for Copan. More females are in the $^{87}Sr/^{86}Sr$ value range of Zone 1, represented by low (<0.7060 $^{87}Sr/^{86}Sr$) values.

Table 19: Geological zone by sex.

	LOCAL Zone 2 0.70632-0.70740	Zone 1 0.70434-0.7075	Zone 3 0.70741-0.70797	Zone 4 0.70803-0.70898	Zone 5 0.71018-0.71538	% Nonlocal by Sex
Male	32	3	15	7	0	43.9%
Female	28	6	9	4	3	44.0%
Undetermined	26	4	1	3	0	23.5%
Total	86	13	25	14	3	39.0%
% by $^{87}Sr/^{86}Sr$ range	61.0%	9.2%	17.7%	9.9%	2.1%	

While the distribution of low and high $^{87}Sr/^{86}Sr$ values appear equal between males and females when the Valley is considered as whole, this pattern does not hold for individual neighborhoods (**Figure 58**). Six of the regions in the Copan Valley have relatively equal proportions of male, female, and undetermined sex individuals with $^{87}Sr/^{86}Sr$ values that are potentially non-local. However, this is not the case for the Sepulturas region, which consists of Groups 8N-11, 9M-22 A and B, and 9M-24. Of the ten individuals with low or high $^{87}Sr/^{86}Sr$ values interred within this region, the only female is from Group 8N-11, one individual of undetermined sex is in Group 9M-22B, and all eight other potential non-local individuals are male. In the Sepulturas Group 9N-8 complex, the pattern is the opposite in that there are more females than males with potential non-local $^{87}Sr/^{86}Sr$ values. The comparison of males and females in Sepulturas Groups 8N-11, 9M-22, and 9M-24 to the Sepulturas Group 9N-8 is significant [Fisher's Exact Test (two-tail), $p = 0.0221$]. The 15 females in Group 9N-8 with potential non-local $^{87}Sr/^{86}Sr$ values were recovered from all patios except Patio A, J, K, and M. The 11 males with potentially non-local $^{87}Sr/^{86}Sr$ values were from all patios except Patio C, K, and M.

If these $^{87}Sr/^{86}Sr$ values are indicative of migration, not some other source of variation, then there may be some sex-based migration into some of the neighborhoods at Copan. However, it should be noted that Sepulturas contributed the majority of the skeletal sample to this project. The significant difference between male and female individuals with potentially non-local $^{87}Sr/^{86}Sr$ values in the Sepulturas groups may have existed in the other six regions but sample sizes were simply too small to detect them.

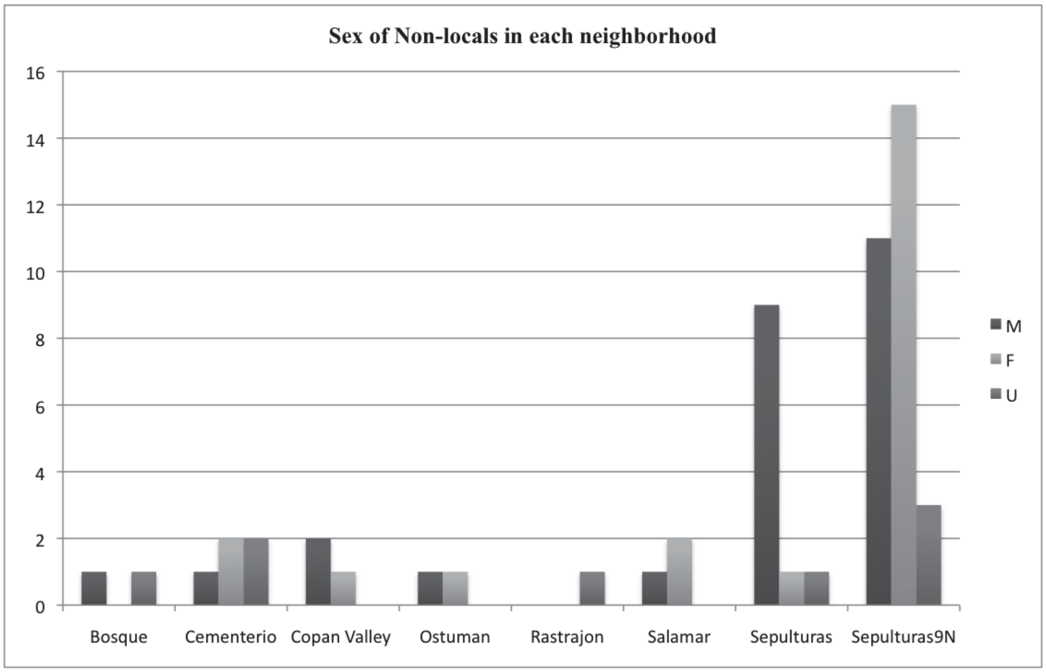

Figure 58: Sex of potentially non-local individuals across neighborhoods

A3. Mortuary trends

A3a. Burial position

In addition to age and sex, the presence of individuals with varying ranges of $^{87}Sr/^{86}Sr$ values was considered in the context of burial position and ceramic vessels to determine if potential non-local individuals received unique mortuary treatment (**Appendix B, C, and D**). Of the 305 burials considered for biodistance and strontium isotope analysis, 63.9% were buried in a flexed position, 10.5% in an extended position, and 7.5% were disarticulated (**Table 20**). A prone, seated, bundled, or disturbed burial position was found in ≤ 2% of all burials in the sample. Burials are recorded here as having an unknown burial position when excavation notes do not identify a position, record that the position could not be determined in the field, or if information regarding the position could not be found.

Table 20: Burial position by local, non-local, and sex

	Flexed	Extended	Bundle	Prone	Seated	Disarticulated	Disturbed	Unknown
Local	17M, 24F, 15U	4M, 1F, 3U	0	1M	2U	3M, 1F, 4U	1M, 1F	4M, 5U
Non-local	17M, 18F, 6U	4M, 1F, 1U	0	1M	1M, 1F	1M, 2F	0	3M, 1U
No Sample	20M, 34F, 44U	3M, 7F, 8U	2M	1M, 1F, 1U	1M, 2U	1F, 10U	2F, 1U	4M, 3F, 18U
Total	**195**	**32**	**2**	**5**	**6**	**22**	**5**	**38**
% of Total	**63.9%**	**10.5%**	**0.7%**	**1.6%**	**2.0%**	**7.2%**	**1.6%**	**12.5%**

It is clear that the flexed burial position is the most common at Copan and is found across age and sex categories. Females exhibit the highest percentage at 78% (77/98), followed by individuals of undetermined sex at 55% (66/118), and 49% (44/89) of the males at the site are buried in this position. More males than females are buried in all other positions including extended, prone, seated, and bundle burials. Burials in the extended position are often from crypt or tomb contexts and are found across residential groups. A comparison of males and females with flexed and extended burial positions was not significant [Fisher's Exact Test (two-tail), p=0.1397]. It therefore does not appear that burial position is correlated with a specific $^{87}Sr/^{86}Sr$ values (**Table 21**).

Table 21: Burial position by local and non-local zone.

	Flexed	Extended	Bundle	Prone	Seated	Disarticulated	Disturbed	Unknown
Local, Zone 2	56	8	0	1	2	8	2	9
Zone 1	10	2	0	0	0	0	0	1
Zone 3	17	4	0	1	2	1	0	2
Zone 4	13	0	0	0	0	0	0	1
Zone 5	2	0	0	0	0	1	0	0
No Sample	98	18	2	3	2	12	3	25

Individuals placed in non-flexed positions were primarily identified in Sepulturas Group 9N-8, Patio C, D, and H, Ostumán Group 11E-2, and Cementerio Group 10L-2. The Cementerio Group exhibited the greatest diversity in burial positions and contained most of the individuals buried in the seated and prone positions.

Two tombs containing females in an extended position are found in Sepulturas 9N-8 Patio H, Structure 9N-110C. Neither individual was buried with grave goods or included in the random sample for radiogenic strontium isotope analysis (Burials 22-39 and 22-7). Four males were interred in an extended position in tombs in Ostumán Group 11E-2 (Burial 46-1 in a shaft tomb), Salamar Group 8L-12 (Burial 42-6), and Sepulturas Group 9N-8 Patio C (Burial 13-5) and Patio J (21-1A). Burials 21-2A and 42-6 demonstrated local $^{87}Sr/^{86}Sr$ values while Burial 21-1A exhibited a slightly higher $^{87}Sr/^{86}Sr$ value.

Of the six burials in the seated position, two are from the Cementerio Group 10L-2, including one male from Zone 3 (Burial 48/11/160-2) and one local subadult (Burial 48/16/43-1). Both burials occur in areas located outside the structures in Patio A and B. Two local adults of undetermined sex were interred in seated positions in Ostumán Group 10E-6 (Burial 45-2) and Sepulturas Group 9N-8 Patio D (Burial 17-18). Two additional individuals from Sepulturas Group 9N-8 include a male in a seated burial position in a crypt, in Patio H (Burial 22-11) and a female from Zone 3 in Patio E (Burial 15-29).

Three of the five burials in the prone position were recovered from Cementerio Group 10L-2, Patio A, Structure 10L-33. The two males, one local (48/6/123-1) and one with a value between 0.7074-0.7080 $^{87}Sr/^{86}Sr$ (48/6/222-7), were in richly furnished graves. The female was not accompanied by grave goods and was not tested for radiogenic strontium isotope analysis (48/6/192-4). The two remaining burials were not part of the strontium sample and include a male from the Copan Valley (Burial 24-5a) with a serpentine belt and an adult of undetermined sex from Ostumán Group 11E-2 (Burial 46-10).

In addition to burial position, the orientation of burials was considered to evaluate whether or not there was a correlation between radiogenic strontium isotope value and burial position. Most burials were oriented North (21.3%), followed by the other cardinal directions South (18.4%), East (13.8%), and West (11.8%) (**Figure 59**). The differences by sex for $^{87}Sr/^{86}Sr$ values for burial heading are not significant. Those with the lowest $^{87}Sr/^{86}Sr$ values (<0.7060 $^{87}Sr/^{86}Sr$, or Zone 1) are most commonly buried heading North and South. Those with higher values (0.7075-0.7080 $^{87}Sr/^{86}Sr$, or Zone 3) are often buried heading South but a North or East heading are equally likely. Those with values in the range of 0.7080-0.7090 $^{87}Sr/^{86}Sr$, or Zone 4, are buried heading in all four cardinal directions but are most commonly heading North or East.

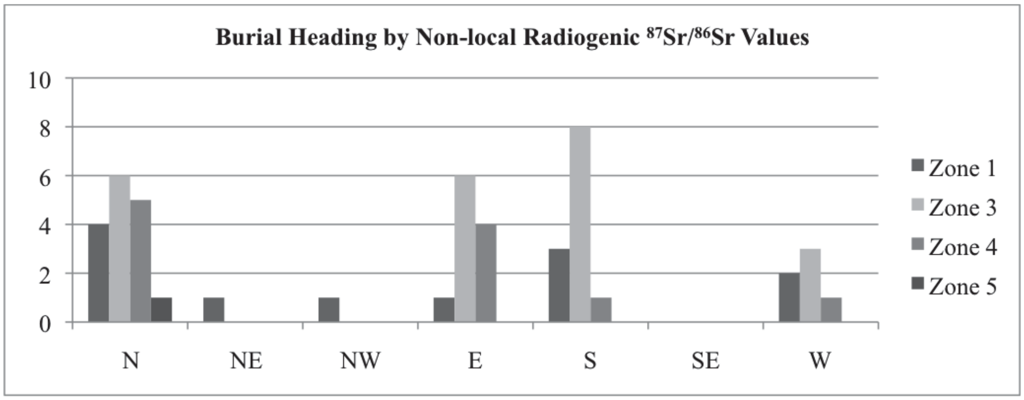

Figure 59: Burial heading by radiogenic strontium isotope value

A3b. Local and imported vessels

The identification of local versus imported vessels was determined using Bill's classification of vessel types in the Copan Valley (Bill, 1997, 2014; also, Landau, personal communication, 2014). The results of the ceramic analysis in relation to $^{87}Sr/^{86}Sr$ values are surprising. None of the individuals identified as non-local through radiogenic strontium isotope analysis were interred with imported vessels or imported ceramic whistles. Of the total sample, 66% were buried with no ceramic vessels, 16.4% with local vessels, 10.8% with vessels for which origin could not be determined, and 5.6% with imported vessels (**Table 22**). The relationship of local and non-local $^{87}Sr/^{86}Sr$ values and local or imported vessels in the grave assemblage was not significant (x^2 = 1.692, *df* =1, *p* =0.0967).

Those inhumed with imported Ulua vessels from Northwestern Honduras and the Ulua Valley are from Cementerio Group 10L-2 in Patio B in Structure 10L-44 (Burials 48/13/170-1 and 48/13/283-9), Ostumán Group 10E-6A and 11E-2A (Burials 45-5 and 46-1), Sepulturas Group 9M-22 in Patio B (Burials 19-13 and 19-16), Sepulturas Group 9N-8 in Patio D in Structure 9N-63 (Burials 17-5, 17-21A, 17-21B), Patio F in Structure

9N-91 (Burials 15-59 and 15-60), and in Patio K in Structure 9N-105 located adjacent to Patio D's Structure 9N-63 (Burial 17-39). Whistles imported from central Honduras were buried with two subadults in Sepulturas Group 9N-8 Patio A (Burial 8-7) and Patio D (Burial 17-32). In the Salamar Group 8L-10, three individuals (Burial 42-5A, B, C) were interred in the same tomb with a Pabellón vessel likely imported from Seibal (Ashmore, 1991).

Table 22: Potential local and non-local individuals with grave furnishings of local or imported vessels.

	Imported Vessel	Local Vessel	Unidentified Origin	None	Whistles
Local	Ulua, 4; Seibal, 2; Undetermined, 1	18	15	43	2
Potential Non-Local	0	9	2	45	0
No Sample	Ulua, 9; Seibal, 1	23	16	115	0
Total	**17**	**50**	**33**	**203**	**2**
% of Burials with Vessel	**5.6%**	**16.4%**	**10.8%**	**66.6%**	**0.7%**

A3c. Cultural body modification

The final component of the mortuary context considered here was cultural body modification in relationship to $^{87}Sr/^{86}Sr$ values (**Table 23**). A total of 49.2% of the sample had some form of cultural body modification with cranial modification being the most common. Of individuals with local $^{87}Sr/^{86}Sr$ values (n=86), 26.7% had cranial modification, 19.7% had dental modification, and 13.9% had both forms. For individuals with low or high $^{87}Sr/^{86}Sr$ values (n=55), the opposite pattern is true, 25.4% had both forms of modification and 18.8% had only cranial modification or dental modification. This appears to be an important difference. Individuals not included in the radiogenic strontium sample had similar percentages of body modification as the local sample where 23.7% had cranial modification, 17.8% dental modification, and 10.2% with both forms.

Table 23: Body modification for local and non-local samples.

	Cranial	Dental	Both	None
Local	23	17	12	34
Potential Non-local	10	10	14	21
No Sample	28	21	12	103
Total	**61**	**48**	**38**	**158**
% of Total	**20.0%**	**15.7%**	**12.5%**	**51.8%**

Given the different incidence of modification in the groups with high, low, or local $^{87}Sr/^{86}Sr$ values were considered in more detail (**Figure 60**).

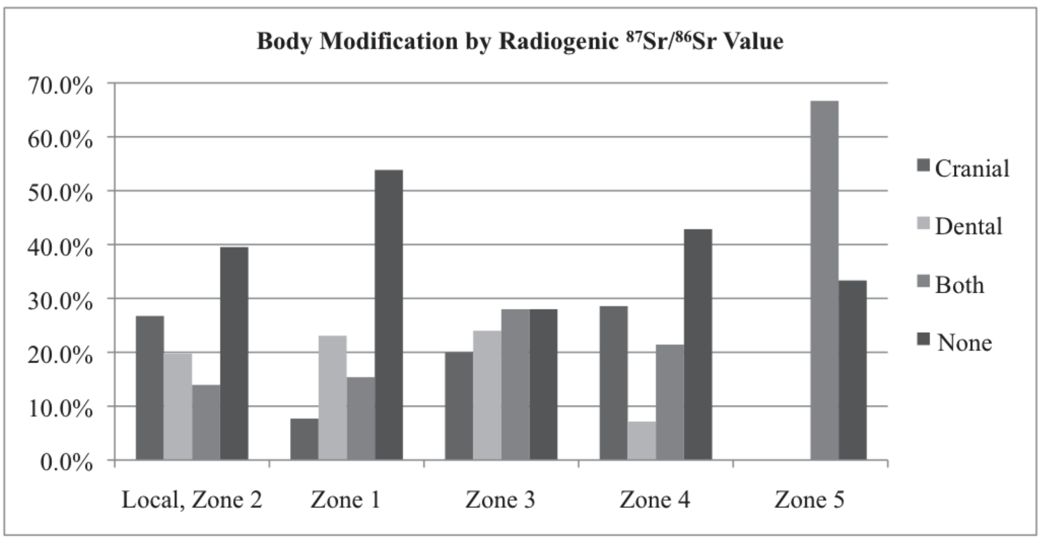

Figure 60: Body modification type by radiogenic strontium isotope value

Each form of modification was separated by $^{87}Sr/^{86}Sr$ value and compared to the total number of individuals with a $^{87}Sr/^{86}Sr$ value in that range. Individuals with $^{87}Sr/^{86}Sr$ values below 0.7060 (n=13) exhibited modification in only 44.14% of the cases with dental being the most common (23.1%), followed by both forms (15.38%), and then cranial (7.7%). Those with slightly higher $^{87}Sr/^{86}Sr$ values between 0.7075-0.7080 (n=25) demonstrated cranial, dental, both forms, and the absence of modification in equal measure at approximately 25% for each type. Individuals with $^{87}Sr/^{86}Sr$ values in the range of 0.7080-0.7090 (n=14) had no modification in 42.9% of the cases, cranial modification in 28.6%, both forms in 21.4%, and dental modification in 7.14% of the sample. For the three individuals with the highest $^{87}Sr/^{86}Sr$ values >0.7090, two had both forms of modification and one had no modification. A comparison of $^{87}Sr/^{86}Sr$ values and either cranial modification or both forms of modification is significant [Fisher's Exact Test (two-tail), $p = 0.0287$]. As such, it seems that those with $^{87}Sr/^{86}Sr$ values lower or higher than the 0.7063-0.7074 range, were more likely to have both forms of modification but equally likely to have *either* cranial or dental modification as compared to the local sample.

A4. Summary of radiogenic strontium trends

Individuals with $^{87}Sr/^{86}Sr$ values outside of the Copan range (0.7063-0.7074 $^{87}Sr/^{86}Sr$) were identified in all residential areas of the Copan Valley and from all five ranges of values previously associated with geological zones. While the majority of potentially non-local individuals in the radiogenic strontium isotope analysis sample were young adults and adults, there was no significant difference between the age-at-death categories and $^{87}Sr/^{86}Sr$ values. There was not a significant difference in the sex of individuals with potentially non-local values when the Copan Valley was considered as a whole, but there was a significant difference in the number of males and females with very low or very high $^{87}Sr/^{86}Sr$ values. In comparisons of the burial position, there does not appear to be a correlation between burial position and ranges of $^{87}Sr/^{86}Sr$ values. Additionally, the presence of imported vessels in the grave assemblage was not associated with any individuals that had potentially non-local $^{87}Sr/^{86}Sr$ values. Those with radiogenic strontium values outside of the Copan range were significantly more likely to have both dental and cranial modification while local individuals were more likely to have only modified crania. If dental or cranial types were considered in isolation, there was no difference based on ranges of $^{87}Sr/^{86}Sr$ values.

In general, with a possible maximum of 40% of the sample with potentially non-local $^{87}Sr/^{86}Sr$ values, it appears that it may not have been unusual to be non-local at Copan. The large sample drawn from the Sepulturas regions highlight that non-local individuals may originate from a variety of $^{87}Sr/^{86}Sr$ isotope zones or have other factors that impacted $^{87}Sr/^{86}Sr$ values (**Figure 61**). Results of a closer examination of the distribution of non-local individuals within patio groups in each neighborhood is reported below and in **Appendix G**.

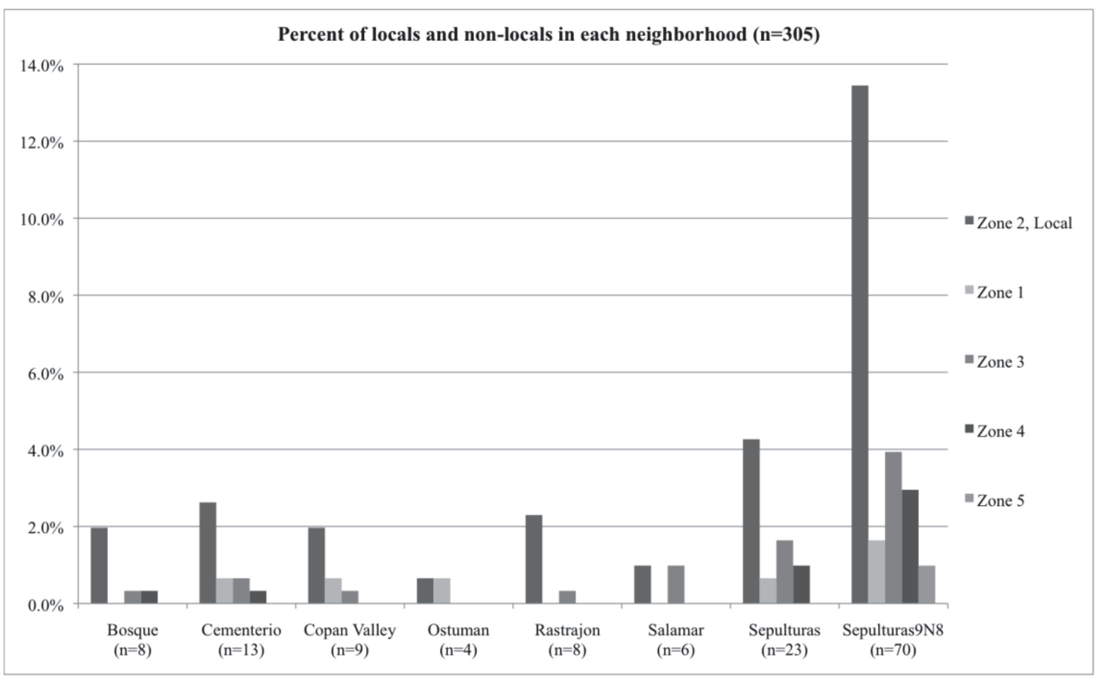

Figure 61: Percentage of locals and non-locals of the total sample (n=305) by region. Each neighborhood is noted with the number of individuals tested for radiogenic strontium isotope analysis.

B. Biodistance Analysis Results

This section describes the results of the biodistance analysis of dental non-metric data at Copan. The methods employed during data collection are outlined in Chapter 3. Chapter 6 provides the background to biodistance analysis, details the statistical tests employed to reach the results presented here, and specifies the pretreatment of the dental data and data imputation techniques. The results of each test will be reported in the same order as presented in Chapter 6 with respect to each neighborhood and/or patio under analysis. The interpretation of the statistical tests is detailed here.

Table 24 contains the summary raw data for Copan dental measurements before data treatment, such as multiple imputation or Q-mode transformation. Upon initial inspection, it is clear that the samples sizes between regions are markedly different, depending on the dental measurement. Also, there are dental dimensions that appear similar between patios within the same neighborhood (e.g. Ostumán), while others exhibit great diversity (e.g. Sepulturas 9N-8) and large standard deviations.

Table 24: Sample size, mean, and standard deviation for all dental metrics by region.

REGION	XI1CMD			XI1CBL			XI1NMD			XI1NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	1	8.48	-	3	7.54	0.49	3	6.12	0.47	3	6.93	0.54
11L	1	8.87	-	5	6.87	0.09	5	6.28	0.09	5	6.32	0.23
CEMENTERIO												
10L-2A	5	8.34	0.55	6	7.54	0.41	6	6.47	0.54	6	6.77	0.35
10L-2B	11	8.61	0.32	7	7.12	0.30	8	6.43	0.40	7	6.59	0.20
COPAN VALLEY												
3O-7	2	8.76	0.19	4	7.57	0.16	4	6.73	0.43	3	6.98	0.14
Regional	1	8.40	-	8	7.02	0.31	8	6.35	0.72	8	6.39	0.38
OSTUMÁN												
10E-6	0	-	-	1	7.53	-	1	6.89	-	1	6.99	-
11E-2	1	9.03	-	3	7.15	0.14	3	6.43	0.26	3	6.47	0.12
RASTROJÓN												
6N-4	0	-	-	2	6.78	0.72	2	5.50	0.77	0	-	-
7M-4	0	-	-	0	-	-	0	-	-	0	-	-
7M-8	0	-	-	0	-	-	0	-	-	0	-	-
7N-20	0	-	-	1	7.42	-	0	-	-	1	6.23	-
SALAMAR												
8L-10	4	8.82	0.87	9	7.21	0.59	9	6.89	0.79	9	6.68	0.44
8L-12	0	-	-	0	-	-	0	-	-	0	-	-
SEPULTURAS												
8N-11	3	7.70	0.40	8	7.06	0.33	9	6.68	0.44	8	6.64	0.33
9M-22A	1	9.89	0.00	6	7.20	0.49	6	6.43	0.45	6	6.59	0.24
9M-22B	5	8.54	0.53	11	7.29	0.57	12	6.43	0.36	11	6.78	0.57
9M-24	2	8.67	1.02	6	7.47	0.47	6	6.75	0.39	6	6.87	0.34
Regional	6	8.99	0.66	6	7.43	0.36	6	6.84	0.72	6	7.08	0.27
SEPULTURAS 9N-8												
Patio A	3	8.75	0.75	5	7.05	0.50	5	6.40	0.48	5	6.49	0.47
Patio B	9	8.51	0.66	11	6.92	0.62	11	6.36	0.63	11	6.49	0.55
Patio C	1	9.05	0.00	3	7.04	0.14	3	6.31	0.39	3	6.46	0.18
Patio D	11	8.75	0.58	18	7.33	0.42	19	6.73	0.69	17	6.85	0.44
Patio E	9	8.51	0.52	15	6.97	0.41	15	6.28	0.54	14	6.43	0.42
Patio F	8	8.48	0.47	6	7.02	0.40	6	6.36	0.69	6	6.59	0.48
Patio H	13	8.61	0.49	20	7.25	0.63	19	6.55	0.53	18	6.61	0.41
Patio I and J	0	-	-	3	7.49	1.14	4	6.50	0.68	3	7.23	0.56
Patio K	4	8.61	0.35	2	7.01	0.07	4	6.23	0.57	2	6.39	0.88
COMBINED	101	8.68	0.49	169	7.21	0.42	174	6.46	0.52	162	6.66	0.39

Table 24: Continued.

REGION	XCCMD			XCCBL			XCNMD			XCNBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	4	8.52	0.49	4	9.03	0.63	4	6.24	0.44	4	8.73	0.67
11L	6	7.77	0.52	5	8.20	0.06	5	5.83	0.12	5	7.95	0.36
CEMENTERIO												
10L-2A	9	8.26	0.52	8	8.82	0.50	8	6.16	0.49	8	8.34	0.69
10L-2B	11	7.96	0.56	6	8.44	0.46	7	5.85	0.35	6	8.12	0.64
COPAN VALLEY												
3O-7	5	8.17	0.29	5	8.46	0.18	5	6.10	0.27	6	8.11	0.39
Regional	7	8.27	0.21	9	8.24	0.40	8	5.92	0.46	9	7.92	0.41
OSTUMÁN												
10E-6	1	8.87	-	1	9.01	-	1	6.72	-	1	8.81	-
11E-2	4	7.94	0.27	4	8.23	0.59	4	5.71	0.32	4	7.99	0.45
RASTROJÓN												
6N-4	0	-	-	2	8.07	0.88	2	5.91	0.64	0	-	-
7M-4	2	8.23	0.59	2	8.70	0.49	2	5.95	0.27	2	8.25	0.50
7M-8	2	8.55	0.41	2	9.58	0.63	2	6.27	0.12	2	9.34	0.28
7N-20	1	8.73	-	1	8.70	-	1	5.94	-	1	7.48	-
SALAMAR												
8L-10	8	8.40	0.31	9	8.52	1.21	9	6.43	0.85	8	8.47	0.72
8L-12	2	7.98	0.64	2	8.22	0.02	2	7.29	0.93	1	7.87	-
SEPULTURAS												
8N-11	10	8.05	0.47	11	8.09	0.74	12	5.99	0.53	11	8.04	0.59
9M-22A	4	8.54	0.31	6	8.61	0.62	6	6.11	0.51	6	8.11	0.67
9M-22B	14	8.14	0.47	15	8.70	0.64	14	6.04	0.38	15	8.38	0.65
9M-24	5	8.20	0.16	6	8.63	0.62	6	6.11	0.32	6	8.30	0.50
Regional	7	8.23	0.51	8	8.52	0.60	7	6.23	0.44	7	8.41	0.67
SEPULTURAS 9N-8												
Patio A	4	8.05	0.75	4	7.90	0.75	3	6.10	0.69	3	7.21	0.69
Patio B	16	7.96	0.65	14	8.12	0.61	14	5.87	0.48	13	7.85	0.63
Patio C	3	7.46	0.13	4	7.89	0.57	4	5.68	0.75	4	7.44	0.59
Patio D	19	8.24	0.61	19	8.60	0.56	17	6.27	0.61	17	8.35	0.69
Patio E	18	8.06	0.47	16	8.23	0.49	16	6.11	0.63	12	7.93	0.51
Patio F	13	7.98	0.29	13	8.15	0.38	11	5.82	0.51	11	7.85	0.57
Patio H	25	8.12	0.57	23	8.42	0.55	24	5.98	0.47	20	8.00	0.57
Patio I and J	5	8.47	0.66	5	8.61	0.87	6	6.18	0.71	5	8.20	0.91
Patio K	5	8.27	0.14	5	8.54	0.31	4	5.99	0.49	4	8.13	0.20
COMBINED	210	8.20	0.44	209	8.47	0.55	204	6.10	0.49	191	8.13	0.56

Table 24: Continued.

REGION	XP3CMD			XP3CBL			XP3NMD			XP3NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	5	7.39	0.33	5	9.57	0.37	5	5.05	0.22	5	8.54	0.35
11L	7	7.29	0.19	7	9.37	0.17	8	4.91	0.28	7	8.35	0.65
CEMENTERIO												
10L-2A	11	7.45	0.44	10	9.56	0.57	10	5.19	0.42	10	8.46	0.52
10L-2B	7	7.34	0.35	8	9.01	0.79	8	4.92	0.40	8	8.17	0.55
COPAN VALLEY												
3O-7	4	7.58	0.21	4	9.69	0.15	4	5.27	0.12	3	8.85	0.26
Regional	8	7.12	0.35	10	9.24	0.52	9	5.03	0.23	10	8.27	0.43
OSTUMÁN												
10E-6	1	7.93	-	1	10.15	-	1	5.55	-	1	9.29	-
11E-2	4	7.19	0.38	4	8.97	0.21	4	4.90	0.17	4	7.69	0.47
RASTROJÓN												
6N-4	0	-	-	2	9.12	0.80	2	4.88	0.30	0	-	-
7M-4	2	7.63	0.25	2	9.79	0.36	2	5.25	0.13	2	8.75	0.76
7M-8	1	7.72	-	1	9.94	-	1	5.69	-	1	9.11	-
7N-20	1	7.66	-	1	9.60	-	1	4.93	-	1	7.72	-
SALAMAR												
8L-10	7	7.45	0.58	7	9.37	1.06	7	5.35	0.60	7	8.80	0.41
8L-12	0	-	-	1	8.09	-	1	5.08	-	1	7.58	-
SEPULTURAS												
8N-11	14	7.36	0.38	14	9.32	0.53	13	5.03	0.32	13	8.40	0.65
9M-22A	6	7.26	0.62	7	9.42	0.80	7	5.26	1.03	7	8.24	1.02
9M-22B	14	7.35	0.38	13	9.47	0.54	15	5.06	0.26	14	8.45	0.58
9M-24	7	7.23	0.55	7	9.51	0.33	7	5.08	0.19	7	8.63	0.28
Regional	7	7.32	0.33	8	9.44	0.49	9	5.34	0.50	8	8.39	0.57
SEPULTURAS 9N-8												
Patio A	7	7.37	0.43	7	9.04	0.80	6	5.23	0.93	6	7.89	1.10
Patio B	11	7.35	0.48	10	9.22	0.48	11	5.14	0.32	9	8.40	0.58
Patio C	5	7.04	0.21	5	9.00	0.31	5	4.91	0.12	5	7.87	0.30
Patio D	20	7.53	0.49	21	9.58	0.60	17	5.27	0.48	18	8.64	0.63
Patio E	17	7.32	0.47	18	9.34	0.45	17	5.09	0.35	16	8.37	0.57
Patio F	8	7.19	0.35	8	9.05	0.51	7	5.00	0.36	7	8.14	0.49
Patio H	21	7.36	0.37	21	9.46	0.53	19	5.19	0.37	19	8.60	0.60
Patio I and J	5	7.35	0.85	5	9.56	0.74	5	5.16	0.43	5	8.77	0.83
Patio K	5	7.02	0.66	5	9.47	0.96	4	5.10	0.28	4	8.57	0.58
COMBINED	205	7.38	0.42	212	9.37	0.54	205	5.14	0.37	198	8.41	0.57

Table 24: Continued.

REGION	XM1CMD			XM1CBL			XM1NMD			XM1NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	4	10.59	0.39	5	11.65	0.53	5	7.95	0.25	5	11.21	0.48
11L	5	10.73	0.73	7	11.25	0.45	7	7.80	0.45	3	10.90	0.25
CEMENTERIO												
10L-2A	9	10.60	0.50	10	11.45	0.69	9	7.47	1.48	9	10.94	0.66
10L-2B	9	10.67	0.55	11	11.33	0.78	11	7.95	0.56	9	11.21	0.40
COPAN VALLEY												
3O-7	1	10.37	-	4	11.58	0.32	4	7.76	0.21	4	11.02	0.13
Regional	4	10.25	0.86	9	11.68	0.52	9	7.96	0.88	10	11.01	0.55
OSTUMÁN												
10E-6	-	-	-	2	11.62	0.36	2	7.62	0.43	2	11.13	0.49
11E-2	1	9.94	-	3	11.25	0.76	3	7.68	0.61	3	10.82	0.32
RASTROJÓN												
6N-4	0	-	-	2	11.53	0.95	2	8.69	1.64	0	-	-
7M-4	2	11.02	0.35	2	12.15	0.29	2	7.81	0.26	2	11.74	0.05
7M-8	3	10.88	0.28	4	12.15	0.21	4	8.27	0.18	4	11.67	0.12
7N-20	0	-	-	2	11.53	0.95	2	8.69	1.64	0	-	-
SALAMAR												
8L-10	5	12.05	0.42	5	7.65	0.45	5	11.56	0.22	3	6.35	0.81
8L-12	1	11.75	-	1	7.85	-	1	11.27	-	0	-	-
SEPULTURAS												
8N-11	5	10.51	0.68	13	11.51	0.75	12	7.73	0.31	12	11.11	0.55
9M-22A	7	10.24	0.53	8	11.63	0.66	8	7.77	0.61	8	11.07	0.60
9M-22B	9	10.31	0.55	11	11.38	0.64	11	7.75	0.34	11	10.91	0.61
9M-24	3	10.01	0.79	9	11.57	0.51	9	7.78	0.27	9	11.17	0.35
Regional	7	10.57	0.46	9	12.21	0.50	8	8.20	0.38	9	11.57	0.61
SEPULTURAS 9N-8												
Patio A	4	10.55	0.67	6	11.64	0.77	7	7.73	0.33	6	11.06	0.59
Patio B	14	10.19	0.72	16	11.37	0.79	12	7.64	0.44	12	10.90	0.66
Patio C	1	10.15	-	2	11.18	0.31	2	7.83	0.49	2	10.60	0.16
Patio D	14	10.70	0.56	20	11.84	0.61	20	8.01	0.52	20	11.19	0.70
Patio E	13	10.31	0.64	19	11.71	0.42	18	8.03	0.53	18	11.17	0.57
Patio F	10	10.11	0.46	12	11.33	0.47	12	7.87	0.74	12	10.83	0.58
Patio H	13	10.31	0.48	21	11.43	0.61	20	7.60	0.46	20	10.85	0.59
Patio I and J	1	10.82	-	4	12.49	0.59	4	7.69	0.82	4	11.78	0.66
Patio K	7	10.51	0.66	9	11.81	0.68	9	7.77	0.49	9	11.04	0.55
COMBINED	152	10.57	0.56	226	11.35	0.58	218	8.14	0.58	206	10.93	0.48

Table 24: Continued.

REGION	NI2CMD			NI2CBL			NI2NMD			NI2NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	4	6.54	0.80	5	6.17	0.53	5	3.99	0.37	5	6.07	0.58
11L	2	5.48	0.00	4	6.15	0.12	4	3.92	0.56	4	5.87	0.63
CEMENTERIO												
10L-2A	9	6.29	0.36	8	6.21	0.55	9	4.24	0.41	8	6.17	0.52
10L-2B	8	6.19	0.34	6	6.10	0.15	7	4.18	0.33	6	6.00	0.15
COPAN VALLEY												
3O-7	2	6.75	0.29	3	6.18	0.22	3	4.36	0.13	3	6.04	0.18
Regional	2	5.80	0.57	6	6.09	0.30	7	3.87	0.26	5	5.93	0.37
OSTUMÁN												
10E-6	0	-	-	1	6.42	-	1	4.27	-	1	6.41	-
11E-2	2	6.41	0.16	4	6.02	0.20	4	3.80	0.17	4	5.96	0.24
RASTROJÓN												
6N-4	0	-	-	2	6.40	0.57	2	4.49	0.65	0	-	-
7M-4	1	5.98	-	2	6.46	0.32	2	3.80	0.29	2	6.30	0.30
7M-8	2	6.62	0.04	1	6.75	-	2	4.54	0.30	1	6.76	-
7N-20	0	-	-	1	6.43	-	1	3.73	-	1	6.03	-
SALAMAR												
8L-10	3	6.35	0.81	7	6.23	0.39	6	4.00	0.29	7	6.12	0.28
8L-12	0	-	-	0	-	-	0	-	-	0	-	-
SEPULTURAS												
8N-11	6	5.95	0.27	10	6.01	0.49	11	4.33	0.66	9	6.09	0.54
9M-22A	2	6.56	0.45	5	6.13	0.32	6	3.97	0.24	4	6.00	0.37
9M-22B	6	6.34	0.44	10	6.19	0.45	9	4.05	0.23	10	6.14	0.37
9M-24	2	6.12	0.63	7	6.13	0.37	7	3.97	0.24	7	6.10	0.34
Regional	5	6.52	0.36	6	5.91	0.51	7	4.13	0.33	7	5.94	0.59
SEPULTURAS 9N-8												
Patio A	3	6.10	0.10	5	5.66	0.44	5	3.88	0.32	5	5.59	0.39
Patio B	12	6.19	0.39	13	5.89	0.47	12	3.99	0.33	12	5.83	0.43
Patio C	2	6.08	0.69	4	5.76	0.40	3	4.03	0.75	3	5.86	0.21
Patio D	12	6.26	0.37	17	6.28	0.46	18	4.24	0.67	17	6.20	0.45
Patio E	10	6.25	0.40	19	5.97	0.31	17	3.91	0.25	17	5.34	0.39
Patio F	9	5.95	0.32	11	5.81	0.34	10	3.95	0.27	10	5.85	0.37
Patio H	10	6.34	0.39	19	6.14	0.40	17	4.14	0.39	21	7.18	0.38
Patio I and J	1	6.91	-	3	6.66	0.38	3	4.53	0.36	4	7.48	0.50
Patio K	6	6.11	0.32	7	5.99	0.14	6	3.93	0.41	8	7.01	0.40
COMBINED	121	6.25	0.39	186	6.15	0.37	184	4.08	0.37	181	6.16	0.39

Table 24: Continued.

REGION	NCCMD			NCCBL			NCNMD			NCNBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	3	7.50	0.27	3	8.33	0.22	4	5.71	0.39	4	8.16	0.51
11L	5	6.80	0.73	6	7.58	0.23	6	5.47	0.36	6	7.59	0.39
CEMENTERIO												
10L-2A	10	7.20	0.35	10	7.70	0.48	10	5.62	0.38	10	7.78	0.49
10L-2B	10	6.83	0.60	5	7.48	0.61	6	5.28	0.39	6	7.60	0.59
COPAN VALLEY												
3O-7	4	7.25	0.27	4	7.87	0.29	4	5.87	0.19	5	7.63	0.22
Regional	10	7.08	0.38	9	7.50	0.34	9	5.50	0.38	10	7.62	0.40
OSTUMÁN												
10E-6	1	7.74	-	1	8.04	-	1	6.08	-	1	8.07	-
11E-2	5	6.84	0.40	5	7.27	0.41	5	5.26	0.33	5	7.54	0.34
RASTROJÓN												
6N-4	0	-	-	2	7.23	0.56	2	5.35	0.75	0	-	-
7M-4	2	7.46	0.86	2	8.19	0.16	2	5.71	0.22	2	8.12	0.11
7M-8	2	7.67	0.28	1	8.58	-	1	5.54	-	1	8.59	-
7N-20	1	7.33	-	1	7.63	-	1	5.53	-	-	-	-
SALAMAR												
8L-10	8	7.08	0.39	8	7.70	0.70	8	5.61	0.50	9	7.74	0.64
8L-12	1	7.44	-	1	7.05	-	1	6.26	-	1	7.12	-
SEPULTURAS												
8N-11	12	6.94	0.42	9	7.56	0.61	11	5.58	0.50	10	7.22	0.98
9M-22A	5	7.17	0.60	7	7.50	0.57	7	5.60	0.69	6	7.44	0.35
9M-22B	12	7.11	0.38	11	7.87	0.62	11	5.88	0.53	10	8.01	0.63
9M-24	6	7.10	0.30	6	7.67	0.41	6	5.53	0.36	5	7.51	0.29
Regional	6	7.12	0.19	7	7.73	0.67	7	5.74	0.33	7	7.87	0.54
SEPULTURAS 9N-8												
Patio A	6	7.31	0.44	7	6.93	0.75	5	5.51	0.20	4	7.12	0.51
Patio B	13	7.08	0.54	12	7.29	0.62	13	5.40	0.58	12	7.43	0.57
Patio C	3	6.45	0.25	3	6.92	0.21	3	4.88	0.15	3	6.47	0.74
Patio D	18	7.25	0.51	18	7.75	0.67	19	5.88	0.66	17	7.89	0.69
Patio E	17	7.09	0.34	17	7.59	0.41	16	5.37	0.41	16	7.62	0.45
Patio F	6	7.09	0.37	7	7.49	0.31	7	5.47	0.57	7	7.56	0.45
Patio H	21	7.18	0.37	25	7.48	0.64	24	5.73	0.65	22	7.53	0.84
Patio I and J	4	7.48	0.50	5	7.70	0.85	5	5.68	0.65	5	7.69	0.89
Patio K	8	7.01	0.40	6	7.65	0.26	6	5.55	0.43	6	7.38	0.86
COMBINED	199	7.17	0.42	198	7.62	0.48	200	5.59	0.44	190	7.62	0.56

Table 24: Continued.

REGION	NP3CMD			NP3CBL			NP3NMD			NP3NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJK	4	6.96	0.70	4	8.07	0.36	4	5.12	0.27	4	7.08	0.32
11L	5	6.97	0.18	6	7.91	0.22	6	5.00	0.35	3	6.81	0.52
CEMENTERIO												
10L-2A	9	7.20	0.41	10	8.03	0.43	9	5.07	0.32	9	6.87	0.65
10L-2B	7	6.81	0.27	7	7.74	0.28	7	4.93	0.25	6	7.04	0.23
COPAN VALLEY												
3O-7	3	7.25	0.25	5	8.04	0.51	4	5.23	0.24	5	7.26	0.49
Regional	7	6.81	0.52	10	7.89	0.36	8	4.83	0.22	9	6.95	0.30
OSTUMÁN												
10E-6	1	7.82	-	1	8.70	-	1	5.40	-	1	7.69	-
11E-2	5	6.71	0.31	5	7.29	0.61	5	4.88	0.44	5	6.72	0.29
RASTROJÓN												
6N-4	0	-	-	3	7.27	0.51	3	5.14	0.19	0	-	-
7M-4	2	7.25	0.73	2	8.44	0.12	2	5.23	0.04	2	7.38	0.62
7M-8	3	7.46	0.68	3	8.43	0.32	3	5.53	0.57	2	7.33	0.25
7N-20	1	7.16	-	1	7.98	-	0	-	-	1	6.20	-
SALAMAR												
8L-10	8	7.00	0.35	9	7.87	0.50	9	4.89	0.29	8	7.09	0.32
8L-12	2	6.72	0.02	2	6.97	0.38	2	5.05	0.08	1	6.73	-
SEPULTURAS												
8N-11	11	7.01	0.44	11	7.96	0.46	11	4.99	0.41	11	6.88	0.62
9M-22A	7	6.74	0.67	7	7.75	0.62	7	4.85	0.39	6	7.00	0.34
9M-22B	11	6.74	0.41	12	7.90	0.46	10	5.06	0.23	10	7.16	0.50
9M-24	8	6.85	0.45	9	7.84	0.27	9	4.97	0.21	8	7.01	0.23
Regional	5	.6.58	0.44	5	7.55	0.72	3	4.64	0.33	4	6.13	0.92
SEPULTURAS 9N-8												
Patio A	5	6.58	0.44	5	7.55	0.72	3	4.64	0.33	4	6.13	0.92
Patio B	13	6.81	0.69	13	7.65	0.70	12	4.97	0.37	12	6.96	0.56
Patio C	4	6.94	0.16	5	7.77	0.47	5	4.85	0.24	5	6.89	0.36
Patio D	20	7.05	0.41	19	7.87	0.55	18	5.15	0.44	17	7.09	0.45
Patio E	17	7.08	0.53	18	7.86	0.42	13	4.99	0.39	16	6.98	0.48
Patio F	9	6.81	0.45	10	7.79	0.28	9	4.91	0.39	10	6.87	0.46
Patio H	20	6.95	0.43	21	7.75	0.51	18	5.07	0.28	17	6.82	0.61
Patio I and J	4	7.11	0.63	5	7.91	0.84	5	5.06	0.29	5	7.22	0.62
Patio K	6	6.68	0.65	6	7.95	0.47	6	4.87	0.36	6	6.96	0.38
COMBINED	197	6.98	0.45	214	7.85	0.47	192	5.01	0.30	187	6.94	0.48

Table 24: Continued.

REGION	NM1CMD			NM1CBL			NM1NMD			NM1NBL		
	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d	N	Mean	s.d
BOSQUE												
10IJKL	5	11.46	0.27	5	10.59	0.30	5	9.17	0.24	5	9.41	0.46
11JL	3	11.37	0.78	4	10.57	0.23	4	8.98	0.23	4	9.02	0.25
CEMENTERIO												
10L-2A	11	11.41	0.66	12	10.40	0.52	13	9.01	0.95	12	9.19	0.57
10L-2B	8	11.60	0.58	9	10.60	0.33	9	9.58	0.50	9	9.63	0.43
COPAN VALLEY												
3O-7	1	11.93	-	3	10.91	0.40	3	9.27	0.03	3	9.53	0.04
Regional	2	10.84	0.31	7	10.44	0.42	6	9.14	0.55	7	9.02	0.20
OSTUMÁN												
10E-6	0	-	-	1	10.79	-	1	9.15	-	1	9.56	-
11E-2	2	11.20	0.05	5	10.42	0.20	5	8.91	0.35	5	9.14	0.13
RASTROJÓN												
6N-4	0	-	-	3	10.03	0.48	2	9.75	0.15	0	-	-
7M-4	2	12.09	0.63	2	11.26	0.14	2	9.44	0.28	2	10.09	0.02
7M-8	4	12.12	0.11	4	11.26	0.16	4	9.98	0.09	3	9.62	0.30
7N-20	0	-	-	0	-	-	0	-	-	0	-	-
SALAMAR												
8L-10	2	12.00	0.40	5	10.82	0.50	5	9.18	0.41	5	9.38	0.33
8L-12	0	-	-	1	10.52	-	1	9.86	-	1	9.69	-
SEPULTURAS												
8N-11	4	11.09	0.37	11	10.50	0.52	10	9.10	0.59	10	9.30	0.43
9M-22A	6	11.35	0.66	8	10.45	0.50	8	9.14	0.64	8	9.06	0.43
9M-22B	8	11.37	0.70	13	10.45	0.58	11	9.17	0.44	12	9.30	0.50
9M-24	5	11.28	0.58	6	10.72	0.60	5	9.20	0.37	5	9.75	0.27
Regional	9	11.92	0.29	9	10.87	0.59	9	9.66	0.57	8	9.73	0.55
SEPULTURAS 9N-8												
Patio A	4	11.17	0.66	5	10.61	0.77	5	9.34	0.36	5	9.10	0.39
Patio B	12	11.33	0.71	18	10.34	0.64	13	9.06	0.57	12	9.22	0.47
Patio C	4	11.57	0.54	5	10.17	0.58	5	8.79	0.21	5	8.74	0.33
Patio D	20	11.55	0.50	24	10.73	0.62	22	9.38	0.56	23	9.56	0.49
Patio E	16	10.97	0.49	21	10.43	0.38	19	9.22	0.46	19	9.35	0.46
Patio F	12	11.17	0.41	14	10.31	0.50	13	9.23	0.71	12	9.20	0.66
Patio H	16	11.32	0.58	25	10.59	0.55	22	9.23	0.54	24	9.15	0.62
Patio I and J	1	12.42	-	5	11.03	0.46	4	9.53	0.27	4	9.69	0.52
Patio K	7	11.56	0.35	9	10.87	0.52	9	9.07	0.40	8	9.31	0.54
COMBINED	164	11.50	0.48	234	10.62	0.46	215	9.28	0.42	212	9.37	0.39

B1. Analysis of Variance and Covariance (ANOVA)

ANOVA was employed on imputed Q-mode transformed data to evaluate whether or not there were significant differences in the sample means across groups. The results of the ANOVA were validated by Levene's test (*W*) to verify if the variances of dental measurements of the sampled regions or patios were similar enough to compare using the ANOVA (**Table 25**). The analysis was divided into four tests of different configurations for the regional groups (Sepulturas and Sepulturas Group 9N-8 separate and then together) and patios (All and Group 9N-8 only). Taken together, these results demonstrate variability in the dental measurement means and intra-group variances at Late Classic Copan.

The first evaluation of all eight neighborhoods (or regions) considered the Sepulturas (Groups 8N-11, 9M-22 Patios A and B, and 9M-24) and Sepulturas Group 9N-8 (All Patios) regions separately. Three measurements were significantly different between groups, XCBL, XM1CMD, and XM1CBL at the $p = <0.001$ level. The means plot of the 8 Group ANOVA showed that Sepulturas and Sepulturas Group 9N-8 were also significantly different from the other groups on XM1CMD and XM1CBL.

Given the clustering of Sepulturas and Sepulturas Group 9N-8 regions, they were collapsed and considered together in subsequent ANOVA tests. The evaluation of seven groups, with the Sepulturas region pooled, produced six measurements that were significantly different between groups (**Table 26**). The same three measurements as the first ANOVA were again significant at the $p = <0.001$ levels Three additional measurements were also significant: NI2CMD ($p = 0.043$), NCCMD ($p = 0.024$), and NCNMD ($p = 0.044$). These data suggest that there are significant differences between regions. The means plot shows that Sepulturas was different from the other neighborhoods on the XM1NBL measurement, but this was not statistically significant.

The third ANOVA compared the means of the 22 patios located in eight regions in the Copan Valley. This test resulted in five significant measurements between patios: XCCBL (p = <0.001), XM1CMD (p = <0.001), XM1CBL (p = <0.001), NCCMD (p = 0.03), and NM1NBL (p = 0.009) (**Table 27**). The means plot identified Salamar Groups 8L-10 and 12 as significantly different from other groups on the XM1CMD measurement.

The fourth ANOVA compared the means of the 14 patios within Sepulturas Group 9N-8. Only two measurements were significant: XCCBL (p = 0.006) and XM1CBL (p = 0.021) (**Table 28**). The means plot highlighted that Patio A and Patios I/J were distinct from the Sepulturas patios on the XP3NBL and XM1CMD measurements, but this was not statistically significant.

The results of the ANOVA tests suggest that there are meaningful differences in dental metric traits between regions and patios. It also suggests that the five residential groups within the Sepulturas region may be more similar to each other than to others in the Copan Valley.

Table 25: ANOVA of eight neighborhoods (*df* = 8)

Measurement	Levene's	*p*	*F*	*df*	*p*
XCCBL	**6.789**	**<0.001**	**4.625**	**7**	**<0.001**
XP3NBL	1.956	0.061	1.303	7	0.248
XM1CMD	1.945	0.062	**6.233**	**7**	**<0.001**
XM1CBL	1.679	0.114	**4.367**	**7**	**<0.001**
XM1NBL	**2.102**	**0.043**	0.449	7	0.871
NI2CMD	**3.453**	**0.001**	2.056	7	0.48
NCCMD	**3.014**	**0.004**	2.269	7	0.29
NCNMD	**2.733**	**0.009**	2.112	7	0.42
NM1NMD	**4.377**	**<0.001**	1.341	7	0.23
NM1NBL	1.542	0.153	1.74	7	0.099

[1] Values in bold are significant at the ≤0.05 level.

Table 26: ANOVA of seven neighborhoods (*df* = 6)

Measurement	Levene's	*p*	*F*	*df*	*p*
XCCBL	**7.697**	**<0.001**	**4.795**	**6**	**<0.001**
XP3NBL	**2.274**	**0.037**	1.523	6	0.17
XM1CMD	**2.261**	**0.038**	**7.253**	**6**	**<0.001**
XM1CBL	1.926	0.076	**4.884**	**6**	**<0.001**
XM1NBL	**2.46**	**0.025**	0.524	6	0.79
NI2CMD	**2.937**	**0.008**	**2.198**	**6**	**0.043**
NCCMD	**3.287**	**0.004**	**2.464**	**6**	**0.024**
NCNMD	**3.145**	**0.005**	**2.191**	**6**	**0.044**
NM1NMD	**5.083**	**<0.001**	1.545	6	0.163
NM1NBL	1.736	0.112	1.752	6	0.109

[1] Values in bold are significant at the ≤0.05 level.

Table 27: ANOVA of all 22 patios (*df* = 21)

Measurement	Levene's	*p*	*F*	*df*	*p*
XCCBL	**2.744**	**<0.001**	**2.633**	**21**	**<0.001**
XP3NBL	**1.658**	**0.037**	1.21	21	0.242
XM1CMD	1.318	0.162	**2.573**	**21**	**<0.001**
XM1CBL	1.568	0.056	**2.556**	**21**	**<0.001**
XM1NBL	1.272	0.193	0.859	21	0.645
NI2CMD	**2.14**	**0.003**	0.872	21	0.628
NCCMD	**2.466**	**<0.001**	**1.703**	**21**	**0.03**
NCNMD	1.262	0.2	1.47	21	0.087
NM1NMD	**2.747**	**<0.001**	0.945	21	0.533
NM1NBL	**1.763**	**0.022**	**1.933**	**21**	**0.009**

[1] Values in bold are significant at the ≤0.05 level.

Table 28: ANOVA of 14 Group 9N-8 patios (*df* = 13)

Measurement	Levene's	*p*	*F*	*df*	*p*
XCCBL	0.743	0.719	**2.346**	**13**	**0.006**
XP3NBL	1.673	0.069	0.924	13	0.529
XM1CMD	0.99	0.462	0.72	13	0.742
XM1CBL	1.18	0.296	**2.024**	**13**	**0.021**
XM1NBL	0.682	0.78	1.072	13	0.386
NI2CMD	1.576	0.094	0.314	13	0.989
NCCMD	1.171	0.303	1.246	13	0.249
NCNMD	0.409	0.966	1.025	13	0.429
NM1NMD	**1.888**	**0.033**	0.522	13	0.909
NM1NBL	**1.947**	**0.027**	1.729	13	0.057

[1] Values in bold are significant at the ≤0.05 level.

B2. Principal Components Analysis (PCA)

PCA was performed on imputed Q-mode transformed data to evaluate metric differences between Copan neighborhoods and patios. **Table 29** lists the three components that were extracted for the dental metrics in this study. They account for 55.11% of the variance. The first component explains 21.24% of the variance and heavily loads on the crown measurements of the maxillary canine and first molar, and the cervical neck of the mandibular first molar. Negative loading is observed on the crown and neck of the mandibular canine. The second component accounts for 17.93% of the variance and positively loads on the cervical neck measurements (except for NCNMD) and the maxillary canine crown. Negative loading occurs on the crown measurements of the maxillary molar and mandibular incisor and canine. The third component explains 15.94% of the variance heavily loads on the mesiodistal measurements of the canine and first maxillary and mandibular molars. There are also positive loadings on the buccolingual measurements of the maxillary canine and mandibular first molar. It is likely that PC 1 reflects crown proportion, PC 2 accounts for cervical neck shape or proportion, and PC 3 is due to the mesiodistal and buccolingual dimensions.

Table 29: Principal components extracted in PCA analysis

	Component 1	Component 2	Component 3
XCCBL	0.461	0.200	0.157
XP3NBL	-0.227	0.590	-0.256
XM1CMD	0.544	-0.233	0.451
XM1CBL	0.610	-0.264	-0.536
XM1NBL	0.431	0.209	-0.665
NI2CMD	0.445	-0.451	0.285
NCCMD	-0.314	-0.653	0.072
NCNMD	-0.781	-0.029	-0.091
NM1NMD	0.023	0.446	0.675
NM1NBL	0.315	0.639	0.148
Eigenvalues	**2.124**	**1.794**	**1.594**

The PCA centroids for several levels of analysis were plotted in three-dimensional space. Clusters become apparent between neighborhoods and patios. In comparing of the eight neighborhoods at Copan (**Figure 62**), two clusters are apparent that include (1) Sepulturas, Sepulturas 9N-8 and the Copan Valley sample and (2) Bosque and Cementerio, and Rastrojón (though Rastrojón separate from this group on PC 2). Ostumán and Salamar are different from these two groups on each of the principal components.

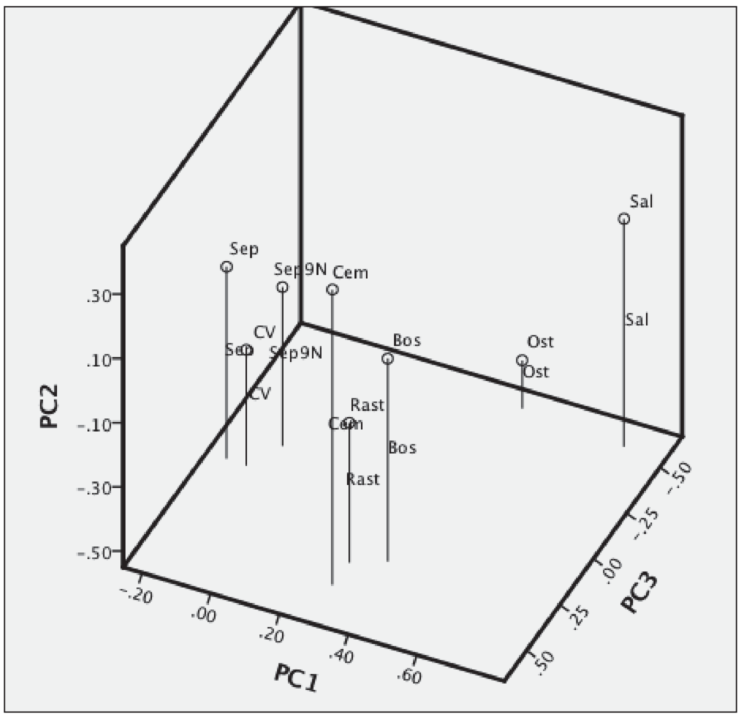

Figure 62: Principal components plot of eight Copan neighborhoods.

Given the similarity between the two Sepulturas regions, they were then considered as a single unit, and the principal components were re-plotted with only seven neighborhoods and with a slightly different rotation (**Figure 63**). Again four groups seem to emerge that included (1) Sepulturas and the Copan Valley, (2) Bosque, Cementerio, and Rastrojón, (3) Ostumán, and (4) Salamar. Cementerio, however, separates from the other two neighborhoods in the second cluster along PC 2.

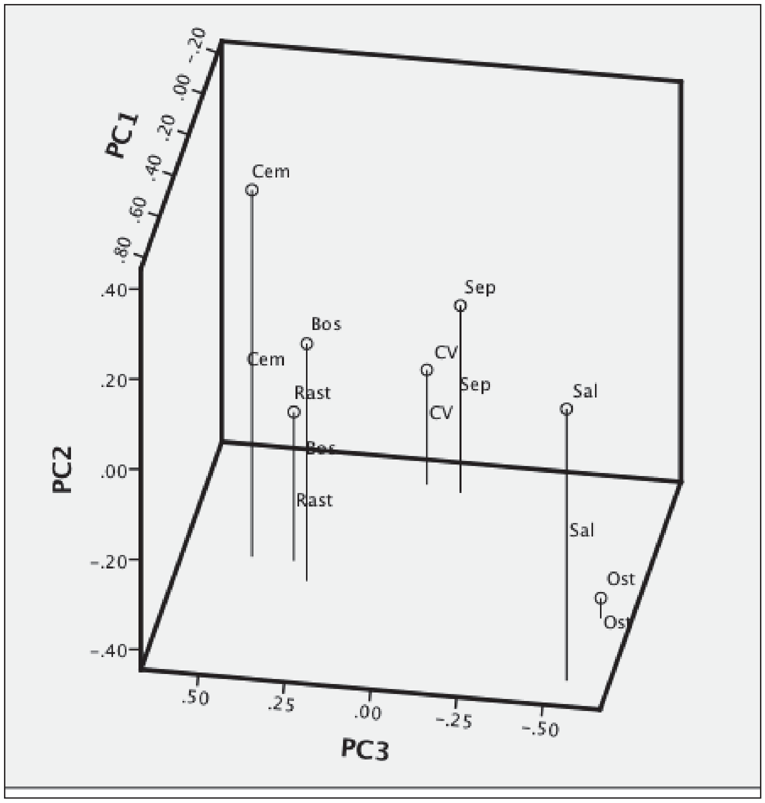

Figure 63: MDS plot of principal components of seven Copan neighborhoods (Sepulturas and Sepulturas 9N-8 are collapsed together).

The inter-patio comparison reveals a pattern similar to the PCA plots of the seven and eight neighborhoods, but it also identifies several additional details (**Figure 64**). Again, there is a cluster of the Bosque, Cementerio, and Rastrojón neighborhoods, but it becomes apparent that patios begin to separate along PC 2. The foothill Salamar and hinterland Ostumán regions diverge from the other patios along PC 2, even though they appear to cluster with other patios in this three-dimensional plot. An important observation is that the patios in the Sepulturas, Sepulturas 9N-8 and Copan Valley regions form a very large cluster that separates from the other neighborhoods along PC 1 and PC 2. However, the patios within this cluster are heterogeneous, especially Sepulturas 9N-8 Patio A and Sepulturas 9M-24.

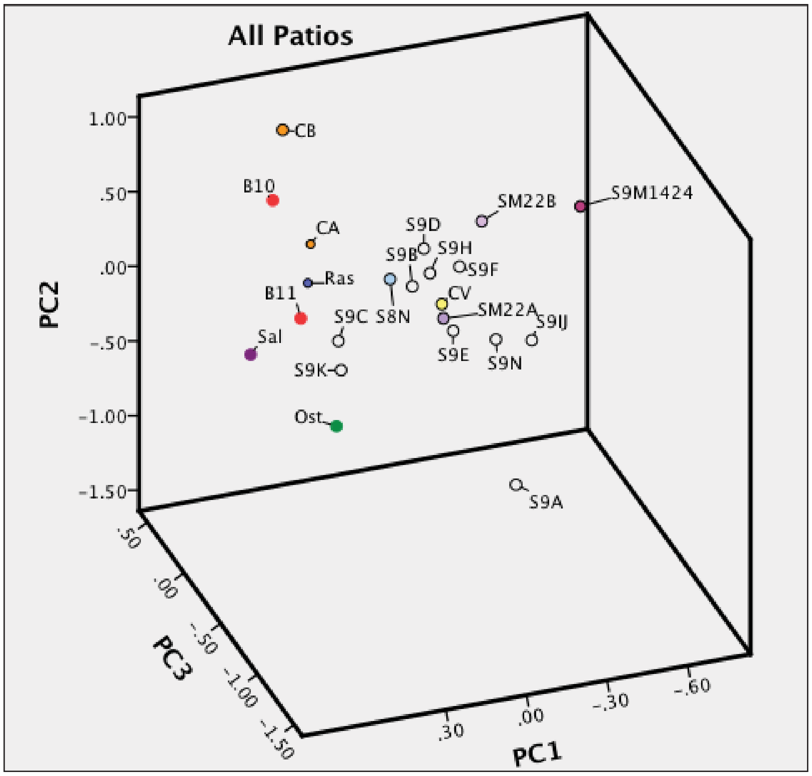

Figure 64: MDS plot of principal components of 22 patios at Copan. Patios from the same neighborhood have the same colored data point.

To further investigate the relationship of the patios within the Sepulturas neighborhoods, the 14 patios were plotted in three-dimensional space (**Figure 65**). Group 9M-22, Patio A and B separate along PC 1 and PC 2, despite being neighboring patios. Group 8N-11 clusters with Patio B in Sepulturas 9N-8. Sepulturas 9N-8 Patios D, H, and F cluster together, which is interesting as Patio F is geographically separated from Patios D and H. Archaeologists have proposed that these three patios shared a common function as craft production centers (Diamanti, 1991). Group 9N-8 Patio A, I, J and Group 9M-24 remain distant from the other patios.

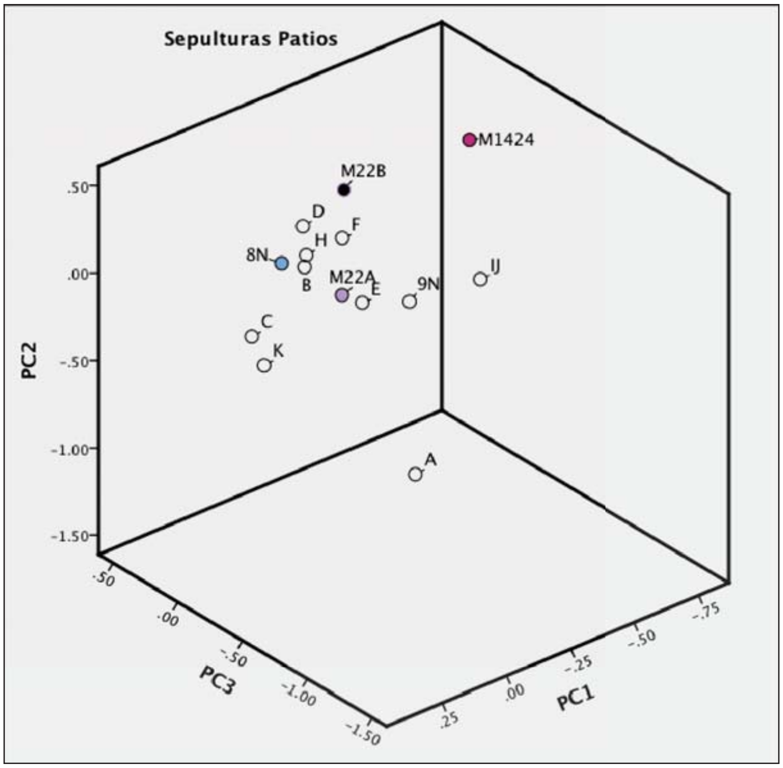

Figure 65: MDS plot of principal components of 14 patios within the Sepulturas and Sepulturas 9N-8 regions.

B3. Canonical Discriminant Function Analysis (CDA)

Like PCA, CDA is a dimension reduction technique that was used to evaluate neighborhood membership based on dental metric data. CDA was conducted on the complete imputed dataset in SPSS v. 22. In CDA, the program creates a predictive model for group membership based on a series of linear predictor values for a maximum number of *k* groups, in this case between 5-8 groups, based on observed group means. Cases are then re-classified by CDA to *k* groups using Mahalanobis Distance. For the Copan sample, CDA re-classified a high percentage of cases to the same groups predicted in the original data set (**Table 30**). Wilk's Λ was significant in all cases.

Table 30: Canonical discriminant function re-classification results.

	% of Correct Re-classifications	*Wilk's Λ*	*df*	*p*
Eight Neighborhoods	58.0%	0.997	70	**<0.0001**
Seven Neighborhoods	75.0%	0.428	60	**<0.0001**
Five Groups	81.6%	0.452	40	**<0.0001**

The CDA plots demonstrate a set of five clusters which include (1) Bosque and Cementerio, (2) Copan Valley, Sepulturas, and Sepulturas 9N-8, (3) Ostumán, (4) Rastrojón, and (5) Salamar. Given the similarity of the two Sepulturas regions, the groups were pooled and evaluated in CDA. With this change, the re-classification increased to 75.0%. Regions were then pooled to create the five clusters observed (**Figure 66**). The re-classification increased to 81.6%, suggesting that the differences between these five clusters are meaningful. If the five clusters were not significant, the percentage of correct re-classifications would have decreased. The results of the CDA reinforce the results of the PCA analysis and demonstrate that neighborhoods at Copan have meaningful differences in dental dimensions.

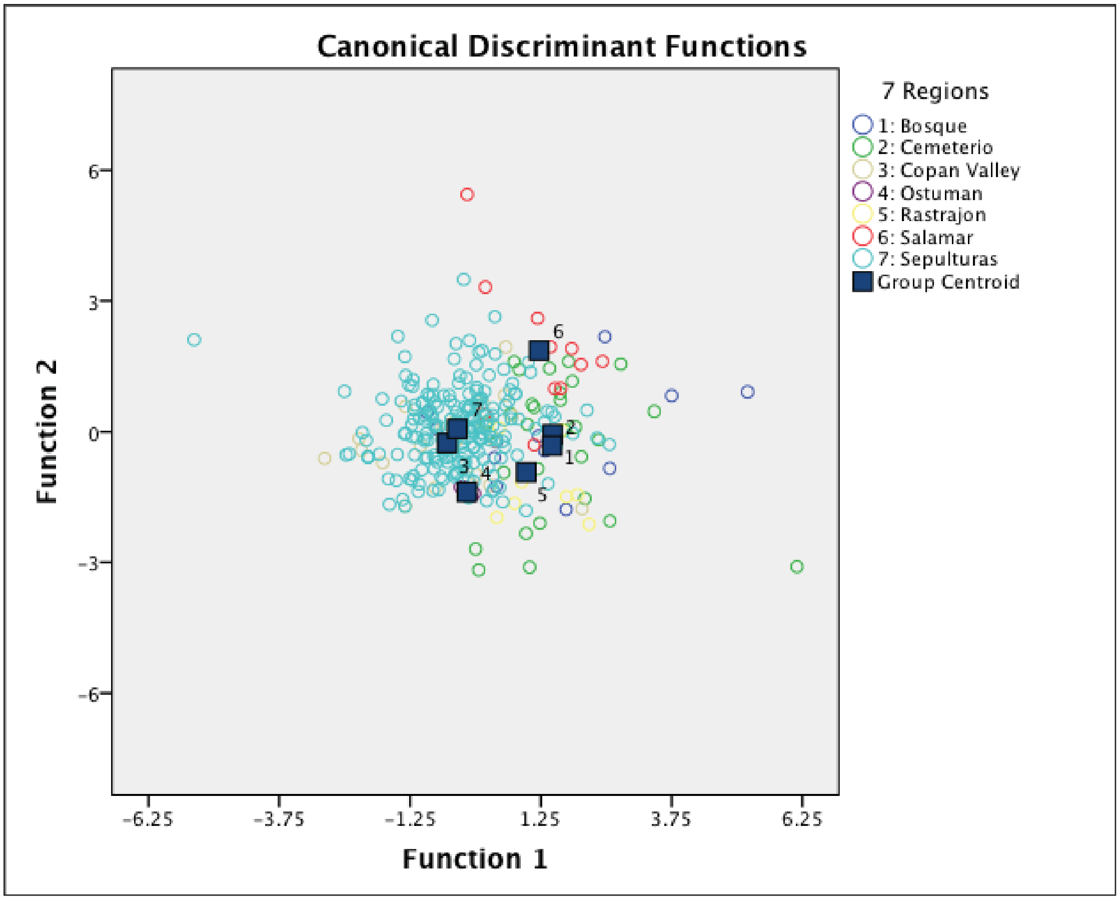

Figure 66: Canonical discriminant function analysis regional centroids.

B4. Mahalanobis Distance (D^2)

As an alternative to PCA and CDA, Mahalanobis distance was calculated using the imputed dataset to quantify the differences in the means relative to the variance of neighborhoods. Following the methodology of Defrise-Gussenhoven (1967) and Scherer (2004), D^2 values > 4.358 ($\sqrt{2t-1}$, where t = 10 measurements in analysis) are statistically significant. The results of this test underscore the inter-neighborhood differences at Copan.

Mahalanobis distances were calculated between the eight neighborhoods (**Table 31** and **Figure 67**), all patios (**Table 32** and **Figure 68**), and the Sepulturas patios (**Table 33** and **Figure 69**). The results were all displayed in multidimensional scaling plots. As with the previous PCA results, Mahalanobis distance calculations suggest that there are significant inter-neighborhood and inter-patio differences. The Sepulturas, Sepulturas 9N-8, and Copan Valley regions are the most similar, Cementerio and Bosque have a small D^2 distance, and the most dissimilar groups are Ostumán, Rastrojón, and Salamar. Inter-patio distances of the 22 patios follow the same pattern described above. For Sepulturas patios, Sepulturas 9M-22 Patio B and 9N-8 Patios A, I, and J have significant D^2 distances.

Table 31: Mahalanobis distances between eight neighborhoods.

	Bos.	**Cem.**	**CV**	**Ost.**	**Rast.**	**Sal.**	**Sep.**	**Sep. 9N8**
Bosque	-							
Cemeterio	0.344	-						
Copan Valley	**4.720**	**5.086**	-					
Ostumán	**6.756**	**6.649**	**5.083**	-				
Rastrojón	**5.450**	**5.107**	**6.028**	**10.566**	-			
Salamar	**4.364**	**5.760**	**8.317**	**14.562**	**10.584**	-		
Sepulturas	2.871	2.819	1.330	**5.297**	**6.380**	**5.457**	-	
Sepulturas 9N8	3.958	3.968	0.834	**4.841**	**5.724**	**6.443**	0.322	-

[1] Values in bold are significant and > 4.358.

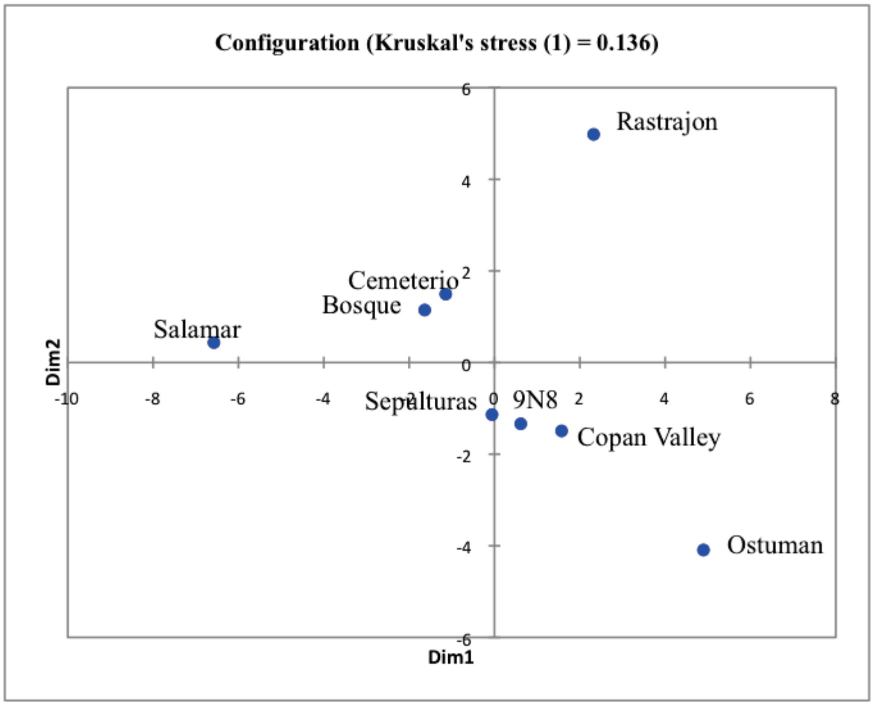

Figure 67: MDS plot of Mahalanobis distances of Copan's eight neighborhoods.

Table 32: Mahalanobis distances between all 22 patios.

	Bos 10IJKL	Bos 11L	Cem 10L2A	Cem 10L2B	Copan Valley	Ost 10,11E	Rast 6N7NM	Sal 8L1012	Sep 8N11	Sep 9M22A	Sep 9M22B	Sep 9M24	Sep Gen	Sep 9N8A	Sep 9N8B	Sep 9N8C	Sep 9N8D	Sep 9N8 E	Sep 9N8F	Sep 9N8H	Sep 9N8IJ	Sep 9N8K
Bos 10IJKL																						
Bos 11L	3.134	-																				
Cem 10L2A	1.472	0.713	-																			
Cem 10L2B	2.377	2.480	2.040	-																		
Copan Valley	**5.150**	**5.981**	**4.573**	**7.440**	-																	
Ost 10E11E	**7.004**	**8.026**	**7.079**	**7.261**	**5.153**	-																
Rast 6N7NM	**6.222**	**6.164**	**5.288**	**5.991**	**6.052**	**10.161**	-															
Sal 8L1012	**5.441**	**4.970**	**5.338**	**7.823**	**8.312**	**14.463**	**10.536**	-														
Sep 8N11	**5.742**	**4.722**	3.935	**7.047**	1.716	**7.701**	**8.567**	**4.714**	-													
Sep 9M22A	**4.591**	4.016	2.921	**5.829**	1.325	**4.976**	**6.645**	**6.769**	1.444	-												
Sep 9M22B	3.166	2.799	1.431	4.205	2.523	**5.861**	**6.763**	**6.422**	1.878	1.158	-											
Sep 9M24	4.431	**4.090**	2.926	**4.531**	2.234	**5.212**	**5.868**	**7.250**	1.959	1.796	1.123	-										
Sep Gen	**7.269**	**7.300**	**7.029**	**7.419**	3.141	**5.811**	**6.703**	**6.717**	3.441	3.393	4.411	3.088	-									
Sep 9N8A	**14.057**	**9.270**	**9.899**	**14.901**	3.879	**10.210**	**11.828**	**10.801**	3.175	**4.166**	**6.081**	**5.588**	4.817	-								
Sep 9N8B	**5.132**	**4.706**	3.514	**6.436**	0.758	**5.070**	**6.548**	**7.079**	0.695	1.116	1.604	1.063	3.431	3.433	-							
Sep 9N8C	**6.614**	**4.870**	4.062	**7.357**	2.262	**6.205**	**8.763**	**6.828**	0.910	0.830	2.290	2.541	4.757	3.599	0.967	-						
Sep 9N8D	3.660	3.854	2.781	**4.641**	1.668	**5.453**	**5.075**	**5.093**	1.273	1.874	1.163	0.829	1.849	**4.792**	0.990	2.619	-					
Sep 9N8E	**6.080**	**5.625**	**4.626**	**6.882**	0.987	**4.385**	**5.160**	**7.725**	1.575	1.364	2.427	1.104	1.975	3.211	0.516	1.641	1.039	-				
Sep 9N8F	**6.904**	**5.937**	**4.708**	**7.308**	1.242	**5.280**	**6.524**	**9.582**	1.519	1.968	2.286	1.127	3.787	3.393	0.320	1.738	1.390	0.549	-			
Sep 9N8H	**4.712**	**4.628**	3.248	**6.607**	0.693	**6.154**	**6.470**	**6.245**	0.549	0.840	1.051	1.377	3.079	3.333	0.356	1.268	0.744	0.944	0.915	-		
Sep 9N8IJ	**6.619**	**8.222**	**7.267**	**7.800**	3.998	**5.021**	**6.801**	**7.320**	**4.585**	**4.298**	**5.077**	2.588	1.333	**7.363**	3.620	**5.437**	2.351	1.989	3.976	4.058	-	
Sep 9N8K	**5.114**	**4.919**	3.746	**6.114**	2.722	3.733	**5.542**	**6.742**	2.418	1.633	2.269	1.756	2.904	**5.264**	1.460	1.719	1.483	0.927	1.887	1.833	2.214	-

[1] Values in bold are significant and > 4.358.

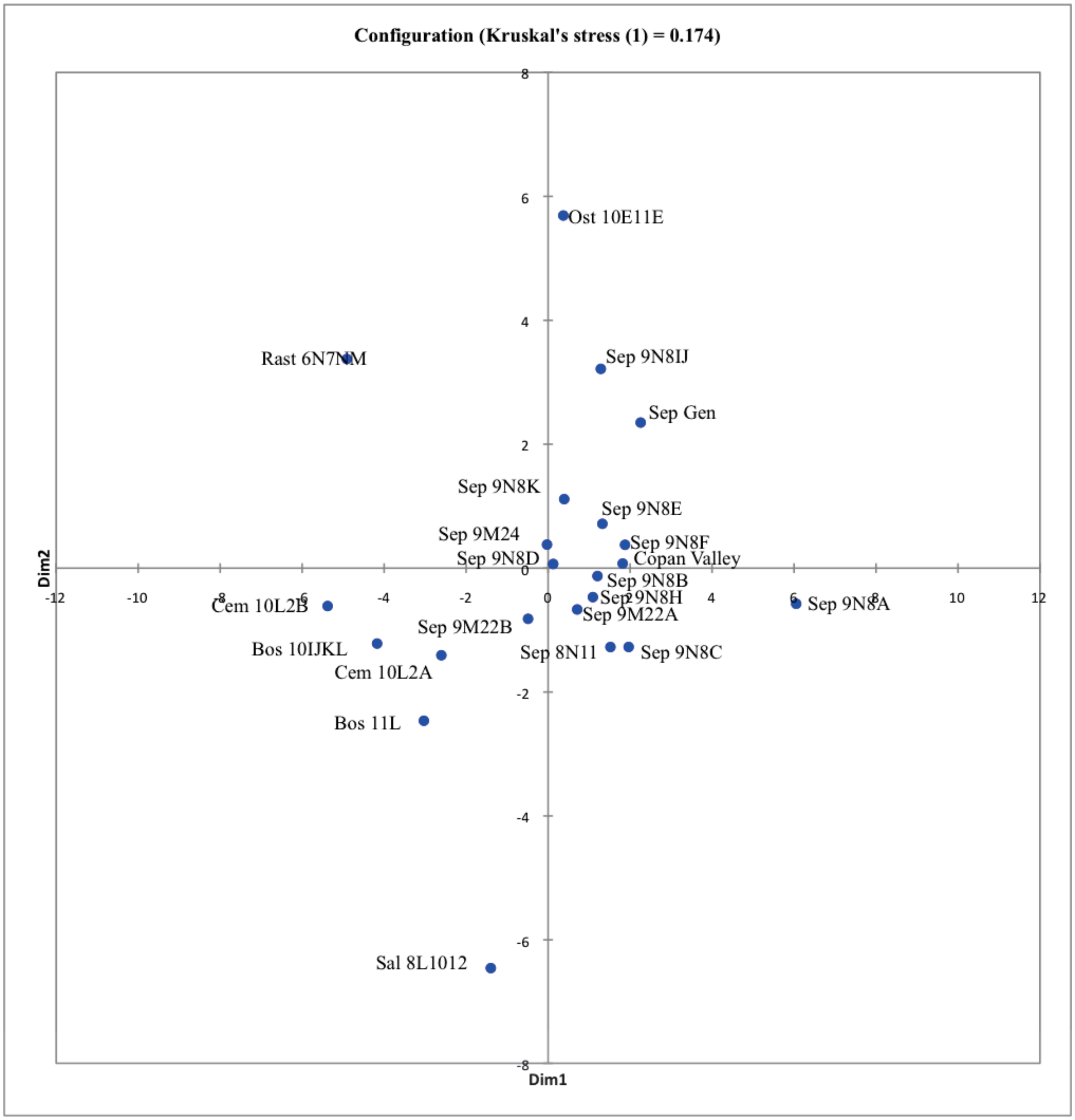

Figure 68: MDS plot of Mahalanobis distances of all 22 patios in the Copan Valley.

Table 33: Mahalanobis distances between Sepulturas patios.

	8N11	9M22A	9M22B	9M24	Gen	9N8A	9N8B	9N8C	9N8D	9N8E	9N8F	9N8H	9N8IJ	9N8K
Sep 8N11	-													
Sep 9M22A	1.832	-												
Sep 9M22B	2.241	1.215	-											
Sep 9M24	2.098	1.901	1.115	-										
Sep Gen	3.477	3.050	4.105	3.187	-									
Sep 9N8A	4.049	**4.920**	**7.301**	6.587	**5.430**	-								
Sep 9N8B	0.864	1.322	1.789	1.049	3.366	3.910	-							
Sep 9N8C	0.898	0.993	2.496	2.660	4.270	3.865	1.123	-						
Sep 9N8D	1.374	1.919	1.159	0.804	1.873	**5.614**	0.954	2.557	-					
Sep 9N8E	1.886	1.485	2.672	1.367	2.023	3.319	0.560	1.721	1.187	-				
Sep 9N8F	1.930	2.204	2.613	1.292	3.744	3.601	0.394	1.989	1.483	0.513	-			
Sep 9N8H	0.784	0.896	1.232	1.417	2.812	3.747	0.369	1.235	0.747	0.857	0.944	-		
Sep 9N8IJ	4.074	3.838	**4.576**	2.555	1.233	**7.342**	3.208	**4.723**	2.071	1.895	3.666	3.396	-	
Sep 9N8K	2.577	1.720	2.491	2.240	2.566	**5.078**	1.685	1.706	1.642	1.043	2.027	1.662	1.999	-

[1] Values in bold are significant and > 4.358.

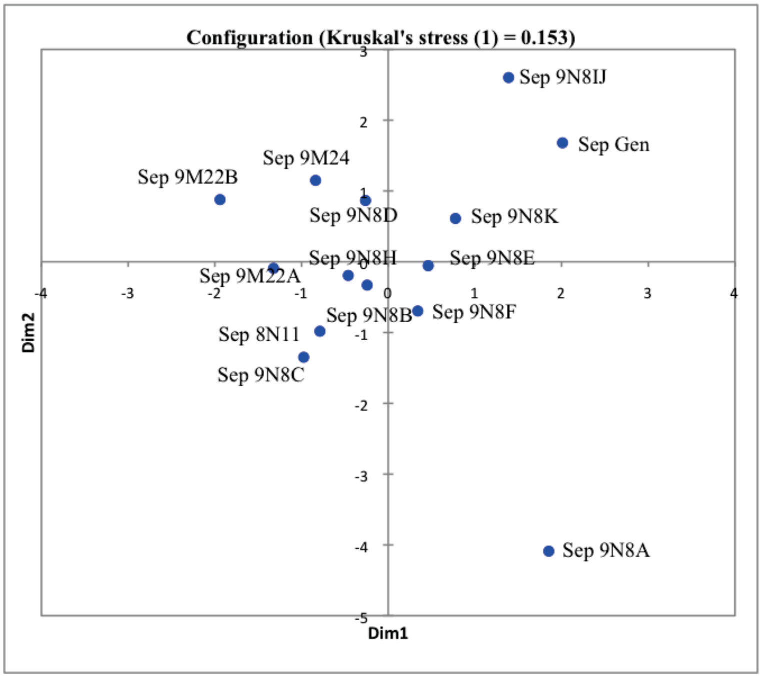

Figure 69: MDS Plot of Mahalanobis distances for all patios in the Sepulturas region

B5. Mantel

A two-tailed Mantel test was performed to test for correlation between biological distances and geographic distance matrices (Smouse et al., 1986) for neighborhoods and for all patio groups. The geographic distance matrices were calculated from approximating physical distances according to least-cost paths (Richards-Rissetto and Landau, 2014) defined for within the site core. Ostumán was calculated as an approximate straight-line distance (**Tables 34** and **35**).

The geographic and biological distance matrices between the eight neighborhoods are correlated ($r(AB) = 0.628$, $p = 0.003$). There is significance when the Sepulturas and Sepulturas 9N-8 groups are pooled and the Mantel test is performed on seven neighborhoods ($r(AB) = 0.529$, $p = 0.02$). These data suggest that geographic distance influence biological distance between the large neighborhoods of Copan.

When all 22 patios are considered across the region, it appears that geographic distance is correlated with biological distance ($r(AB) = 0.483$, $p = <0.001$). However, the pattern does not hold within Group 9N-8 where patios are located only 10-50 m apart ($r(AB) = 0.082$, $p = 0.485$). This is not unexpected for Group 9N-8 as the ANOVA, PCA, and Mahalanobis tests reveal that patios with similar dental metric traits are not those that are adjacent within the neighborhood, especially in the case of Patio A.

The phenotypic structure that the Mantel test reveals is quite surprising, especially because it is a conservative test. This result would suggest that Copan was a dynamic urban environment and mate exchange was occurring with other cities. Essentially, the Manel test identifies the nature of the biological difference that the other statistical tests identified. There is spatial correlation at Copan, which may mimic some of the ethnographic patterns, observed among the Tzotzil and Zinancantan Maya discussed in Chapter 4.

Table 34: Geographic distance matrix for the eight neighborhoods used in the Mantel test. Distance is in kilometers.

	Bosque	Cemeterio	Ostumán	Rastrojón	Salamar	Sepulturas	Sep 9N8
Bosque	-						
Cemeterio	0.500	-					
Ostumán	3.250	4.750	-				
Rastrojón	2.250	2.200	4.950	-			
Salamar	1.600	1.250	3.950	1.100	-		
Sepulturas	1.250	1.000	4.200	1.500	0.600	-	
Sep 9N8	1.500	1.250	4.500	1.350	0.750	0.250	-

Table 35: Geographic distance matrix for 22 patios used in Mantel test. Distance is in kilometers.

	Bos 10IJKL	Bos 11L	Cem 10L2A	Cem 10L2B	Ost 10E11E	Rast 6N7NM	Sal 8L1012	Sep 8N11	Sep 9M22A	Sep 9M22B	Sep 9M24	Sep 9N8A	Sep 9N8B	Sep 9N8C	Sep 9N8D	Sep 9N8E	Sep 9N8F	Sep 9N8H	Sep 9N8IJ	Sep 9N8K
Bos 10JKL	-																			
Bos 11L	0.250	-																		
Cem 10L2A	0.387	0.225	-																	
Cem 10L2B	0.312	0.200	0.075	-																
Ost 10E11E	3.250	3.500	3.850	3.750	-															
Rast 6N7NM	2.250	2.500	2.200	2.275	4.950	-														
Sal 8L1012	1.600	1.800	1.250	1.325	3.950	1.100	-													
Sep 8N11	1.250	1.400	1.200	1.295	4.500	0.800	0.750	-												
Sep 9M22A	0.800	0.800	0.700	0.720	4.150	1.250	0.800	0.600	-											
Sep 9M22B	0.830	0.830	0.730	0.750	4.180	1.280	0.830	0.630	0.030	-										
Sep 9M24	0.850	1.000	0.750	0.800	4.250	1.210	0.850	0.600	0.010	0.400	-									
Sep 9N8A	1.200	1.150	0.900	0.958	4.268	1.250	0.800	0.500	0.300	0.430	0.180	-								
Sep 9N8B	1.258	1.200	1.500	1.580	4.326	1.192	0.742	0.442	0.358	0.488	0.238	0.058	-							
Sep 9N8C	1.132	1.082	0.968	1.026	4.336	1.182	0.732	0.432	0.320	0.450	0.228	0.068	0.035	-						
Sep 9N8D	1.296	1.238	1.538	1.618	4.364	1.154	0.686	0.386	0.396	0.526	0.276	0.080	0.038	0.056	-					
Sep 9N8E	1.142	1.092	0.842	0.900	4.210	1.260	0.810	0.510	0.242	0.372	0.122	0.058	0.085	0.070	0.115	-				
Sep 9N8F	1.134	1.084	0.834	0.892	4.202	1.286	0.836	0.536	0.234	0.364	0.114	0.068	0.105	0.100	0.155	0.026	-			
Sep 9N8H	1.298	1.240	1.540	1.620	4.366	1.190	0.740	0.440	0.418	0.548	0.298	0.060	0.040	0.060	0.018	0.112	0.130	-		
Sep 9N8IJ	1.192	1.142	1.028	1.086	4.396	1.124	0.656	0.356	0.380	0.510	0.288	0.105	0.058	0.060	0.030	0.130	0.155	0.050	-	
Sep 9N8K	1.308	1.250	1.550	1.630	4.376	1.172	0.704	0.404	0.398	0.528	0.278	0.780	0.057	0.080	0.030	0.118	0.130	0.010	0.055	-

B6. Euclidean distance

Euclidean distances were calculated for each patio to evaluate inter-individual relationships. The multidimensional plots in section C display the results of the Euclidean distance matrix for each patio. The results reveal that there are likely familial relationships within some patios and structures within Copan's neighborhoods. The results of Euclidean distance are discussed in detail, in conjunction with the radiogenic strontium data. The Euclidean distance tables are found in **Appendix F** and figures for other patios in **Appendix G**.

B. Summary of biological distance trends

The results of statistical analysis reveal several patterns at Copan. Burial location was purposeful and non-random. Those buried within residential neighborhoods or patios had stronger relationships within that location than across groups. The effect of these burial practices has structured the ordination space observed in the various plots of genetic distance showing divergence between Copan's neighborhoods.

The groups that lie in the hinterlands or foothills at the margins of the Copan Valley have a suite of dental measurements distinct from the neighborhoods in the site core. Ostumán is the most divergent of all groups, followed by Rastrojón, and Salamar. There is a close affiliation between the neighboring Sepulturas (Groups 8N-11, 9M-22, and 9M-24) and Sepulturas Group 9N-8 (All patios) regions. The Copan Valley sample clusters with the Sepulturas regions and suggests that the random valley sample approximates the heterogeneity of individuals in the large Sepulturas regions. Two other neighboring regions, the Bosque and Cementerio neighborhoods, share similar dental metric traits and cluster together in every statistical test.

A similar pattern was identified among the patios within the Sepulturas region. According to the PCA, Group 9N-8, Patios H, D, and F are similar, which follows a theory put forth by Diamanti (1991) suggesting that these three groups were diverse and primarily occupied by diverse craft producers. Group 9N-8, Patio A is unique among all other patios and hints that this patio was not the residence of a founder of a biological lineage in Sepulturas Group 9N-8.

Finally, it is important to note that the results may have been affected by the limitations of the available sample. First, the small sample size in some regions may not be representative of entire neighborhoods. The differences in sample size between regions may have also affected the results, making small groups seem more dissimilar than the groups with larger sample sizes and more internal variability. Second, as with most archaeological samples, there were missing data. Data imputation is a common and recognized way to deal with this issue in multivariate analysis, but variability may be lost in the process.

C. Interpretation of Spatial Trends Within Patios: Radiogenic Strontium and Biodistance Data

An important purpose of this study was to evaluate the internal social organization of Copan from the intersection of biological and biogeochemical data. The following section briefly describes the results of the analysis of Euclidean distances in concert with radiogenic strontium isotope data for two patio groups Sepulturas Group 8N-11 and Salamar Groups 8L-10 and 8L-12. The multidimensional scaling plots (MDS) derived from the distance matrices are discussed in conjunction with radiogenic strontium data. The Euclidean distance matrices for each patio are found in **Appendix F** and the discussion of the remaining groups, with associated figures, in found in **Appendix G**. The architectural maps presented in Chapter 3 are indicated throughout this short discussion the aforementioned appendices and can be referenced to provide additional clarity to this discussion. While these data are quite interesting, it is important to note that these plots are based on a limited number of dental metric data that may not truly identify phenotypic relationships (e.g. Hubbard, 2014).

Each MDS plot has been coded to convey various forms of data. Individuals in *italics* are female with a (◆) symbol, **bold** are male with a (**−**) symbol, and those of undetermined sex are in regular typeface with a (•) symbol. Individuals sampled for $^{87}Sr/^{86}Sr$ isotopes are identified by the color of the range of radiogenic strontium values as shown (**Table 36**).

Table 36: Color code for MDS plots of Euclidean distance.

Color	Zone	$^{87}Sr/^{86}Sr$ Values
Yellow	1	0.70434 - 0.70575
Blue	2	0.70632 - 0.70740
Orange	3	0.70741 - 0.70797
Green	4	0.70803 - 0.70898
Red	5	0.71018 - 0.71538

Burial numbers have been coded to convey the maximum amount of information. Each number represents the region, the group, the patio, the structure, and the burial number. For example, **S8L10.77.42.5B** (see **Figure 74)** is the Salamar neighborhood (**S**), Group 8L-10 (**8L10**), Structure 8L-77 (**77**), Operation 42 (**42**), Burial 5B (**5B**). In the discussion, burials will be identified by simplified numbers (e.g. Burial 42-5B) that appear at the end of the longer code in the MDS plots. Chapter 3 includes the plan maps for the patios where each burial is plotted in its approximate location with simplified burial numbers (e.g. 42-5B), and notes the $^{87}Sr/^{86}Sr$ value range.

C1. Salamar (8L-10, 12)

Previous statistical tests have indicated that the Salamar neighborhood is distinct from other neighborhoods within the Copan Valley. The noble residences in Groups 8L-10 and 12 have elaborate sculptural elements on the eastern structures and are large Type 3 and 4 sites (**Chapter 3, Figure 21**). Ashmore (1991) recovered a series of tombs with double occupants, one male and one female, and suggested that the tombs are representations of Maya cosmology, evoking the moon goddess and the 13th ruler, Waxaklahun U'bah K'awil.

The Salamar region is the best example of the combined power of integrated biodistance and radiogenic strontium isotope analyses. Three males plot in the upper left quadrant of the MDS plot (Burials 42-1b, 42-5b, and 42-2) with potential relationships (**Figure 70**). The females in this group (42-1A, 42-4, and 42-5A) appear primarily in the lower quadrants of the MDS. Two of the female burials (42-1A, and 42-4) are potentially non-local, while the third seems to be local based on $^{87}Sr/^{86}Sr$ values (Burial 42-5A). Two other males were recovered from the neighboring Group 8L-12. Burial 42-6 is a potential non-local male interred in an elaborately furnished tomb with local vessels, imported shells, stingray spines, jade pendants, jade ear flares, and a jade pectoral.

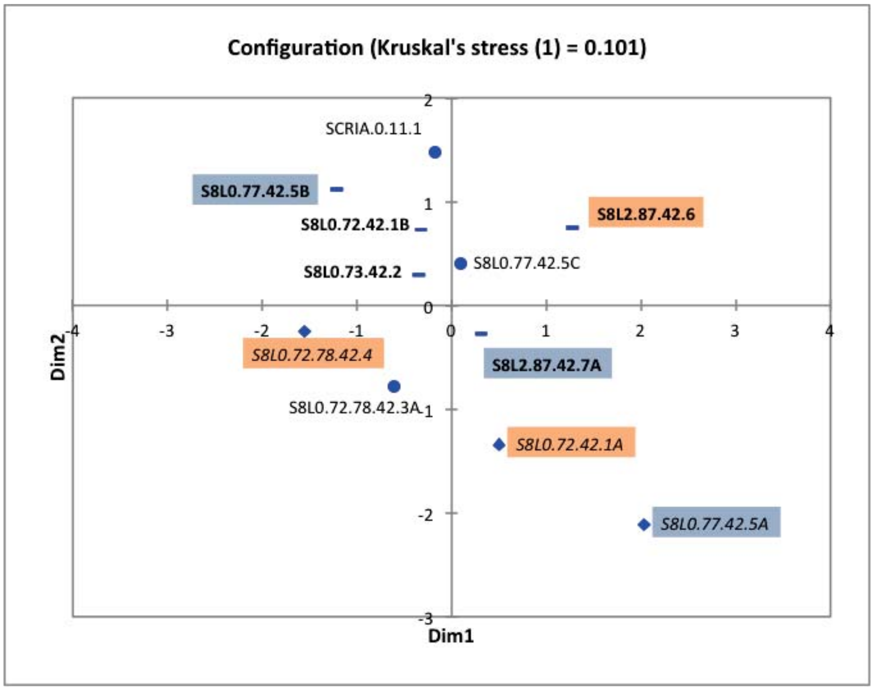

Figure 70: MDS plot of Euclidean distances for the Salamar neighborhood.

Taken together, the biodistance and radiogenic strontium isotope data suggest that the primary members of the Salamar region may have been the males interred in Groups 8L-10 and 8L-12. Two potentially unrelated and non-local females were interred with the local related males and may represent in-marrying spouses. The potentially non-local unrelated male in the richly furnished tomb is an interesting case that demonstrates how an individual that is both non-local and lacks biological kinship ties can be integrated into a residential group.

C2. Sepulturas 8N-11

The results of the Euclidean distance analysis of Group 8N-11 are unexpected. The "Skyband Group" is a Type 4 site with sculpted architecture that was hypothesized to be a residential compound of sub-royal elites (Webster et al., 1998) (**Chapter 3, Figure**

23). More than half of the individuals excavated from Group 8N-11 were part of this analysis (15/26) and few individuals cluster in the MDS plot (**Figure 71**). Burial 50-2A is a potentially non-local young adult male buried below a circular altar behind Structure 8N-51. The four non-local individuals from Group 8N-11 include a female (Burial 50-7) and two males (Burial 50-2A and 50-24). Like Burial 42-7A in Salamar, Burial 14-1 was a potentially non-local male entombed in a richly furnished elaborate tomb with a jade pectoral in the center of a main structure. While archaeological data support inferences that this group was residential, it does not appear to have been a biological lineage or a group of related individuals based on the dental metrics used in the Euclidean distance.

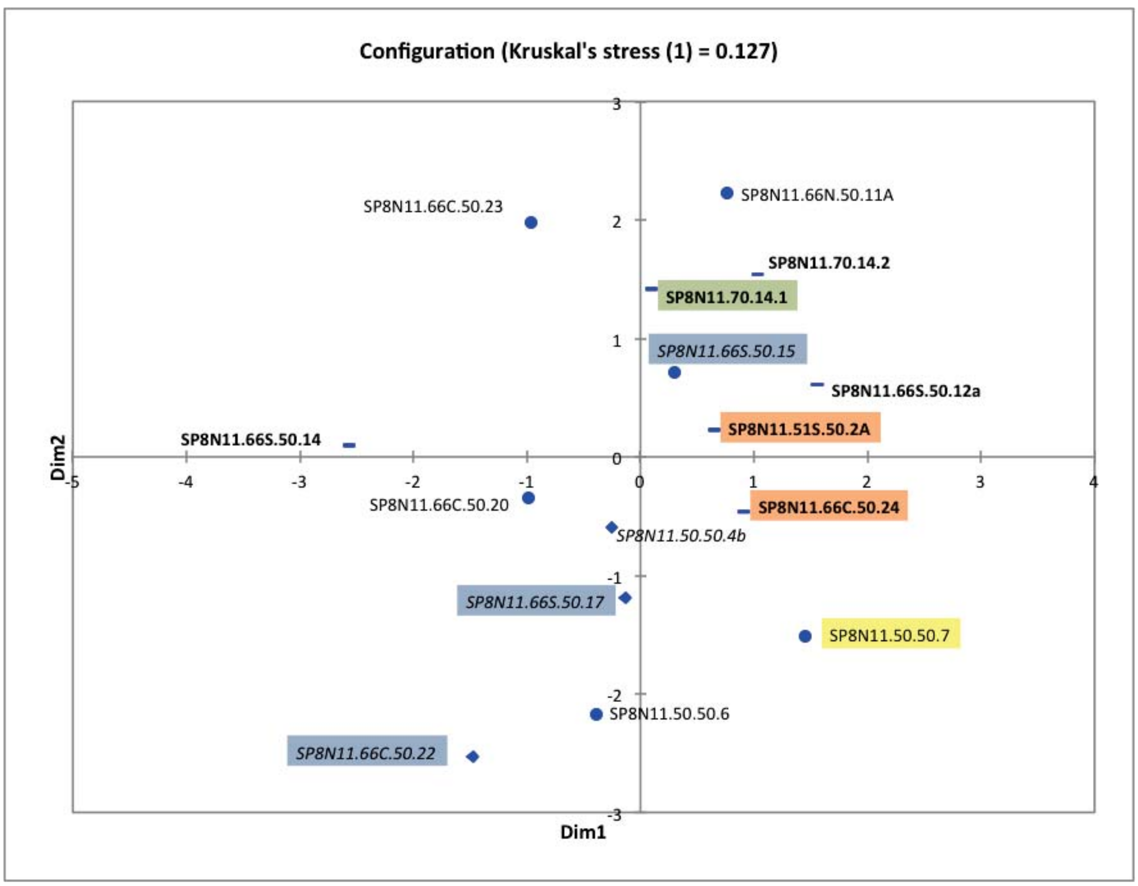

Figure 71: MDS plot of Euclidean distances for Group 8N-11 from the Sepulturas neighborhood.

C3. Summary of spatial trends

The intersection of the biological and biogeochemical data is a powerful analytical tool for elucidating relationships in the past. Sections A and B discussed the larger trends for the Copan Valley while considering inter-individual relationships within patios. Individuals with non-local $^{87}Sr/^{86}Sr$ values seem to have been regularly integrated as members of patio groups. This is evident in both burial location and and the results of the Mantel test.

Several regions did not exhibit significant Euclidean distances (Bosque, Copan Valley, Group 8N-11, Group 9M-24, and Group 9N-8 Patio A) and suggest co-residence was based on a political, economic, or other social relationship. Other patios exhibited some biological affiliation among those interred within the patio but demonstrated overall radiogenic strontium isotope variability (Group 10L-2 Patio B, Group 9M-22, Group 9N-8 Patio B, Group 9N-8 Patio C, Group 9N-8 Patio D, Group 9N-8 Patio E, Group 9N-8 Patio F, and Group 9N-8 Patio H). Finally, some patios had significant Euclidean distances within the patio but this may be driven by the small sample size in these regions (Ostumán Group 10E-2 and 11E-2, Rastrojón Groups 6N-4 and 7M-8, Copan Valley Group 3O-7, and Salamar Groups 8L-10 and 12). In sum, according to the Euclidean distances, the social organization of patios is highly varied at Copan and represents multiple scales and types of affiliation that affected co-residential patterns.

D. Summary

This chapter presented the results of radiogenic strontium isotope and biodistance analysis with detailed summaries at the end of each section. The results of isotope analysis are presented in Section A. Of the 141 burials sampled, a maximum of 55 potentially non-local individuals were identified from five geological zones. However, given the variety of baseline data described, if only outiers are considered anomalous then only 10% of the sample is potentially non-local. Whereas, if the bimodal data is indicative of two modes of radiogenic strontium isotope values for Copan then 15% of the sample is potentially non-local. If the average of all of the baseline data is considered and the “local” $^{87}Sr/^{86}Sr$ range is 0.7063-0.7074, then there is potential that 40% of the sample has demonstrates radiogenic strontium isotope values that are not indicative of the Copan Valley (or are the result of the trends described at the outset of the radiogenic strontium discussion). Trends in age, sex, mortuary patterns, and cultural body modification were described for the various $^{87}Sr/^{86}Sr$ ranges. Section B presented the results of the statistical tests employed in biodistance analysis which include Principal Components Analysis (PCA), Canonical Discriminant Function Analysis (CDA), Analysis of Variance (ANOVA), Mahalanobis Distance (D^2), and Mantel tests. Section C presented the results of the Euclidean Distance matrices in conjunction with $^{87}Sr/^{86}Sr$ isotopic values and mortuary context for two patios (see **Appendix F** and **G** for all other patios).

CHAPTER 8: DISCUSSION AND CONCLUSIONS

The previous chapters have outlined the results and interpretations of the radiogenic strontium isotope and biodistance analyses. This chapter will present the summary, conclusions, and future directions for the research question proposed at the outset of the project. This investigation addressed the role that kinship (biological or fictive) and co-residence played in the internal social organization of a lineage-based and/or house society. Detailed analyses of the differences between and among the individuals interred within patios and neighborhoods were undertaken to examine these concepts at Copan.

A. Research Questions and Alternate Scenarios

Alternative expectations considered in this study were drawn from a matrix of possibilities (**Figure 7**). Data were used to establish whether or not the eight archaeologically defined neighborhoods followed house (e.g., Gillespie, 2000a) or lineage models (e.g., Sanders, 1989). Since households are the minimal economic units that reflect relationships (Becker, 2004) and a single house may include multiple households (Wilk and Ashmore, 1988), patios and structures within neighborhoods were examined in detail. The following discussion outlines the alternative expectations within the context of the results.

(1) <u>Unrelated Local Residents:</u> If individuals within a neighborhood exhibit local radiogenic strontium values and dissimilar phenotypic profiles, then that neighborhood would have been open to biologically unrelated individuals yet limited to locally-born

individuals. Such a pattern would support the house model.

This scenario was not observed at Copan. In the few patios where individuals may be unrelated biologically, non-local individuals were also included. There are no cases of a neighborhood occupied exclusively by individuals with local $^{87}Sr/^{86}Sr$ values who do not demonstrate some biological affinity. Thus, it does not appear that affiliation within Copan neighborhoods was based solely on a local place of origin, as one might infer from radiogenic strontium isotope ratio values.

(2) Related Local Residents: If individuals within a neighborhood possess local radiogenic strontium values and similar phenotypic profiles, then a neighborhood was insular where affiliation was limited to local biologically related individuals (and their spouses). Such a pattern would support a lineage-based form of social organization.

There are no cases where exclusively related individuals with local $^{87}Sr/^{86}Sr$ values occupied a patio or neighborhood. *Prima facie*, the results do not support a lineage-based model in which a potential place of origin and biological affinity (or marriage to a related lineage member) were required for neighborhood affiliation. If this were the case, the neighborhood or patio would represent a discrete social unit predicated by a linkage to a common local ancestor.

Several regions have individuals with "local" $^{87}Sr/^{86}Sr$ values and similar dental dimensions within neighborhoods and/or patios but these areas also included individuals with non-local $^{87}Sr/^{86}Sr$ values and dissimilar dental metric traits. In the Salamar region in Group 8L-10 and 8L-12, there may be close biological relationships among the males but the females demonstrated potentially non-local $^{87}Sr/^{86}Sr$ values, implying patrilineal and patrilocal residence structure with in-marrying spouses. However, a potentially non-local unrelated male was entombed within the most richly furnished tomb in a principal structure of Group 8L-12 indicating that non-local individuals were important members of the compound. The inclusion of the non-local male makes a lineage model questionable even in the best example of closely related males within Salamar.

The example of Salamar is important to review within the context of the modern Maya who follow patrilineal and patrilocal residence systems (Vogt, 1969; 1994). A patrilineal society has been assumed to exist in ancient Maya society (Carmack and Weeks, 1981; Fash et al., 1992); but clearly Copan deviated from this form of residential organization. It is likely that Watanabe (2004), among others, is correct when he contends that filiation from either parent could have been declared and manipulated to maintain social groups or access to land.

Finally, when the eight Copan neighborhoods are evaluated in light of the entire site, distinct clusters emerge and show some affinity based on dental measurements. The five clusters were discussed in Chapter 7 and in most cases are only affiliated with their closest neighbors: (1) Bosque and Cementerio, (2) Sepulturas, Sepulturas 9N-8, and the Copan Valley, (3) Ostumán, (4) Salamar, and (5) Rastrojón. These distinct clusters reflect the existence of suites of dental metric traits unique to each locale. This signals specific and distinct biological affiliations not apparent in inter-individual or inter-patio analyses.

(3) Unrelated Non-local Residents: If individuals within a neighborhood have radiogenic strontium values associated with another geological region and dissimilar phenotypic profiles, then a neighborhood was open to non-local and biologically

unrelated individuals. Such an arrangement would not support either the lineage-based or house-based model of social organization.

There were no examples of exclusively non-local and phenotypically dissimilar, individuals occupying a patio or neighborhood. However, several patios presented a lack of within patio biological affinity and included both local and non-local individuals. In some cases, the patios were previously hypothesized to be residences of important lineages with a male principal member (Groups 8N-11, 9M-24, and 9N-8 Patio A). This substantiates the possibility that some architectural groups were not residential in function and not occupied by individuals with an affiliation traced through biological ancestry or place of origin. Groups 8N-11 and Group 9N-8 Patio A have large elaborately carved structures that archaeologists proposed were used for meetings and political functions (Webster and Fash, 1989). In conjunction with the data discussed here, these patios may have had a different form of affiliation based in production, socio-politics, or ritual. Finally, it may reflect that neighborhoods may have been indistinct amorphous units within a complex urban environment.

(4) <u>Related Non-local Residents:</u> If individuals within a neighborhood exhibit radiogenic strontium values lower or higher than the local range but maintain similar phenotypic profiles, then neighborhoods were open to potential non-locals but limited to biologically related individuals (and their spouses). Such a model would support both the lineage-based and house-based models, suggesting that the form of social organization falls between these two classic models.

This scenario was the primary form detected at Copan. There was pronounced diversity within patios and neighborhoods in radiogenic strontium isotope and biodistance data. Patios that follow this arrangement include Group 9M-22, Group 9N-8 Patios B-K, and Group 10L-2. This observation is especially germane for Group 9M-22 Patios A and B, Group 9N-8 Patio D, and Group 9N-8 Patio H. Based on archaeological evidence, these patios were posited to be ethnic enclaves of non-Maya peoples (e.g. Lenca, Chontal, Nahua). These patios, while residential, do not demonstrate significant numbers of individuals with potentially non-local $^{87}Sr/^{86}Sr$ values and display only limited biological affiliation. This is especially evident in Patios D and H, which exhibit a low percentage of potentially non-local individuals (< 23%), when compared to the rest of the Copan Valley. Moreover, when non-locals exist within patios, they represent a variety of $^{87}Sr/^{86}Sr$ values associated with a several geological zones. The results support an argument that Copan was an urban and cosmopolitan city inhabited by a population that may have included a number of first generation migrants with great potential for linguistic and cultural diversity.

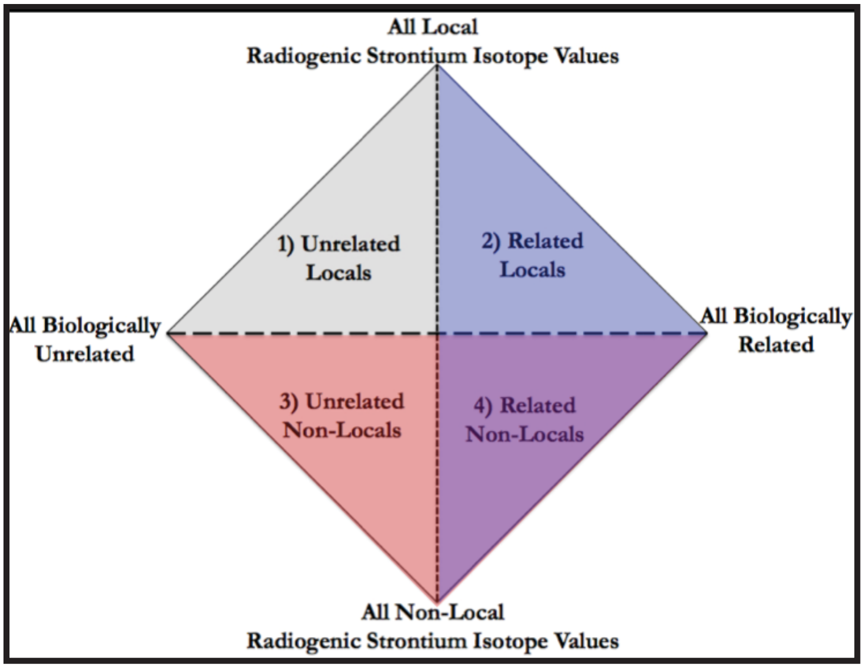

Figure 72: The results that are color-coded according to the predicted scenarios. Scenario 2 (blue) and 3 (red) were observed but Scenario 4 (purple) was the most common.

In summary, individuals with local and non-local $^{87}Sr/^{86}Sr$ values with varying degrees of biological affinity are all buried within Copan's residential areas. Both males and females are identified in the potentially local and non-local samples, in the high and low status burial contexts, and in biologically un/affiliated groups. The flexibility what it meant to be local or non-local was also apparent in the ceramic assemblages associated with individuals whose $^{87}Sr/^{86}Sr$ values are indicative of an origin in Copan or elsewhere. There were no cases of a potentially non-local individual interred with imported mortuary furniture; such vessels were only found in burials of those with $^{87}Sr/^{86}Sr$ values in the range for the Copan Valley.

When the biodistance data and radiogenic strontium isotope values are treated together, it is clear that residential group membership was not tied to a place of origin (as inferred from $^{87}Sr/^{86}Sr$ values) but that biological affiliation was important within the patios and neighborhoods specified in Chapter 7. The intersection of the biodistance and radiogenic strontium data provide support the fourth scenario of social organization for ancient Copan (**Figure 72**).

B. Social Organization

The results of the skeletal data underscore the complexity of the Copan community. Social organization is influenced by multiple factors where the interplay of genealogy, affiliation, and migration intertwined to create the kinship system. The ancient city was as dynamic and urban as many modern cities. These results call into question long-standing models of past social organization, as the Copan community was neither insular nor homogenous. This study highlights that we must build new, flexible, and culturally specific models to understand the past.

B1. Social and political models

In terms of sociopolitical models, these results challenge the centralized (Blanton et al., 1996; Chase and Chase, 1994, Fox et al., 1996), decentralized (Iannone, 2002, Fox et al., 1996), and dynamic (Marcus 1993, 1995, 2003) models. As discussed in Chapter 3, it would seem that Group 8N-11 and 9N-8 Patio A would be the best candidates for kin-based corporate groups that wielded sociopolitical power within the city. However, the lack of biological inter-individual distinction within these patios emphasizes that kinship may not be necessary for a group to hold sociopolitical power. For the decentralized model, the lack of biological affiliation of those interred within the most ornate structures of the group challenges the idea of 'lineage heads' that held social and political sway over a segmentary lineage. The dynamic model would seem the most probable for Sepulturas Groups 8N-11 and 9N-8, given the diversity of internal social organization observed there. There may have been political power nested in each, but the foundation of this power need not be tied to consanguinity or corporate group membership.

Similar complications arise in review of the lineage model, as proposed by Sanders (1989) and the house model proposed by Lévi-Strauss (1987; see also Gillespie, 2000a, 2007). The lineage model states that elite administration focuses on male relatives but permits affinal kin to be part of the essential lineal core residing in connected neighborhoods. The problem with this model is the assumption that groups at Copan are, by nature, administrative, sociopolitical, and patrilineal – a scenario that was not supported by these data. In contrast, the house model is open to non-kin or non-locals because houses are maintained through the "language of kinship" based in either biological affiliation or social alliances (Lévi-Strauss, 1982; Gillespie, 2007). Flexibility in models of social organization and kinship systems elucidate the past by embracing anomalies in the perceived social structure and diversity observed within archaeological samples. The adoption of house society models for the ancient Maya (Gillespie, 2000a,b,c, 2007; Hendon, 1991, 2007, 2010; Joyce, 2000; Joyce and Gillespie, 2000) testifies that Lévi-Strauss was prescient in his approach to the meaning and structure of kinship, community, and society. The house model represents an ethnographic approach within which to understand social relationships and practices that create the material culture from archaeological contexts. While this model holds particular promise, especially as described by Gillespie (2000a,b,c, 2007), it remains difficult to empirically test the social aspects of the model that may not leave material evidence (e.g. behavior, actions, and social relationships).

While the data observed here do not conform to either a lineage or house model, the house remains an apt and appropriate paradigm for investigating the past. The house is not simply physical architecture or residential space; it is a conditional social structure. It is physical and intangible, a "genealogy of place" that is created and maintained through social practices, relationships, and the "language of kinship" (McAnany, 1995:65; see also Gillespie, 2007; Lévi-Strauss, 1987). The diversity and complexity among the populace within Copan's patios and neighborhoods speak to the ecumenical life in an ancient metropolis. New neighbors were welcomed, the *foreigner* may have become family, and people were not bound solely by biological affiliation or place of origin.

B2. Migration as the new normal

Social organization is more than political maneuvering; it is interaction, identity, language, culture, and everyday decisions made by members of that society. A key component of understanding social process is evaluating the impact of migration upon society. Migration can dramatically change demographic profiles of a site, phenotypic traits in a population, and social structure. While it is difficult, if not impossible, to access all aspects of social organization archaeologically, migration can be empirically evaluated with recent scientific advances in biological statistics and $^{87}Sr/^{86}Sr$ isotope analysis.

Previous studies of migration between sites in Mesoamerica (see Chapter 5) have detected rates of potential first generation migrants between 10-25%. This project included a large sample drawn from a single site and estimated that 10-40% of Copan's population during the Late Classic period were potential migrants. This significant percentage, in comparison to other sites, may reflect a coincidence in sampling strategy, an artifact of the large sample size, or represent meaningful high immigration rates due to Copan's location on the Maya periphery. I argue that this is a meaningful indicator of a city at the crossroads of two drastically different cultural regions.

One aspect of Copan's potential migrants is particularly intriguing: each patio and neighborhood has varying percentages individuals with $^{87}Sr/^{86}Sr$ values higher or lower than 0.7063-0.7074 buried within the architectural (and social) group. The biological implications are unmistakable where some regions are receiving gene flow from outside populations at higher rates than others. This can produce the divergence observed among the five neighborhood clusters delineated at Copan. Within the Sepulturas region, groups categorized as low-status retainer households for Copan's elite, demonstrate high numbers of potential non-locals (e.g. Group 9N-8 Patio E) while those that are purported to be ethnic enclaves of foreign groups have some of the lowest rates of in-migration (e.g. Group 9N-8 Patios D and H). These neighborhoods demonstrate that a mosaic of social factors structured society. Questions naturally arise as to what it meant to be local or *foreign*, a member or visitor, included or excluded, and the social roles occurring within these ancient groups.

Smith (2014) proposes that movement of ancient peoples was common, substantial, and most often based on economic circumstances. Most importantly, he argues that the movement of people into nucleated or urban settlements "was not an extraordinary occurrence that requires special explanation; instead, it is the normal concomitant of broader patterns of local and regional spatial mobility" (Smith, 2014:2). Drawing from Tilly (1978), Smith distinguishes between mobility, a movement over a minimal distance with minimal breakage in social ties, and migration. When considering that non-local individuals were inhumed away from their supposed place of origin, (as determined by $^{87}Sr/^{86}Sr$ values), migration appears to be a commonality in Mesoamerica. Social ties would have been re-created in Copan where membership and belonging to a residential group would have to be fluid. This supports Smith's inference that migration *was not* an extraordinary achievement in the past and *foreignness* might not have carried the same social and cultural implications as in contemporary society. In archaeological models, migration should be viewed as the norm, not the exception.

B3. Building a new model

Watanabe (2004) contends that descent rules are culturally constructed, do not operate automatically, and rarely remain inviolable. Filiation can be shifting, adaptive, and complex and tracing descent is often not straightforward. He recommends that (bio)archaeologists build "models that define the relevant components of social organization – filiation, descent, alliance, and residence – and then theorize how differently structured relations between these components might yield the institutional groupings we find on (or in the case of archaeology, in) the ground" (Watanabe, 2004:159).

In his perspective, the concepts of lineage (e.g. Freter, 2000; Sanders, 1989) and house (Lévi-Strauss, 1987) should both be abandoned in favor of conceptualizing neighborhoods as groups of extended families with filial transmission of name and property, splitting inheritance between generations. The results of the current project impress that neither model works for the site or even all neighborhoods. The integration of biological and radiogenic strontium data, however, serve as a starting point for creating a new site-specific model.

Copan does not follow the lineage or house model, given that “Scenario 4” is represented in the social organization of the majority of its patios. As such, it is better to conceptualize neighborhoods as groups of extended families, as Watanabe (2004) proposes, where non-local and unrelated individuals were embraced as members of the residential group. Following Watanabe’s analogy, the social fabric of Copan was woven with warp and weft that integrated the Maya pattern of co-residing extended family groups and the challenge of being a frontier city with regular in-migration of Maya and non-Maya peoples.

C. Future Directions

An important implication of this study was the development of a new strontium baseline for Honduras (Freiwald et al., 2014; Miller and Freiwald, 2013). This baseline designated a number of new values for Honduras and established others that mirror those previously only recovered from within the narrowly defined Maya region. This is particularly compelling given that cultural groups in Honduras have been overlooked as a source of immigrants into ancient Maya cities. Models of movement within the area often favor viewing migrants as originating from Maya centers in Guatemala, Belize, and Mexico.

Given that values in the current research sample match a number of the new values indicated in the baseline, further sampling is necessary. The next step is to clarify if migrants originated in the Maya heartland or in culturally non-Maya modern-day Honduras. This can be accomplished by including stable oxygen isotope ($\delta^{18}O$) assays to correlate with existing radiogenic strontium isotope values to ascertain place of origin (e.g. Buikstra et al., 2004; Evans et al., 2010; Price et al., 2010). The $\delta^{18}O$ values for the Copan sample can be correlated to known baselines (e.g. Price et al., 2010) and preliminary $\delta^{18}O$ values collected in conjunction with the strontium baseline for Honduras (Freiwald et al., 2014; Miller and Freiwald, 2013). The comparison of $\delta^{18}O$ and $^{87}Sr/^{86}Sr$ values will provide the data necessary to better identify potential homelands of the non-local individuals present in the Copan sample. Furthermore, we must better understand the implications for an imported diet, averaging between geological zones, or the like on the "local" and "non-local" ranges (e.g. Burton and Price, 2013).

Intra-site analysis of cemetery populations is important for larger questions of human variation. Regional studies have compared the occupants of large sites to each other (e.g. Aubry, 2009; Scherer, 2004; Wrobel, 2003) and observed relative homogeneity. Both Aubry (2009) and Scherer (2004) included a subsample of Copan skeletons (curated at Harvard University) from the Cementerio (Group 10L-2) neighborhood and found that Copan was not markedly divergent. However, intra-site analysis, at the scale of the current study, can have a meaningful impact on understanding sample composition and potential mortuary bias in group or regional biology (Stojanowski et al., 2013). It is possible that other Maya sites had internal residential variability similar to Copan that is masked when diverse samples are pooled for inter-site comparisons.

D. Conclusion

At a frontier city like Copan, the distinction between Maya and non-Maya may not be as dichotomous as the archaeological evidence has previously established and may not have been important to ancient Copanecos. This changes our understanding of the social organization of the ancient city, specifically revealing a diverse urban environment with possible extensive contact with peoples in central Honduras. The varied grave goods and ceramics may not reflect traded luxury items but rather a multi-cultural city. Further, these data signal the urban diversity of the ancient city where affiliation, membership, kinship, and community may be unique among Maya sites. The results indicate that the social organization of this urban center, as we understand it, moves beyond the proposed and popular lineage models. At Copan, the social fabric of neighborhoods was a complex weave of family and foreigners.

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APPENDIX A

HISTORY OF COPAN BURIALS IN SAMPLE

B = Bosque, Cem. = Cementerio, CV = Copan Valley, Os = Ostumán, Rast/Ch = Rastrojón/Chorro, Sal = Salamar, Sep = Sepulturas, Sep9N8 = Sepulturas 9N-8

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
B	10I-m11	3-2 (3/30-2)	233	JMG, R. Agurcia	Don Tulio, JMG	May-90	R. Orellana, A Fernandez	S. Whittington	May-84	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
B	10L-16	4-38	228	W. Fash	Project member	-	R. Orellana, A Fernandez	L. Martinez	June 84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	10L-17	4-39	275	W. Fash	Project member	Mar-78	R. Orellana, A Fernandez	S. Whittington	Jun-85	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	10L-17	4-41	272	W. Fash	Project member	-	R. Orellana, A Fernandez	S. Whittington	Jun-85	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	11j-1	24-7	198	"Varios"	?, Rescue Excavation	Apr-84	-	S. Whittington	Jun-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
B	11L-11	4-27	427	W. Fash	Project member	Mar-78	R. Orellana, A Fernandez	T. Kardatzke	Jun-89	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	11L-11	4-9	548	W. Fash	J. Mallory	Feb-81	R. Orellana, A Fernandez	D. Fercuson	Jun-00	Apr-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	11L-11	4/99-28	No	W. Fash	Project member	-	R. Orellana, A Fernandez	-	-	Jun-05	2012	R. Storey; M. Rhoads (2001)
B	11L-11	4/99-29	No	W. Fash	Project member	Apr-78, Apr-85	R. Orellana, A Fernandez	-	-	Jun-05	2012	R. Storey; M. Rhoads (2001)
B	11L-11	4/99-30	No	W. Fash	Project member	-	R. Orellana, A Fernandez	-	-	Jun-05	2012	R. Storey; M. Rhoads (2001)
B	11L-7	4-2	265	W. Fash	J. Hatch	Apr-78	R. Orellana, A Fernandez	S. Whittington	Jun-85	Jul-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	11L-8	4-4	269	W. Fash	J. Mallory	May-73, May-78?	R. Orellana, A Fernandez	S. Whittington	Jun-85	Jul-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
B	Visitor Center	19-12A	389	J. Hatch	R. Storey	Jul-87	-	R. Storey	May-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
B	11K-18	4-46	235	W. Fash	Project member	-	R. Orellana, A Fernandez	S. Whittington	May-23	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Cem	10L-1	7-3A	143	C.D. Cheek	C.D. Cheek	Feb-81	-	R. Storey	May-83	Jun-06	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Cem	10L-1	7-3C	145	C.D. Cheek	C.D. Cheek	Feb-81	-	R. Storey	May-83	Jun-06	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Cem	10L-2	40-3a	450	D. Webster	A. Freter, R. Storey	Feb-88	-	D. Jain	Jun-90	Nov-11	2012	R. Storey; M. Rhoads (2001)
Cem	10L-2	40-5	452	D. Webster	R. Paine, Chepe, Martin	Mar-88	-	J. Cordova	Jun-90	Nov-11	2012	R. Storey; M. Rhoads (2001)
Cem	10L-2	48/6/192-4	507	E.W. Andrews	Project member	1990	-			Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2	48/9/107-2	No	E.W. Andrews	Project member	1993	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001)
Cem	10L-2, S 237	48/14/124-1	No	E.W. Andrews	JA	Apr-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 238	48/11/161-3	525	E.W. Andrews	GA	Mar-91	-			Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 29	48/8/249-I	No	E.W. Andrews	Project member	1993	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 29	48/8/249-I. Indiv. 2	No	E.W. Andrews	Project member	1993	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 29	48/8/249-I. Indiv. 3	No	E.W. Andrews	Project member	1993	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 30	48/2/107-1	No	E.W. Andrews	Project member	1994	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 32	48/1/413-1	No	E.W. Andrews	RH	Aug-90	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/123-1	No	E.W. Andrews	JBB	Mar-91	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/185-2	No	E.W. Andrews	JBB	Apr-91	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/195-5	505	E.W. Andrews	DW	Aug-91	-			Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/206-8	No	E.W. Andrews	JBB	Apr-91	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/222-7	No	E.W. Andrews	Project member	Apr-91	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 33	48/6/228-9	No	E.W. Andrews	JBB	Apr-91	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 41	48/10/212-1	No	E.W. Andrews	GE	Mar-93	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 41	48/10/346-3	No	E.W. Andrews	GE	Apr-93	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 42	48/12/64-1	No	E.W. Andrews	Project member	Feb-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 44	48/13/204-3	No	E.W. Andrews	JP	Mar-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Cem	10L-2, S 44	48/13/21 1-4	539	E.W. Andrews	Project member	Apr-94	-			Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 44	48/13/22 3-5	No	E.W. Andrews	GA	Apr-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 44	48/13/24 8-6	No	E.W. Andrews	AW	Apr-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 44	48/13/28 3-9	No	E.W. Andrews	HSS	Feb-95	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 84	48/16/43 -1	No	E.W. Andrews	Project member	Mar-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 86	48/13/17 0-1	No	E.W. Andrews	Project member	Mar-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S 86	48/13/28 0-8	No	E.W. Andrews	JP	Apr-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Cem	10L-2, S41	48/11/16 0-2	No	E.W. Andrews	GA	Feb-94	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
CV	12G-6	4-1	223	W. Fash	J. Hatch	Feb-81, Jun-78	R. Orellana, A Fernandez	S. Whittington	Jun-90	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	18a-2-3	24-4	193	"Varios"	?, Rescue Excavation	Sep-84	-	S. Whittington	Jun-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	18d-4-1	24-9	185	"Varios"	?, Rescue Excavation	1981-1984?	-	S. Whittington	Mar-84	Juen2005	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	25b-2-1	24-5(a?)	190	"Varios"	?, Rescue Excavation	Apr-84	-	S. Whittington	Jun-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	34a-12-2	34-2A	449/ 553	D. Webster	Project member	1986	R. Orellana, A Fernandez	J. Cordova	Jun-90	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	34a-12-2	34-3	465	D. Webster	Project member	1986	R. Orellana, A Fernandez	L. Lee	Apr-90	Nov-11	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	34d-73-3	24-1	199	"Varios"	?, Rescue Excavation	1981-1984?	-	S. Whittington	Jun-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	3O-7A	27-3	183	A. Gerstle	S. Whittington	Feb-84	-	S. Whittington	May-84	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	3O-7A	27-4	173	A. Gerstle	S. Whittington	Feb-84	-	S. Whittington	May-84	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	3O-7B	27-10	176	A. Gerstle	S. Whittington	Feb-84	-	S. Whittington	May-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
CV	3O-7B	27-11	180	A. Gerstle	S. Whittington	Feb-84	-	S. Whittington	May-84	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	3O-7B	27-6	174	A. Gerstle	S. Whittington	Feb-84	-	S. Whittington	May-84	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	3O-7B	27-9	175	A. Gerstle	S. Whittington	Mar-84	-	S. Whittington	May-84	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	4N-5	24-8	196	"Varios"	?, Rescue Excavation	Apr-84	-	S. Whittington	Aug-84	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	9P-5	4-7	234	W. Fash	R. Agurcia, Mallory	Feb-81	R. Orellana, A Fernandez	S. Whittington	Jun-84	Jul-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
CV	Copan Valley?	59-2	551	W. Fash	A. Maca	May-97	-	N. Somoano	Jul-02	Jun-06	2012	R. Storey;
CV	Copan Valley?	59/2-5	561	W. Fash	A. Maca	May-97	-	D. Shea	Apr-02	Jun-06	2012	R. Storey;
CV	E of town, Rio Sesesmil	3-3 (3/30-3)	547	JMG, R. Agurcia	Don Tulio, F. Drayer, JMG	Jun-90	R. Orellana, A Fernandez	D. Fercuson	Jun-00	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
CV	Hacienda Grande	4-55	222	W. Fash	Project member	Aug-79	R. Orellana, A Fernandez	S. Whittington	Jun-84	Jun-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
CV	Petapilla	3-1 (3/30-1)	219	JMG, R. Agurcia	Don Tulio, JMG	May-90	R. Orellana, A Fernandez	S. Whittington	Jun-84	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Os	10E-5A	45-2	430	S. Whittington	S. Whittington	1989	-	S. Whittington	Jun-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	10E-6A	45-5	432	S. Whittington	S. Whittington	1989	-	S. Whittington	Mar-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	11E-2.	46-10	434	S. Whittington	S. Whittington	1989	-	S. Whittington	Jul-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	11E-2.	46-11	442	S. Whittington	S. Whittington	1989	-	S. Whittington	Jun-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	11E-2A	46-1	446	S. Whittington	S. Whittington	1989	-	S. Whittington	Jul-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	11E-2A	46-8A	435	S. Whittington	S. Whittington	1989	-	S. Whittington	Jun-89	Jun-12	2012	R. Storey; Whittington (1989)
Os	11E-2A	46-8B	440	S. Whittington	S. Whittington	1989	-	S. Whittington	Aug-89	Jun-12	2012	R. Storey; Whittington (1989)
Ras/Ch	6N-4	64-R26	No	W. Fash, B. Fash, J. Ramos	J. Ramos ?	Oct-08	C. Martinez, E. Rodriguez	-	-	Nov-11	2012	R. Storey; J. Ramos, K. Miller
Ras/Ch	6N-4	64-R36	No	W. Fash, B. Fash, J. Ramos	J. Ramos ?	Apr-08	C. Martinez, E. Rodriguez	-	-	Nov-11	2012	R. Storey; J. Ramos, K. Miller

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Ras/Ch	6N-4	64-R41	No	W. Fash, B. Fash, J. Ramos	J. Ramos ?	Jul-09	C. Martinez, E. Rodriguez	-	-	Nov-11	2012	R. Storey; J. Ramos, K. Miller
Ras/Ch	7M-4	4-45	238	W. Fash	Project member	-	R. Orellana, A Fernandez	S. Whittington	Jun-85	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7M-8	4-49A	236	W. Fash	Project member	Jul-78	R. Orellana, A Fernandez	S. Whittington	Jul-84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7M-8	4-49B	236	W. Fash	Project member	Jul-78	R. Orellana, A Fernandez	S. Whittington	Jul-84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7M-8	4-49C	236	W. Fash	Project member	Jul-78	R. Orellana, A Fernandez	S. Whittington	Jul-84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7M-8	4-49D	236	W. Fash	Project member	Jul-78	R. Orellana, A Fernandez	S. Whittington	Jul-84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7M-m38	4-47	232	W. Fash	Project member	-	R. Orellana, A Fernandez	S. Whittington	Sep-84	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Ras/Ch	7N-20	4-43	237	W. Fash	Project member	-	R. Orellana, A Fernandez	S. Whittington	Jun-85	Feb-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Sal	8L-10	42-1A	412	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Aug-88	Mar-05	2012	R. Storey; M. Rhoads (2001)
Sal	8L-10	42-1B	411	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Aug-88	Mar-05	2012	R. Storey; M. Rhoads (2001)
Sal	8L-10	42-2	425	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001)
Sal	8L-10	42-3A	424	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001)
Sal	8L-10	42-4	423	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	8L-10	42-5A	421	W. Ashmore	C. Carelli	1988-1989	-	T. Kardatzke	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	8L-10	42-5B	422	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	8L-10	42-5C	426	W. Ashmore	C. Carelli	1988-1989	-	R. Storey	Jul-88	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	8L-12	42-6	550	W. Ashmore	C. Carelli	1988-1989	-	N. Somoano	Jul-01	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	8L-12	42-7A	555	W. Ashmore	C. Carelli	1988-1989	-	S. Ramirez	Jun-89	Mar-05	2012	R. Storey; M. Rhoads (2001); C. Carrelli (1990)
Sal	CRIA	11-1	269	A. Sandoval	S. Whittington	May-84	-	S. Whittington	Jun-85	Jul-05, Jun-06	2012	R. Storey; V. Tiesler Blos (1999); Whittington (1989)
Sep	8N-11A	50-11	463	D. Webster	Project member	1991	-	D. Wilson	Apr-90	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-12a	470	D. Webster	Project member	1991	-	C. Lee	Aug-90	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-14	526	D. Webster	Project member	1991	-	Landry	Jun-98	Jun-12	2012	R. Storey; M. Rhoads (2001)

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Sep	8N-11A	50-15	477	D. Webster	Project member	1991	-	L. Keng	Jun-92	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-17	487	D. Webster	Project member	1991	-	C. Lee	Jul-92	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-20	530	D. Webster	Project member	1991	-	Landry	Jun-98	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-22	479	D. Webster	Project member	1991	-	J. Cordova	Jun-92	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-23	527	D. Webster	Project member	1991	-	Waldman	Jun-98	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A	50-24	485	D. Webster	Project member	1991	-	B. Taylor	Mar-92	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11A (CV68)	14-1	No	E. Rattray	E. Rattray, I. Gonzalez, C. Quintana	Mar-82	-	R. Storey	Mar-83	Jun-06	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Sep	8N-11A (CV68)	14-2	184	E. Rattray	E. Rattray, I. Gonzalez	Mar-83	-	R. Storey	Mar-84	May-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Sep	8N-11B	50-2A	483	D. Webster	Project member	1991	-	L. Keng	Jun-92	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11B	50-4b	531	D. Webster	Project member	1991	-	Waldman	Jun-98	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11B	50-6	532	D. Webster	Project member	1991	-	Garcia-Herrero	Jun-98	Jun-12	2012	R. Storey; M. Rhoads (2001)
Sep	8N-11B	50-7	474	D. Webster	Project member	1991	-	J. Cordova	Apr-92	Jun-06	2012	R. Storey; M. Rhoads (2001)
Sep	9M-22A	10-10	492	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jul-92	Jun-06	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-13	497	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jul-92	Jun-06	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-14	493	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jul-92	Jun-06	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-2	478	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jun-92	Mar-05	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-4	482	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jun-92	Mar-05	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-5	476	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jun-92	Mar-05	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-6	496	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jun-92	Mar-05	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-7	489	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jul-92	Mar-05	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22A	10-9	491	J.J. Sheehy	J.J. Sheehy	Mar-81	R. Orellana, A.Fernandez	D. Jain	Jul-92	Jun-06	2012	R. Storey; D. Jain (1992); V. Tiesler Blos (1999)
Sep	9M-22B	19-1	18	J. Hatch	Kulesa	Mar-87	-	S. Whittington	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)

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Sep	9M-22B	19-13	264	J. Hatch	R. Storey	Jul-87	-	S. Whittington	Jun-85	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	19-14	263	J. Hatch	R. Storey	Jul-87	-	S. Whittington	Jun-85	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	19-16	259	J. Hatch	R. Storey	Aug-87	-	S. Whittington	May-85	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	19-4	122	J. Hatch	Project member	1987	-	C. Faini, R. Storey, L. Martinez	Mar-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	19-8	248	J. Hatch	R. Storey	May-87	-	S. Whittington	May-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-1	247	J. Hatch, J.K. Mallory	Project member	1981	R. Orellana, A Fernandez	S. Whittington	May-84	Apr-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-10	241	J. Mallory	Project member	1981	-	S. Whittington	Jul-84	Feb-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-11	240	J. Mallory	Project member	1981	-	S. Whittington	Jul-84	Jun-06	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-16	258	J. Mallory	Project member	1981	R. Orellana, A Fernandez	S. Whittington	May-84	Jun-06	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-3	244	J. Mallory	Project member	1981	-	S. Whittington	Jul-84	Apr-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-4	250	J. Mallory	Project member	1981	-	S. Whittington	May-84	Mar-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-5	246	D. Webster, W. Fash	Fash, recorder	Feb-81	-	R. Storey	Feb-83	Apr-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep	9M-22B	9-6	243	J. Mallory	Project member	1981	-	S. Whittington	Jul-84	Feb-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-8	249	J. Mallory	Project member	1981	-	S. Whittington	May-84	Feb-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-22B	9-9	242	J. Mallory	Project member	1981	-	S. Whittington	Jul-84	Feb-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-10	42	S. Murillo	W. Dudley, C. Faini	Apr-83	-	W. Dudley	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)

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Sep	9M-24	18-11	224	S. Murillo	R. Storey	Juen 83	-	S. Whittington	Jun-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-13	208	S. Murillo	-	.1983.	-	S. Whittington	Jun-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-14	214	S. Murillo	V. Vasquez	Nov-83	-	S. Whittington	Jun-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-3	19	S. Murillo	C. Faini	Mar-83	-	L. Kuznar	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-8	88	S. Murillo	K. Fox	Apr-83	-	C. Faini	Jun-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9M-24	18-9	94	S. Murillo	B. Lutz	Apr-83	-	C. Durmaine	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999); Whittington (1989)
Sep	9N-8	Sepultur as 13	No	Recovery project	-	<1980	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Sep	9N-8	Sepultur as 14	No	Recovery project	-	<1980	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Sep	9N-8	Sepultur as 15	No	Recovery project	-	<1980	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Sep	9N-8	Sepultur as 8	No	Recovery project	-	<1980	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Sep	9N-8	Sepultur as 16	No	Recovery project	-	<1980	-	-	-	Jun-06	2012	R. Storey; M. Rhoads (2001) ?
Sep9N8	9N-8A	8-1	147	D. Webster, W. Fash	Fash, recorder ?	Mar-81	-	R. Storey	May-83	Apr-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-10	155	D. Webster, W. Fash	Fash, recorder	Mar-81	-	R. Storey	May-83	Jun-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-2	148	D. Webster, W. Fash	Fash, recorder ?	Mar-81	-	R. Storey	May-83	Apr-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-34	158	D. Webster, W. Fash	Fash, recorder ?	Mar-81?	-	R. Storey	Jun-83	Juen2005	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-37	160	D. Webster, W. Fash	R. Viel	Apr-81	-	R. Storey	Jun-83	Jun-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-4	150	D. Webster, W. Fash	Fash, recorder	Mar-81	-	R. Storey	May-83	Feb-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-6	152	D. Webster, W. Fash	Fash, recorder	Mar-81	-	R. Storey	Mar-83	Jun-06	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999)
Sep9N8	9N-8A	8-7	153	D. Webster, W. Fash	Fash, recorder	Mar-81	-	R. Storey	Jun-83	Jun-05	2012	R. Storey; M. Rhoads (2001): V. Tiesler Blos (1999); Whittington (1989)
Sep9N8	9N-8B	16-1	315	J. Hendon	C. Rafferty	May-86	-	R. Storey	Jun-88	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8B	16-10	93	J. Hendon	M. Graetzer	Apr-83	-	A. Fitz	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-11	13	J. Hendon	Kulesa	Mar-87	-	C. Kuleza	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-12	11	J. Hendon	L. Kuzar	Mar-87	-	L. Kuznar	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-13A	62	J. Hendon	B. Lutz	Mar-87	-	B. Lutz	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-15	20	J. Hendon	J. Hendon	Apr-87	-	C. Rafferty	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-16	61	J. Hendon	H. Reickart	Apr-87	-	C. Durmaine	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-18	72	J. Hendon	M. Graetzer	Apr-87	-	W. Roberts	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-2	415	J. Hendon	J. Hendon	May-86	-	R. Sheli	Jan-88	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-21	57	J. Hendon	K. Fox	Apr-87	-	C. Durmaine	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-22	71	J. Hendon	H. Reickart	Apr-87	-	H. Reickart	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-23	68	J. Hendon	L. Kuzar	Apr-87	-	WIN	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-24	305	J. Hendon	J. Hendon	Apr-87	-	R. Storey	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-25	302	J. Hendon	J. Hendon	Apr-87	-	R. Storey	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-26	309	J. Hendon	E. Villagran	Jun-88	-	R. Storey	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-27	304	J. Hendon	E. Villagran	Jun-88	-	R. Storey	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-29A	311 A	J. Hendon	E. Villagran	Jun-88	-	R. Storey	Jul-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8B	16-31	310	J. Hendon	Project member	<1985	-	R. Storey	Jul-85	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8B	16-5	128	J. Hendon	J. Hendon	Apr-87	-	H. Reickart	Mar-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-10 (Old 26-12)	279	D. Webster	A. Gerstle, Earthwatch	1984	-	R. Storey	Jun-83	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-2	162	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	May-86	-	R. Storey	Jun-83	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-3	163	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	May-86	-	R. Storey	Jun-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-4A	164	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	May-86	-	R. Storey	Jun-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-4B	165	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	May-86	-	R. Storey	Jun-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-5	166	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	Sep-86	-	R. Storey	Mar-83	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-7 (Old 19-3)	105	J. Hendon, R. Agurica, W. Fash, E. Aguilar	J. Hendon	Oct-86	-	H. Reickart	Feb-14	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8C	13-8 or 22-8 (old 26-9)	283	D. Webster	A. Gerstle	.1984.	-	R. Storey	Feb-85	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999
Sep9N8	9N-8D	17-12A	140	A. Gerstle	A. Gerstle	Feb-87	-	L. Kuznar	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-12B	206	A. Gerstle	A. Gerstle	Feb-87	-	Lovena	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-16A	138	A. Gerstle	A. Gerstle	Feb-87	-	B. Lutz, W. Dudley	May-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8D	17-18	21	A. Gerstle	M. Graetzer	Mar-87	-	C. Rafferty	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-19A	209	A. Gerstle	A. Gerstle	Feb-87	-	L. Martinez	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-21A	216	A. Gerstle	A. Gerstle	Mar-87	-	L. Martinez	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-21B	217	A. Gerstle	A. Gerstle	Mar-87	-	L. Martinez	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-25	89	A. Gerstle	C. Dumaine, C. Faini	Mar-87	-	L. Martinez	Feb-84	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-3	187	A. Gerstle	A. Gerstle	May-86	-	D. Ballinger	-	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-32	96	A. Gerstle	M. Graetzer	Mar-87	-	R. Storey, L. Martinez	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-33	44	A. Gerstle	B. Lutz	Mar-87	-	R. Storey, L. Martinez	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-35A	47	A. Gerstle	H. Reickart	Apr-87	-	R. Storey, B. Lutz	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-36A	46	A. Gerstle	W. Roberts	Apr-87	-	W. Roberts	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-36B	52	A. Gerstle	W. Roberts	Apr-87	-	W. Roberts	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-4	192	A. Gerstle	A. Gersle	May-86	-	R. Storey	Apr-83	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-40	22	A. Gerstle	A. Fitz	Mar-87	-	L. Kuznar	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-42	85	A. Gerstle	A. Fitz, C. Faini	Mar-87	-	C. Dumaine	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-45	86	A. Gerstle	C. Faini	Mar-87	-	C. Durmaine	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-48-36 (Old 26-1)	273	D. Webster	A. Gerstle, Earthwatch	1984	-	R. Storey	Jun-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999);

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Sep9N8	9N-8D	17-5	189	A. Gerstle	A. Gerstle	May-86	-	D. Ballinger	Jun-84	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-50 (Old 26-3)	277	D. Webster	A. Gerstle, Earthwatch	1984	-	R. Storey	Jun-85	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-51 (Old 28-17)	403	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	Jul-87	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-54 (Old 28-20)	295	V. Vasquez	A. Gerstle	1985	-	R. Storey	Jul-85	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-58 (old 28-24)	394	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	May-87	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-6	191	A. Gerstle	V. Vasquez ?	1985?	-	R. Storey	May-87	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-60 (Old 28-26)	405	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	May-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-7	194	A. Gerstle	A. Gerstle	May-86	-	D. Ballinger	Jul-84	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-8(a)	202	A. Gerstle	C. Rattray, A. Gerstle	May-86	-	R. Storey	Jun-84	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-8B	204	A. Gerstle	C. Rattray, A. Gerstle	May-86	-	R. Storey	Jun-84	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D	17-9	195	A. Gerstle	C. Rattray, A. Gerstle	May-86	-	D. Ballinger	Aug-84	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8D/H	17-53A, Old 28-19	296	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	Jul-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-10	322	M. Diamanti, S. Murillo	M. Diamanti, Francisco, Marlo	Jun-82	-	R. Storey	Oct-86	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-11	323	M. Diamanti, S. Murillo	M. Diamanti, Gilberto, Miguel	May-82	-	R. Storey	Nov-86	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-14	334	M. Diamanti, S. Murillo	M. Diamanti, Napo	Aug-82	-	R. Storey	Nov-86	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-2	316	M. Diamanti, S. Murillo	S. Murillo, M. Diamanti	Apr-82	-	R. Storey	Feb-80	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8E	15-25B	382	M. Diamanti, S. Murillo	M. Diamanti, Francisco, Felipe	Feb-83	-	R. Storey	Mar-87	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-26B	339	M. Diamanti, S. Murillo	R. Storey, M. Diamanti, M. Hernandez	Mar-83	-	R. Storey	Nov-86	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-28	376	M. Diamanti, S. Murillo	R. Storey, M. Diamanti, Miguel, Chepe	Mar-83	-	R. Storey	Feb-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-29	342	M. Diamanti, S. Murillo	A. Freter, R. Storey, M. Diamanti, Francisco, Felipe	Mar-83	-	R. Storey	May-86	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-3	317	M. Diamanti, S. Murillo	M. Diamanti, M. Hernandez, Felipe	May-82	-	R. Storey	Apr-86	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-35A	14	M. Diamanti, S. Murillo	L. Kuznar	Mar-87	-	L. Kuznar	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-35B	16	M. Diamanti, S. Murillo	L. Kuznar	Mar-87	-	L. Kuznar	Apr-83	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-36	77	M. Diamanti, S. Murillo	A. Fitz	Mar-87	-	A. Fitz	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-39	27	M. Diamanti, S. Murillo	W. Dudley	Apr-83	-	W. Dudley	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-4	318	M. Diamanti, S. Murillo	M. Diamanti, Carlos, Julio	May-82	-	R. Storey	Aug-86	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-40	41	M. Diamanti, S. Murillo	H. Reickant	Mar-83	-	H. Reickant	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-42	54	M. Diamanti, S. Murillo	C. Dumaine	Apr-83	-	C. Durmaine	Apr-83	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-43	64	M. Diamanti, S. Murillo	C. Rafferty	Apr-87	-	C. Rafferty	Apr-83	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-44	43	M. Diamanti, S. Murillo	K. Fox	Jun-83	-	R. Fox	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8E	15-45	70	M. Diamanti, S. Murillo	R. Storey	May-83	-	R. Storey	May-86	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-47	337	M. Diamanti, S. Murillo	R. Storey	Jun-83	-	R. Storey	Nov-86	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-6	319	M. Diamanti, S. Murillo	M. Diamanti	1982?	-	R. Storey	Sep-86	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-64 (Old 19-2)	35	J. Hatch	L. Kuznar	Jul-83		L. Kuznar	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-65 (Old 26-14)	301	D. Webster	Earthwatch	1984	-	R. Storey	Jul-85	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-66 (Old 26-15)	285	D. Webster	Earth Watch	1984	-	R. Storey	Feb-85	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-67 (Old 26-18A)	287	D. Webster	J.R. Pinto	1984	-	R. Storey	May-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-7	320	M. Diamanti, S. Murillo	M. Diamanti	Jun-82	-	R. Storey	Oct-86	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8E	15-8	321	M. Diamanti, S. Murillo	M. Diamanti, Tulio	Jun-82	-	R. Storey	Oct-86	Mar-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-17	332	M. Diamanti, S. Murillo	M. Diamanti, Tulio, Tulo	Feb-83	-	R. Storey	Aug-86	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-19B	340	M. Diamanti, S. Murillo	M. Diamanti, M. Hernandez	Feb-83	-	R. Storey	Nov-86	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-20	326	M. Diamanti, S. Murillo	M. Diamanti, R. Storey	Feb-83	-	R. Storey	Oct-86	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-21	136	M. Diamanti, S. Murillo	M. Diamanti, R. Storey, Francisco, Felipe	Feb-83	-	R. Storey, W. Dudley	Nov-86, May-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-22	23	M. Diamanti, S. Murillo	W. Dudley	Mar-83	-	W. Dudley	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-30	385	M. Diamanti, S. Murillo	R. Storey, M. Diamanti, Tulio, Tono	Mar-83	-	R. Storey	Apr-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8F	15-31	5	M. Diamanti, S. Murillo	W. Dudley	Mar-87	-	R. Storey	Mar-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-37	78	M. Diamanti, S. Murillo	A. Fitz	Mar-87	-	A. Fitz	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-50	379	M. Diamanti, S. Murillo	R. Storey	Aug-83	-	R. Storey	Mar-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-51	386	M. Diamanti, S. Murillo	M. Diamanti, I. Gonzalez	Aug-83	-	R. Storey	Apr-87	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-52	383	M. Diamanti, S. Murillo	R. Storey, I. Gonzalez	Aug-83	-	R. Storey	Mar-87	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-53	380	M. Diamanti, S. Murillo	R. Storey, I. Gonzalez	Aug-83	-	R. Storey	Mar-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-54	384	M. Diamanti, S. Murillo	W. Fash	Sep-83	-	G. Hoffmann	Jan-87	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-56	387	M. Diamanti, S. Murillo	W. Fash	1982?	-	R. Storey	Apr-87	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-59	374	M. Diamanti, S. Murillo	W. Fash	1982?	-	R. Storey	Mar-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-60	343	M. Diamanti, S. Murillo	W. Fash	Apr-82	-	R. Storey	Dec-86	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-61	344	M. Diamanti, S. Murillo ?	Project member	<1986		R. Storey	Dec-86	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-62	375	M. Diamanti, S. Murillo	W. Fash, V. Vasquez	1982?	-	R. Storey	Mar-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8F	15-63	345	M. Diamanti, S. Murillo	V. Vasquez	1982?	-	R. Storey	Dec-86	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	17-43	55	A. Gerstle	A. Fitz, C. Faini	Mar-87	-	Anne	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-10A	63	R. Widmer	C. Rafferty	Apr-83	-	C. Rafferty	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-10B	74	R. Widmer	C. Rafferty	Apr-83	-	C. Faini	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8H	22-11	58	R. Widmer	B. Lutz, J. Hatch	Apr-83	-	B. Lutz	Apr-83	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-13C	92	R. Widmer	Kulesa, B. Lutz	Apr-83	-	B. Lutz	Apr-83	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-14	39	R. Widmer	W. Dudley	Apr-83	-	W. Dudley	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-16	40	R. Widmer	W. Dudley	Apr-83	-	W. Dudley	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-17	84	R. Widmer	Kulesa	Apr-83	-	W. Dudley	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-21A	80	R. Widmer	L. Kuzner	Apr-83	-	W. Dudley	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-22	98	R. Widmer	L. Kuzner	Apr-83	-	A. Fitz	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999
Sep9N8	9N-8H	22-22-26A (Old 22-19-21)	300	R. Widmer	L. Kuzner	Apr-83	-	R. Storey	Jul-85	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-28b	291 (a)	R. Widmer	C. Faini	Apr-83	-	R. Storey	Jul-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-23	75	R. Widmer	P. Miller	Apr-83	-	C. Rafferty, C. Durmaine	Apr-83	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-25 (old 22-19-20a)	299	R. Widmer	C. Faini	Apr-83	-	R. Storey	Jul-85	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-26D	308	R. Widmer	Project member	1982	-	R. Storey	Jul-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-27 (Tumba 2, some tags say Tumba 3.)	290	R. Widmer	Project member	1982	R. Orellana, A Fernandez	R. Storey	Jul-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-28A Tumba 3	291	R. Widmer	Project member	1982	R. Orellana, A Fernandez	R. Storey	Jul-85	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

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Sep9N8	9N-8H	22-31 (Old 26-7and8)	282	D. Webster	A. Gerstle	1984	-	R. Storey	Jun-85	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-33 (Old 17-23, 26-11?)	132	D. Webster	A. Gerstle	1984	-	R. Storey, W. Dudley	Jul-84, May-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-34 (Old 28-13A)	298	D. Webster	A. Gerstle	1984	-	R. Storey	Jul-85	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-35 (Old 28-12)	293	V. Vasquez	Project member	1985	-	R. Storey	Jul-85	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-37 (Old 28-14)	398	V. Vasquez	Project member	1985	V. Vasquez	R. Widmer	Mar-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-38 (Old 28-15)	399	V. Vasquez	Project member	1985	V. Vasquez	R. Widmer	Mar-87	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-39 (Old 22, Tumba 4, Esq 2)	289	R. Widmer	Project member	1982	-	R. Storey	Jul-85	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-4	15	R. Widmer	C. Rafferty	Mar-83	-	C. Rafferty	Apr-83	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-40 (Old 22, Tumba 3, Esq. 3)	303	R. Widmer	Project member	1982	-	R. Storey	Jul-85	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-41 (Old 22-1 Tumba 4)	280	R. Widmer	Widmer, Agurcia	Feb-83	R. Orellana, A Fernandez	R. Storey	Jun-87	Jul-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999
Sep9N8	9N-8H	22-42 (Old 26-6)	278	D. Webster	A. Gerstle, Earthwatch	1984	-	R. Storey	Jun-87	Feb-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999);
Sep9N8	9N-8H	22-44 (Old 28-19C)	396	V. Vasquez	Project member	1985	-	R. Widmer	Mar-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999
Sep9N8	9N-8H	22-45	406	R. Widmer	Project member	1982	-	R. Storey	Jul-87	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8H	22-8	87	R. Widmer	M. Graetzer	Apr-83	-	C. Dumaine	-	May-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Sep9N8	9N-8H	22-9B	56	R. Widmer	C. Faini	Apr-83	-	C. Faini, H. Roberts	Apr-83	Jun-06	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999
Sep9N8	9N-8I	17-10	207	A. Gerstle	A. Gerstle	May-86	-	C. Rafferty	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8I	17-47 (Old 17-15)	135	A. Gerstle	A. Gerstle	Feb-87	-	L. Martinez, W. Dudley	Apr-83	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8I	17-57 (Old 28-23)	391	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	May-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8I	17-61 (Old 28-27)	392	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	May-87	Jun-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8I	4-16	419	W. Fash	J. Mallory	Feb-81	R. Orellana, A Fernandez	R. Storey	Jul-88	Apr-05	2012	R. Storey; M. Rhoads (2001); V. Tiesler Blos (1999); Whittington (1989)
Sep9N8	9N-8J	21-1A	102	Okamura	M. Graetzer	Apr-83	-	Martinez	Jan-83	Apr-05	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-22	2	A. Gerstle	A. Gerstle	Feb-87	-	R. Storey	Mar-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-24	221	A. Gerstle	A. Gerstle	Feb-87	-	L. Martinez	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-31	31	A. Gerstle	A. Fittz, H. Reickart	Mar-87	-	L. Martinez	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-34A	45	A. Gerstle	H. Reickart, W. Dudley, B. Lutz	Apr-87	-	R. Storey	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-34B	95	A. Gerstle	H. Reickart, W. Dudley, B. Lutz	Apr-87	-	R. Storey	Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-39	59	A. Gerstle	C. Faini	Apr-87	-	R. Storey, C. Durmaine	Jun-85, Apr-83	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-55 (Old 28-21	404	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	Jun-84	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8K	17-56 (Old 28-22)	388	V. Vasquez	V. Vasquez ?	1985	-	R. Storey	Apr-87	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)
Sep9N8	9N-8M	15-23	329	M. Diamanti, S. Murillo	A. Freter, M. Diamanti, Silvestre	Feb-83	-	R. Storey	Oct-86	Jun-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

Sample Region	Group	Burial	CP	Project PI	Excavator	Date of Excavation	Washing	Storey CP # and Inventory	Storey Date	Date of Inventory by Miller	Date of Rehousing by Miller (NSF)	Selected Research History
Sep9N8	9N-8M	15-27	97	M. Diamanti, S. Murillo	M. Diamanti, R. Storey, Silvestre	Mar-83	-	C. Faini	-	Jul-04	2012	R. Storey; M. Rhoads (2001); T. Patterson; V. Tiesler Blos (1999)

APPENDIX B

BURIAL DATA: FULL PROVENIENCE INFORMATION, AGE, SEX, AND BURIAL POSITION

B = Bosque, Cem = Cementerio, CV = Copan Valley, Os = Ostumán, Rast/Ch = Rastrojón/Chorro, Sal = Salamar, Sep = Sepulturas, Sep9N8 = Sepulturas 9N-8
Sex: M = Male, MP = Probable Male, F = Female, FP = Probable Female, U = Undetermined Sex

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
B	10I-11	3-2 (3/30-2)	233	Mound 11	-	Pit	Coner	MP	YA	20-24	Und	-	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
B	10L-16	4-38	228	156	-	None	Coner	U	YA	20-24	S	Flexed	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	10L-17	4-39	275	-	-	Pit	Acbi	U	YA	20-24	S	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	10L-17	4-41	272	10L-168	-	Cist	Coner	F	Adol	12-15	N	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11j-1	24-7	198	11J-1	-	Pit	Late Coner	FP	YA	18-25	Und	Extended	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
B	11L-11	4-27	427	Unit 10b	-	-	Coner	F	YA	20s	W	Flexed	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4-9	548	Unit 6	-	-	Coner	MP	A	M-L 30s	SE	Flexed	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-28	No	Unit 10b	-	Pit	Early Coner	FP	YA	20-24	NE	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-29	No	Unit 9	-	Pit	Coner	U	YA/A	16-30	E	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-30	No	unit 16	-	-	Early Coner	MP	YA	20-30	N	Flexed	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Burial Database shared in 2011
B	11L-7	4-2	265	Plaza	-	Cist	Coner	MP	A	30s	N	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-8	4-4	269	212	-	Pit	Coner	M	A	30-40	E	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	Visitor Center	19-12A	389	Visitor center	-	Pit	Coner	M	A	30s	N	Extended	Diamanti, 1991; Whittington, 1989; Burial form and informe at CRIA library; D. Reed Burial Database shared in 2011
B	11K-18	4-46	235	-	-	Pit	Coner	F	YA	30s	SE	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Cem	10L-1	7-3A	143	233	Domestic	Pit?	Late Classic?	M	YA	24-35	Und	-	Andrews unpublished 10L-2 Summary (2014); D. Reed Burial Database shared in 2011

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Cem	10L-1	7-3C	145	233	Domestic	Pit?	Late Classic?	M	YA	24-30	Und	-	Andrews unpublished 10L-2 Summary (2014); D. Reed Burial Database shared in 2012
Cem	10L-2	40-3a	450	-	-	Cist	Late Classic	FP	A	30-45	NE	Flexed	D. Reed Burial Database shared in 2011
Cem	10L-2	40-5	452	-	-	Cist	Late Classic	FP	YA/A	24-35	S	Flexed	Padgett, 1996; D. Reed Burial Database shared in 2011
Cem	10L-2	48/1/413-1	No	1	Cerem.	Pit	-	U	SA	3 +/- 1	E	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/10/212-1	No	41	Meeting Room	Pit	Coner	U	SA	4 +/- 1	S	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/10/346-3	No	41	Resid.	Cist	-	U	SA	4 +/- 1	W	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/11/160-2	No	238	Storage or Retainer Resid.	Crypt	Coner	U	MA	40s	-	Seated	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/11/161-3	525	238	Storage or Retainer Resid.	Crypt	Acbi/ Coner	U	YA	18-22	E	Supine	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/12/64-1	No	42	Resid.	Pit?	Early Coner	F	A	30-40	SSE	Partially flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/170-1	No	86	Resid.	Pit?	Early Coner	U	SA	3 to 4 +/- 1	NE	Supine	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/204-3	No	44	Resid.	-	Late Coner	U	SA	3.5 +/- 1	-	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Cem	10L-2	48/13/211-4	539	44	Resid.	-	Coner?	F	YA	20-30	NE	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/223-5	No	44	Resid.	Pit	Predates 10L-44. (Coner?)	U	SA	5-6 +/- 1-2	N	Supine	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/248-6	No	44	Resid.	Pit	Late Coner	U	SA	5 +/- 9 mos.	S	Partially flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/280-8	No	86	Resid.	Crypt	Predates 10L-44B. (Early Coner)	U	YA	18-22	NW	Partially flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/283-9	No	44	Resid.	Pit	Acbi/ Coner	U	SA	4 to 5 +/- 1-1.5	W	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/14/124-1	No	237	Early Resid. ?	Pit	Late Coner	F	YA/A	24-35	W	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/16/43-1	No	84	-	-	Coner	U	SA	6 +/- 2	SE	Bundle, Seated	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011
Cem	10L-2	48/2/107-1	No	30	Cerem. or Resid.	Pit	Coner	U	SA	3 +/- 1	N	Flexed on right	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/123-1	No	33	Resid. in E. Coner	-	Acbi/ Coner	MP	YA	24-30	E	prone	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/185-2	No	33	Resid. in E. Coner	-	Acbi/ Coner	MP	A	35-45	-	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Cem	10L-2	48/6/192-4	507	33	Resid. in E. Coner	Pit	Early Coner	F	A	30-40	NE	Prone	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/195-5	505	33	Resid. in E. Coner	Pit	Acbi/ Coner	F	YA	18-24	S	Supine	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/206-8	No	33	Resid. in E. Coner	-	Coner	U	Adol	15 +/- 3	?	?	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/222-7	No	33	Resid. in E. Coner	Cist	Acbi/ Coner	M	A	30-35	W	prone	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/228-9	No	33	Resid. in E. Coner	Cist	Early Coner	MP	Adol	18 +/- 2	N	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I. Indiv. 2	No	29	Shrine	-	Acbi/ Coner	U	SA	10 +/- 30 mos.	N	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I. Indiv. 3	No	29	Shrine	-	Acbi/ Coner	U	Adol	15-17	N	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I	No	29	Shrine	Pit	Coner	U	SA	9 to 10 +/- 24-30 mos.	N	Flexed	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2, 43	48/9/107-2	No	43	Shrine	Pit	Coner	U	Adol	15 +/- 3	NW	on right side	Context database provided by E.W. Andrews and J. Piehl; D. Reed Burial Database shared in 2011; Str. function, Andrews, (personal communication, 2014).
CV	12G-6	4-1	223	12G-6	-	Pit	Coner	M	A	24-40	N	Extended	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
CV	18a-2-3	24-4	193	18a/2-3	-	Cist	Early Coner	F	YA	20-30	N	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	18d-4-1	24-9	185	18d/4-1	-	Pit	Coner	M	A	35-45	Und	Extended	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	25b-2-1	24-5(a?)	190	-	-	None	Coner	M	A	35-45	NW	Prone	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	34a-12-2	34-2A	449 and 553	-	Resid.	Pit?	Early Coner	FP	YA	24-30	S	Flexed	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	34a-12-2	34-3	465	1	Resid.	Pit	Acbi/ Coner Transition	U	A	30-40	E	Extended	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	34d-73-3	24-1	199	2	Resid.	Pit	Coner	U	SA	3 +/-1	und	Flexed	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	3O-7A	27-3	183	-	Resid.?	Tomb	Coner	M	YA	20-30	N	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7A	27-4	173	28	Resid.?	Cist	Coner	FP	YA	20-24	SE	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-10	176	29-1st-A	Resid.?		Coner	U	SA	3 +/- 1	W	Extended	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-11	180	29-1st-A	Resid.?	Cist	Coner	FP	YA	24-30	SE	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-6	174	29-1st-B	Resid.?	Pit	Coner	F	A	35-40	S	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-9	175	29-1st-A	Resid.?	Cist	Coner	FP	A	35-45	S	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	4N-5	24-8	196	None	Resid.?	Cist	Coner	F	YA	24-35	S	Flexed	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	9P-5	4-7	234	9P-5 no str	Resid.?	Cist	Coner	M	YA	18-24	N	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
CV	Copan Valley?	59-2	551	?	-	-	Late Classic	MP	A	30-40	-	-	Lote forms CRIA Library; Miller burial database; D. Reed Database shared in 2011
CV	Copan Valley?	59/2-5	561	?	-	-	Late Classic	MP	A	30-45	-	-	Lote forms CRIA Library; Miller burial database; D. Reed Database shared in 2011

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
CV	E of town, Rio Sesesmil	3-3 (3/30-3)	547	Rio Sesesmil	-	-	Late Classic	U	YA	20-30	und	-	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	Hacienda Grande	4-55	222	HG	-	Cist	Late Classic	M	YA	25-34	-	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
CV	Petapilla	3-1 (3/30-1)	219	Petapilla	Resid.?	Pit	Coner	F	YA	24-35	und	Extended	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
Os	10E-5A	45-2	430	40	Und.	Cist	Coner	U	A	I	NW	Flexed, Seated	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	10E-6A	45-5	432	40	Und.	Cist	Coner	F	YA	20-24	NW	Flexed	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2.	46-10	434	20	Resid.	Cist	Coner	U	Adol	12 +/- 3	SE	Extended prone	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2.	46-11	442	20	Resid.	Pit	Coner	FP	A	30s	NE	Flexed	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2A	46-1	446	7	High Status Resid.	Cist	Coner	U	A	30-45	NW	Supine	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2A	46-8A	435	18	Cerem. and Craft	Pit	Coner	M	MA	30-45	NW	Flexed, Supine	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2A	46-8B	440	18	Cerem. and Craft	Cist	Coner	M	YA/A	24-35	NW	Supine	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Ras/Ch	6N-4	64-R26	No	4		-	Late Classic	U	Adol	13-15	-	-	Excavation notes from J. Ramos, shared in 2011
Ras/Ch	6N-4	64-R36	No	12		-	Late Classic	MP	A	35-45	-	-	Excavation notes from J. Ramos, shared in 2011

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Ras/Ch	6N-4	64-R41	No	4		stone pit	Late Classic	U	A	30-35	-	-	Excavation notes from J. Ramos, shared in 2011
Ras/Ch	7M-4	4-45	238	Plaza	-	Tomb	Early Coner	F	YA	20-24	N	Extended	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49A	236	Plaza	-	Pit	Late Coner	U	A	30-40	und	Disartic	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49B	236	Plaza	-	Pit	Late Coner	U	A	25-20	und	Disartic	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49C	236	Plaza	-	Pit	Late Coner	U	A	?	und	Disartic	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49D	236	Plaza	-	Pit	Late Coner	U	YA	24-35	und	Disartic	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-m38	4-47	232	M38	-	Pit	Early Coner	U	A	30s	N	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7N-20	4-43	237	Plaza	-	Cist	Coner	F	A	20-44	E	Flexed	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Sal	8L-10	42-1A	412	72	Ritual/ Resid. Group	Crypt	Late Classic	F	A/MA	40-55	N	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-1B	411	72	Ritual/ Resid. Group	Crypt	Late Classic	M	YA	24-30	N	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-2	425	73	Ritual/ Resid. Group	Pit	Late Classic	M	A	30-35	W	Flexed	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-3A	424	78	Ritual/ Resid. Group	Pit	Late Classic	U	YA/A	24-40	E	Flexed	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-4	423	72	Ritual/ Resid. Group	Pit	Late Classic	F	YA	20-30	E	Flexed	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sal	8L-10	42-5A	421	77	Ritual/ Resid. Group	Tomb	Late/Terminal Classic	F	MA	40-55	S	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-5B	422	77	Ritual/ Resid. Group	Tomb	Late/Terminal Classic	M	YA	20-30	N	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-5C	426	77	Ritual/ Resid. Group	Tomb	Terminal Classic	U	A	30-45	und	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-12	42-6	550	87	Resid. Group	Tomb	Late Classic	M	YA/A	24-35	N	Extended	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-12	42-7A	555	87	Resid. Group	Pit	Late Classic	M	YA	20-30	und	Disartic	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	CRIA	11-1	269	CRIA	-	Pit	Coner	M	A	20-24	und	Flexed	Whittington, 1989; Miller Inventory Database; D. Reed Database shared in 2011
Sep	8N-11A	50-11	463	66N	Resid.	-	Acbi/ Coner	U	A	30-40	E	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-12a	470	66S	Cerem./Resid.	-	Coner	M	YA/A	24-35	-	Bundle	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-14	526	66S	Cerem.l/Resid.	Pit	Coner	M	YA/A	24-35	Und	Bundle	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-15	477	66S	Cerem./Resid.	Cist	Coner	FP	YA/A	24-35	N	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep	8N-11A	50-17	487	66S	Cerem./Resid.	Crypt	Coner	F	YA	20-24	S	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-20	530	66C	Cerem.	Pit	Coner	U	SA	3 +/- 1	Und	-	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-22	479	66N	Resid.	Pit	Coner	F	YA	20-30	S	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-23	527	66N	Resid.	Cist	Coner	U	A	30-45	S	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-24	485	66N	Resid.	Crypt	Coner	MP	YA	18-24	Und	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A (CV68)	14-1	1	70	Resid.	Tomb	Coner	M	YA	20-30	N	Flexed	Whittington, 1989; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A (CV68)	14-2	184	70	Resid.	Cist	Coner	M	A	30-35	N	Extended	Whittington, 1989; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-2A	483	51S	Resid.	Pit	Coner	MP	YA	20-24	N	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-4b	531	50	Resid.	-	Coner	F	YA	20-30	N	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep	8N-11B	50-6	532	50	Resid.	-	Coner	U	SA	4 +/- 1	W	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-7	474	50	Resid.	-	Coner	F	YA	20-30	W	Flexed	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	9M-22A	10-10	492	193S	Resid.	Crypt	Late Classic	M	YA	20-24	S	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011
Sep	9M-22A	10-13	497	199	Resid.	Cist	Late Classic	M	A	Und	N	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-14	493	193S	Resid.	Cist	Late Classic	M	YA	30-40	N	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-2	478	245	Resid.	None	Late Classic	F	YA	20s late	S	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-4	482	195W	Storage	None	Late Classic	U	SA	4, 12mos	S	Extended	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-5	476	193N	Resid.	Crypt	Late Classic	F	A	30-34	S	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-6	496	195W	Resid. and Storage	None	Late Classic	U	SA	4, +/- 1	Und	Disartic	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-7	489	193N	Resid.	Cist	Late Classic	FP	SA	11-12, +/- 3	S	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-9	491	196	Resid. and Storage	Cist	Late Classic	MP	YA	30s	NE	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-1	18	190	Resid., Kitchen and Food Process.	Pit	Early Coner	M	YA	18-22	Und	-	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep	9M-22B	19-13	264	191N	Resid.	Crypt	Coner	MP	A	35-45	S	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-14	263	191W	Kitchen	Pit?	Early Coner	U	SA	3 to 4 +/- 1	Und	-	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-16	259	191W	Resid. and Food Process.	Crypt	Coner	U	A	20-24	Und	Disartic	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-4	122	Patio B	-	-	Late Classic?	U	A	30-35	-	-	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-8	248	191W	Resid. and Food Process.	Pit	Coner	U	A	30-35	E	Flexed	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	9-1	247	191N	Cerem. and Resid.	None	Coner	U	SA	6 to 7	N	Flexed	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-10	241	191W	Resid. and Food Process.	Pit	Coner	MP	A	30-45	S	Flexed	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-11	240	191N	Kitchen	Crypt	Coner	U	A	30s	SE	Flexed	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-16	258	191W	Resid. and Food Process.	Pit	Coner	M	A	24-30	E	Flexed	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-3	244	191N	Resid. and Food Process.	Pit	Early Coner	M	YA	20s	N	Extended	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-4	250	191W	Resid. and Food Process.	None	Coner	F (Reed)	A	24-35	Und	Partially flexed	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-5	246	191W	Resid. and Food Process.	Pit	Coner	F	YA	20s late-early 30s	E	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep	9M-22B	9-6	243	191N	Food Process.	Pit	Coner	F	YA	18-22	N	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	9-8	249	191N	Food Process.	None	Early Coner	U	SA	11+/-30 mos.	S	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	9-9	242	191N	Cerem. and Resid.	Crypt	Coner	MP	YA	18-22	N	Tightly flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-10	42	213	Resid. and Craft	Pit	Acbi/ Coner Transition	M	A	20-30	W	Extended	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-11	224	212	Resid.	Pit?	Early Coner	M	YA	18-22	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-13	208	212	Resid.	Pit	Coner	U	YA	20-30	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-14	214	247	Storage and Craft	Pit?	Coner	U	A	30-35	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-3	19	212	Resid.	Pit	Coner	FP	Adol	13-14	Und	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-8	88	212	Resid.	Cist	Coner	F	A	30-35	E	-	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-9	94	213	Resid. and Craft		Coner	M	YA	20-30	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9N-8	Sep. 13	No	M15	-	-	Late Classic?	F	YA	18-22	-	-	Miller Inventory Database from burial tags

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep	9N-8	Sep. 14	No	M2	-	-	Late Classic?	U	A	30-35	-	-	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 15	No	M2-3	-	-	Late Classic?	MP	A	35-50	-	-	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 8	No	M4	-	-	Late Classic?	U	YA	20-30	-	-	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 16	No	M9	-	-	Late Classic?	MP	YA	20-24	-	-	Miller Inventory Database from burial tags
Sep9N8	9N-8A	8-1	147	82C-1	Cerem.	None	Late/Terminal Classic	M	YA	18-24	Und	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-10	155	83	Resid.	Pit	Late Classic?	F (Reed)	A	30-40	W	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-2	148	83	Resid.	Cist	Late Coner	F	YA	30s	S	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-34	158	82W	Resid. of Kitchen Staff	Cist	Late Coner	FP	Adol	15-18	S	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-37	160	83-sub	Resid.	Pit	Early Late Classic	MP	Adol	16-20	N	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-4	150	83	Resid.	Tomb	Coner	M	MA	35-40	S	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-6	152	82C	Resid.	Pit	Early Late Classic	F (Reed)	A	20-40	W	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-7	153	83	Resid.	Crypt	Late Classic	U	SA	5 to 6	N	Flexed	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8B	16-1	315	68	Resid.	None	Late Classic	U	YA	Late 20s	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8B	16-10	93	74C	Storage or Craft	Pit	Late Classic	FP	YA	20-30	W	Extend	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-11	13	74S	Kitchen	Pit	Late Classic	U	SA	7 to 8 +/- 2	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-12	11	74S	Kithecn	Pit	Late Classic	U	SA	3 +/- 1	Und	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-13A	62	75	Food Process. Area or Resid.	Pit	Late Classic	U	SA	9 +/- 2	NE	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-15	20	67	High Status Resid. of Patio B	Pit	Late Classic	FP	A	30-40	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-16	61	74C	Storage or Craft	Pit	Late Classic	U	SA	5 to 6 +/- 16-24 mos.	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-18	72	74S	Resid.	Pit	Late Classic	U	SA	3 to 4 +/- 1	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-2	415	68	Resid.	None	Late Classic	FP	YA	25-35	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-21	57	73	Resid.	Pit	Late Classic	U	SA	3 +/- 1	N	Disturbed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8B	16-22	71	73	Resid.	Pit	Late Classic	U	SA	4 to 5 +/- 1	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-23	68	67	High Status Resid. of Patio B	None	Late Classic	M	A	30s	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-24	305	73	Resid.	None	Late Classic	F	A	30s	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-25	302	68	Kitchen	Cist	Late Classic	M	YA	Early 20s	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-26	309	75	Resid.	Cist	Late Classic	U	SA	2 to 3 +/- 1	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-27	304	75	Between Kitchen and Resid.	Pit	Late Classic	F	YA	20s	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-29A	311A	74N	Resid.	-	Late Classic	MP	Adol	15-16	Und	-	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-31	310	74	Resid.	Tomb	Late Classic	F	YA	20-30	-	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-5	128	75	Food Process. Area or Resid.	Cist	Late Classic	U	SA	2 +/- 8 mos.	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8C	13-10 (Old 26-12)	279	73	Resid.	Cist	Acbi/ Coner	F	A	30-50	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-2	162	100	Resid.	Cist	Coner	F	YA	20-30	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-3	163	100	Resid.	Cist	Coner	F	A	30-35	E	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-4A	164	71	Cerem.	Tomb	Coner	M	A	20-30	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-4B	165	71	Cerem.	Tomb	Late Classic	U	A	24-30	-	Und	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-5	166	69	Resid.	Tomb	Coner	M	MA	40-50	N	Extended	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-7 (Old 19-3)	105	69	Resid.	Pit	Coner	F	A	30-35	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-8 (old 26-9)	283	73N	Resid.	None	Coner	U	YA	20-24	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-12A	140	111	Resid.	Crypt	Late Classic	U	SA	3 to 4 +/- 1	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-12B	206	111	Resid.	Crypt	Coner	MP	YA	24-30	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8D	17-16A	138	61	Resid.	None	Late Classic	U	SA	5 +/- 16 mos.	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-18	21	111	Resid.	Crypt	Coner	U	SA	7 +/- 2	NE	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-19A	209	111	Resid.	Pit	Coner	F	YA	20-24	W	Tightly flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-21A	216	63	Temple turned into Resid.	Tomb	Coner	M	MA	45+	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-21B	217	63	Temple turned into Resid.	Tomb	Coner	U	A	40s	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-25	89	111	Resid.	Pit	Coner	MP	A	30s	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-3	187	63	Temple turned into Resid.	Cist	Late Classic	M	A	24-35	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-32	96	111	Resid.	Cist	Late Classic	U	SA	3 +/- 1	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-33	44	61	Resid.	Pit	Coner	U	SA	3 to 4 +/- 1	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8D	17-35A	47	111	Resid.	None	Coner	U	SA	5 to 6 +/- 2	E	-	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-36A	46	61	Resid.	Cist	Coner	M	YA	20s	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-36B	52	61	Resid.	Cist	Coner	FP	YA	20-24	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-4	192	105 and 63	Cerem. and Temple turned into Resid.	Crypt	Coner	M	A	20-30	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-40	22	61E	Resid. and Craft, possibly Kitchen	Cist	Coner	MP	Adol	15-18	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-42	85	60S	Resid.	None	Late Classic	U	SA	3 +/- 1	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-45	86	105	Cerem.	None	Late Classic	U	SA	4 +/- 1	S	Und	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-48-36 (Old 26-1)	273	104	Resid. and Storage	None	Late Classic	F	YA	20-30	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-5	189	105 and 63	Cerem. and Temple turned into Resid.	Pit	Coner	U	SA	3 +/- 1	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8D	17-50 (Old 26-3)	277	60S	Resid.	Cist	Late Classic	M	A	24-35	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-51 (Old 28-17)	403	105	Cerem.	Crypt	Late Classic	F	Adol	15-18	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-54 (Old 28-20)	295	63	Temple turned into Resid.	Tomb	Late Classic	F	A	30s	NE	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-58 (old 28-24)	394	61	Resid. and Craft	Pit	Late Classic	M	YA	18-22	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-6	191	60S	Residential	None	Coner	F	YA	24-30	N	Tightly flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-60 (Old 28-26)	405	61E	Resid. and Craft, possibly Kitchen	Pit	Late Classic	F	Adol	15-18	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-7	194	63	Temple turned into Resid.	Cist	Coner	FP	A	30-40	E	Extended	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-8(a)	202	63	Temple turned into Resid.	Crypt	Late Classic	MP	YA	24-30	N	Disturbed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-8B	204	63	Temple turned into Resid.	Crypt	Late Classic	U	SA	3 to 4 +/- 1	Und	-	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8D	17-9	195	60S	Residential	None	Coner	F	YA	17-24	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D/H	17-53A, Old 28-19	296	63 and 115W	Resid. and Craft	Pit	Late Classic	M	YA/A	25-35	S	-	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-10	322	93S	Resid.	Cist	Acbi/ Coner Transition	F	A	30-35	N	Flexed	Diamanti (1991) does not mention this burial. Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-11	323	94	Resid.	Cist	Coner	F	YA	20-24	N	Flexed	Diamanti (1991) does not mention this burial. Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-14	334	97	Resid.	Pit	Acbi or Coner	U	SA	3 to 4 +/-1	S	Flexed	Diamanti (1991) does not note this burial. Miller Inventory Database; Reed Burial Database shared in 2011. Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-2	316	95	Kitchen	Cist	Coner	F	A	25-30	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-25B	382	108	Resid.	Cist	Coner	MP	A	20-35	W	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-26B	339	96	Resid. and Storage	Pit	Coner	U	SA	3 to 4 +/- 1	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-28	376	92	Resid.	Cist	Coner	F	A	30-45	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8E	15-29	342	108	Resid.	Pit	Coner	F	A	24-35	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-3	317	97	Resid.	Cist	Late Classic	M	YA	16-20	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-35A	14	96	Resid.	None	Coner	U	SA	4 +/- 1	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-35B	16	96	Resid.	Pit	Coner	FP	YA	20s	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-36	77	92	Resid. and Craft	None	Coner	U	SA	3 +/- 1	Und	Disartic	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-39	27	92	Resid.	Cist	Late Classic	U	SA	2 to 3 +/- 8-12mos.	E	-	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-4	318	96	Resid.	Cist	Coner	F	MA	40+	NE	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-40	41	92	Resid.	Cist	Late Classic	U	A	24-35	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8E	15-42	54	93N	Resid.	Pit	Coner	U	YA	Late 20s	E	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-43	64	93N	Resid.	Cist	Coner	M	A	30-40	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-44	43	92 and 93	Kitchen and Resid.	Pit	Coner	U	SA	8 +/- 2	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-45	70	96	Resid.	None	Coner	U	SA	7 +/- 2	N	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-47	337	96-2nd	Resid.	Pit	Coner	M	A	30s	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-6	319	93S	Resid.	Cist	Coner	F	YA	20-30	SE	Disturbed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-64	35	96	Resid.	Pit	Late Classic	MP	MA	50s	NW	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-65 (Old 26-14)	301	92	Resid.	Pit	Early Late Classic	F	A	30s	SE	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8E	15-66 (Old 26-15)	285	92	Resid.	Pit	Early Late Classic	F	A	30s	SE	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-67 (Old 26-18A)	287	95	Kitchen	Pit	Early Late Classic	U	SA	4 +/- 1	S	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-7	320	93S	Resid. and Kitchen	Cist	Late Classic	U	SA	8+/-2	SE	Disturbed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-8	321	93S	Resid. and Kitchen	Pit	Late Classic	U	SA	3+/-1	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-17	332	90S	Cerem. or Craft	Pit	Coner	U	A	25-40	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-19B	340	90N	Cerem.	Cist	Coner	U	SA	3 +/-1	Und	-	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-20	326	90N	Und.	Pit	Coner, poss. Ejar	U	A	20-35	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-21	136	91	Residential	Cist	Late Classic	F	YA	18-24	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8F	15-22	23	90N	Und.	Pit	Coner	M	YA	18-24	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-30	385	90S	Craft	Pit	Coner	FP	A	30s	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-31	5	90	Residential	Pit	Late Classic	U	SA	4 +/- 1	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-37	78	91	Residential	Pit	Coner	U	SA	4 +/- 1	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-50	379	90N	Und.	Pit	Late Classic	U	SA	2 +/- 8 mos.	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-51	386	90N	Und.	Cist	Coner	M	Adol	16-19	NW	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-52	383	90N	Und.	Pit	Coner	F	YA	Early 30s	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-53	380	91	Resid.	Pit	Coner	U	SA	3 +/- 9 mos.	E	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8F	15-54	384	91	Resid.	Cist	Coner	F	A	24-30	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-56	387	91	Resid.	Pit	Early Coner	U	SA	4 +/- 1	W	Extended	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-59	374	91	Resid.	Pit	Coner	U	YA	24-30	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-60	343	91	Resid.	Pit	Early Coner	U	SA	3 +/- 1	SW	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-61	344	91	Resid.	Pit	Early Coner	U	SA	2 to 3 +/- 8-12 mos.	und	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-62	375	90N	Resid.	Pit	Coner	F	YA	20s	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-63	345	90N	Resid.	Pit	Early Late Classic	F	A	30-35	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	17-43	55	115	Craft	Pit	Coner	U	SA	4 +/- 1	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8H	22-10A	63	sub-13	-	Pit	Early Late Classic	F	YA	18-22	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-10B	74	sub-13	-	Pit	Late Classic	F	YA	24-35	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-11	58	64	Cerem.	Cist	Late Classic	MP	A	35-40	Und	Flexed, poss. Seated	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-13C	92	76	Resid. and Storage	Pit	Late Classic	FP	YA	20-24	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-14	39	64	Cerem.	Pit	Late Classic	M	A	30-35	NW	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-16	40	sub-14	-	Pit	Late Classic	FP	A	30-40	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-17	84	76	Resid. and Storage	Pit	Late Classic	U	SA	3 +/- 1	E	Semi-flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-21A	80	110C	Residential and Craft	Pit	Late Classic	F	A/MA	30-50	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-22	98	64	Cerem.	Crypt	Late Classic	FP	YA	24-30	N	Disturbed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-22-26A (Old 22-19-21)	300	110S	Resid.	Pit	Late Classic	F	YA	20-24	-	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-28b	291(a)	110S	Resid.	Tomb	Late Classic	U	A	20-40	-	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-23	75	76	Resid. and Storage	Cist	Coner	F	MA	35-45	E	Semi-flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8H	22-25 (old 22-19-20a)	299	110C	Residential and Craft	Pit	Late Classic	FP	YA	24-35	-	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-26D	308	110S	Resid.	-	Late Classic	U	SA	3 +/- 1	-	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-27 (Tumba 2)	290	110C	Resid. and Craft	Crypt	Late Classic	FP	A	24-30	S	Extended	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-28A Tumba 3	291	110C	Resid. and Craft	Tomb	Late Classic	FP	A	24-35	-	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-31 (Old 26-7and8)	282	110S	Resid.	None	Late Classic	U	SA	5 +/- 16 mos.	und	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-33 (Old 26-11)	132	110S	Resid.	None	Late Classic	U	SA	3 to 4 +/- 1	S	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-34 (Old 28-13A)	298	110N	Resid.	Tomb	Late Classic	M	A	35-40	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-35 (Old 28-12)	293	110N	Resid.	Pit	Late Classic	F	MA	45+	N	Tightly flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-37 (Old 28-14)	398	64	Cerem.	Pit	Late Classic	M	YA	20-30	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-38 (Old 28-15)	399	110N	Resid.	Crypt	Late Classic	M	A	35-45	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-39	289	110C	Resid.	Tomb	Late Classic	F	Adol	16-21	-	Extended	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-4	15	76	Resid. and Storage	None	Late Classic	U	SA	8 +/- 2	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-40	303	110C	Resid. and Craft	Tomb	Late Classic	M	A	35-40	-	Flexed	Diamanti, 1991; D. Reed Database

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8H	22-41 (Old 22-1 Tumba 4)	280	110C	Resid. and Craft	Tomb	Late Classic	M	YA	20-30	-	Flexed	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-42 (Old 26-6)	278	110S	Resid.	None	Late Classic	F	A	30-40	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-44 (Old 28-19C)	396	110N	Resid. and Craft	-	Late Classic	U	SA	3 to 4 +/- 1	-	-	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-45	406	110C and 74	Resid.	-	Late Classic	U	A	40s	-	-	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-8	87	64	Cerem.	Pit	Late Classic	U	SA	10 to 11 +/- 30 mos.	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-9B	56	76	Resid.	Cist	Late Classic	M	YA	18-22	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-10	207	60N	Resid.	Pit	Coner	F	YA	24-30	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-47	135	113E	-	Pit	Late Classic	F	A/MA	35-50	E	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-57 (Old 28-23)	391	112A	Craft and Kitchen	Pit	Late Classic	U	A	20-30	und	Disartic	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-61 (Old 28-27)	392	112	Craft and Kitchen	Tomb	Late Classic	MP	MA	40s	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	4-16	419	9N-55	-	Tomb	Coner	MP	A	30-40	S	Flexed	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8J	21-1A	102	sub 20	-	Tomb	Early Late Classic	M	A	25-30	S	Extended	Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	CP	Str	Str. Func.	Grave	Phase	Sex	Age	Range	Orientation	Position	Select References
Sep9N8	9N-8K	17-22	2	107	Craft	Pit	Coner	U	SA	10 to 11 +/- 30 mos.	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-24	221	107	Craft	Crypt	Late Classic	U	SA	6 +/- 2	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-31	31	106	Resid.	Cist	Late Classic	U	A	24-30	W	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-34A	45	107	Craft	Pit	Coner	MP	YA	20s	N	Semi-flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-34B	95	107	Craft	Pit	Late Classic	U	SA	4 +/- 1	und	-	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-39	59	106	Resid.	Pit	Late Classic	U	A	30s	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-55 (Old 28-21	404	106	Resid.	Cist	Late Classic	FP	Adol	15-18	N	Extended	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-56 (Old 28-22)	388	106	Resid.	Cist	Late Classic	F	YA	24-30	S	Flexed	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8M	15-23	329	88	Resid. and Storage	Pit	Coner, poss. Ejar	M	A	30-45	N	Flexed	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamani (1991)
Sep9N8	9N-8M	15-27	97	88	Resid. and Storage	Cist	Coner	U	SA	3 to 4 +/- 1	S	Flexed	Diamanti, 1991; Forms at CRIA; Webster monograph 2011; Miller Inventory; Reed Database 2011

APPENDIX C

BURIAL DATA: BODY MODIFICATION, ARTIFACTS, AND FULL BURIAL CONTEXT

B = Bosque, Cem = Cementerio, CV = Copan Valley, Os = Ostumán, Rast/Ch = Rastrojón/Chorro, Sal = Salamar, Sep = Sepulturas, Sep9N8 = Sepulturas 9N-8
Sex: M = Male, MP = Probable Male, F = Female, FP = Probable Female, U = Undetermined Sex

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
B	10I-11	3-2 (3/30-2)	Cranial and dental	"Coner phase" vessel	Undetermined	Site destroyed. Op. 3, Burial 2.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
B	10L-16	4-38	Dental	-	-	Open area between 10L-16 and 10L-18; 5m. NW of Str. 10L-156; lot IV/122/6, unit 3; obsidian may be part of fill. Op. 4, Burial 38, IV/122/6.	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	10L-17	4-39	None	-	-	No associated structures; SE of 10L-17; lot IV/121/39, unit 2. Op. 4, Burial 39	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	10L-17	4-41	None	None	-	In pit with 2 large stones on W side; lot IV/121/55, unit 4	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11j-1	24-7	None	Coner sherds in fill	Undetermined	Disturbed; placed partially on top of first cut stone tread and cut stones making-up next riser are missing from burial area. Either group 11J-1 or 13F-3, discrepancy between Reed and Whittington. Op. 24, Burial 7, Lot 84-1496, Level 3, Pozo 1, Sitio 1-4, Feature 1, 17-Abril 1984	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
B	11L-11	4-27	Cranial and dental	-	-	Subop IV/99, unit 10B, lot IV/99/243,248; above 04-8, 04-25, 04-28, and below 04-26	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4-9	None	-	-	Subop IV/99, unit 6; field age. Op. 4, Burial 9	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-28	None	-	-	Subop IV/99, unit 10B, lot IV/99/265; could be associated with 04-25, in same pit as 04-08, 04-26, 04-27. Op. 4, Burial 28.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-29	Cranial	-	-	Subop IV/99, trench D-North, unit 9, lot IV/99/335. Op. 4, Burial 28.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-11	4/99-30	None	-	-	Subop IV/99, trench D-South, unit 16, lot IV/99/372; front rests on patch of burnt clay. Op. 4, Burial 30.	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Burial Database shared in 2011

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
B	11L-7	4-2	Dental	None	-	Cist, offering of 4 pieces of jade, in Plaza. Tomb IV-83-23, Pozo 4. Op. 4, Burial 2, IV/83/23, Pozo 4, Tomb, April 12, 1978.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	11L-8	4-4	Cranial and dental	Adrilla Incised and Excised cylinder, Tasu-fluted, Macadudo variety cylinder, Surlo (Orange/ Brown) bowl, Raul Red jar, 2 stingray spines, ceramic earring, bone bead	All local	Near OP4-BU3, OP4-BU5, OP4-BU6, on top of a low mound. Pozo 24, Nivel 6-100-200. Op. 4, Burial 4, IV/83/44, Pozo 24, Level 6 (100-120), May 8, 1973.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
B	Visitor Center	19-12A	None	None	-	Site destroyed, E of new visitor's center, not analyzed by Whitt, 2 rocks under knees. Op. 19, Burial 12A.	Diamanti, 1991; Whittington, 1989; Burial form and informe at CRIA library; D. Reed Burial Database shared in 2011
B	11K-18	4-46	Dental	Coner sherds associated	Undetermined	no associated architecture; 120m N of river in low terrace to W of Bosque and SE of nearby 11K-18; lot IV/136/15; poorly preserved. Op. 4, Burial 46, Lot 136	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Cem	10L-1	7-3A	None	-	-	233 is single room structure burials recovered from around building in fill. Did not recover burial form. Op. 7, Burial 3a.	Andrews unpublished 10L-2 Summary (2014); D. Reed Burial Database shared in 2011
Cem	10L-1	7-3C	None	-	-	234 is single room structure burials recovered from around building in fill. Did not recover burial form. Op. 7, Burial 3c.	Andrews unpublished 10L-2 Summary (2014); D. Reed Burial Database shared in 2012
Cem	10L-2	40-3a	Cranial	-	-	Burial form not recovered. 10L-2? OP. 40, Burial 3	D. Reed Burial Database shared in 2011
Cem	10L-2	40-5	None	-	-	Burial form not recovered. 99B-8-, Op. 40, Burial 2	Padgett, 1996; D. Reed Burial Database shared in 2011
Cem	10L-2	48/1/413-1	None	1 bone needle, 1 piece of obsidian, 4 jute shells, all likely due to midden	-	South of 10L-2's south facing wall and just north of bench of earlier structure located south of 10L-32. In midden, below floor of 10L-32 final structure, between 2 structures. Vessel smashed over head. Flexed, head to east. N3 W40. Op. 48/1, Burial 1, Lot 413, Str. 10L-32, Level 5, N3, W40, August 17, 1990 RH	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Cem	10L-2	48/10/212 -1	None	6 ceramic beads with red, black, white paint, stucco found around neck. 1 shell bead around neck, 2 perforated shell tinklers, faunal bone in midsection.	Possibly Local	Vessel source as likley local due to it being stuccoed, Landau (2014). Beneath floor in NE of 10L-41B, behind northern benched doorway in east room. In construction fill, surrounded by large stones. 15cm below cascajo, 136cm below floor level of latest construction. Flexed, head to south. Prone with pelvis elevated and legs flexed beneath. Arms flexed below torso. S18 W50. Op. 48/10, Burial 1, Lot 212, Str. 10L-41B, S18, W 50, March 26, 1993. GE.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/10/346 -3	None	Decorated stuccoed vessel with stylized glyphs, jade bead inside vessel, 3 shells near pelvis	Possilby Local	Vessel source as likley local due to it being stuccoed, Landau (2014). NW of Burial 2 and at lower elevation. In gray midden layer. Flexed, on right side, head to west. Individual continues eastward under wall. Lower legs not recovered, and probably lie beneath wall. Large stones placed above and north of burial. S22 W53. Op. 48/10, Burial 3, Lot 346, Str. 10L-41B, Lado: Oeste, April 22, 1993, GE.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/11/160 -2	None	Gualpopa Polychrome ceramics	Local	Str. 238 poorly preserved. Rectangular crypt south of Copan Tomb 2. 3 capstones. Bones in Ne corner and along E wall. Individual probably seated. Probably intrusive into Structure 238 platform. Probably seated. N13 W69. Op. 48/11, Burial 2, Lot 160, Str. 10L-238, Feb. 22, 1994, N13, W 69, GA.	Context database provided by E.W. Andrews and J. Piehl;. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/11/161 -3	None	4 Gualpopa vessels, tubular beads	Local	St.r 238 poorly preserved. West of Burial 2, south of Copan Tomb 2. In vaulted crypt with capstones and limestone slab floor. Probably intrusive into 10L-238 platform. Supine, head east. Legs bent at knees and crossed, with feet under opposite upper legs. Arms crossed on chest. Red pigment on R hand and forearm, teeth, near R clavicle. Probably wearing headdress, as evidenced by space above head before tomb wall and mica chips found in this space. N12 W72. Op. 48/11, Lot 161, Str. 10L-238, Feature 40, N12, W 72, Feb. 28, 1994. GA	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/12/64- 1	None	None	-	Under east wing of L-shaped bench in east room of 10L-42-3D. 2 individuals. Adult head SSE, supine with legs folded at knees and hands resting atop pelvis. Subadult 2cm from adult, at adult's shoulder level. S49 W62 . Op. 48/12, Burial 1, Lot 64, Str. 10L-42, S 49, W 62, 10L-62, Level 2, Feb. 24, 1994, Trench 1x2	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Cem	10L-2	48/13/170 -1	None	Ulua jug, 2 ceramic bowls, necklace of 20 jade beads, shattered ocharina skull, shattered figurine	Ulua =Imported, Ulua Valley/NW Coast of Honduras	In NE corner of Room 1 bench. Top of skull 56cm below surface of bench. Probably extended supine, head to NE. Op. 48/13, Burial 1, Lot 170, Level 3, March 6-9, 1994	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/204 -3	None	None	-	South and east of Burial 2, on cobble emplanteado at base of easternmost platform wall west of SW corner of 10L-44C. In gray midden layer. Flexed, facing east. S40 W86. Op. 48/13, Burial 3, Lot 204, Str.10L-44, S 40, W86, 0.4x0.7m, Lado: Oeste, Level 4, March 24, 1994, JP	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/211 -4	None	None	-	At NE extent of excavations of 2 platform faces W of SW corner of 10L-44C. In gray midden layer. At base of western platform wall. Tightly flexed, facing east, head to northeast. S40 W86. Op. 48/13, Burial 4, Lot 211, Structure 10L-44, Level 5, April 12, 1994, S 40, W 86	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/223 -5	None	None	-	Beneath platform floor of 10L-44A, just west of niche and north of north platform face of 10L-44A-2nd. In construction fill. Interred after 10L-44A-2nd built; may have been placed in north platform extension of 10L-44A-2nd or may have been intrusive into east terrace of 10L-44A-1st. Probably extended, supine, head north. 2 tuff facing stones found above burial in fill. Op. 48/13, Burial 5, Lot 223, Str. 10L-44A, Level 2, April 5, 1994, GA	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/248 -6	None	None	-	In trench in front of east doorway of 10L-44B. In brown soil, not red alluvial fill. Associated with cut stone and cobble platform that predates 10L-44B-3rd (before the flagstones were laid in the plaza). 45cm north of this platform and just below platform base. Head south, on right side. One leg flexed, other extending to northeast. Op. 48/13, Burial 6, Lot 248, Str. 10L-44B, Level 5, April 11-13, 1994, Trench in front of East Doorway, AW	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Cem	10L-2	48/13/280-8	None	Double-head jaguar pillow, 4 Chilanga vessels, 2 Gualpopa vessels, 2 greenstone beads.	Local	In crypt in plaza beneath NE corner of 10L-86. Crypt filled with red alluvial soil and cobbles. Supine, with knees flexed diagonally toward right side, head NW. Arms crossed over chest. Op. 48/13, Burial 8, Lot 280, Estr. 10L-86, Lower E Terrace Trench, Lado: Este, April 29, 1994, JP	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/13/283-9	None	Possibly associated with Ulua vessel. Jade pendant, sell bead necklace of 206 pieces, additional vessel at waist.	Imported, Ulua Valley/NW Coast of Honduras	Possibly associated with "Special Deposit 4" an Ulua vessel. Beneath east wall of Room 3 of 10L-44B, below plaza level. Beneath east wall of Room 3 of 10L-44B, below plaza level. Discovered during building restoration. Op. 48/13, Burial 9, Lot 283, Str. 10L-44B, S23, W78, February 1, 1995 HSS	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/14/124-1	None	1 large jute	-	1.49m below surface of terrace. May be associated with Feature 96,a cobble layer in alluvial soil. Burial is in red alluvial soil, at similar elevation as Burial 2. Flexed, head west, facing north. S6.25 W76.75. Op. 48/14, Burial 1, Lot 124, Str. 10L-237, Area 1.5x2m, April 21, 1994, JA.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/16/43-1	None	None	-	In fill of south extension of Room 2 bench, outside original south wall but inside extension wall. 20cm SW of south wall of 10L-84, outside of original structure, 170cm from SW corner of building. At base of wall in and above cobble fill. Loose café-colored soil except for area of cazcajo, plaster bits, burned clay mixed with charcoal. Not clear whether intrusive or placed at time of extension. Bundled or seated. Head to SE, legs to NW, crossed. S22 W94. Op. 48/16, Burial 1, Lot 43, Estr. 10L-84, March 9, 1994.	Context database provided by E.W. Andrews and J. Piehl.
Cem	10L-2	48/2/107-1	None	Red rimmed sherd under cranium, necklace of tiny shells, large shell	Undetermined	Shells S of cranium. Associated with Cache 48/2/1. In midden deposit below last plaza floor on primary axis of structure 10L-30. Stone ballast of plaza floor is absent above burial, suggesting that it is intrusive. Flexed, on right side, facing west, head to north. Hugging right knee to chest with left arm. On position of left femur, possibly sitting. N27 W15. Op. 48/2, Burial 1, Lot 107, N 27, W 15.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Cem	10L-2	48/6/123-1	None	1 piece chert, 1 round clay lump, 1 obsidian blade, 10+ frags of deer bone and teeth, marble, figurine . Vessels 1, 2, 3, 4, 6, 2 pounding stones.	Undetermined	Marble, figurine with torso. Associated with burial, Vessels 1, 2, 3, 6, 4, chips of bone, charcoal, chert, stone west of body, 2 pounding stones. 30cm below surface, extends S .5 M beyond N31 line., East side of 10-33. ? N32 W39. Op. 48/6, Burial 1, Lote123, N32, W 39, Level 2, Area .8 x 1.5 M, Str. 10L-33, JBB, March 20, 1991.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/185-2	None	1 ceramic earflare, 1 shell bead, 1 modified long bones, 53 obsidian blades, 2 animal teeth	-	Under midden layer associated with 10L-33. On right side, flexed, face up, left hand curled under right side of face. N34 W40. Op. 48/6, Burial 2, Lot 185, N34, W40, Level 3, Area 1 x 2.5 M, Str. 10L-33, April 1, 1991, JBB.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/192-4	None	None	-	Below wall of 10L-33 B. Legs flexed.1 adult (30-40 years.)Below level of 10L-33B-2nd north wall. Prone, head to east, legs flexed. N34 W46	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/195-5	None	Mano, bracelet of large and small shell beads, black stone beads, and jade centerpiece.	-	East of eastern edge of cobble structure. Supine, extended but with tightly flexed legs, ankles crossed. Head to south. N20 W50. Op. 48/6, Burial 5, Lot 195, Str. 10L-33, Level 5, Area 1x2m, August 31, 1991. DW.	Context database provided by E.W. Andrews and J. Piehl;. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/206-8	None	2 bone needles, 1 marble, 1 bifacial chert point, 1 jade pebble, 1 unworked shell, 1 ceramic figurine fragment, 10 human teeth, 3 animal teeth, 45 obsidian blades, 4 obsidian pieces	-	Below slumped step of fill in central stairway, contains burial 10L-33-8. situated within loose garbage and dirt, except for feet which were on a layer of red claylike soil. Body slumped 10cm from level of feet. Position ? N34 W40. Op. 48/6, Burial 8, Lot 206, Str. 10L-33, Level 5, Area 1x1m, N34, W40, April 4, 1991, JBB.	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Cem	10L-2	48/6/222-7	None	Serpentine celt, star-shaped shell ornament, 2 obsidian blades	-	Middle of 10L-33-sub bench below floor level. Under east wall of 10L-33-sub-1, just north of south bench room wall. In construction fill. Burial bounded to south and west by cut stone set into empedrada surface. Prone, head west, facing north. N37.6 W46. Op. 48/6, Burial 7, Lote 222, Nivel 3, N37.6, W46, 1.3 x 1.3 M, Str. 10L-33, April 4, 1991	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/6/228-9	None	None	-	Beneath cobble pavement near center of west side of Structure 233. Near wall. Cist burial, prepared by removing some paving stones to form an oval pit. Cobbles on top of individual. Flexed, on left side. Head to north, face east. N16 W54. Op.48/6, Burial 9, Lote 228, N16, W 54, Area .6 x 1M, Level 3, Str. 10L-33, April 13, 1991, JBB	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I. Indiv. 2	None	None	-	NE corner of east stairway, beside single-course east-west wall, on flat earthen surface 3cm below base of wall. Floor associated with earlier platform is not present here, but burial protrudes above the level of this floor. N60 W32. Op.48/6, Op. 48/8, Burial 1, Lot 249, Str. 10L-29	Context database provided by E.W. Andrews and J. Piehl;. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I. Indiv. 3	None	None	-	NE corner of east stairway, beside single-course east-west wall, on flat earthen surface 3cm below base of wall. Floor associated with earlier platform is not present here, but burial protrudes above the level of this floor.N60 W3. Op.48/6, Op. 48/8, Burial 1, Lot 249, Str. 10L-29	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2	48/8/249-I	None	None	-	NE corner of east stairway, beside single-course east-west wall, on flat earthen surface 3cm below base of wall. Floor associated with earlier platform is not present here, but burial protrudes above the level of this floor. Flexed, on left side, head north. N60 W32. Op. 48/8, Burial 1, Lot 249, Str. 10L-29	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).
Cem	10L-2, 43	48/9/107-2	None	4 Oliva tinklers, drilled jute shell, 2 obsidian blades	-	In red alluvial layer south of southeast corner of 10L-43 platform. Beneath unbroken floor and cascajo. Primary interment, missing bones below knees. On right side, head NW, facing W. Stones piled under, over, around body. S18 W58. Op. 48/9, Burial 1, Lot 92, Estr. 10L-43, S18, W64, March 12, 1993, JLJ, Test pit 1	Context database provided by E.W. Andrews and J. Piehl; Str. function, Andrews, (personal communication, 2014).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
CV	12G-6	4-1	Dental	None	-	Probably secondary; poorly preserved; under retention wall. Op. 4, Burial 1, Pit 5, Level 1, 6/3/1978	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
CV	18a-2-3	24-4	Dental	Ceramic vessel, animal tooth	Undetermined	Pile of cobble offerings, aggregate site, non-core. Op. 24, Burial 4, Unit 1, Level 2, Lot 84-1334, Date 9-4-84	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	18d-4-1	24-9	None	Polychrome vessel	Undetermined	On plaster floor; associated with OP24-Ind1; in road cut through mound. Op. 24, Burial 9b	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	25b-2-1	24-5(a?)	Dental	Lance point, Coner sherds	Undetermined	Non-core site. Op. 24, Burial 5, Unit 5, Level 1, "25B-2-1" Lot 84-1357, Date April 4, 1984.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	34a-12-2	34-2A	None	Possibly associated with obsidian blade and Chilanga bowl	Local	One of three burials recovered from this building (Webster, 1988). The vessels were associated with one of these individuals but no burial numbers in article. Associated with OP34-2-3 and OP34-2-4; poor preservation. Burial form not recovered.	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	34a-12-2	34-3	None	Arturo incised bowl	Local	Down slope from building (Webster, 1988). This is likely the extended adult with the vessel over the lower legs. Associated with OP34-3-6; poor preservation. Burial form not recovered.	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	34d-73-3	24-1	-	Coner sherds in fill	Undetermined	Disturbed; poor preservation; in midden deposit along S wall of Str.; 10 cm. below wall base. Op. 24, Burial 7, Lot 84-1496, Level 3, Pozo 1, Sitio 1-4, Feature 1, 17-Abril 1984	Webster and Gonlin, 1988; D. Reed Database; Str. Function, Webster and Gonlin (1988)
CV	3O-7A	27-3	None	Surlo cylinder, Surlo bowl, 1 or 2 Copador cylinders	Both local	Elaborate crypt, N of N wall of Str. 32-1st-B; 3 courses of dressed tuff with capstones of cut stone below layer of squared tuff blocks and pile of plaza floor paving stones. CV68 Op. 27, Burial 3, Lote 201, Pit 18B and 39, Date Feb. 13, 1984, Feature 8	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7A	27-4	Cranial	Coner sherds and animal mandible in Fill	Undetermined	In pit with 2 wall stones placed on body; pit dug below E wall of Str.; same pit as OP27-BU7 but to NW and separated by thin layer of soil (probably later). Petapilla. Op. 27, Burial 4.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
CV	3O-7B	27-10	None	None	-	Below level of stone floor between N walls of Strs., no paving stones above burial, N of NE corner of 29-1st-A. Petapilla. Op. 27, Burial 10.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-11	Cranial	Coner sherds, Candelero fragment	Undetermined	Stones piled around and above; below level of W wall of Str. directly below parts of OP27-BU5 and OP27-BU9; partly disturbed by OP27-BU9. Petapilla. Op. 27, Burial 11, Lot 380, Pozo 63, March 15, 1984	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-6	None	Coner sherds, 2 jade pendants	Undetermined	E of SE corner of Str. 29-1st-B. Petapilla. Op. 27, Burial 6, Lot 296, Pozo 11, Level 4, February 24, 1984.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	3O-7B	27-9	Cranial	2 Copador bowls	Local	Small niche in cist to hold offerings, rough cist with pile of stones, W wall of Str., pit dug into clay below wall level but top of pile of stones may have stuck above ground. Petapilla. Op. 27, Burial 9.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	4N-5	24-8	Cranial and dental	Chilanga ring-based hemispherical bowl, Coner sherds, worked bone	Local	Large cut stones thrown on body; coner sherds, worked bone; animal bones in fill; in midden below plaza terrace; arms curled around head. Op. 24, Burial 8, Site 4N-5, Pozo 2, Level 3, Date April 23, 1984	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	9P-5	4-7	None	None	-	Cap of small stones, 10 M. E of nearest structure, possibly secondary. Whittington ages at 50+. Op. 4, Burial 7, Pozo 5, Level 40-50, Lot 105	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
CV	Copan Valley ?	59-2	None	-	-	23E 21, Feature 7. Op. 59, Burial 2, Feature 7, N23, E39. Did not recover burial form.	Lote forms CRIA Library; Miller burial database; D. Reed Database shared in 2011
CV	Copan Valley ?	59/2-5	Cranial	-	-	N37E48. Level 21, Feature 150, In Fill. Did not recover burial form. Context unclear. Op. 59, Burial 5, Phase 2, Lot 536, Feature 150 in Feature 17, N37/E48, Lev. 20, 5/13/97	Lote forms CRIA Library; Miller burial database; D. Reed Database shared in 2011
CV	E of town, Rio Seses mil	3-3 (3/30-3)	Cranial	None	-	In mound on east side of town of Copan. Context unclear. Op. 3, Burial 3	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
CV	Hacien da Grande	4-55	Cranial and dental	None	-	Coner phase, flexed, stone-lined pit with 3 slabs on top, part of basal molding of building removed for introduction of burial. Op. 4, Burial 55, "4/166/20/1/CP222/18/8/79"	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
CV	Petapil la	3-1 (3/30-1)	Cranial and dental	Babilonia (Ulua) Polychrome cylinder, Madrugada Modeled-Carved cylinder, 2 Surlo Orange/Brown bowls	Surlo and Madrugada = Local. Babilonia (Ulua) = Imported, Ulua Valley, NW Coast of Honduras	Associated with OP3-Ind1, from destroyed site near main road of Petapilla region, in SE corner of house mound, intentional deformation; poor preservation; lot III/21/6. Obsidian cache same level. Near main road between two platforms. Op. 3, Burial 1.	Whittington, 1989; Burial form and informe at CRIA library; D. Reed Database
Os	10E-5A	45-2	None	None	-	Plaza side of junction of Strs. 40 and 41, under pile of stones. Pit lined with stones covered with more stones. Primary flexed, lying on front, nearly sitting, head to NW, arms crossed in front of chest, legs drawn up to chest. Op. 45, Burial 2, Lot 320, N100E50/52, Level 9/11	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	10E-6A	45-5	None	Ulua pitcher, Obsidian blade	Imported, Ulua Valley/NW Coast of Honduras	Plaza side juncture of Str. 40 and Str. 41, N100 E50/52; 1; Grave is two large pieces of white stone covering body but not entire length of pit. cranium 98.473, pelvis 98.223; separated from OP45-2, OP45-3, and OP45-4 by thin line of stones that lined pit of OP45-4. Primary, flexed on right side, upside down from normal position, arms loosely drawn to chest, legs flexed to chest. OP. 45, Burial 5, Lot 376, Level 10/12,	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2.	46-10	None	Small stone ball and bone needle.	-	Behind Str. 20 in round midden. Nor burial pit, no constructions. 10cm E and below base of wall 70 cm N of Burial 4. N34E75/N36E76; cranium 96.205, pelvis 96.117. Primary, extended, oriented to SE, prone. Op. 46, Burial 10, Lot 297, Level l4/7.	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2.	46-11	None	None	-	N of Str. 20, stones over burial and floor (Feature 54) with intrusive pit. Poorly preserved, legs flexed. N of Str.; N45E72; 95.611. Primary, flexed on right side, arms across torso, legs flexed and drawn to chest. Op. 46, Burial 11, Lot 331, N45E72, Feature 27, 46.	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2A	46-1	None	Ulua jar, same decorations as 45-5	Ulua = imported, Ulua Valley/NW Coast of Honduras	Shaft tomb below plaza floor, in front center of Str. 7, Pile of stones covering burial. Pit visible - 1.3 M in diameter with cut and uncut stones into otherwise sterile soil. Ulua jar below right humerus. N39E52; cranium 95.983, pelvis 95.771. Primary flexed, head to NW, on back arms crossed over chest, legs flexed onto torso. Op. 46, Burial 1, Lot 89.	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Os	11E-2A	46-8A	Cranial	Surlo "red-on-white" (likely, Topsi Hematite Red or Rifis Polychrome type) flaring wall bowl	Local	In passageway between Strs. 8 and 18 below base of Str. 18 wall. On top of pile of stones over bones found in Level 5. Associated with OP45-8B which was a secondary internment that disturbed the remains of individual 8A; N23/24E51/52/53; cranium 96.887, bottom 96.609. Primary, flexed, legs pulled to chest. Op. 46, Burial 7, Level 6-8/10-11, Lot 210.	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Os	11E-2A	46-8B	Cranial	Surlo "red-on-white" (likely, Topsi Hematite Red or Rifis Polychrome type) flaring wall bowl	Local	In passageway between Strs. 8 and 18 below base of Str. 18 wall. On top of pile of stones over bones found in Level 5. Associated with OP45-8A which was a primary internment. 8A was disturbed to place this burial. Disturbed. Op. 46, Burial 8B, Lot 308, Level 5-7. N23E53, N24E51, N23E52.	Whittington, 1989; Whittington NSF Report, 1991; Burial form CRIA Library; D. Reed Burial Database shared in 2011; Str. Function, Whittington Report (1991).
Ras/Ch	6N-4	64-R26	None	None	-	Rastrajon Group. N10,E14, Level 4, Frente 1, Estr. 4.	Excavation notes from J. Ramos, shared in 2011
Ras/Ch	6N-4	64-R36	None	None	-	Rastrajon Group. S50, W2, Level 2, Frente 2, Estr. 12	Excavation notes from J. Ramos, shared in 2011
Ras/Ch	6N-4	64-R41	None	None	-	Rastrajon Group. N4, E2, Level 1, Frente 1, Estr. 4, In rough stone lined "box".	Excavation notes from J. Ramos, shared in 2011
Ras/Ch	7M-4	4-45	Cranial and dental	-	-	Head moved out of position by rodent disturbance, lot IV/127/67, unit 8; Op. 4, Burial 45, Date 3/4/1985.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49A	Dental	Madrugada Modeled-Carved cylinder, 2 jade pectorals	Local	Rough enclosure of stones around and above, in plaza near stone feature, associated with OP4-49B, OP4-49C, OP4-49D; lot IV/127/182, unit 24. Op. 4, Burial 49, Lot 127/182, Pozo 24/24A, 26 July, 1978.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49B	Dental	Associated with 4-49A, Madrugada Modeled-Carved cylinder.	Local	Rough enclosure of stones around and above, in plaza near stone feature, associated with OP4-49A, OP4-49C, OP4-49D; lot IV/127/182, unit 24. Op. 4, Burial 49, Lot 127/182, Pozo 24/24A, 26 July, 1978.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-8	4-49C	None	Associated with 4-49A, Madrugada Modeled-Carved cylinder.	Local	Rough enclosure of stones around and above, in plaza near stone feature, associated with OP4-49A, OP4-49B, OP4-49D; lot IV/127/182, unit 24. Op. 4, Burial 49, Lot 127/182, Pozo 24/24A, 26 July, 1978.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Ras/Ch	7M-8	4-49D	None	Associated with 4-49A, Madrugada Modeled-Carved cylinder.	Local	Rough enclosure of stones around and above, in plaza near stone feature, associated with OP4-49A, OP4-49B, OP4-49C; lot IV/127/182, unit 24. Op. 4, Burial 49, Lot 127/182, Pozo 24/24A, 26 July, 1978.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7M-m38	4-47	Dental	Chilanga vessel	Local	Chorro area, away from structures but adjacent to rough stone feature; 20m W of terrace "7M-md 38"; area del Cheno; lot IV/127/144. Op. 4, Burial 47, Lote 127/141, Sepulturas.	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Ras/Ch	7N-20	4-43	Cranial	Coner sherds in fill	Undetermined	Stones on top of pit fill, along side of Str.; lot 1V/127/55, unit 6. Op. 4, Burial 43, Lot 136	Whittington, 1989; Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database
Sal	8L-10	42-1A	Cranial	Flat rectangular jade pendant with each skull	-	Small crypt below and to N of round tuff altar discolored by fire, long blocks of tuff and cap of smaller rough stone slabs, associated with OP42-1B, jade pendant with each, marked by altar. Op. 42, Burial 1a	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-1B	None	Flat rectangular jade pendant with each skull	-	Small crypt below and to N of round tuff altar discolored by fire, long blocks of tuff and cap of smaller rough stone slabs, associated with OP42-1A, jade pendant with each, marked by altar. Op. 42, Burial 1b	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-2	Cranial	Casaca tu[e. Zico group jar sherds, obsidian blade	Local	Shallow deposit beneath both the plaza surface and edge of lowest platform course covered with lajas to the north (1 crushed skull), Op. 42, Burial 2	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-3A	None	Jade bead in mouth, incised ceramic bead	Undetermined	Poor preservation, E side of Str. near juncture with Str. 8L-72, lower portion of body lay beneath bulk of Str. 78, only teeth and some fragments of bone removed for analysis. Op. 42, Burial 3a	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sal	8L-10	42-4	Dental	Ceramic jaguar head		Near OP42-3, Partially beneath lowest step of Str. 72. Op. 42, Burial 4	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-5A	Cranial and dental	4 Surlo Orange/Brown vessels, Pabelllón Modeled-Carved pear shape imported vessel, broken shell ring, two spindle whorls	Surlo = Local. Pabellón = Imported, Seibal.	Elaborate tuff block tomb, associated with OP42-5B and OP42-5C, below and to W of square altar, slightly S of centerline of Str., capped with long blocks of tuff and lajas above them, associated with cache OP42-2 (box with spondylus, shell disc, stingray spine). This skeleton is in the north of tomb. Pear shaped vessel is attributed to Seibal by Ashmore in report (see Sabloff, 1975:Fig. 384, 386). Op. 42, Burial 5a	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-5B	None	4 Surlo Orange/Brown vessels, Pabelllón Modeled-Carved pear shape imported vessel, broken shell ring, two spindle whorls	Surlo = Local. Pabellón = Imported, Seibal.	Elaborate tuff block tomb, associated with OP42-5B and OP42-5C, below and to W of square altar, slightly S of centerline of Str., capped with long blocks of tuff and lajas above them, associated with cache OP42-2 (box with spondylus, shell disc, stingray spine). This skeleton is in the north of tomb. Pear shaped vessel is attributed to Seibal by Ashmore in report (see Sabloff, 1975:Fig. 384, 386). Op. 42, Burial 5b	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-10	42-5C	Dental	4 Surlo Orange/Brown vessels, Pabelllón Modeled-Carved pear shape imported vessel, broken shell ring, two spindle whorls	Surlo = Local. Pabellón = Imported, Seibal.	Elaborate tuff block tomb, associated with OP42-5B and OP42-5C, below and to W of square altar, slightly S of centerline of Str., capped with long blocks of tuff and lajas above them, associated with cache OP42-2 (box with spondylus, shell disc, stingray spine). This skeleton is in the north of tomb. Pear shaped vessel is attributed to Seibal by Ashmore in report (see Sabloff, 1975:Fig. 384, 386). Op. 42, Burial 5c	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	8L-12	42-6	None	7 Surlo vessels (1 cont. 1 Spondylous & Strombus shell). Spondy. cont. 2 stingray spines. 2 Sepultura-type with cacao appliqués (Ashore says ritual-related). Jade = line incised pectoral, 2 pendants carved as faces, 2 ear flares. Deer antlers.	Shells = Imported; Surlo and Sepultura = Local	Large vaulted tomb, marked by large uncarved altar, completely below Str. with E wall under lowest E step of Substr. on central axis, 5 course cut stone walls with 3 courses of beveled vault stones, 2.5x1.12m., niche in center of each wall, plastered floor. Op. 42, Burial 6, 42/31/28	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sal	8L-12	42-7A	None	None		Below altar, possible offering for cache, set among tuff blocks in redeposited midden matrix, associated with OP42-7B. Ashmore thinks may be offering with cached burial as secondary deposit. Op. 42, Structure 48/9, Burial 7a.	Ashmore, 1991; Excavation notes courtesy of Ashmore and Carrelli; Miller Inventory Database; D. Reed Burial Database shared in 2011; Group function, Ashmore (1991).
Sal	CRIA	11-1	Dental	Surlo sherd in fill and worked bone.	Local	Site destroyed, south of Centro de Investigaciones; surlo sherd and worked bone in fill; in road cut; well preserved. Op. 11, Burial 1, May 9, 1984.	Whittington, 1989; Miller Inventory Database; D. Reed Database shared in 2011
Sep	8N-11A	50-11	None	None	-	Lot 501; feature #25; N28E18; directly below burial 50-9, but not related	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-12a	None	None	-	Possible decapitation; disarticulated in bundle with mandible and temporal bone together; lot 550; N0E12; in front of staircase central niche	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-14	None	None	-	Disarticulated bundle burial in front of staircase center niche of Str. 66S; lot 563; N0E10	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-15	Cranial	Copador bowl with animal figures, 3 fragments of green stone, 6 olivella beads, 3 pieces of cinnabar/hematite, 1 fragment of highly polished marble	Local	lot 576; N0E10; in plaza in front W center of staircase niche of Str. 66S; good preservation Cist with Capstones.	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	8N-11A	50-17	Cranial	None	-	6 capstones over partial rectangular chamber (only 1, E wall made of stone); lot 602; at base of stairs behind corridor between Str. 66S and Str. 67	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-20	None	None	-	Poorly preserved under cluster of stones in plaza in W front of Str. 66C	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-22	Cranial	None	-	Below pile of stones at base of W front stairs of Str. 66N; lot 666; N22E12; with small bottle at base of skull	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-23	None	Small Surlo bottle.	Local	3 rectangular cut capstones on top of pile of stones; lot 673; N20E12. Small bottle at base of skull.	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A	50-24	None	-	-	Lot 677; N24E12; small crypt made of large flat lajas set on end; at base of W front staircase of Str. 66N	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11A (CV68)	14-1	None	Two Surlo vessels, 1 chert biface, 2 jade discs, 1 rectangular jade pendant	Local	North of old runway near old Visitor's center. Tomb (1.94x.74x.70) with E and W niches (both .37x.26x.24); 5 courses of cut stone with upper course beveled inward and large slab capstones; fragments of plastered floor; mostly under Str. Single burial. Arms and legs flexed. Op. 14, Burial 1, Lot 1469	Whittington, 1989; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	8N-11A (CV68)	14-2	Cranial and dental	None	-	Pit was partially dug under the front of the Str. 50, general midden context. CV 68 CV 68, Op. 14, Burial 2, Stratified Pit #2, Pits: N9/E1, N10/E1, N11/E1	Whittington, 1989; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-2A	Cranial	Chilanga cylindrical vessel, burned inside with red-orange rectilinear designs on buff-color.	Local	Below small circular altar in plaza front of Str. 51S; N2E24; top-591.663, bot-591.5.02; level 5; feature #11; lot 299; vase in level above; facing W	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-4b	None	None	-	E of E wall of Str. 50; S6E30/S8E30; top 592.45, bot-592.078; level 5; feature #16; lot 388; extremely fragmentary, midden context	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-6	None	None	-	S of S wall of Str. 50; S8E22/S8E24; top-592.425, bot-592.128; level 3; feature #18; lot 414; facing S	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	8N-11B	50-7	Cranial and dental	None	-	S of S wall of Str. 50; S8E22; top-591.75, bot-591.53; level 6; feature #14; lot 432; facing N. Cranial deformation and inlaid incisors. In plaza fill.	Monograph of burial information shared by Webster in 2011; Webster et al., 1998; Webster et al., 2000; D. Reed Burial Database shared in 2011; Str. Function, Webster et al. (1998)
Sep	9M-22A	10-10	Cranial	None	-	Along W side wall base of Str. 193S, 193-A; in fill below midden; 5 large cap stones covering cobble lined crypt (1.30x.5); S5.6W2.5; feet and legs bowed back, possibly tied; partial flex, W of W wall of 9M-193A. Op. 10, Burial 9, Lot 1313	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	9M-22A	10-13	Cranial	None	-	Primary burial in stone lined crypt under front stairs of Str. 199; good preservation; S6E30; tightly flexed with knees pulled to chest, crypt was capped by stucco. Op. 10, Burial 13, Lot 1420	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-14	Cranial and dental	None	-	Rear of Str. 193S in plaza fill below midden; good preservation; (1.38x0.5) S10W6; loosely flexed on right side, arms across chest, burial placed after platform ceased to function., in a stone lined crypt. Op. 10, Burial 14, Lot 1426	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-2	Cranial and dental	None	-	No burial pit, skeleton flexed on left side, knees drawn to chest. in midden at base of rear E Substr. wall of Str. 245 (B); N18E44; 586.25. Op. 10, Burial 2, Lot 1165, March 30, 1981.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-4	None	1 candelero	Undetermined	Was likely extended in stone line crypt, badly preserved, poor preservation, in trench 2 of Str. 9M-195B (West); 585.7. Op. 10, Burial 4, Lot 1215, March 22, 1981.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-5	Cranial and dental	1 jade bead	-	In E front stairs of Substr. of Str. 193N; chamber (1x.66x.6) of rough-cut stones and cobbles; N4E2; 575.43, body partially flexed, arms extended over body, left leg flexed over right leg. Op. 10, Burial 5, Lot 1215, March 23, 1981.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-6	None	None	-	Skull only; from same level as OP10-4 in level of earth matrix on top of which the Substr. of Str. 195W was constructed; 585.5. Op. 10, Burial 6, Lot 1219, N 585.74, E 585.50, Level 4, Feature 22	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22A	10-7	None	Large metate fragment	-	Below E front stairs of Str. 193N (B-1); sexing questionable (F in field but subadult); associated with OP10-8 which is to the right of the skull; (.75x.47); N4E2; 585.34. Large metate fragment was over the chest and skull. Op. 10, Burial 7, Lot 1286, Feature 23, March 26 1981, N6, E2	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	9M-22A	10-9	None	2 unspecified local vessels, 1 obsidian blade	Local	Vessel is of local origin as determined by Diamanti (1991). Along S side wall base of Str. 196; pit lined by cut stones in NW, S, SE; (1.05x.87); N8E40; 586.71; arms crossed over stomach	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-1	Cranial and dental	None	-	2.2 M. NE of N projection of Str. 190 under plaster floor; S12W26; associated with burial OP19-BU1B; disturbed. CV 30, Op. 19, Burial 1a, Lot 1	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-13	Dental	Ulua jar	Imported, Ulua Valley/NW Coast of Honduras	Behind W facade; below level of walls; 2 slabs on W and S edge and capstones; inlay material unknown. Op. 19, Burial 13, Lot 50	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-14	Cranial	Chilanga jar	Local	In fill of floor inside door of room with bench; fragmentary; discovered during restoration. Op. 19, Burial 14, Lot 51.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-16	-	Ulua Globular bowl with ring base	Imported, Ulua Valley/NW Coast of Honduras	Under bench in room; cobble walls and cobble floors with capstones; near OP19-BU17. Op. 9, Burial 16, Lot 456.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-4	None	-	-	Burial form not recovered.	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	19-8	None	Copador bowl, Surlo Plain bowl, Surlo Plain cylinder, 2 perforated jade beads	Local	In Str. 191-W; 50-60 cm. deep; 2 dressed stone walls and dressed capstones. CV 36, Op. 19, Burial 8	Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

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Sep	9M-22B	9-1	None	4 jade beads	-	S4W8; 585.6; beads placed in mouth (4), intrusive into Coner midden. Op. 9, Burial 1, Lot 105	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-10	Cranial	1 vessel	Local	Vessel is of local origin as determined by Diamanti (1991). Below plaza level above sterile soil; S6W22; 585.85; intentional deformation. Op. 9, Burial 11, Lot 382.	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-11	Cranial	1 imported vessel, 1 needle	Imported	Vessel is of nonlocal origin as determined by Diamanti (1991). Crypt of 2 walls covered by stone (feature 15); E wall of Str. 191-N; S6W10; 586.1; separated from OP9-BU9 by crude cobble wall	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-16	None	None	-	just below wall base of SE corner of original Str. 191-W; below feature 18 (similar to feature 15); 10 cm. below OP9-BU14; S10W16	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-3	Dental	2 fragmentary "annular ringed bowls" (likely, Surlo or Chilanga type of Cream Paste traidtion)	Local	Vessels are of local origin as determined by Diamanti (1991). N0W10; 5 cm. below E wall of Str. in Coner midden; possibly 3 vessels, facing right, arms extended at sides. Found in cleaning midden from East wall of Mound 191-N. Right canine has coral inlay. Op. 9, Burial 3, Lot 210	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-4	None	None	-	S of platform between Str. 191-W and 9M-22A plaza; S of Str. 191-N kitchen; in shallow midden; 586.1; disturbed; poor preservation. Lying on left side, right arm at 90 degree angle between upper and lower body. Op. 9, Burial 4, Lot 352	Whittington, 1989; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Funciton, Diamanti (1991)
Sep	9M-22B	9-5	None	None	-	Secondary burial?, below plaza floor; N wall of Str. 191-W; above sterile soil, secondary burial, intrusive from above, deposited after Str. 83 was constructed. Some burial tags say OP8-5, Diamanti (1991) and Reed Database list this burial as OP9-5 and this is most likely OP9-5 Op. 9, Burial 5, Lot 345.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	9M-22B	9-6	Cranial	None	-	W wall of Str. 191-N, N of steps below wall base and below plaza floor on sterile soil, N0W16, 585.5, associated with OP9-BU7. Lying on L side head up, torso on left side, arms flexed, legs fully flexed. Op. 9, Burial 6, Lot 339.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	9-8	None	None	-	Close to OP9-BU3; in midden next to E wall of Str. 191-N; N0W10.Lying on left side, head facing up and to right, torso is on left side and arms are flexed toward the head. Op. 9, Burial 8, Lot 336	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-22B	9-9	Dental	None	-	Crypt of 2 walls covered by stone (feature 15); E wall of Str. 191-N; S4W10; 586.3; separated from OP9-BU11 by crude cobble wall; 2 parallel walls ~90cm. apart covered by stone. Lying on back, head up, arms and legs tightly flexed. Op. 9, Burial 9, Lot 333	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-10	None	Sovedeso Negative-Painted type cylindrical tripod jar, Chilanga vessel, Caterpillar and Cementerio sherds in fill	Sovedeso, Chilanga, and Caterpillar = Local. Cementerio = style is consistent with Honduras but manufature could be local or non-local.	Notes on source of Cementerio sherds from Landau, 2014. NW corner, S18W154, 586.7, caterpillar and cementerio sherds in fill. Op. 18, Burial 10.	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-11	None	Local Osicala variety of Chilanga vessel, Besal Incised restricted-neck Surlo bowl, 3 deer bones	Local	Vessels are local origin as determined by Diamanti (1991). S side behind first wall line in midden; S32W156; 584.8; near OP18-BU12 in same midden. Op. 18, Burial 11, Lote 738, Feature 122	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-13	Cranial	None	-	In terrace partly under room wall on N (front) side of Str. 212. Op. 18, Burial 13, Lot 740.	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	9M-24	18-14	None	None	-	Just below W wall of superstructure of Str. 247. CV 34, Op. 18, Burial 14, Lot 748, Feature 130, Date 23-Nov-83	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-3	None	Surlo monochrome (likely, Blanco variety of Surlo Orange/Brown type or Topsi Hematite Red type)	Local	partly disturbed, along and partly into N wall, S28W158, 586.1, 60 cm. E of OP18-BU4; vessel not mentioned or depicted on form or drawings. CV 34, Op. 18, Burial 3, Lot 1670	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-8	None	Izalco sherd	Imported. The earliest Chilanga group vessels were made in Copan but were derived from the Izalco-Usulutan type. True Izalco vessels are imported and found at Chalchuapa, Quelepa, Nicaragua, and S Mexico.	Notes on source of vessel are from Landau, 2014. True Izalco vessels are imported and found at Chalchuapa, Quelepa, Nicaragua, and S Mexico. S wall in midden, S34W158, 587.9, disturbed; poorly preserved	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9M-24	18-9	Dental	Local Copador vessel	Local	Vessel is of local origin as determined by Diamanti (1991). SE corner near S wall, S30W148, 586.7; skull & long bones only	Diamanti, 1991; Burial form and informe at CRIA library; Murillo, 1983; Whittington, 1989; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep	9N-8	Sep. 13	None	-	-	Rescate 1970s? From river cut? Sepulturas Tr3, Sec3, N3, M15, Ent. 13	Miller Inventory Database from burial tags

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep	9N-8	Sep. 14	None	-	-	Rescate 1970s? From river cut? Sepulturas 3/30, Mon 2, Tomb 2, Ent 14	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 15	None	-	-	Rescate 1970s? From river cut? Sepulturas, T1, M2-3, Ent 15	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 8	None	-	-	Rescate 1970s? From river cut? Sepulturas, 3/30, M4, Ent 8	Miller Inventory Database from burial tags
Sep	9N-8	Sep. 16	None	-	-	Rescate 1970s? From river cut? Sepulturas , M9, N2, Ent 16	Miller Inventory Database from burial tags
Sep9N8	9N-8A	8-1	Cranial	None noted.	-	Skeleton badly damaged; mixed with collapsed vault stones in center room 1 of Str. 82-1st. Room collapsed prior to interment. Op. 8, Burial 1, Lot 360.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-10	None	-	-	No burial form. Op. 8, Burial 10, Lot 706, Date 3/12/85, CV 36	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-2	Cranial	1 jade	-	S20E2; covered by rough stones and two rectangular cut tuff blocks. Op. 8, Burial 2, Lot 481, Date March 19, 1980	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-34	None	1 vessel, animal bones	Local	Local vessel according to Diamanti (1991). S44W36; below basal molding of W wall of Str. 9N-82, cobble grave. Op. 8, Burial 34	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-37	None	1 vessel	Local	Local vessel according to Diamanti (1991). Pit burial in early Patio in front of Str. 83. Op. 8, Burial 37	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-4	Cranial	None	-	Crypt (.75x.25) of uncut stone capped by unworked flat lajas, in substructure 1 of Str. 82. Op. 8, Burial 4, Lot 500, 3/12/1985. Note: Burial was misnumbered as OP8-7 in the past but this is OP8-4.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8A	8-6	None	2 vessels, 1 jade pectoral, 1 bone, 1 candelero	Local	Vessels are of local origin as determined by Diamanti (1991). S32.77/W12; stratigraphically assoc. with 9N-82C-second; pectoral is similar to that worn by the sculptural figure over the central doorway of 9N-82C. Op. 8, Burial 6.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8A	8-7	Cranial	2 whistles, 1 jade, 4 bone	Whistle may be imported from Ulua.	Whistles are attributed to Ulua/Lenca regions (Gerstle, 1988). Chamber (.70x.50) made of irregular courses of cut tuff stone and flat lajas with three rectangular cut tuff capstones; associated with CP151, OP8-5. Op. 8, Burial 7.	Webster et al, 1986; Diamanti, 1991; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function Diamanti (1991)
Sep9N8	9N-8B	16-1	None	1 local Copador variety of Maya Polychrome tradition plate, 1 local Surlo simple hemispherical plate	Local	Vessels local by Diamanti (1991). In fill of Str. 68-2nd substructure (Feature 5, terrace); levels above and below are midden deposits, but were probably part of middens used for fill; N37W19; 587.21. No formal burial. Primary, flexed on left size. Op. 16, Burial 1, Easting 102, Feature 27, Group 9N-9	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-10	None	None	-	In patio W front of center of Str. 74. Bones covered by P.P. I. (1.8x.21); N26W8; 587.39. Primary, extended on back. Op. 16, Burial 10.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-11	Cranial	None	-	In midden S of Str. 74 and E of Str. 75; close to S boundary wall of area; in the basurero to the S of 74. No formal burial in contrast to Burial 7 from this same area. N10W6; 588.05. CV 36, Op. 16, Burial 16-11, Lote 809, Feature 84, N 10, W 6, Patio B	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-12	None	None	-	S of Str. 74 and E of Str. 75; disturbed; missing lower torso and limbs; N12W6; 587.88.No formal burial. N12W6, in the basurero to the S of Str. 74. near the original S wall. Same elevation as burial 11 CV 36, Op. 16, Burial 16-12, Lot 823, N 12, W 5, Feature 86	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8B	16-13A	None	2 vessels, small olla and Copador cylinder.	Local	Vessels local by Diamanti (1991). Directly below OP16-5; assoc. with OP16-13B; in fill to north of N retaining wall of Str. 75-2nd and 40 cm below fill of Str. 75-1st Substr.; N14W10; 587.43. Primary, flexed. Op. 16, Burial 13/a	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-15	Dental	None	-	S front of Str. 67 in plaza corner formed by Substr. wall and W stair side, where stairs meet basamento; large limestone slab marking burial position in cobble plaza paving; similar in style and placement to OP16-23; (.85x.68x.35); N34W12; 588.5. CV 36, Op. 16, Burial 16-15, Lote 851	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-16	Cranial	1 labret, 1 deer bone	-	Labret found near mouth; from trench over W wall in front of Str. 74, 10 cm W of wall; N21W5; 587.46. Flexed on right side. Op. 16, Burial 16.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-18	Cranial	None	-	No formal burial. In trench along front W wall of Str. 74 in plaza fill; N20W6; 587.34. In the same context as Op. 16-16, and Op. 16-17. Primary, flexed, arms absent, legs very flexed, on back. Op. 16, Burial 18.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-2	None	None	-	Not a formal burial, mixed with N rear Superstr. wall collapse of Str. 68; N41W22; 587.26. Op. 16, Burial 3.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-21	None	None	-	Primary, incomplete and disturbed postmortem; along front E Substr. wall of Str. 73 in plaza fill; N30W22; 587.71. PCV 36, Op. 16, Burial 16-21, Lot 931, Patio B.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8B	16-22	None	None	-	Fragmentary; in plaza fill in the corner formed by front E Substr. staircase of Str. 73 and front S Substr. staircase of Str. 68; N36W22; 587.18. O. 22, Burial 16-22.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-23	Cranial and dental	None	-	Excellent preservation; immediately in front and center of first step of Str. 67 Substr.; well-defined oval pit formed partially by use of earlier phase construction that dates to PPII and PPIII so contemporary with construction of 67-1st; similar in style and placement to OP16-15; (1.4x.9x.5); N32W8; 586.63. Primary flexed, on back with legs flexed and arms crossed over the chest. CV 36, Op. 16, Burial 23, Date 6-14-88	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-24	Dental	None	-	In fill behind E rear wall of Str. 73 room 4 and N rear wall of Str. 68; good preservation; no pit identified; (.75x.33); N44W20. Op. 16, Burial 24, Lot 949, Feature 100, Patio B, Date 16-Jun-88	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-25	None	1 bone, 1 awl	-	In fill of S terrace of Str. 68-2nd a few cm SW and below cache vessel at foot of Str. 68-3rd central doorway; placed on floor of rough-cut tuff blocks with cut tuff blocks lin3ng pit and covering cobbles; (1.1x.8x.35); N37W21; 587.46i. Op. 16, Burial 25, Lot 95	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-26	None	None	-	Fragmentary; (.59x.2); .68 M. N of NW platform of Str. 75 in plaza fill; covered with cobbles; 592.01. Op. 16, Burial 26, Lot 958, Level 590.85, Date 15-June-84	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-27	Cranial and dental	None	-	0.2 M. E of NE corner of Str. 75; .65 deep in plaza fill; 580.95. Op. 16, Burial 27, Lot 959, Level 590.85, Date 15-Jun-84	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8B	16-29A	None	None	-	Very fragmentary; placed at foot of front W stairs of Str. 74; assoc. with OP16-29B?; 591.988. Op. 16, Burial 29a, Lot 961, Level 591.988	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-31	None	None	-	Op. 16, Burial 31. No field forms.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8B	16-5	None	None	-	Located above and to the W of OP16-13A that had 2 vessels. Str. 75, 40 cm under the architectural feature A-3, retaining wall of 75-2nd. The basamento of Str. 75-1st covers the surface. N14W10; 587.45. Partial skeleton on right side, flexed position. Op. 16, Burial 16-5, Lot 720.	Diamanti, 1991; Burial form and informe at CRIA library; Hendon et al. PACII, Vol. 2, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-10 (Old 26-12)	Cranial and dental	Metate fragment	-	Likely cobble paving & cover of crudely cut tuff slab covered with thick layer of cobbles & metate fragment over chest; at same level and adjoining stucco ball pile (42 up to .32 circ./.11 diam.); Formerly OP26-12; .90 below base of W ret. wall; (.90x.35). Op. 26, Burial 10, Lot 230, Date 2/11/1984. (New Number: Op. 13-10)	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-2	Cranial and dental	None	-	Assoc. with CP163/13-3; N38W52. Behind Str. 70, Feature 11, the floor was cut to place burials. Plate placed over cranium of 13-3. Primary, shared burial. Very flexed on left side with arms crossed over chest. OP. 13, Burial 2, Lot 390	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-3	Cranial	1 Surlo plate	Local	Vessel local by Diamanti (1991). Assoc. with CP162/13-2; N38W52. Behind Str. 70, Feature 11, the floor was cut to place burials. Plate placed over cranium of 13-3. Primary, shared burial. Partial cranium, femur fragments, and long bones. South of Burial 2. Fragmentary, possible reburial or secondary to 13-2, N38W5. Op. 3, Burial 3, Lot 406	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8C	13-4A	Dental	None, but looted tomb	-	Disturbed burial - probably by the introduction of CP161/13-1 above; 8 rough cut capstones covering 7 irregular courses of cut stone walls (1.5x.8x.92) and slab floor; under basamento of Str. 71, after construction of 71-3rd, N27W47, Feature 13. Tomb was also looted. Op. 13, Burial 4A, Lot 389.	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-4B	None	None, but looted tomb	-	Partial disturbed burial associated with Op. 13-4a. 8 rough cut capstones covering 7 irregular courses of cut stone walls (1.5x.8x.92) and slab floor; under basamento of Str. 71, after construction of 71-3rd, N27W47, Feature 13. Tomb was also looted. Op. 13, Burial 4B, Lot 389.	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-5	Dental	4 local vessels; Surlo plate, 1 Surlo vessel, 2 cylindrical vases. 2 shell disks, 1 jade.	Local	Vessels local by Diamanti (1991). 2nd tomb of Patio C, in front of Str. 69, 30 cm S of the basamento. 8 rough cut rect. tuff capstones; 6 courses of cut tuff blocks; vaulted upper 2 courses of E, W walls; four central niches; poor preservation due to water damage in tomb. Op. 8, Burial 5 (1), Lot 495	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-7 (Old 19-3)	Cranial and dental	1 vessel	Local	Vessel local according to Diamanti (1991). Pit burial in Patio of Str. 69. Burial was formerly OP19-3. CV 36, Op. 19, Burial 3, Lot 13, Patio C.	Diamanti, 1991; Burial form and informe at CRIA library; Miller Inventory Database; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8C	13-8 (old 26-9)	None	None	-	Skull and mandible frags. only; in fill behind Substr. retaining wall of Str. 73N; found during restoration; formerly OP26-9. New number is 13-8 but is on some tags as 22-8. PAC 1, Op. 26, Burial 9. (New Number: Op. 13, Burial 8)	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-12A	None	Jade beads and figurine fragments	Imported, Ulua Valley/NW Coast of Honduras	Figurines attributed to Ulua (Gerstle, 1988). Below OP17-12B; crude cobble tomb (Feature 97) with poorly preserved stucco floor over cobbles in corridor between Strs. 61 and 111, (1.4x.65x.80); N58E21.8; 586.52. Primary flexed, arms flexed. CV 36, Op. 17, Burial 12 a, Lot 653, Bolsa 4, Date 2-2-83	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-12B	Cranial and dental	Jade beads and figurine fragments in fill	Imported, Ulua Valley/NW Coast of Honduras	Figurines attributed to Ulua (Gerstle, 1988). Inside rustic pebble tomb in the corridor between Strs. 61 and 111, tomb is feature 97, is crudely made, and has poorly preserved stucco floor. OP 17-12B is the primary individual, Located above burial OP17-12A; (1.4x.65x.80); N58E21.85; 586.52. Primary, flexed, arms across chest, knees to chest. CV 36, Op. 17, Burial 12B, Lot 642, Date May 4, 1983.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-16A	None	None	-	In midden corridor between rear Substr. walls of Str. 61,platform C and Str. 113, plaza I; good preservation, but disturbed; Associated with 17-16B. (.35x.25); N61.5E32.9. Secondary, position undetermined. CV 36, Op. 17, Burial 16 a, Lot 804, N 60, E 32	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-18	Cranial	None	-	Disturbed, seated burial with a head that rolled over torso; under S edge front staircase Str. 111, feature 98, , possibly assoc. with earlier Str. 111 front; classed as cist by Diamanti 1991; (.3x.3x.3); N54.67E21.98; 585.64. CV 36, Op. 17, Burial 17-18, Lote 1233, Bolsa 16	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-19A	Cranial and Dental	1 skull mask	-	Under front central S side stairs of Str. 111 Substr.; OP17-19B is skull mask on chest, OP17-19C is calvarium on feet -- may be part of disturbed OP17-25 that is below this burial. Good preservation (.8x.4); N53.77E20.05; 585.75. Primary, tightly flexed all parts, on left side. CV 36, Op. 17, Burial 19a, Lot 887.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-21A	Dental	8 jades. 5 local vessels; 2 simple Surlo cylinders, 1 Pseudo-glyph Copador, 2 Surlo. sencillo cajete. 1 imported Ulua polychrome pot (olla).	Surlo and Copador = Local. Ulua = Imported, Ulua Valley/NW Coast of Honduras	Vessels local/imported as determined by Diamanti (1991). This is Tomb 3, a shaft "cañon" in the middle of the Substr. of Str. 63. 21C is the oldest of the three burials in this tomb, 21A follows, and 21B is the most recent. Reused tomb with 10-16 rough faced courses, with 4 capstones, and all were placed on a large slab pedestal. 21A was associated with jades and jadeite (Jades A-H, and J). 21B was the same level as 21B after removing the torso of 21A. 6 vessels (A-F) and two balls of burned cal were offerings for 21A and 21B. 5 vessels were aligned on the S wall of the tomb and the NE corner served as offerings for burial 21A. N44.5E28.5; base ~586, top ~588. Flexed, disturbed. CV 36, Op. 17, Burial 21 a, Lot 991, Tumba 3, Rasgo 10	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-21B	Dental	6 vessels: 2 simple Surlo cylinders, 1 Pseudo-glyph Copador, 2 Surlo, 1 imported Ulua polychrome pot (olla), 1 simple cajete, 2 shells.	Surlo and Copador = Local. Ulua = Imported, Ulua Valley/NW Coast of Honduras	Vessels local/imported as determined by Diamanti (1991). This is Tomb 3, a shaft "cañon" in the middle of the Substr. of Str. 63. 21C is the oldest of the three burials in this tomb, 21A follows, and 21B is the most recent. Reused tomb with 10-16 rough faced courses, with 4 capstones, and all were placed on a large slab pedestal. 21A was associated with jades and jadeite (Jades A-H, and J). 21B was the same level as 21B after removing the torso of 21A. 6 vessels (A-F) and two balls of burned cal were offerings for 21A and 21B. 5 vessels were aligned on the S wall of the tomb and the NE corner served as offerings for burial 21AN44.5E28.5; base ~586, top ~588. CV 36, Op. 17, Burial 21 b, Lot 924, Rasgo 10, Tumba 3, SW 63, Level 14	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-25	Cranial	None	-	Under front central S side stairs of Str. 111 Substr.; missing skull, but may be with OP17-19C that is located above this burial and was disturbed by OP17-19A, OP17-19B, OP17-19C; (.9x.2); N53.77E20.05; 585.47. Primary, flexed arms and legs, on left side. CV 36, Op. 17, Burial 25, Lote 1170	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-3	None	None	-	In cist burial in fill of crevice formed by the W wall of Str 63A, N of platform N and Wall O. Resting on pebbles over empedrado floor. Under laja and over fill. Legs of 3 over laja that is over burial 4, Head and torso of Burial 3 mixed over legs of Burial 2. Associated with OP 17-2, OP17-4, OP17-5. N43E24; 587.04. Primary, flexed. CV 36, Op. 17, Burial 3, Lot 282 and 283, Feature 20, Locations A and B. Primary, possibly flexed. CV 36, Op. 17, Burial 3, Lot 282 and 283, Feature 20, Locations A and B.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-32	None	6 zoomorphic ceramic whistles, 1 miniature bottle	Whistles likely imported from Ulua Valley.	Whistles are attributed to Ulua/Lenca regions (Gerstle, 1988). Under the edge of front S stairs of Str. 111 in pit covered and cobbles; (.3x.14); N53.75E21.47; 585.80. Primary, partially flexed on back, left arm crossed over chest, right arm extended, legs flexed. CV 36, Op. 17, Burial 32, Lot 1158, Bolsa 1.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-33	Cranial	61 obsidian beads	-	Under and in front of east wall A of Str. 61. Semi-flexed, arms semi-flexed. Good preservation; (.72x.24); N58.42E34.03; 585.7. CV 36, Op. 17, Burial 33, Lot 1221	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-35A	Cranial	1 restricted mouth Osicala variety, Chilanga type Cajete.	Local	Vessels local as determined by Diamanti (1991). Only skull removed, rest of remains extended 30 c under E side retaining wall of Str. 111; N56E22; 585.4. CV 36, Op. 17, Burial 17-35 a	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-36A	Cranial and dental	None	-	Assoc. with OP17-36B; under the S wall extending W of the terraced of Str. 61A, identical position as OP 17-36B - Flexed, very flexed arm parallel to body. Burials separated by large cobble between head and pelvis; covered by a few cobbles; excellent preservation; (.88x.5); N53.7E24.2; 585.51. CV 36, Op. 17, Burial 17-36a, Lote 1199, N 52-54, E22-24	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-36B	Cranial	1 bone with incised decoration	-	Assoc. with OP17-36A; under the S wall extending W of the terraced of Str. 61A, identical position as OP 17-36A - Flexed, very flexed arm parallel to body. Burials separated by large cobble between head and pelvis; covered by a few cobbles; excellent preservation;(.77x.5); N53.1E23.5; 585.51. CV 36, Op. 17,Burial 17b, Lot 1307, N 52-54, E 22-24	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-4	Dental	1 Madrugada Modeled-Carved vessel	Local	Vessel local (Diamanti, 1991).In cist burial in fill of crevice formed by the W wall of Str 63A, N of platform N and Wall O. Resting on pebbles over empedrado floor. Under laja and over fill. Legs of 3 over laja de toba that is over burial 4, Head and torso of Burial 3 mixed over legs of Burial 2. Associated with OP 17-2, OP17-3, OP17-5. Primary, flexed legs. CV 36, Burial 4, Feature 29.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-40	Cranial and dental	None	-	In fill of platform C, Str. 61, E of buried wall A'; below mass of cobbles; good preservation but fragmentary; (.91x.61); N59.97E34.20; 586.23. CV 36, Op. 17, Burial 17-40	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-42	None	None	-	Under P.P. 2, 55 cm under E stairs of Str. 60A (South). Fragmentary with poor preservation; (.3x.25); N56.25E12.68; 585.70. CV 36, Op. 17, Burial 17-42, Date 4-29-83.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-45	None	None	-	Not completely excavated, only cranial fragments removed; below paving #2 in main plaza under N wall of Str. 105; N46.65E22.55; 585.62. CV 36, Op. 17, Burial 17-45, Lote 1309, Date 4-4-83	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-48-36 (Old 26-1)	None	None	-	Formerly OP26-1; heavily disturbed by root action; pit in fill of Substr. of Str. 104, under W. retaining wall within 3 M. of NW corner of Str. 104; (1x.25). CV 36, Op. 26, #36, Burial #1	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-5	Cranial	1 Ulua polychrome vessel, 1 Copador Modeled-Decorated Olla	Ulua = Imported, Ulua Valley/NW Coast of Honduras. Copador = Local	Vessels imported and local as determined by Diamanti (1991). In cist burial in fill of crevice formed by the W wall of Str 63A, N of platform N and Wall O. Resting on pebbles over empedrado floor. Under laja and over fill. Legs of 3 over laja that is over burial 4, Head and torso of Burial 3 mixed over legs of Burial 2. Associated with OP 17-2, OP17-3, OP17-4. Primary, flexed, legs flexed, on right side. Op. 17, Burial 5.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-50 (Old 26-3)	Cranial and dental	None	-	Formerly OP26-3; in plaza fill to rear W of Str. 60S; in cobble lined pit with cobble covering assoc. with OP17-49 (OP26-3); (.9x.6); N55.70E6.15; 586.10. CV 36, Op. 26, Burial 3 (New Number: Op. 17, Ent. 50)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-51 (Old 28-17)	Cranial and dental	Ceramic and lithics in fill, jade button, deer bone.	Undetermined	Formerly OP28-17; chamber with N and S 3 course high walls only and 4 capstones; in fill of NE corner of Str. 105; found during restoration; ~590?. Op. 28, Burial 17, Tomb. 7, Lot 111, Str. 105, Mar. 23, 1985 (New Number: Op. 17, Burial 51)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-54 (Old 28-20)	Dental	1 Floreno vessel, 1 cylindrical monochrome vessel.	?	Vessels undetermined origin according to Diamanti (1991). Formerly OP28-20; tomb (1.14x1x1.75) with 10-14 course high faced walls (upper 4 courses inward sloping, not beveled), niches in N & S walls, 5 large capstones; in fill of Str. 63; found during restoration; adjacent to tomb #3 OP17; ~590.77?~592.7? Tomb has a double wall that divides the space into two cavities. Op. 28, Burial 20, Lot 135, Tomb 10, Str. 63. May 30, 1985 (New Number: Op. 17, Ent. 54)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-58 (old 28-24)	Dental	None	-	Formerly OP28-24; found during restoration; in fill of Str. 61B to E of E retaining wall of Str. 61A, at side of earlier phase construction.; 590.79? Arms and legs flexed. Op. 28, Burial 24, Lot 163, 61-A (New Number: Op. 17, Burial 58)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-6	Dental	1 Caterpillar vessel with Zico-like paste	Local	In fill below floor of room 2 of Str. 60S; adjacent to and in front of buried W facing wall; associated with OP17-9; N56E8; 586.33. Primary, tightly flexed, on left side. CV 36, Op. 17, Burial 6, Lot 394.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-60 (Old 28-26)	Dental	None	-	Formerly OP28-26; found during restoration; in fill of Str. 61C just to W of E retaining wall; (.78x.26); 591.28?. CV 36, Op. 28, Burial 26, Lot 167, Structure 61C (New Number Op. 17, Burial 60)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-7	None	Coner sherds	Undetermined	Pit is narrow basin partly deliminated by cobbles and partly plastered floor; good preservation; under floor of Patio 2, in plaza fill between Str. 106, plaza K and Str. 63, plaza D; (1.3x.3); N44E30; 586.00. Primary, extended body on left side. CV 36, Op. 17, Burial 7.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8D	17-8(a)	Cranial	4 local Gualpopa vessels	Local	Vessels local (Diamanti, 1991). In the basamento of Str. 63, S of Tomb 1 in collapsed chamber Tomb 2. Tomb 2 was badly preserved with only N wall, pebbles and 3 capstones. Assoc. with OP17-8B (infant), OP17-8C; good preservation; (.55x.4x.59); N46E30; 585.70 (burial), 587.79 (top of capstones). Primary, flexed, arms and legs undetermined. CV 36, Op. 17, Burial 8, Structure 63	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-8B	None	None	-	In the basamento of Str. 63, S of Tomb 1 in collapsed chamber Tomb 2. Tomb 2 was badly preserved with only N wall, pebbles and 3 capstones. Assoc. with OP17-8A (adult), OP17-8C; good preservation; (.55x.4x.59); N46E30; 585.70 (burial), 587.79 (top of capstones). OP. 17, Burial 8b.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D	17-9	Cranial and dental	2 deer humerii	-	Under and to the W of the wall going W. No formal burial. In fill of room 2 of Str. 60S; near OP17-6; (.70x.60); N56E8; 586.1. Associated with OP17-6. Primary, flexed, hands over chest. CV 36, Op. 17, Burial 9.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8D/H	17-53A, Old 28-19	Cranial and dental	Ceramic fragments in fill.	Undetermined	Formerly OP28-19; assoc. with OP17-53B, OP17-53C; in plaza fill between rear walls of Str. 115W and Str. 63; cranium under base of rear N wall of Str. 115W; found during restoration; (.515x.26); ~589.6?. Op. 17, Burial 53-A (Old # OP.28-19)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-10	Cranial	None noted	-	Earlier phase construction (feature OP15-91); (1x.55); S37W74.9; 584.1. CV 36, Op. 15, Burial 10, Lot 591	Diamanti (1991) does not mention this burial. Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-11	Dental	None, but looted	-	Looted burial. Directly in front and parallel to the earlier W wall line of platform and behind 2nd W wall line; laid on large cobbles and covered with cobles from destroyed pavement above; (1.06x.5); S35W56.5; 585.6. CV 36, Op. 15, Burial 11, Lot 727, S36, W58, Date May 21, 1982	Diamanti (1991) does not mention this burial. Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8E	15-14	None	1 untyped vessel, "Brownish orange with white inclusions and geometric lines"	If utilitarian ware is a Besal Incised or Sesesmil Incised type of Surlo = Local. But, if inclusions are calcite = Imported from undetermined location.	Notes of vessel source from Landau, 2014. Loosely flexed; in middle classic burial group (OP15-15and OP15-16) around late classic tomb (OP15-13); (.7x.3x.35); S12.55W54.5; 585.2. Op. 15, Burial 14, Lot 801, S 15, W 56, Date 10/8/82	Diamanti (1991) does not note this burial. Miller Inventory Database; Reed Burial Database shared in 2011. Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-2	None	None	-	Poor preservation; pit dug into room floor and covered with angular tuff stones like those in construction. fill; (.75x.45x.4); S24W50; 586.2. CV 36, Op. 15, Burial 2, Lot 130/131.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-25B	Cranial	Fragment of jade	-	SE corner plaza E ~5 M. to rear Str. 108 & ~5 M. to rear Str. 91, plaza F; central portion disturbed by feature 130; 7 long tuff capstones with cobbles above; OP15-25A possible offering or association; (2.2x.8x.65); S43.5W53.45; 584.80. CV 36, Op. 15, Burial 25 B, Lot 1241, S 46, W 56, N 6, Date 3-mar-83	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-26B	None	1 vessel with 15-26A.	Local	Vessels local origin determined by Diamanti (1991). Just N of side staircase; OP15-26A lying on its legs; (.6x.4x.4); S15.25W58.85; 586.04. CV 36, Op. 15, Burial 26 b, Lot 1237	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-28	Dental	1 Surlo type vessel, 1 tooth	Local	Vessels local as determined by Diamanti (1991). Pit defined by ring of cobbles placed upright covered with layer of cobbles flat on top like paving; E end of staircase; (.9x.75x.6); S42.5W67.5; 585.11. CV 36, Op. 15, Burial 28, Lot 1298, B, Date 3/12/1983	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-29	None	-	-	SE corner plaza E ~3 M. behind Str. 108 and ~5 M. NW (rear) of Str. 91 in plaza F; twisted with legs crossed and pelvis facing up and head and torso facing down; may have slumped from seated position; (.95x.6x.45); S44.25W55.70; 584.92. CV 36, Op. 15, Burial 29, Lot 1289, Feature 134	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sep9N8	9N-8E	15-3	Dental	1 Chilanga type, Osicala variety vessel and 1 hemispherical Chilanga type, Oscala variety cajete.	Local	Vessels local origin determined by Diamanti (1991). Placed at SW corner of Str. 97-2nd below plaza floor, but probably associated with construction. of Str. 97-1st; pit lined with cobbles with cobbles used as fill up to the plaza surface; (2.6x1.5); S15.5W54; 586.01. CV 36, Op. 15, Burial 3, Lot 447	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-35A	None	None	-	Only teeth and a few skull frags. found; not associated with OP15-35B; S16.4W70.9; 585.85. CV 36, Op 15, Burial 35 a, Lot 1409	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-35B	Cranial and dental	None	-	along W wall of room 4 of Str. 96; not associated with OP15-35A; (>.85x.55x.50); S16.4W70; 585.58	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-36	None	None	-	A few frags. of long bones and teeth recovered; in light midden deposit along base of Str. 92 retaining wall; (>.4x.15x.3); S46.8W72.87; 585.20. CV26, Op. 15, Burial 36.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-39	None	1 local Copador small cajete	Local	Vessels local as determined by Diamanti (1991). Poor preservation and very fragmentary remains; (.85x.45x.4); S41.9W71.9; 585.12. CV 36, Op. 15, Burial 39	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-4	Cranial	2 vessels, both Surlo type. 1 metate	Local	Vessels local as determined by Diamanti (1991). Placed prior to construction. of Str. 96-2nd; 2 large stones (1 unused metate) covering head; (1.5x.9); S20.4W62.45; 585.6. CV 36, Op. 15, Burial 4, Lot 513	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-40	Dental	None	-	covered with river cobbles; fairly good preservation; in light midden deposit along W wall of Str. 92; (.8x.45x.3); S44.55W73; 585.10. CV 36, Op. 15, Burial 40, Lot 1440	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8E	15-42	None	None	-	Oriented perpendicular to front wall line of Str. 93N; possibly associated with earlier phase construction.; (1.7x.4x.5); S30W67.7; 585.64. CV 36/E, Op. 15, Burial 15-42, Lot 1492, Date 4-28-83	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-43	Cranial	1 bone tool	-	Very good preservation; pit lined and covered with cobbles; SE corner of buried earlier phase Str. 93N; directly below later E retaining wall of Str. 93N; (1.05x.63x.3); S31.80W68.3; 585.70. CV 36/E, Op. 15, Burial 43, Lot 1494	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-44	None	None	-	Fragmentary with poor preservation; in passageway between Str. 92 and Str. 93S; (.6x.2x.35); S40.75W68.7; 585.45. CV 36, Op. 15, Burial 44, Lot 1503, N 2, S 41, W 70, Date 21 April 83	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-45	Dental	None	-	Below and perpendicular to base of innermost S retaining wall Str. 96-2nd; assoc. with earlier phase construction.; (.75x.25x.55); S20.25W66.55; 585.75. CV 36 E, Op. 15, Burial 45, Lot 1519, Date 16-Jul-82	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-47	Cranial	1 simple Surlo cup. 1 cajete polychrome.	Surlo = Local, Polychrome = undetermined	Vessels local/undetermined origin as determined by Diamanti (1991). Parallel and partially underneath S retaining wall of earlier Str. 96-2nd; (>.65x.45x.43); S20.4W65.55; 585.45. Op. 15, Burial 47, Lot 1521	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-6	Dental	None	-	Disturbed; associated with OP15-7 and adjacent but separate from OP15-8; only skull remains; (1x.55); S39.25W72.5; 585.21. CV 36, Op. 15, Burial 6, Lot 538, 6-V-82	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8E	15-64	Cranial and dental	1 vessel	Local	Vessels local origin determined by Diamanti (1991). Formerly OP19-2; facing SE; below base of N retaining wall of Str. 96 and possibly assoc. with Str. 96-2nd; S15.5W65; <586.1. CV 30, Op. 19, Burial 2, Lot 3 (New Number Op. 15, Burial 64)	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-65 (Old 26-14)	Dental	-	-	Poor preservation.; intrudes on N edge of OP15-66A, OP15-66B, OP15-66C; formerly OP26-14; .65-.85 below & perp. to N ret. wall, Str. 92; legs and feet not excavated; possibly associated with earlier construction.; intruded in earlier midden; (.76x.36); S43.2W70.75; 584.65. Op. 26, Burial 14 (New Number Op. 15 Burial 65)	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-66 (Old 26-15)	Dental	-	-	Intruded on by OP15-65; formerly OP26-15; assoc. with OP15-66B, OP15-66C; .75-.85 below inner S. retaining wall of earlier phase construction. of Str. 92-2nd; intruded into earlier midden deposit; (.9x.45) S43.9W70.6; 584.65. Op. 15, Burial 66b	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-67 (Old 26-18A)	None	2 vessels, Chilanga type, 1 candelero.	Local	Probably predated construction. of Str. 95; lower legs cut below femur heads; assoc. with OP15-67B; Formerly OP26-18A; .65 below NW corner of Str. 95 Substr.; (>.75x.25x.65); S20.45W51.35; 585.55. Op. 26. Lot 537, Feature 11, Burial 18.(New Number Op. 15, Burial 67)	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-7	None	None	-	Disturbed; associated with OP15-6 and adjacent to, but separate from OP15-8; (1x.55); S39.25W72.5; 585.21. CV 36, Op. 15, Burial 7, Lot 525, S40, W74, Level 7.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8E	15-8	None	None	-	Adjacent to, but separate from OP15-6 and OP15-7; S38.9W73.2; 584.86. CV 36, Op. 15, Burial 8, Lot 521, S40, W74, Date 5-2-1982	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8F	15-17	None	None	-	Poor preservation; associated with earlier phase construction. of Str. 90N; S53W64.8; 586.04. CV 36, Op. 15, Burial 23, Lot 1207, Feature 124	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-19B	None	None	-	Op. 15, Burial 19 b, Lot 1085, B1, N 4. S47.3W58.55; 585.74	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-20	None	-	-	Probably postdates abandonment of Str. 90S; pit dug through latest room floor and placed on earlier bench surface; S55.65W61.2; 586.68. CV 36, Op. 15, Burial 20, Lot 1098	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-21	Dental	None	-	Layer of cobbles placed over burial at almost the top of the midden level; (.7x.6); S48.4W52.5; 585.69. CV 36, Op. 15, Burial 21, Lot 1106, N 3, Feature 118	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-22	Cranial and Dental	1 anvil	-	In small midden deposit; tuff block lying upside-down on neck and chest; (.85x.55x.55); S48.75W58.6; 585.18. CV 36/B, Op. 15, Burial 22, Lot 1405, Feature 151, Position 55 E, 60 W, N 3, 3/24/83	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-30	Cranial	None	-	Excellent preservation; (.95x.6x.5); S59.5W64.25; 586.07. CV 36, Op. 15, Burial 30, Lot 1291, Feature 135	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8F	15-31	None	None	-	Pit dug into cobble floor of room 3 of Str. 90N-1st which was also located 20 cm. in front of threshold of room 1 of Str. 91; (.55x.25x.55); S51.5W54.1; 585.95. CV 36, Op. 15, Burial 31, Lot 1368, S52, W55, N 1, Feature 137, Date 17-Mar-83	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-37	None	None	-	In bench fill of room 2 of Str. 91; (.5x.25x?); S52.4W52.65; 586.50. CV36, Op. 15, Burial 37.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-50	None	None	-	parallel to W side retaining wall of room 7 of Str. 90N; (.65x.2x.35); S48.45W61.35; 585.8	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-51	Dental	1 Simple variety of the Surlo Orange/Brown type vessel, 2 jade	Local	Vessel local origin determined by Diamanti (1991). Excellent preservation; among rocks of NW addition to Str. 90N-1st and covered with rocks of construction. fill; predated NW addition, associated with earlier terrace; (.95x.4x.55); S48.9W61.85; 585.82. CV 36, Op. 15, Burial 51	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-52	Cranial	None	-	Between N and S room walls of Str. 90N-2nd; associated with earlier construction. phase; (.7x.3x.2); (S49.8W50.4); 585.65. CV 36, Op. 15, Burial 52	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-53	None	1 deer mandible	-	Only skull and two long bones recovered; directly below S face of N wall of room 6 of Str. 90, but probably associated with earlier phase W retaining wall of Str. 91; (>.25x.1x.3); S49.45W55; 585.18. Op. 15, Burial 53	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8F	15-54	Cranial and dental	None	-	Excellent preservation; along E side retaining wall of Str. 91; (.8x.35); S51.8W51.45. CV 36, Op. 15, Lot 15-31, Burial 54	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-56	None	1 jade bead	-	Directly below SW corner of original retaining wall of Str. 91-1st; probably assoc. with earlier phase Str. 91-2nd 1.5 M. to N; (~.83x.17x<.6); S54.65W54.35; 584.95. Op. 15, Burial 56, Lot 1553	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-59	Dental	1 imported Ulua polychrome vessel, 1 obsidian projectile point, 1 jade pectoral	Ulua = Imported, Ulua Valley/NW Coast of Honduras.	Vessel local origin determined by Diamanti (1991). Poor preservation; below S retaining wall of Str. 91-1st and behind W side of S front staircase; placed on pavement level 4, but intruded from above and probably associated with plaza pavement 2; (.8x.5); S54.65W51.35; ~584.8. Op. 15, Burial 59, Lot 1538	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-60	None	1 Copador polychrome vessel, 1 Ulua polychrome vessel.	Ulua = Imported, Ulua Valley/NW Coast of Honduras. Copador = Local	Vessels as local/imported determined by Diamanti (1991).along original S retaining wall of Str. 91-1st, but probably assoc. with plaza paving 2 and Str. 91-2nd 1.4 M. to N; possibly assoc. with 15-61 .20 M. to N (.72x.33); S54.7W52.7; ~584.8. Op. 15, Burial 60.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-61	None	3 obsidian flakes, bone beads, human teeth.	-	poor preservation; no skull or teeth; along original S retaining wall of Str. 91-1st, but probably assoc. with plaza paving 2 and Str. 91-2nd 1.1 M. to N; possibly assoc. with 15-60 .20 M. to S (.3x.2); S54.3W52.75; ~584.8. CV 36, Op. 15, Burial 61, Lot 1361	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8F	15-62	None	None	-	Under W retaining wall and W wall of room 3 of Str. 90N-1st; poor preservation; possibly assoc. with room 5 of Str. 90N-2nd just to the west; (>1.0x.4); S51.9W55.35. Op. 15, Burial 62, Lot 1366, CV 36.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8F	15-63	Dental	None	-	.95 M. S of S retaining wall of room 5 of Str. 90N-2nd; could be assoc. with fill of .3 M. S platform or fill below it; (.87x.52); S54W53.15. Op. 15, Burial 63, CV 36, Lot 1367	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	17-43	Cranial	None	-	Under S wall of earlier construction. 9N-sub 15 and the floor of Patio H, in Trench FF; (.65x.42); N35.83E33.34; 585.82. Primary, semi-flexed, right arm crossed over torso, CV 36, Op. 17, Burial 43, Lot 1258	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-10A	Cranial	None	-	Beneath original stairs of Str. sub-13; between bottom course of stairs and front of Substr. ret. wall; above OP22-10B; (.8x.4x.31); 585.78. Primary, on back with left arm across chest, right arm to shoulder, legs flexed to chest. Op. 22, Burial 10a, Lot 514, level 3	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-10B	Cranial	-	-	Beneath original stairs of Str. sub-13; between rear of stair tread and front of Substr. ret. wall; above OP22-10B; (.8x.4x.31); 585.78	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-11	None	2 vessels, 5 jades	Local	Vessels of local origin according to Diamanti (1991). Near center S Substr. ret. wall, under original staircase when Str. 64 served as residence; rectangular pit with a few stones forming crude lining, but in vertical position around skeleton, without caps.; assoc. artifacts may have rolled down to feet (especially beads); (1.2x.85x1); 586.12. Primary, disturbed burial, probably seated, arms semi-flexed in front of torso. CV 36, Op. 22, Burial 11, Lot 513	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-13C	Cranial	None	-	In midden between rear walls of Str. 76 and Str. 78; against S rear Substr. wall of Str. 76; near, but probably separate from OP22-12A, OP22-12B; associated with OP22-13A, OP22-13B; OP22-13A and OP22-13B possibly twins; poor preservation; N12E14. On back, arms and legs flexed. CV 36, Op. 22, Burial 13-c, Lot 616.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8H	22-14	Cranial and dental	None	-	in plaza fill against S front retaining wall of Str. 64 near SE corner of Substr.; good preservation; 585.73	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-16	None	None	-	In corridor between rear E retaining wall of earlier phase Str. sub-13 and rear W retaining wall of Str. sub-14; shallow pit in fill; poor preservation; skeleton encircled by rocks (.97x.43); N24E2. On left side, right arm flexed, left semi-flexed, legs flexed. CV 36, Op. 22, Burial 22-16, Lote 555	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-17	None	None	-	In midden area in corridor between S wall of Str. 76 and rear N wall of Str. 78, against rear S Substr. retaining wall of Str. 76; level below OP22-13A, OP22-13B, OP22-13C; poor preservation, possibly disturbed by later burials; N12E14; 586.80. Primary, semi-disarticulated and flexed, face up on back with arms flexed on torso and legs flexed onto body. Op. 22, Burial 17, Lot 556.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-21A	Cranial	None	-	SW corner, against rear W retaining wall of Str. 110B (Center); associated with OP22-21B; excellent preservation; N20E0; 587.74. Primary, flexed on left side, arms extended at sides, legs flexed to the left. Op. 22, Burial 21a, Lot 604	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-22	Dental	3 jade beads	-	NW corner of Substr. 13 in small square cist with stone walls, 5 courses high on the E and S walls, N was only 2 courses high and left "open-ended" (.6x.6x.62); 2 large capstones; poorly preserved and disturbed; N26E20; 585.75. Primary, disturbed, arms mixed, no legs. Jade teeth found along western wall of cist. CV 36, Op. 22, Burial 22-22, Lot 567	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-22-26A (Old 22-19-21)	Cranial and Dental	None	-	Str. 110 Center/South, Rear. Op. 22, Burial 19-21 (New Number Op. 22, Burial 22-26). Burial form not recovered	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-28b	None	None	-	Str. 110 Center. Op. 22, Burial 28 b, Fase 2a Tomb 3, date 11/10/84. Burial form not recovered.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8H	22-23	Cranial and dental	1 miniature vessel	Undetermined	Vessel is of undetermined origin according to Diamanti (1991). Along front N base of Str. 76 Substr.; pit topped with 3 cut stones; good preservation; N18E14. Primary semi-flexed on right side, right arm flexed to face, left arm flexed skyward, legs fully flexed on right side. Op. 22, Burial 23, Lot 620	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-25 (old 22-19-20a)	-	None	-	Str. 110 Center. Op. 22, Burial 19-20 (New Number Op. 22, Burial 22-25a). Burial form not recovered.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-26D	None	None	-	Str. 110 South. Op 22. Burial 22-26d. Burial form not recovered.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-27 (Tumba 2)	Dental	None	-	Formerly OP28-9; fill under E front stairs of Str. 110-Center; rectangular chamber with E and W walls and 6 capstones; good preservation; discovered during restoration; (1.25x~.55x.36); 590.89?. Op. 22, Burial 27, Fase 2a Tomb 2, date11/10/84. Some tags say Tomb 3.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-28A Tumba 3	Dental	3 vessels, 2 jade, 2 spondylous shells.	Spondylous = imported	Fill of Str. 110-C, rough stone tomb. Vessels of undetermined origin (Diamanti, 1991). Op. 22, Burial 28 a, Fase 2a, Tomb 3, date 11/10/84. Burial form not recovered.	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-31 (Old 26-7and8)	None	None	-	Formerly OP26-7and OP26-8; midden deposit, corridor between Str. 110-Center rear & Str. 74 rear; adjacent to rear W Substr. wall of Str. 110C; skull only; cluster of burials OP22-30, OP22-32, OP22-33, OP22-42; combined with OP26-8; (.2x.2); N22.3E2.4	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-33 (Old 26-11)	Cranial	None	-	Formerly OP26-11; midden deposit in corridor between Str. 110-Center rear & Str. 74 rear; adjacent to rear W Substr. wall of Str. 110C; very fragmentary; cluster of burials OP22-30, OP22-31, OP22-32, OP22-42; (.25x.2); N21.95E2.55	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8H	22-34 (Old 28-13A)	Dental	Polychrome jar (olla), Monochrome bowl	Undetermined	Vessels from undetermined location (Diamanti, 1991). Formerly OP28-13A, tomb #5; chamber (.84x.54x1.02) with 3 walls of cut stone 4-6 courses high with 4 rectangular capstones; 30 cm. above OP22-36 in same chamber; found during restoration; 591.8. Two occupants A: Bur. 22-34 (previously 28-13A) and B: Bur. 22-36 (previously 28-13B).Individual A had arm flexed and legs extended but possibly crossed. Op. 28, Burial 13a, Tomb 5, Structure 110 (New Number Op. 22, Burial 34).	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-35 (Old 28-12)	Cranial	1 jade	-	Formerly OP28-12; in fill in NE front corner of Str. 110N; adjacent to top of chamber containing OP22-15; found during restoration; (.68x.3); 592.2 Fetal position. Op. 28, Burial 19a, Phase 2a, Tomb B, Structure 110 (New Number Op. 22, Burial 35)	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-37 (Old 28-14)	None	1 cylindrical vessel with decorated rim, 1 bowl, 1 round jade.	If vessel is Cream Paste tradition = local, otherwise = imported.	Notes of vessel source from Landau, 2014. Formerly OP 28-14; in fill of W part of Substr. of Str. 64; found during restoration; (.63x.2x.69); 591.05?. Op. 28, Burial 19, Estr. 11o, Fase 2a. (New number 22-37)	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-38 (Old 28-15)	None	None	-	Formerly OP28-15, tomb #6; in Substr. fill under N bench, Str. 110N; circular chamber (.75 diam. x .9 high) with faced and unfaced rough cobble walls and topped by 2 large capstones; found during restoration; OP22-35 placed adjacent to caps.; 591.12?. Op. 28, Burial 19, Tumba B, Structure 110, Date 2/21/1985. (New number 22-38	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-39	-	None	-	OP. 22, Burial 39, Tumba 4, Date 12/17/1984. No burial form.	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-4	Cranial	None	-	In midden deposit behind Str. 76 and Str. 78, no grave apparent; more proximate to Str. 76; N12E10. Flexed with legs flexed to the chest, right arm across chest, left arm flexed to shoulder. Op. 22,Burial 4, Lot 210, CV 36	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-40	Dental	None	-	Str. 110 C. Burial form not recovered.	Diamanti, 1991; D. Reed Database

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8H	22-41 (Old 22-1 Tumba 4)	Cranial and dental	None	-	Str. 110 C. Op. 22, Burial 40. Burial form not recovered.	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-42 (Old 26-6)	None	None	-	Formerly OP26-6; pit in midden deposit in corridor between Str. 110-Center rear & Str. 74 rear; adjacent to rear W Substr. wall of Str. 110C; very fragmentary; cluster of burials OP22-30, OP22-31, OP22-32, OP22-33; (.90x.45); N22.25E2.6. Flexed on left side. CV36, Op. 26, Burial 6, Lot 140, N21, W110. (New Number: Op. 22, Burial 42	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-44 (Old 28-19C)	Cranial	None	-	Storey inventory form says "22-44" with 28-12, 2-35, 2242, and 28-16 all crossed out. Notes from Op. 28 excavations (Vasquez) are not clear in regard to this burial number. Op. 28,Burial 19C, Lote 1, Fase 2a, Structure 110, Date 9/4/1985. (New number 22-44)	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-45	Dental	-	-	Op. 22,Burial 45, bones are labeled CP401 but are actually from CP406, see Miller notes. Burial form not recovered	Diamanti, 1991; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-8	None	None	-	Pit into upper plaza surface 1 M north of NW corner of Str. sub-13 and 1M east of SE corner of Str. 64; excellent preservation; N28E34; 586.17. Primary on back, arms flexed with hands on chest, legs flexed to right side of body. Op. 22, Burial 8, CV 36/H, Lot 337, N 28, E 24, Level 3, Date April 4, 1983	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8H	22-9B	Cranial	None	-	In pit between plaza & lower N front ret. wall of Str. 76; pit lined on W with stones on end, S with base of Str. 76, N with patio floor base, nothing in E; no caps.; good preservation; pit shared with Op22-9A in stone lined cist with dirt floor.(.8x.42x.68); N20E10; 586.15. Primary, flexed with hands crossed across chest, flexed to left side. Op. 22, Burial 9b, Lot 614, N 20, E 10	Diamanti, 1991; Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-10	Cranial	None	-	Intrusive pit cut into floor along N front retaining wall of Str. 60N in plaza fill, P.P. I; (1.1x.3x.25); N65.5E11.5; 586.21. Primary, flexed, legs flexed, arms on right side. CV 36, Op. 17, Burial 10, Lot 448, Feature 10.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8I	17-47	Cranial and dental	Fragments of rhyolite metate	Local	In plaza fill below SE rear corner of Str. 113B (East); good preservation; (.83x.56); N61.3E27.75; 587.75. Primary, flexed on right side. Arms and legs flexed. Head to the S, orientation is E-W. Op. 17, Burial 47.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-57 (Old 28-23)	None	None	-	Formerly OP28-23; in fill of bench of E room of Str. 112A; very fragmentary; above tomb #11, OP17-61; found during restoration; (.63x.19); 591.43? Burial was "destroyed". Op. 28, Burial 28-23, Lot 162, 112A, Date 4/9/05. New Number 17-57.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	17-61 (Old 28-27)	Dental	1 monochrome vessel with flat base (possibly a local Burdalu or an imported type), 2 jade ear flares	Undetermined	Formerly OP28-27; below OP17-57; found during restoration; tomb #11 (1.09x.75x.72) with 3 (N,S,E) faced 4-6 course high walls (W wall defined by Str. retaining wall), single basal slab, 3-4 rough capstones, small niches in N and S walls; 590.7? Under the bank of the east rom. Head resting on right side, arms flexed. Op. 28, Burial 24, Lot 163, 61-B (New Number: Op. 17, Burial 61)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8I	4-16	Cranial and dental	-	-	Op. 4, Burial 16, lot IV/111/187-195	Viel and Cheek, 1983; Lote forms in CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8J	21-1A	Dental	None	-	In fill of Sub 20 (platform 4), SE corner of plaza J; 4 niches in each 7 course high faced stone wall; 5 large capstones; stucco floor; no vault or inward slope (1.94x.61x.85); N48E0.65. Op. 21, Burial 21-1.	Burial form and informe at CRIA library; D. Reed Database; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-22	Cranial	None	-	N 42.5/E36. Under the stairs in front of Str 107 under the level of the retention wall of basamento, no formal burial no offerings. (.55x.35); N42.5E36. Op. 17, Burial 22, Lot 899, Bolsa 2	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8K	17-24	None	None	-	Rough cut stone tomb chamber (.45x.40x.34) built into floor of room 1 Str. 107 with single large capstone; cobble walls and flat cobble floor; N43.6E34.4; 586.02. Primary, flexed, arms and legs flexed, on left side. Head absent. CV 36, Op. 17, Burial 24, Lot 909	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-31	Dental	2 jade, 1 shell	-	In pit lined by cobbles in N part of Substr. fill below floor of room 2 Str. 106; (.89x.55); N50.38E34.2; 586.26. CV 36, Op. 17, Burial 31, Lot 1147, Bolsa 22	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-34A	None	None	-	Under terrace and 2nd step Substr. of Str. 107; (.76x.41); N41.88E36.38; 585.4. Semi-flexed, right arm over torso, left arm over chest, semi flexed legs to the right side. CV 36, Op. 17, Burial 17-34, Lote 1292	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-34B	None	None	-	Under the terrace/ 2nd step, of E front Substr. of Str. 107; (.76x.41); N41.88E36.38; 585.4. Position not determined. CV 36, Op. 17, Burial 17-34B. No burial form.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-39	Cranial	1 Ulua vessel	Imported	Vessel imported (Diamanti, 1991). In the basamento fill of room 2, Str. 106, S of feature OP17-90 (capstones); assoc. vessel and lower limbs partially underneath capstones; lower limbs not excavated; (.5x.15); N49.48E34.44; 586.33. Primary, flexed burial on right side, legs not excavated. CV 36, Op. 17, Burial 39, Lot 1318	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8K	17-55 (Old 28-21	Cranial	None	-	Formerly OP28-21; directly under E front wall of Str. 106; stones from fill placed over burial; good preservation; found during restoration; (.75x.23); 590.54? Resting on left side, right arm flexed, legs fragmented. CV 36, Op. 28, Burial 21, Lot 140, Bolsa 6, Structure 106 (New Number Op. 17, Burial 55)	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)

Sample Region	Group	Burial	Body Modification (Miller Inventory; Tiesler Blos 1999)	Artifacts	Local or Imported Ceramics (Diamanti, 1991; or Landau, personal communication, 2014)	Burial context from Miller Inventory, David Reed Burial Database, Field Notes, Reports, and Publications. Provenience information directly from burial tags provided at the end of context description.	Select References
Sep9N8	9N-8K	17-56 (Old 28-22)	Cranial and dental	2 metate fragments	-	Formerly OP28-22; directly under E front wall of Str. 106, 1.73 M SE of Str. 106; 2 metate frags. placed over cranium; found during restoration; (.68x.44); 590.24? Position is undetermined, head on left side, right arm flexed, legs flexed. Op. 17, Burial 56 -- Old # -- Op. 28, Burial 22, Lot 145, Structure 106, 28/145/B10/Fecha 22/7/85.	Diamanti, 1991; Burial form and informe at CRIA library; Gerstle and Webster PACII, Vol. 3, 1990; D. Reed Burial Database shared in 2011; Str. Function, Diamanti (1991)
Sep9N8	9N-8M	15-23	Cranial	None	-	Recovered from completely eroded area Str. 88 E of room 1 wall; placed close to surface in cobble fill; S77.15W60.90; 585.79	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamani (1991)
Sep9N8	9N-8M	15-27	None	None	-	Covered with cap of angular rocks; (.5x.25x.3); S75.75W66; 585.01. CV 36, Op. 15, Burial 27, Lot 1280, Date 9 Mar 83.	Diamanti, 1991; Burial form and informe at CRIA; Webster monograph on burials shared in 2011; Miller Inventory Database; Reed Burial Database shared in 2011; Str. Function, Diamani (1991)

APPENDIX D

LOCAL AND NON-LOCAL: CERAMICS AND RADIOGENIC STRONTIUM ISOTOPE VALUES

Sample Region: B = Bosque, Cem = Cementerio, CV = Copan Valley, Os = Ostumán, Rast/Ch = Rastrojón/Chorro, Sal = Salamar, Sep = Sepulturas, Sep9N8 = Sepulturas 9N-8

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
B	10I-11	3-2 (3/30-2)	Coner	MP	YA	20-24	-	Undetermined	0.70656	Local	URM1
B	10L-16	4-38	Coner	U	YA	20-24	Flexed	-	0.70707	Local	NLI2
B	10L-17	4-39	Acbi	U	YA	20-24	Flexed	-	N/A	No Sample	-
B	10L-17	4-41	Coner	F	Adol	12to15	Flexed	-	0.70663	Local	XRM1
B	11j-1	24-7	Late Coner	FP	YA	18-25	Extended	Undetermined	N/A	No Sample	-
B	11L-11	4-27	Coner	F	YA	20s	Flexed	-	0.70701	Local	NLI2
B	11L-11	4-9	Coner	MP	A	M-L 30s	Flexed	-	N/A	No Sample	-
B	11L-11	4/99-28	Early Coner	FP	YA	20-24	Flexed	-	N/A	No Sample	-
B	11L-11	4/99-29	Coner	U	YA/A	16-30	Flexed	-	0.70825	Non-local	-
B	11L-11	4/99-30	Early Coner	MP	YA	20-30	Flexed	-	N/A	No Sample	-
B	11L-7	4-2	Coner	MP	A	30s	Flexed	-	N/A	No Sample	-
B	11L-8	4-4	Coner	M	A	30-40	Flexed	All local	0.70649	Local	NRM1
B	Visitor Center	19-12A	Coner	M	A	30s	Extended	-	0.7075	Non-local	XRM1
B	11K-18	4-46	Coner	F	YA	30s	Flexed	Undetermined	0.70704	Local	ULM1
Cem	10L-1	7-3A	Late Classic?	M	YA	24-35	-	-	0.70676	Local	NRM1
Cem	10L-1	7-3C	Late Classic?	M	YA	24-30	-	-	N/A	No Sample	-
Cem	10L-2	40-3a	Late Classic	FP	A	30-45	Flexed	-	N/A	No Sample	-
Cem	10L-2	40-5	Late Classic	FP	YA/A	24-35	Flexed	-	N/A	No Sample	-
Cem	10L-2	48/1/413-1	-	U	SA	3 +/- 1	Flexed	-	0.70535	Non-local	NLM1
Cem	10L-2	48/10/212-1	Coner	U	SA	4 +/- 1	Flexed	Possibly Local	N/A	No Sample	-
Cem	10L-2	48/10/346-3	-	U	SA	4 +/- 1	Flexed	Possilby Local	N/A	No Sample	-
Cem	10L-2	48/11/160-2	Coner	U	MA	40s	Seated	Local	0.70634	Local	LRM1
Cem	10L-2	48/11/161-3	Acbi/ Coner	U	YA	18-22	Supine	Local	0.70664	Local	URM3
Cem	10L-2	48/12/64-1	Early Coner	F	A	30-40	Partially flexed	-	0.70646	Local	LLM1
Cem	10L-2	48/13/170-1	Early Coner	U	SA	3 to 4 +/- 1	Supine	Ulua =Imported, Ulua Valley/NW Coast of Honduras	N/A	No Sample	-
Cem	10L-2	48/13/204-3	Late Coner	U	SA	3.5 +/- 1	Flexed	-	N/A	No Sample	-
Cem	10L-2	48/13/211-4	Coner?	F	YA	20-30	Flexed	-	0.70715	Local	LLI2
Cem	10L-2	48/13/223-5	Predates 10L-44. (Coner?)	U	SA	5-6 +/- 1-2	Supine	-	N/A	No Sample	-
Cem	10L-2	48/13/248-6	Late Coner	U	SA	5 +/- 9 mos.	Partially flexed	-	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Cem	10L-2	48/13/280-8	Predates 10L-44B. (Early Coner)	U	YA	18-22	Partially flexed	Local	0.70681	Local	LRM3
Cem	10L-2	48/13/283-9	Acbi/ Coner	U	SA	4 to 5 +/- 1-1.5	Flexed	Imported, Ulua Valley/NW Coast of Honduras	N/A	No Sample	-
Cem	10L-2	48/14/124-1	Late Coner	F	YA/A	24-35	Flexed	-	0.70434	Non-local	LLI2
Cem	10L-2	48/16/43-1	Coner	U	SA	6 +/- 2	Bundle, Seated	-	N/A	No Sample	-
Cem	10L-2	48/2/107-1	Coner	U	SA	3 +/- 1	flex on right	Undetermined	N/A	No Sample	-
Cem	10L-2	48/6/123-1	Acbi/ Coner	MP	YA	24-30	prone	Undetermined	0.70632	Local	LRI2
Cem	10L-2	48/6/185-2	Acbi/ Coner	MP	A	35-45	Flexed	-	0.70635	Local	LRI2
Cem	10L-2	48/6/192-4	Early Coner	F	A	30-40	Prone	-	N/A	No Sample	-
Cem	10L-2	48/6/195-5	Acbi/ Coner	F	YA	18-24	Supine	-	0.70783	Non-local	LLM1
Cem	10L-2	48/6/206-8	Coner	U	Adol	15 +/- 3	?	-	N/A	No Sample	-
Cem	10L-2	48/6/222-7	Acbi/ Coner	M	A	30-35	prone	-	0.70762	Non-local	LLI2
Cem	10L-2	48/6/228-9	Early Coner	MP	Adol	18 +/- 2	Flexed	-	N/A	No Sample	-
Cem	10L-2	48/8/249-I. Indiv. 2	Acbi/ Coner	U	SA	10 +/- 30 mos.	Flexed	-	N/A	No Sample	-
Cem	10L-2	48/8/249-I. Indiv. 3	Acbi/ Coner	U	Adol	15-17	Flexed	-	N/A	No Sample	-
Cem	10L-2	48/8/249-I	Coner	U	SA	9 to 10 +/- 24-30 mos.	Flexed	-	0.70844	Non-local	NLM1
Cem	10L-2, 43	48/9/107-2	Coner	U	Adol	15 +/- 3	on right side	-	N/A	No Sample	-
CV	12G-6	4-1	Coner	M	A	24-40	Extended	-	N/A	No Sample	-
CV	18a-2-3	24-4	Early Coner	F	YA	20-30	flex	Undetermined	N/A	No Sample	-
CV	18d-4-1	24-9	Coner	M	A	35-45	Extended	Undetermined	0.70633	Local	NRM1
CV	25b-2-1	24-5(a?)	Coner	M	A	35-45	Prone	Undetermined	N/A	No Sample	-
CV	34a-12-2	34-2A	Early Coner	FP	YA	24-30	Flexed	Local	N/A	No Sample	-
CV	34a-12-2	34-3	Acbi/ Coner Transition	U	A	30-40	Extended	Local	N/A	No Sample	-
CV	34d-73-3	24-1	Coner	U	SA	3 +/-1	Flexed	Undetermined	N/A	No Sample	-
CV	3O-7A	27-3	Coner	M	YA	20-30	Flexed	Both local	0.70651	Local	NRP4
CV	3O-7A	27-4	Coner	FP	YA	20-24	Flexed	Undetermined	0.70679	Local	NRC
CV	3O-7B	27-10	Coner	U	SA	3 +/- 1	Extended	-	N/A	No Sample	-
CV	3O-7B	27-11	Coner	FP	YA	24-30	Flexed	Undetermined	0.70686	Local	XRM1
CV	3O-7B	27-6	Coner	F	A	35-40	Flexed	Undetermined	N/A	No Sample	-
CV	3O-7B	27-9	Coner	FP	A	35-45	Flexed	Local	0.70663	Local	XRM1
CV	4N-5	24-8	Coner	F	YA	24-35	flex	Local	0.70787	Non-local	XRM1
CV	9P-5	4-7	Coner	M	YA	18-24	Flexed	-	0.70555	Non-local	NLI2

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
CV	Copan Valley?	59-2	Late Classic	MP	A	30-40	-	-	0.70545	Non-local	XLM1
CV	Copan Valley?	59/2-5	Late Classic	MP	A	30-45	-	-	N/A	No Sample	-
CV	E of town, Rio Sesesmil	3-3 (3/30-3)	Late Classic	U	YA	20-30	-	-	N/A	No Sample	-
CV	Hacienda Grande	4-55	Late Classic	M	YA	25-34	Flexed	-	0.70692	Local	NRI2
CV	Petapilla	3-1 (3/30-1)	Coner	F	YA	24-35	Extended	Surlo and Madrugada = Local. Babilonia (Ulua) = Imported, Ulua Valley, NW Coast of Honduras	N/A	No Sample	-
Os	10E-5A	45-2	Coner	U	A	I	Flexed, Seated	-	N/A	No Sample	-
Os	10E-6A	45-5	Coner	F	YA	20-24	Flexed	Imported, Ulua Valley/NW Coast of Honduras	0.70681	Local	NLM2
Os	11E-2.	46-10	Coner	U	Adol	12 +/- 3	Extended prone	-	N/A	No Sample	-
Os	11E-2.	46-11	Coner	FP	A	30s	Flexed	-	0.70513	Non-local	XRM2
Os	11E-2A	46-1	Coner	U	A	30-45	Supine	Ulua = imported, Ulua Valley/NW Coast of Honduras	N/A	No Sample	-
Os	11E-2A	46-8A	Coner	M	MA	30-45	Flexed, Supine	Local	0.70664	Local	NLM1
Os	11E-2A	46-8B	Coner	M	YA/A	24-35	Supine	Local	0.70575	Non-local	NRM1
Ras/Ch	6N-4	64-R26	Late Classic	U	Adol	13-15	-	-	0.7067	Local	XLM1
Ras/Ch	6N-4	64-R36	Late Classic	MP	A	35-45	-	-	0.70723	Local	XRM1
Ras/Ch	6N-4	64-R41	Late Classic	U	A	30-35	-	-	0.7076	Non-local	NRM1
Ras/Ch	7M-4	4-45	Early Coner	F	YA	20-24	Extended	-	0.70671	Local	NLM1
Ras/Ch	7M-8	4-49A	Late Coner	U	A	30-40	Disartic	Local	0.70693	Local	NRM1
Ras/Ch	7M-8	4-49B	Late Coner	U	A	25-20	Disartic	Local	N/A	No Sample	-
Ras/Ch	7M-8	4-49C	Late Coner	U	A	?	Disartic	Local	0.70664	Local	XLM1
Ras/Ch	7M-8	4-49D	Late Coner	U	YA	24-35	Disartic	Local	N/A	No Sample	-
Ras/Ch	7M-m38	4-47	Early Coner	U	A	30s	Flexed	Local	0.70665	Local	NRM1
Ras/Ch	7N-20	4-43	Coner	F	A	20-44	Flexed	Undetermined	0.70675	Local	XRM2
Sal	8L-10	42-1A	Late Classic	F	A/MA	40-55	Disartic	-	0.7077	Non-local	NLM1
Sal	8L-10	42-1B	Late Classic	M	YA	24-30	Disartic	-	N/A	No Sample	-
Sal	8L-10	42-2	Late Classic	M	A	30-35	Flexed	Local	N/A	No Sample	-
Sal	8L-10	42-3A	L. Classic	U	YA/A	24-40	Flexed	Undetermined	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sal	8L-10	42-4	Late Classic	F	YA	20-30	Flexed	0.70779	SC Lowlands		NRM1
Sal	8L-10	42-5A	Late/Terminal Classic	F	MA	40-55	Disartic	Surlo = Local. Pabellón = Imported, Seibal.	0.70667	Local	NLP4
Sal	8L-10	42-5B	Late/Terminal Classic	M	YA	20-30	Disartic	Surlo = Local. Pabellón = Imported, Seibal.	0.70675	Local	NLM1
Sal	8L-10	42-5C	Terminal Classic	U	A	30-45	Disartic	Surlo = Local. Pabellón = Imported, Seibal.	N/A	No Sample	-
Sal	8L-12	42-6	Late Classic	M	YA/A	24-35	Extended	Shells = Imported; Surlo and Sepultura = Local	0.70796	Non-local	NLM1
Sal	8L-12	42-7A	Late Classic	M	YA	20-30	Disartic		0.7073	Local	XLI2
Sal	CRIA	11-1	Coner	M	A	20-24	Flexed	Local	N/A	No Sample	-
Sep	8N-11A	50-11	Acbi/ Coner	U	A	30-40	Flexed	-	N/A	No Sample	-
Sep	8N-11A	50-12a	Coner	M	YA/A	24-35	Bundle	-	N/A	No Sample	-
Sep	8N-11A	50-14	Coner	M	YA/A	24-35	Bundle	-	N/A	No Sample	-
Sep	8N-11A	50-15	Coner	FP	YA/A	24-35	Flexed	Local	0.70651	Local	NLM1
Sep	8N-11A	50-17	Coner	F	YA	20-24	Flexed	-	0.7067	Local	XLM2
Sep	8N-11A	50-20	Coner	U	SA	3 +/- 1	-	-	N/A	No Sample	-
Sep	8N-11A	50-22	Coner	F	YA	20-30	Flexed	-	0.70678	Local	NRI2
Sep	8N-11A	50-23	Coner	U	A	30-45	Flexed	Local	N/A	No Sample	-
Sep	8N-11A	50-24	Coner	MP	YA	18-24	Flexed	-	0.70768	Non-local	XLM1
Sep	8N-11A (CV68)	14-1	Coner	M	YA	20-30	Flexed	Local	0.70821	Non-local	NLM1
Sep	8N-11A (CV68)	14-2	Coner	M	A	30-35	Extended	-	N/A	No Sample	-
Sep	8N-11B	50-2A	Coner	MP	YA	20-24	Flexed	Local	0.70781	Non-local	NRI2
Sep	8N-11B	50-4b	Coner	F	YA	20-30	Flexed	-	N/A	No Sample	-
Sep	8N-11B	50-6	Coner	U	SA	4 +/- 1	Flexed	-	N/A	No Sample	-
Sep	8N-11B	50-7	Coner	F	YA	20-30	Flexed	-	0.70535	Non-local	XLM1
Sep	9M-22A	10-10	Late Classic	M	YA	20-24	Flexed	-	0.70763	Non-local	XLI2
Sep	9M-22A	10-13	Late Classic	M	A	Und	Flexed	-	0.70803	Non-local	XLM2
Sep	9M-22A	10-14	Late Classic	M	YA	30-40	Flexed	-	N/A	No Sample	-
Sep	9M-22A	10-2	Late Classic	F	YA	20s late	Flexed	-	N/A	No Sample	-
Sep	9M-22A	10-4	Late Classic	U	SA	4, 12mos	Extended	Undetermined	N/A	No Sample	-
Sep	9M-22A	10-5	Late Classic	F	A	30-34	Flexed	-	N/A	No Sample	-
Sep	9M-22A	10-6	Late Classic	U	SA	4, +/- 1	Disartic	-	0.70662	Local	XRM1
Sep	9M-22A	10-7	Late Classic	FP	SA	11-12, +/- 3	Flexed	-	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep	9M-22A	10-9	Late Classic	MP	YA	30s	Flexed	Local	0.70695	Local	XLM2
Sep	9M-22B	19-1	Early Coner	M	YA	18-22	-	-	0.70765	Non-local	NLM1
Sep	9M-22B	19-13	Coner	MP	A	35-45	Flexed	Imported, Ulua Valley/NW Coast of Honduras	N/A	No Sample	-
Sep	9M-22B	19-14	Early Coner	U	SA	3 to 4 +/- 1	-	Local	N/A	No Sample	-
Sep	9M-22B	19-16	Coner	U	A	20-24	Disartic	Imported, Ulua Valley/NW Coast of Honduras	N/A	No Sample	-
Sep	9M-22B	19-4	Late Classic?	U	A	30-35	-	-	0.70678	Local	NRM1
Sep	9M-22B	19-8	Coner	U	A	30-35	Flexed	Local	0.70681	Local	NRM1
Sep	9M-22B	9-1	Coner	U	SA	6 to 7	Flexed	-	N/A	No Sample	-
Sep	9M-22B	9-10	Coner	MP	A	30-45	Flexed	Local	N/A	No Sample	-
Sep	9M-22B	9-11	Coner	U	A	30s	Flexed	Imported	0.70718	Local	NRI2
Sep	9M-22B	9-16	Coner	M	A	24-30	Flexed	-	N/A	No Sample	-
Sep	9M-22B	9-3	Early Coner	M	YA	20s	Extended	Local	0.70674	Local	ULM1
Sep	9M-22B	9-4	Coner	F (Reed)	A	24-35	Partially flexed	-	N/A	No Sample	-
Sep	9M-22B	9-5	Coner	F	YA	20s late-early 30s	Flexed	-	0.70656	Local	LRM1
Sep	9M-22B	9-6	Coner	F	YA	18-22	Flexed	-	N/A	No Sample	-
Sep	9M-22B	9-8	Early Coner	U	SA	11+/-30 mos.	Flexed	-	0.70605	Non-local	URM1
Sep	9M-22B	9-9	Coner	MP	YA	18-22	Tightly flexed	-	0.70791	Non-local	NRM1
Sep	9M-24	18-10	Acbi/ Coner Transition	M	A	20-30	Extended	Sovedeso, Chilanga, and Caterpillar = Local. Cementerio = style is consistent with Honduras but manufature could be local or non-local.	N/A	No Sample	-
Sep	9M-24	18-11	Early Coner	M	YA	18-22	Flexed	Local	0.7081	Non-local	ULM1
Sep	9M-24	18-13	Coner	U	YA	20-30	Flexed	-	0.70662	Local	ULM1
Sep	9M-24	18-14	Coner	U	A	30-35	Flexed	-	N/A	No Sample	-
Sep	9M-24	18-3	Coner	FP	Adol	13-14	Flexed	Local	0.70728	Local	ULM1
Sep	9M-24	18-8	Coner	F	A	30-35	-	Imported. The earlist Chilanga group vessels were made in Copan but were derived from the Izalco-Usulutan type. True Izalco vessels are imported and found at Chalchuapa, Quelepa, Nicaragua, and S Mexico.	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep	9M-24	18-9	Coner	M	YA	20-30	flex	Local	0.70655	Local	ULM2
Sep	9N-8	Sep. 13	Late Classic?	F	YA	18-22	-	-	N/A	No Sample	-
Sep	9N-8	Sep. 14	Late Classic?	U	A	30-35	-	-	N/A	No Sample	-
Sep	9N-8	Sep. 15	Late Classic?	MP	A	35-50	-	-	N/A	No Sample	-
Sep	9N-8	Sep. 8	Late Classic?	U	YA	20-30	-	-	N/A	No Sample	-
Sep	9N-8	Sep. 16	Late Classic?	MP	YA	20-24	-	-	N/A	No Sample	-
Sep 9N8	9N-8A	8-1	Late/Terminal Classic	M	YA	18-24	Flexed	-	0.70898	Non-local	XRM1
Sep 9N8	9N-8A	8-10	Late Classic?	F (Reed)	A	30-40	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8A	8-2	Late Coner	F	YA	30s	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8A	8-34	Late Coner	FP	Adol	15-18	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8A	8-37	Early Late Classic	MP	Adol	16-20	flex	Local	0.70659	Local	XLM1
Sep 9N8	9N-8A	8-4	Coner	M	MA	35-40	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8A	8-6	Early Late Classic	F (Reed)	A	20-40	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8A	8-7	Late Classic	U	SA	5 to 6	Flexed	Imported	0.70668	Local	NRM1
Sep 9N8	9N-8B	16-1	Late Classic	U	YA	Late 20s	Flexed	Local	0.70645	Local	XLM1
Sep 9N8	9N-8B	16-10	Late Classic	FP	YA	20-30	Extend	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-11	Late Classic	U	SA	7 to 8 +/- 2	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-12	Late Classic	U	SA	3 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-13A	Late Classic	U	SA	9 +/- 2	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8B	16-15	Late Classic	FP	A	30-40	Flexed	-	0.70824	Non-local	XLM1
Sep 9N8	9N-8B	16-16	Late Classic	U	SA	5 to 6 +/- 16-24 mos.	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-18	Late Classic	U	SA	3 to 4 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-2	Late Classic	FP	YA	25-35	Disartic	-	0.70694	Local	NRP4
Sep 9N8	9N-8B	16-21	Late Classic	U	SA	3 +/- 1	Disturbed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-22	Late Classic	U	SA	4 to 5 +/- 1	Flexed	-	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix D.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8B	16-23	Late Classic	M	A	30s	Flexed	-	0.70797	Non-local	NLM2
Sep 9N8	9N-8B	16-24	Late Classic	F	A	30s	Flexed	-	0.70751	Non-local	NLI2
Sep 9N8	9N-8B	16-25	Late Classic	M	YA	Early 20s	Flexed	-	0.70709	Local	XLM1
Sep 9N8	9N-8B	16-26	Late Classic	U	SA	2 to 3 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-27	Late Classic	F	YA	20s	Flexed	-	0.70752	Non-local	XRM1
Sep 9N8	9N-8B	16-29A	Late Classic	MP	Adol	15-16	-	-	0.70803	Non-local	NRM1
Sep 9N8	9N-8B	16-31	Late Classic	F	YA	20-30	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8B	16-5	Late Classic	U	SA	2 +/- 8 mos.	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8C	13-10 (Old 26-12)	Acbi/ Coner	F	A	30-50	Flexed	-	0.70779	Non-local	NRP4
Sep 9N8	9N-8C	13-2	Coner	F	YA	20-30	Flexed	-	0.70749	Non-local	NRM1
Sep 9N8	9N-8C	13-3	Coner	F	A	30-35	Disartic	Local	N/A	No Sample	-
Sep 9N8	9N-8C	13-4A	Coner	M	A	20-30	Disartic	-	0.70741	Non-local	XRP3
Sep 9N8	9N-8C	13-4B	Late Classic	U	A	24-30	Und	-	N/A	No Sample	-
Sep 9N8	9N-8C	13-5	Coner	M	MA	40-50	Extended	Local	0.70683	Local	NRM1
Sep 9N8	9N-8C	13-7 (Old 19-3)	Coner	F	A	30-35	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8C	13-8 (old 26-9)	Coner	U	YA	20-24	Disartic	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-12A	Late Classic	U	SA	3 to 4 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-12B	Coner	MP	YA	24-30	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-16A	Late Classic	U	SA	5 +/- 16 mos.	Disartic	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-18	Coner	U	SA	7 +/- 2	Flexed	-	0.70655	Local	NLM1
Sep 9N8	9N-8D	17-19A	Coner	F	YA	20-24	Tightly flexed	-	0.70677	Local	XRM2
Sep 9N8	9N-8D	17-21A	Coner	M	MA	45+	Flexed	Surlo and Copador = Local. Ulua = Imported, Ulua Valley/NW Coast of Honduras	0.70736	Local	NRI2
Sep 9N8	9N-8D	17-21B	Coner	U	A	40s	Flexed	Surlo and Copador = Local. Ulua = Imported, Ulua Valley/NW Coast of Honduras	0.70721	Local	NLM1
Sep 9N8	9N-8D	17-25	Coner	MP	A	30s	flex	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-3	Late Classic	M	A	24-35	Flexed	-	0.70667	Local	NRI2
Sep 9N8	9N-8D	17-32	L. Classic	U	SA	3 +/- 1	Flexed	Undetermined	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8D	17-33	Coner	U	SA	3 to 4 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-35A	Coner	U	SA	5 to 6 +/- 2	-	Local	N/A	No Sample	-
Sep 9N8	9N-8D	17-36A	Coner	M	YA	20s	Flexed	-	0.70676	Local	NLM2
Sep 9N8	9N-8D	17-36B	Coner	FP	YA	20-24	Flexed	-	0.70703	Local	XRM1
Sep 9N8	9N-8D	17-4	Coner	M	A	20-30	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8D	17-40	Coner	MP	Adol	15-18	Flexed	-	0.70826	Non-local	NLM1
Sep 9N8	9N-8D	17-42	Late Classic	U	SA	3 +/- 1	Disartic	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-45	Late Classic	U	SA	4 +/- 1	Und	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-48-36 (Old 26-1)	Late Classic	F	YA	20-30	Disartic	-	0.71018	Non-local	ULM2
Sep 9N8	9N-8D	17-5	Coner	U	SA	3 +/- 1	Flexed	Ulua = Imported, Ulua Valley/NW Coast of Honduras. Copador = Local	N/A	No Sample	-
Sep 9N8	9N-8D	17-50 (Old 26-3)	Late Classic	M	A	24-35	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-51 (Old 28-17)	Late Classic	F	Adol	15-18	Flexed	Undetermined	0.70646	Local	XRM1
Sep 9N8	9N-8D	17-54 (Old 28-20)	Late Classic	F	A	30s	Flexed	?	N/A	No Sample	-
Sep 9N8	9N-8D	17-58 (old 28-24)	Late Classic	M	YA	18-22	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-6	Coner	F	YA	24-30	Tightly flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8D	17-60 (Old 28-26)	Late Classic	F	Adol	15-18	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-7	Coner	FP	A	30-40	Extended	Undetermined	N/A	No Sample	-
Sep 9N8	9N-8D	17-8(a)	Late Classic	MP	YA	24-30	Disturbed	Local	0.70665	Local	NRI2
Sep 9N8	9N-8D	17-8B	Late Classic	U	SA	3 to 4 +/- 1	-	-	N/A	No Sample	-
Sep 9N8	9N-8D	17-9	Coner	F	YA	17-24	flex	-	0.71538	Non-local	NRM2
Sep 9N8	9N-8D/H	17-53A, Old 28-19	Late Classic	M	YA/A	25-35	-	Undetermined	0.7074	Local	NLI2
Sep 9N8	9N-8E	15-10	Acbi/ Coner Transition	F	A	30-35	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-11	Coner	F	YA	20-24	Flexed	-	0.70557	Non-local	NRM1
Sep 9N8	9N-8E	15-14	Acbi or Coner	U	SA	3 to 4 +/- 1	Flexed	If utilitarian ware is a Besal Incised or Sesesmil Incised type of Surlo = Local. But, if inclusions are calcite = Imported undetermined location.	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8E	15-2	Coner	F	A	25-30	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-25B	Coner	MP	A	20-35	Extended	-	0.70671	Local	XRM1
Sep 9N8	9N-8E	15-26B	Coner	U	SA	3 to 4 +/- 1	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8E	15-28	Coner	F	A	30-45	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8E	15-29	Coner	F	A	24-35	Flexed	-	0.70746	Non-local	NRM1
Sep 9N8	9N-8E	15-3	Late Classic	M	YA	16-20	Flexed	Local	0.70776	Non-local	XLM1
Sep 9N8	9N-8E	15-35A	Coner	U	SA	4 +/- 1	Disartic	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-35B	Coner	FP	YA	20s	Flexed	-	0.71319	Non-local	NRM1
Sep 9N8	9N-8E	15-36	Coner	U	SA	3 +/- 1	Disartic	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-39	Late Classic	U	SA	2 to 3 +/- 8-12mos.	-	Local	0.70658	Local	NRM1
Sep 9N8	9N-8E	15-4	Coner	F	MA	40+	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8E	15-40	Late Classic	U	A	24-35	Flexed	-	0.70677	Local	NRC
Sep 9N8	9N-8E	15-42	Coner	U	YA	Late 20s	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-43	Coner	M	A	30-40	Flexed	-	0.70762	Non-local	XRM2
Sep 9N8	9N-8E	15-44	Coner	U	SA	8 +/- 2	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-45	Coner	U	SA	7 +/- 2	Extended	-	0.70523	Non-local	XLM1
Sep 9N8	9N-8E	15-47	Coner	M	A	30s	Flexed	Surlo = Local, Polychrome = undetermined	0.70777	Non-local	XLM1
Sep 9N8	9N-8E	15-6	Coner	F	YA	20-30	Disturbed	-	0.70667	Local	XRM1
Sep 9N8	9N-8E	15-64	Late Classic	MP	MA	50s	Flexed	Local	N/A	No Sample	-
Sep 9N8	9N-8E	15-65 (Old 26-14)	Early Late Classic	F	A	30s	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-66 (Old 26-15)	Early Late Classic	F	A	30s	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-67 (Old 26-18A)	Early Late Classic	U	SA	4 +/- 1	Extended	Local	0.70667	Local	NLM1
Sep 9N8	9N-8E	15-7	Late Classic	U	SA	8+/-2	Disturbed	-	N/A	No Sample	-
Sep 9N8	9N-8E	15-8	Late Classic	U	SA	3+/-1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-17	Coner	U	A	25-40	Flexed	-	0.70815	Non-local	NRM2
Sep 9N8	9N-8F	15-19B	Coner	U	SA	3 +/-1	-	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-20	Coner, poss. Ejar	U	A	20-35	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-21	Late Classic	F	YA	18-24	Flexed	-	0.70449	Non-local	NLM1
Sep 9N8	9N-8F	15-22	Coner	M	YA	18-24	Flexed	-	0.70752	Non-local	XLM1
Sep 9N8	9N-8F	15-30	Coner	FP	A	30s	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-31	Late Classic	U	SA	4 +/- 1	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-37	Coner	U	SA	4 +/- 1	Flexed	-	0.70661	Local	NLM1

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8F	15-50	Late Classic	U	SA	2 +/- 8 mos.	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-51	Coner	M	Adol	16-19	Flexed	Local	0.70666	Local	NLM1
Sep 9N8	9N-8F	15-52	Coner	F	YA	Early 30s	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-53	Coner	U	SA	3 +/- 9 mos.	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-54	Coner	F	A	24-30	Flexed	-	0.7045	Non-local	NLM2
Sep 9N8	9N-8F	15-56	Early Coner	U	SA	4 +/- 1	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-59	Coner	U	YA	24-30	Flexed	Ulua = Imported, Ulua Valley/NW Coast of Honduras.	0.70663	Local	XLM1
Sep 9N8	9N-8F	15-60	Early Coner	U	SA	3 +/- 1	Flexed	Ulua = Imported, Ulua Valley/NW Coast of Honduras. Copador = Local	N/A	No Sample	-
Sep 9N8	9N-8F	15-61	Early Coner	U	SA	2 to 3 +/- 8-12 mos.	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8F	15-62	Coner	F	YA	20s	Flexed	-	0.7085	Non-local	NRI2
Sep 9N8	9N-8F	15-63	Early Late Classic	F	A	30-35	Flexed	-	0.70669	Local	XRM1
Sep 9N8	9N-8H	17-43	Coner	U	SA	4 +/- 1	Flexed	-	0.70702	Local	NLM1
Sep 9N8	9N-8H	22-10A	Early Late Classic	F	YA	18-22	Flexed	-	0.70666	Local	XLM2
Sep 9N8	9N-8H	22-10B	Late Classic	F	YA	24-35	flex	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-11	Late Classic	MP	A	35-40	Flexed, poss. Seated	Local	N/A	No Sample	-
Sep 9N8	9N-8H	22-13C	Late Classic	FP	YA	20-24	flex	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-14	Late Classic	M	A	30-35	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-16	Late Classic	FP	A	30-40	Flexed	-	0.70707	Local	NLM1
Sep 9N8	9N-8H	22-17	Late Classic	U	SA	3 +/- 1	Semi-flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-21A	Late Classic	F	A/MA	30-50	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-22	Late Classic	FP	YA	24-30	Disturbed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-22-26A (Old 22-19-21)	Late Classic	F	YA	20-24	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-28b	Late Classic	U	A	20-40	-	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-23	Coner	F	MA	35-45	Semi-flexed	Undetermined	0.70678	Local	XLP4

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8H	22-25 (old 22-19-20a)	Late Classic	FP	YA	24-35	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-26D	Late Classic	U	SA	3 +/- 1	-	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-27 (Tumba 2)	Late Classic	FP	A	24-30	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-28A Tumba 3	Late Classic	FP	A	24-35	-	Spondylous = imported	N/A	No Sample	-
Sep 9N8	9N-8H	22-31 (Old 26-7and8)	Late Classic	U	SA	5 +/- 16 mos.	-	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-33 (Old 26-11)	Late Classic	U	SA	3 to 4 +/- 1	-	-	0.70641	Local	NLM1
Sep 9N8	9N-8H	22-34 (Old 28-13A)	Late Classic	M	A	35-40	Flexed	Undetermined	N/A	No Sample	-
Sep 9N8	9N-8H	22-35 (Old 28-12)	Late Classic	F	MA	45+	Tightly flexed	-	0.70809	Non-local	XRI2
Sep 9N8	9N-8H	22-37 (Old 28-14)	Late Classic	M	YA	20-30	Flexed	If vessel is Cream Paste tradition = local, otherwise = imported.	0.70687	Local	XLM1
Sep 9N8	9N-8H	22-38 (Old 28-15)	Late Classic	M	A	35-45	Flexed	-	0.70666	Local	NRM1
Sep 9N8	9N-8H	22-39	Late Classic	F	Adol	16-21	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-4	Late Classic	U	SA	8 +/- 2	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-40	Late Classic	M	A	35-40	Flexed	-	0.7067	Local	NLM1
Sep 9N8	9N-8H	22-41 (Old 22-1 Tumba 4)	Late Classic	M	YA	20-30	Flexed	-	0.70865	Non-local	NLI2
Sep 9N8	9N-8H	22-42 (Old 26-6)	Late Classic	F	A	30-40	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-44 (Old 28-19C)	Late Classic	U	SA	3 to 4 +/- 1	-	-	0.70664	Local	XRM1
Sep 9N8	9N-8H	22-45	Late Classic	U	A	40s	-	-	N/A	No Sample	-
Sep 9N8	9N-8H	22-8	Late Classic	U	SA	10 to 11 +/- 30 mos.	flex	-	0.7062	Non-local	XRM1
Sep 9N8	9N-8H	22-9B	Late Classic	M	YA	18-22	Flexed	-	0.70693	Local	XLM1
Sep 9N8	9N-8I	17-10	Coner	F	YA	24-30	Flexed	-	0.70678	Local	XRM1
Sep 9N8	9N-8I	17-47	Late Classic	F	A/MA	35-50	Flexed	Local	0.70849	Non-local	XRM1
Sep 9N8	9N-8I	17-57 (Old 28-23)	Late Classic	U	A	20-30	Disartic	-	N/A	No Sample	-

Sample Region	Group	Burial	Phase	Sex	Age	Range	Position	Local or Imported Ceramics. See Appendix C.	$^{87}Sr/^{86}Sr$ Value	Potentially Local or Non-Local	Tooth Sampled
Sep 9N8	9N-8I	17-61 (Old 28-27)	Late Classic	MP	MA	40s	Flexed	Undetermined	0.70786	Non-local	NRM2
Sep 9N8	9N-8I	4-16	Coner	MP	A	30-40	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8J	21-1A	Early Late Classic	M	A	25-30	Extended	-	0.70778	Non-local	XRM1
Sep 9N8	9N-8K	17-22	Coner	U	SA	10 to 11 +/- 30 mos.	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8K	17-24	Late Classic	U	SA	6 +/- 2	Flexed	-	N/A	No Sample	-
Sep 9N8	9N-8K	17-31	Late Classic	U	A	24-30	Flexed	-	0.70669	Local	NLP4
Sep 9N8	9N-8K	17-34A	Coner	MP	YA	20s	Semi-flexed	-	0.70728	Local	NRM1
Sep 9N8	9N-8K	17-34B	Late Classic	U	SA	4 +/- 1	-	-	N/A	No Sample	-
Sep 9N8	9N-8K	17-39	Late Classic	U	A	30s	Flexed	Imported	N/A	No Sample	-
Sep 9N8	9N-8K	17-55 (Old 28-21	Late Classic	FP	Adol	15-18	Extended	-	N/A	No Sample	-
Sep 9N8	9N-8K	17-56 (Old 28-22)	Late Classic	F	YA	24-30	Flexed	-	0.70686	Local	XRM1
Sep 9N8	9N-8M	15-23	Coner, poss. Ejar	M	A	30-45	Flexed	-	0.70669	Local	XLM1
Sep 9N8	9N-8M	15-27	Coner	U	SA	3 to 4 +/- 1	Flexed	-	N/A	No Sample	-

APPENDIX E

MAYA AND SELECTED MESOAMERICAN BIODISTANCE AND PHYSICAL ANTHROPOLOGY REFERENCES

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Morton SG	1839	Crania Americana: or a comparative view of the skulls of various aboriginal nations of north and south America.	Philadelphia and London.	-	-	-
Morton SG	1842	Yucatan (Ticul) Skeleton	Proceedings of the Academy of Natural Science	1	-	203
Davis B	1867	Thesaurus craniorum. catalogue of the skulls of various Races of men.	London.	-	-	234-x
Collins J	1870	The Indians of Mosquito Territory	Memoirs of the Anthropological Society of London	3	-	148-156
Putnam FW	1872	Note on ancient races of America, their crania, migrations, and the greatest development in Mexico and Peru.	Bulletin Esses Institute, Salem.	-	-	-
Putnam FW	1872	An ancient human cranium from southern Mexico	Proceedings of the Boston Society of Natural History	15	-	228
Flower WH	1880	The American races.	British Medical Journal, London.	-	549, 577, 616	
Hamy ET	1882	Les mutilations dentaires au Mexique et dans le Yucatan.	Bulletins de la Societe d'Anthropologie de Paris, 3e. Ser	5	-	879-882
Quatrefages A, Hamy ET	1882	Crania ethnica.	Paris.	-	-	-
Barrett WC	1883	An examination of the condition of the teeth of certain prehistoric American races	Independent Pract. New York.	IV	-	513-521
Hamy ET	1883	Mutilations dentaires des huaxteques modernes.	Bulletins de la Societe d'Anthrpologie de Paris, 3e Ser.,	6	-	644-645
Kollman J	1883	Die Autochtonen Amerikas	Zeitschrift fur Etnologie, Berlin	15	-	1-47
Charnay D	1884	Medidas de indios Mixtecos, Yucatecos y Chochos	HAMY: Mission Scientifique au Mexique et dans l'Amerique Centrale, Primera Parte, Paris.	-	-	40
Gosse LA	1885	Essais sur les deformaions artificielles du crane.	Paris	-	-	-
Aitken Meigs J	1886	Catalogue of the human crania in the collection of the Academy of Natural Science of Philadelphia	Proceedings of the Academy of Natural Sciences, Philadelphia, 1886.	-	-	197-235
Virchow R	1888	Ein Skelet und Schadel von Guajiros. Verhanlungen der Berliner.	Gesellschaft fur Anthropologie. Ethnologie und Urgeschichte. Berlin	-	-	692-706
Ernst A	1887	Uber einen Motilonen-Schadel aus Venezuela.	Zeitschrift fur Ethnologie, Berlin	-	-	190-197
Ernst A	1889	Un craneo Moilon	El Zulia Ilustrado	7	-	48-50
Boas F	1890	Cranium from Progreso, Yucatan	Proceedings American Antiquity Society. Worcester	6	-	
Matthews W	1891	The human bones of the Hemenway Collection in the US Army Medical Museum at Washington	Memoirs of the Academy of Sciences, Washington	-	-	141-286
Anton M	1892	Antropología de los pueblos de America anteriores al descubrimento.	Madrid.	-	-	-
Virchow R	1892	Crania ethnica Americana.	Zeitschrift fur Ethnologie. Berlin	Supp	24	-
Andres RR	1893	Prehistoric Crania from Central America	International Dental Journal	1983	Dec	-
Sentenach N	1898	Ensayo sobre la America precolumbiana	Toledo.	-	-	-
Jacques MV	1898	Cranes Caraibes du Venezuela	Bull. Soc. Anthropol. De Burxelles	3	-	306-311
Leon N	1901	Los dientes caninos en los indios de Mexico	Cronica Medica Mexicana	4	-	270

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Rivet P	1908	Note sur deux cranes de Yucatan	Journal de la Societe des Americanistes	5	-	251-259
Rivet P	1910	Recherches sur le prognathisme	L'Anthropologie	11	-	504-518, 637-659
Hrdlicka A	1911	Artificial deformations of the human crania with special reference to America	Congresos Internacionales de Americanistas. Sesion de Buenos Aires	XVII	-	147-149
Mena R	1911	Los dientes de los indios	In: Memoria y Revistas de la Sociedad Cientifica Antonio Alzate	30	-	3-6
Caparo Perez JA	1917	Origins of the Indians of central and south America	Proceedings of the 2nd Pan-American Scientific Congress	1	1	116-120
Gann TWF	1918	The Maya Indians of Southern Yucatan & Northern British Honduras	Bureau of American Ethnology, Washington	Bull	64	-
van Rippen B	1918	Mutilations and decorations of teeth among the Indians of north, central, and south America	Journal of Allied Dental. Soc. New York	-	-	219-242
Leon N	1919	Historia de Antropoogia fisica en Mexico	American Journal of Physical Anthropology	2	3	229-264
Hrdlicka A	1920	Shovel-shaped teeth.	American Journal of Physical Anthropology	3	-	429-465
von Bulow T	1922	Contribucion de la craneologia costarricense	Escuela Costarricense, San Jose de Costa Rica	8	-	-
Kate HT	1924	Notes d' Antropologie Sud-Americaine	Journal de la Soceite des Americanistes	16	-	183-193
Ayala Durante RJ	1928	Apuntes de antropología Venezolana.	Doctoral thesis, Caracas.	-	-	-
Rubin de la Borbolla DF	1930	Estudio de las particularidades que presentan algunos craneos de la coleccion del Departamento de Antropologia Fisica del Museo Nacional	Annales del Museo Nacional.	Epoca 4	Tomo 4	429-434
Cabrera, A	1930	Sobre el supesto antropoideo de Venezuela	Prysis	10	-	204-209
Basauri C	1931	Tojolables, Tzeltales, y Mayas	Mexico.	-	-	-
Ricketson OG	1931	Excavations at Baking Pot, British Honduras	Carnigie Institution of Washington	403	-	-
de las Barras de Aragon F	1932	Estudio de los craneos de Indios Guajiros [venezuela]	Memoria de la Sociedad Espanola de Antropología, Ethnografia y Prehistoria Madrid	96	-	69-119
de las Barras de Aragon F	1932	Estudio de los craneos de indios Guajiros, existentes en el museo de historia natural de Caracas, Venezuela	Actas y Memorias Socieded Espanola de Antropologia Etnografia y Prehistoria	11	2-3	69-119
Blom F, Grosjean SS, Cummins H	1933	A Maya Skull from the Ulua Valley, Republic of Honduras.	Tulane University Studies Middle America, Publication 5, New Orleans. Translated to Castellean Spanish en Annales de la Socieded de Geografia e Historia. Año 10, number 1, Guatemala.	10	1	32-40
Ricketson OG	1933	1926-31 Uaxactun, Guatemala, Grupo E.	Carnigie Institution of Washington.	477	-	
Cave AJE	1939	Report on two skulls from British Honduras	Bureau of American Ethnology, Washington	Bull	123	59-63
Gann TWF	1939	Archaeological investigations in the Corazol District of British Honduras	Anthropological Papers, Bureau of American Ethnology	Bull	7	-
Frazer JG	1839	Anthologia Anthropologica. The Native Races of America	London	-	-	-
Giraldo Jaramillo G	1939	Clasificacion del hombre americano	Bol. De Historia y de Antiguedades	26	-	206-215
Basauri C	1940	La poblacion indigena de Mexico.	Secretaria de Educacion, Publica.	2	-	125-134
Hooten EA	1940	The Mayas and their Neighbors	New York	-	-	-

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Hooten EA	1940	Skeletons from the cenote of sacrifice at Chichen Itza	In: The Maya and their Neighbors. D. Appleton Century C. Inc. New York USA	-	-	272-280
Linne S	1940	Dental Decoration in Aboriginal America	Ethnos	5	-	2-28
Longyear III JM	1940	A Maya old empire skeleton from Copan	American Journal of Physical Anthropology	27	1	151-154
Comas J	1940s	Informe preliminar sobre los restos oseos hallados por el doctor MW Sirling en el Cerro de las Mesas, Veracruz	Bulletin del Bureau of American Ethnology, Smithsonian Institution, Washington.	-	-	-
Steggerda M	1941	Maya Indians of Yucatan.	Washington, Carnegie, Institution of Washington.	531	-	-
Stewart TD	1941	New examples of tooth mutilation from Middle America	American Journal of Physical Anthropology	28	1	117-124
Comas J	1942	El problema de la existencia de un tipo racial Olmeca. Conclusiones	Mayas y Olmecs, edited by the Society of Mexican Anthropology, Tuxtla Gutierrez, Chiapas.	-	-	69-70
Lehmann H	1942	Bibliografia Antropologica Colombiana	Boletin Bibliografico de Antropologia Americana. Mexico	6	-	42-46
Goldstein MS	1943	Observations of Mexican Crania	American Journal of Physical Anthropology	1	1	83-93
Delgado Febres C	1944	Los cuadruples Contreras de Achaguas	Arch. Ven. De Puericulta y Pediatria	6	20-21	1101-1111
Alvarado L	1945	Datos etnograficos de venezuela	Bib Venezolana de Cultura, Caracas	-	-	-
Cruxent JM	1945	Los craneos tabulares erectos de Venezuela	Acta Venezolana	1	2	258-260
Cruxent JM	1947	Descubrimiento del primer craneo con deformacion intencional tabular-erecta en la zona del Tacarigua, Estado Aragua, Venezuela	Boletin de la sociedad Venezolana de Ciencias Naturales	69	-	335-361
Fastlicht S	1947	Estudio dental y radiografico de las mutilaciones dentarias	Anales del INAH, Mexico, INAH, 1947	II	-	7-13
Weer Goff C	1948	Anthropometry of a Mam-speaking group of Indians from Guatemala	American Journal of Physical Anthropology	6	4	429-448
Rubin de la Borbolla DF	1950	Types of tooth mutilation found in Mexico	American Journal of Physical Anthropology	26	-	349-365
Dahlberg AA	1951	The dentition of the American Indian.	In: The physical anthropology of the American Indian edited by WS Lauglin, Viking fund, NY	-	-	138-176
Fleury-Cuello E	1953	Estudio Craneometrico	Anales de la Universidad Central de Venezuela	34	-	137-207
Newman MT	1960	Population analysis of finger and palm prints in Highland and Lowland Maya Indians	American Journal of Physical Anthropology	18	1	45-58
de Diaz Ungria AG	1961	Los grupos sanguineos del sistema MN en poblaciones indigenas de Venezuela	Folia Antropologica. Caracas.	3	-	1-26
Dahlberg AA	1963	Analysis of the American Indian Dentition	In: symposium o f the Society for the study of Human Biology, Volume 5, Dental Anthropology, Pergamon Press	-	-	149-178
Genoves S, Comas T, Comas J	1964	La antopologia fisica en Mexico, 1943-64: inventario bibliografico	Cuadernos: Serie Antropologia, 17. Instituto de Investigaciones Historicas, Universidad Nacional Autonoma de Mexico, Mexico.	-	-	-
Gomez VC, Blanco JS	1964	Variaciones mofologicas y valores metricos del primer molar inferior permanente en indigenas Guajiros	Tesis de grado (multigrafiada). Facultad de Odontologia. Universidad Central de Venezuela.	-	-	-
Davalos Hurtado E	1965	Caracteristicas del indigena	Temas de antropologia fisica, Mexico, INAH/SEP	-	-	229-237
Davalos Hurtado E, Romano A	1965	Las deformaciones corporales enter los mexicas	Temas de antropologia fisica, Mexico, INAH/SEP	-	-	75-93

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Comas J	1966	Caracteristicas fisicas de la familia linguistica Mayas.	Instituto de Investigaciones Historicas. Series Antropologia	20	-	-
de Diaz Ungria AG	1966	Estudio comparativo de las caracteristicas Serologicas y Morfologicas correspondientes a las poblaciones Guajiro, Guahibo, Guaro y Yaruro.	Coleccion Esquemas Ediciones Facultad de Economia	32	-	U.C.V.
Peñalver J	1969	Deformaciones maxilo-dento-facial en los indios de la cuenca del Lago de Tacarigua.	Instiuto de Antropologia e Historia del Estado Carabobo. Valencia.	-	-	-
Austin DM	1970	Dental microevolution in Two ancient Maya Communities.	Thesis: Department of Anthropology The Pennsylvania State University, University Park	-	-	-
Erickson RP, Nerlove, S, Creger WP, Romney A	1970	Comparison of genetic and anthropological interpretations of population isolates in Aguacatenenago, Chiapas, Mexico	American Journal of Physical Anthropology	32	1	105-120
Roisenberg, Morton, Newton	1970	Population structure of blood groups in Central and South American Indians	American Journal of Physical Anthropology	32	3	323-340
Romero Molina J	1970	Dental mutilation, trephination, and cranial deformation.	In: Physical Anthropology edited by T.D. Stewart. Handbook of the Middle American Indians, vol. 9, R Wauchope general editor, UT Press, Austin	-	-	50-67
Stewart TD	1970	Physical anthropology	In: Handbook of Middle American Indians, R. Wauchope, general editor. UT Press, Austin.	9	-	-
Austin DM	1972	Appendix. morphology and dimensions of the Altar de Sacrificios teeth.	Human Skeletal Remains of Altar de Sacrificios: An Osteobiographic Analysis, edited by Frank. P. Saul. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University. Cambridge. Peabody Museum.	63	-	-
Saul FP	1972	The physical anthropology of the ancient Maya: An Appraisal.	Internationalen Amerikaistenkongresses, Stuttgart-Munchen, 1968, Band 4. Kommissionsverlag Klaus Renner, Munchen.	-	-	383-394
Saul FP	1972	The human skeletal remains of Altar de Sacrificios and osteobiographic analysis.	Papers of the Peabody Museum of Archaeology and Ethnology. Harvard University, Cambridge	63	2	-
de Castillo HL	1973	Odontometria y morfologia dental del los Guajiros.	Caracas: Serie de biologia humana, publicacion patrocinada por el consejo de desarrollo cientifico y humanistico y el instituto de investigaciones economicas y sociales	-	-	Diciembre 1973
Howells WW	1973	Cranial variation in Man: a study by multivariate analysis of patterns of difference among recent human populations.	Papers of the Peabody Museum of Archaeology and Ethnology Harvard University, Cambridge MA	67	-	-
Portin P, Alvesalo L	1974	The Inheritance of shovel shape maxillary central incisors	American Journal of Physical Anthropology	41	-	59-62
Spence MW	1974	Residential practices and the distribution of skeletal traits in Teotihuacan, Mexico	Man	9	-	262-273
Saul FP	1975	Appendix 8 -human remains from Lubaantun.	In: Lubaantun, a Classic Maya Realm, edited by N. Hammond. Peabody Museum Monographs no 2. Peabody Museum of Archaeology and Ethnology Cambridge University, Cambridge.	-	-	389-410

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Serrano C	1975	Balance y perspectivas de la investigacion antrobiologica en la zona maya	XIII Mesa Redonda. Balance y perspectivas de la Antrpologia de Mesoamerica y Norte de Mexico, Antropologia Fisica. Sociedad Mexicana de Antropologia, Mexico.	1976	2	267-273
Escobar V, Conneally PM, Lopez C	1977	The dentition of the Queckchi Indians. Anthropological aspects	American Journal of Physical Anthropology	47	3	443-451
Austin DM	1978	The biological affinities of the ancient populations of Altar de Sacrificios and Seibal.	Estudios de Cultura Maya	11	-	57-73
Austin DM	1978	The biological affinity of the Sacrificios and Seibel	In: Estudios de Cultural Maya. Centro de Estudios Mayas, Instituto de Investigaciones Filologicas, Universidad Nacional Autonoma de Mexico.	11	-	57-72
Campos V, Silva A	1978	Paleopatologia (dientes, maxilares y mandibula)	Tesis. Mexico: Escuela de Odontologia-Universidad Tecnologica de Mexico	-	-	-
Quintanar M, Ana S, Briseño L	1978	Investigacion odontoanthropologico	Tesis: Mexico: Facultad de Odontologia UNAM	-	-	-
Escobar V, Conneally M, Kang W	1979	Genetic structure of the Queckchi Indians [Guatemala]	Human Heredity	29	3	134-142
Baume RM, Carford MH	1980	Discrete dental trait asymmetry in Mexican and Belizean groups	American Journal of Physical Anthropology	52	-	315-321
Pompa y Padilla JA	1980	Las Investigaiones en antropologia dental: fuentes de informacion sobre intercambios geneticos.	In: Memorias de la XVI Mesa Redonda de la Sociedad de Mexico de Anthropologia "Rutas de intercambio" Tomo I.	1980	1	29-40
Steele DG, Eaton JD, Taylor AJ	1980	The skulls from operation 2011 at Colha: a prelimary examination.	In: The Colha Project, Second Season, and 1980 Interim Report. Edited by TR Hester, HJ Shafer, and JD Eaton,. The University of Texas at San Antonio and Center for Archaeological Research, Centro Studi e Ricaerche Liguabue Venezia, San Antonio.	-	-	163-172
Jeux C	1981	Apport de la collection de l'Institut National D'Antrhopolgie et d'Histoire de Mexico a l'etude Des mutilations dentaires	Doctoral Thesis, Lyon, Facultad de Odontologia-Universidad Claude Bernard	-	-	-
Serrano C	1981	Estudio bioantropologico del grupo. consideraciones preliminares.	Los Legitimos Hombres: Aproximacion antropologica al grupo Tjolabal. Edited by Mario Humerto Ruz. Universidad Nacional Autonoma de Mexico.	-	-	89-98
Turner II CG	1981	Dental evidence for the peopling of the Americas.	Work for the Early Man in the New World, New Developments 1970-1980 Symposium at the 1981 SAA meetings, San Diego, CA.	-	-	-
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Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Mata Ramirez MB	1982	El estado paradontal de un grupo etnico de la epoca preshispanica	Tesis, Mexico, ENEP Iztacala-UNAM	-	-	
Massey VK, Steele DG	1982	Preliminary notes on the dentition and taphonomy of the Colha human skeletal material.	In: Archaeology of Colha, Belize: The 1981 Interim Report, edited by T.R. Hester, H.J. Shafer, and J.D. Eaton. Center for Archaeological Research, The University of Texas at San Antonio and Centro Studi e Ricerche Ligabue, Venezia, San Antonio.	-	-	198-202
Kennedey GE	1983	Skeletal remains from Sarteneja, Belize	In: Archaeological investigations in Northern Belize, Central America, edited by RV Sidrys. Monograph XVII. Institute of Archaeology, University of California at Los Angeles, Los Angeles.	-	-	353-372
Speckman Borg I	1983	Frecuencia y distribucion de furcaciones involcradas y proyecciones cervicales del esmalte y su relacion	In: Revista de la Asociacion Dental Mexicana	XLI	-	35-42
Goldaracena P, Rey R, Martinez C	1984	Dental-caries and chewing side preference in Maya Indians	J Dental Research	63	SI	182-182
Marquez L, Schmidt P	1984	Osario infantil en un chultun en Chichen Itza	In Investigaciones recientes en el area Maya tomo 2. Memorias de la XVII Mesa Redonda, 1981. Sociedad Mexicana de Antropologia, San Cristobal de las Csas.	-	-	89-103
Perzigian AJ	1984	Human odontometric variation: An evolutionary and taxonomic assessment.	Anthropologie	22	-	193-197
Pijoan Aguade CM, Salas Buesta ME	1984	La poblacion prehispanica de Jaina: analisis osteologico.	In: Investigaciones recientes en el area Maya, tomo 2. Memoria de la XVII Mesa Redonda, 1981. Sociedad Mexicana de Antropologia, San Cristobal de las Casas.	-	-	471-480
Pompa y Padilla JA	1984	Jaina y Chichen Itza: morfologia dentaria normal de dos muestras de la poblacion Maya prehispanica.	In: Memorias de la XVII Mesa Redonda de la Sociedad Mexicana de Antropologia. San Cristobal de las Casa, Mexico: Socieded Mexicana de Antropologia.	-	-	481-489
Torre- A G, Diaz AE	1984	Estudio de malformaciones dentarias en la poblacion Mexicana	Mexico: ENEP Zaragoza-UNAM	v	-	-
Little BB, Malina RM	1986	Gene flow and variation in stature and craniofacial dimensions among indigenous populations of Southern Mexico, Guatemala, and Honduras	American Journal of Physical Anthropology	70	4	502-512
Romero Molina J	1986	Catalogo de la coleccion de dientes mutilados prehispanicos, IV parte.	Instituto Nacional de Antropologia e Historia, Mexico.	-	-	-
Bogin B, MacVean RB	1987	Growth status, age, and grade as predictors of school continuation for Guatemalan Indian children	American Journal of Physical Anthropology	73	4	507-513
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Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Howells WW	1989	Skull Shapes and the map.	Papers of the Peabody Museum of Archaeology and Ethnology Harvard University, Cambridge MA	79	-	-
Massey VK	1989	The human skeletal remains from a Terminal Classic skull pit at Colha, Belize.	College Station TX: Texas A&M University.	-	-	-
Culbert TP, Sasokowsky L, Fry R, Haviland WA	1990	The population of Tikal, Guatemala	In: Culbert TP, Rice CS, editors, Pre-Columbian population history in the Maya lowlands. Albuquerque: University of New Mexico Press	-	-	103-122
Lang CA	1990	The dental morphology of the Maya from Lamanai and Tipu	Trent University MA thesis, Peterborough, Ontario	-	-	-
Pompa y Padilla JA	1990	Antropologia dental: aplicacion en poblaciones preshispanicas	Mexico: INAH (col. Cientifica 195)	-	-	-
Tourtellot G	1990	Burials: a cultural analysis.	In: Excavations at Seibal, Department of Peten, Guatemala, edited by GR Willey. Memoirs of the Peabody Museum of Archaeology and Ethnology. Harvard Univ.Cambridge MA	17	2	-
Harris EF, Rathburn TA	1991	Ethnic differences in the apportionment of tooth sizes	In: Advances in Dental Anthropology, edited by MA Kelley and CS Larsen Wiley-Liss NY	-	-	121-142
Neves WA, Pucciarelli HM	1991	Morphological affinities of the first Americans: an explanatory analysis based on early South American human remains.	Journal of Human Evolution	21	-	261-273
Sugiyama KB	1991	Descubrimiento de entierros y ofrendas dedicadas al Templo Viejo de Quetzalcoatl, Teotihuacan 1980-1982	IN: Ruben Cabrera C, Ignacio Rodriguez G and Noel Morelos G. Teotihuacan 1980-1982, Mexico INAH (Col. Cientifica, 227)	-	-	275-326
Bogin B, Wall M, MacVean RB	1992	Longitudinal analysis of adolescent growth of ladino and Mayan school children in Guatemala: Effects of environment and sex	American Journal of Physical Anthropology	89	4	447-457
Del Angel-E A	1992	El modelo filogenetico de historia cultural y el problema de los indios Coxoh. un enfoque antropoloico dental	Thesis, Mexico, ENAH	-	-	-
Steele DG, Powell JF	1992	Peopling of the Americas: Paleobiological evidence	Journal of Human Biology	64		303-336
del Angel-E. A, Serrano CS; Castro AS	1993	Dental morphology from two Mayan groups in Chiapas, Mexico	Dental Anthropology Newsletter	7	2	13
Konigsberg LW, Kohn LA, Cheverud JM	1993	Cranial deformation and non-metric trait variation	American Journal of Physical Anthropology	90	1	35-48
Marquez L	1993	Xcaret. Estudio osteologico de un sitio arqueologio maya	Ms on file. Direccion de Antropologia Fisica, Instituto Nacional de Antropologia e Historia, MX.	-	-	-
Powell JF	1993	Dental evidence for the peopling of the new world: some methodological considerations.	Journal of Human Biology	65		799-815
Steele DG, Powell JF	1993	Paleobiology of the first Americans	Evol Anthropol	2		138-146
Villegas Alcantara DI	1993	Estudio de algunas afecciones orales en poblaciones del Mexico antiguo	Tesis: Mescio Escuela de Odontologia-Universidad Lationamericana	-	-	-

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Chase DZ	1994	Human osteology, pathology, and demography as represented in the burials of Caracol, Belize	IN: Studies in the Archaeology of Caracol, Belize, edited by DZ Chase and AF Chase. Monograph 7. Pre-Columbian Research Institute, San Francisco.	-	-	123-138
Glassman DM	1994	Skeletal biology of the Prehistoric Maya on Ambergris Cay, Belize (abstract)	American Journal of Physical Anthropology, Supplement	18	-	95
Larsen CS	1994	In the wake of Columbus: Native population biology in post contact Americas	American Journal of Physical Anthropology	37	S19	109-154
Massey VK	1994	An osteological analysis of the skull pit children.	Ms on file at the Center for Archaeological Research, The University of Texas at San Antonio.	-	-	-
Merriweather DA, Rothhammer AF, Ferrell RE	1994	Genetic variation in the New World: ancient teeth, bone and tissue as sources of DNA.	Experientia	50	-	592-601
Powell JF	1995	Dental variation and biological affinity among middle Holocene human populations in North America.	Dissertation Texas A&M University, College Station.	-	-	-
Haydenbilt R	1996	Dental variation among four Prehispanic Mexican populations	American Journal of Physical Anthropology	100	2	225-246
Jacobi KP	1996	An analysis of genetic structuring in a colonial maya cemetery, Tipu, Belize	PhD Indiana University, Bloomington	-	-	-
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Lopez Oliares NM.	1997	Cultural odontology: dental alterations from Peten, Guatemala	In: Whittington SL, Reed DM editors. Bones of the Maya: studies of ancient skeletons. Washington: Smithsonian Institute Press.	-	-	105-115
Merriweather DA, Reed DM, Ferell RE	1997	Ancient and contemporary mitochondrial DNA variation in the Maya.	In: Whittington SL, Reed DM editors. Bones of the Maya: studies of ancient skeletons. Washington: Smithsonian Institute Press.	-	-	208-217
Scott GR, Turner II CG	1997	The anthropology of modern human teeth: Dental morphology and its variation in recent human populations.	Cambridge University Press, Cambridge.	-	-	-
Wright LE	1997	Los restos oseos humanos de Piedras Negras: un reporte preliminar.	In: Escoedo HL, Houston SD, editors. Proyecto Arqueologico Piedras Negras: Informe preliminar no 1., primera temporada 1997. Guatemala City, Guatemala: Informe presented to the Instituto de Antropologia e Historia de Guatemala	-	-	213-217
Bogin B, Loukey J	1998	Plasticity, political economy, and physical growth status of Guatemala Maya Children Living in the United States	American Journal of Physical Anthropology	102	1	17-32
Brace L	1998	The anthropology of modern human teeth: dental morphology and its variants in recent human populations	Dental Anthropology Newsletter	12	2 to 3	
Christensen AF	1998	Colonization and microevolution in Formative Oaxaca, Mexico	World Archaeology	30		262-285
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Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Schunutenhaus S Rosing FW	1998	World variation of tooth size.	In Dental Anthropology: Fundamentals, Limits, and Prospects Edited by KW Alt FW Rosing and M Teshler-Nicola. Springer-Verlag, NY.	-	-	521-535
Glassma DM, Garber JF	1999	Land use, diet and their effects on the biology of the prehistoric Maya of northern Ambergris Cay, Belize.	In: White CD, editor. Reconstructing ancient Maya diet. Salt Lake City: University of Utah Press.	-	-	119-132
Powel JF, Neves WA	1999	Craniofacial morphology of the first Americans: pattern and process in the peopling of the New World.	Yearbook of Physical Anthropology	42		153-188
Scherer A, Yoder CJ, Wright LE	1999	Los esqueletos de Piedras Negras: reporte preliminar No 3.	In: Escobedo HL, Houston SD editors. Proyecto Arqueologico Piedras Negras: Informe preliminar No 3. tercera temporada, 1999. Guatemala: Informe presented to the Instituto de Antropoogia e Historia de Guatemala	-	-	553-557
Tiesler V	1999	Rasgos bioculturales entres ls antiguos maya: aspectos arequologicos y sociales	Dissertation: Universidad Nacional Autonoma de Mexico, Mexico City.	-	-	-
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Jacobi KP	2000	Last Rites for the Tipu Maya: genetic structuring in a Colonial cemetery	Book: Tuscaloosa: University of Alabama Press.	-	-	-
Wright LE, Vasquez MA, Morales MA, Valdizon WM	2000	Proyecto Osteologico Tikal: Informe Preliminar #1 Temporada de Laboratorio 1998-9	Instituto de Antropologia e Historia	-	-	-
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Gonzalez-Oliver A, Marequez-Morfin L, Jimenez JC, Torre-Blanco A	2001	Founding Amerindian mitochondrial DNA lineages in ancient Maya from Xcaret, Quintata Roo	American Journal of Physical Anthropology	116	3	230-235
Iglesias MJ, Cuiduad A, Arroyo E, Adanez J, Alvarez S.	2001	Aplicaciones de antropologia molecular a la arqueologia Maya: El Caso de Tikal.	In: Laporte JP, de Suasnavar AC, Arroyo B, editors. XIV Simposio de Ivestigaciones Arqueologicas en Guatemala. Guatemala City: Ministerio de Cultura y Deportes. Instituto de Antropologia e Historia, Asociacion Tikal.	-	-	
Jan RL, Owsley DW	2001	Variation among early American crania	American Journal of Physical Anthropology	114	-	146-155
Rhoads M	2001	Preliminary analyses of ancient Maya kinship within the Copan Valley using dental metric traits	American Journal of Physical Anthropology, Supplement	Supp	32	125-126
Tielser Blos V	2001	Decoraciones dentales entre los antiguos mayas	Mexico: INAH/Ediciones Euroamericanas (Paginas Mesoamericanas, 3)	-	-	-
Tiesler Blos VG, Frausto RLB	2001	Head shaping and dental decoration: Two biocultural attributes of cultural integration and social distinction among the ancient Maya	American Journal of Physical Anthropology, Supplement	Supp	32	149-149
Bogin B, Smith P, Varela Silva MI, Loucky J	2002	Rapid change in height and body proportions of Maya American children	American Journal of Human Biology	14	6	753-761

Name: Last, First	Year	Title or Description	Journal, Book, or Publisher	Vol.	Issue	Pages
Cucina A, Tiesler Blos V, Sosa TS	2002	Dental anthropology, settlement pattern, and social structure at the Maya site of Xcambo, Yucatan	American Journal of Physical Anthropology, Supplement	Supp	34	58-59
Gallego CR	2002	Morologia y odontometrica en restos dentales del sito arqueoogica "Bacuranao", Cuba	International Journal of Dental Anthropology	3		20-31
Rhoads M	2002	Population dynamics at the southern periphery of the ancient Maya world: kinship at Copan.	Dissertation: University of New Mexico, Albuquerque	-	-	-
Wrobel GD	2002	Intertrait association: measuring correlations among dental discrete traits within and between tooth classes in a Maya skeletal collection	American Journal of Physical Anthropology, supplement	Supp	34	18-168
Cucina A, Tiesler Blos V	2003	Dental morphometry and indicators of developmental stress in Precontact and contact Maya populations from Yucatan	American Journal of Physical Anthropology, Supplement	Supp	36	81-81
Pompa y Padilla JA	2003	Estudio de la antropologia dental en Mexico	In: Antropologia Fisica Disciplina Plural. Mexico DF: INAH	-	-	199-210
Rejon Patron L	2003	Quienes son los antiguos habitantes de Chichen Itza?	Temas antropologicos	25	1 to 2	5-30
Saenz Faulhaber ME	2003	Los estudios de ontogenia en Mexico hacia del siglo XX.	In: Antropologia Fisica: Disciplina Plural. Eds. Josefina Mansilla Lory, Xabier Lizarraga Cruchaga. Coleccion Divulgacion, Conaculta, INAH.	-	-	-
Wright LE, Scherer AK, Vasquez MA, Valdizon WM	2003	Proyecto Osteologico Tikal: Informe Preliminar #2 Temporada de Laboratorio 2000	Instituto de Antropologia e Historia	-	-	-
Wrobel GD	2003	Metric and non-metric dental variation among the ancient Maya of Northern Belize.	Dissertation: Indiana University, Bloomington, IN.	-	-	-
Cucina A, Tiesler V	2004	Dental morpometry and biological affinity in pre-contact and contact Maya populations from the peninsula of Yucatan.	Mexicon	26	-	14-19
Rodriguez Florez CD	2004	Dental Morphology and biological distances within a Pre-conquest population from Columbia	International Journal of Dental Anthropology	5	-	15-22
Roseman CC, Weaver TD	2004	Multivariate apportionment of global human craniometric diversity	American Journal of Physical Anthropology	125	3	257-263
Wright LE	2004	Osteological investigations of ancient Maya lives.	In: Golden CW, Borgstead G, editors. Continuities and Changes in Maya Archaeology. New York: Routledge	-	-	201-216
Hanihara T, Ishada H	2005	Metric dental variation of major human populations	American Journal of Physical Anthropology	128	-	287-298
Krenzer U	2005	Caracterizacion biometrica de craneos Guatemaltecos	Centro de analisis forense y ciencias apucadas	2005	Oct	
Scherer AK	2005	Dental Analysis of Classic period population variability in the Maya area	Dissertation, Texas A&M University	-	-	-
Wrobel GA	2005	Non-metric dental variation among the ancient Maya of Northern Belize	American Journal of Physical Anthropology, Supplement	Supp	40	227-227
Melton PE, Briceno I, Gomez A, Bernal, JE, Crawford MH	2006	Biological relationship between central and South American Chibhan speaking populations: evidence from mtDNA	American Journal of Physical Anthropology	133	1	753-770

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Scherer AK	2006	Las relaciones biologicas durante la epoca Clasica Maya	XVIX Simposio de Investigaiones Arqueologicos en Guatemala, edited by JP Laporte, B. Arroyo, and H.E. Mejia, Museo Nacional de Arqueologia y Etnologia, Guatemala	-	-	535-543
Delgado-Burbano ME	2007	Variacion dental non-metrica y el trafico de esclavos por el atlantico: la ascendencia biologica y los orines geograficos de una poblacion afro-columbiana	Revista Espanola de Antropologia Fisica	27	-	13-32
Scherer AK	2007	Population structure of the classic period Maya	American Journal of Physical Anthropology	132	3	367-380
Gomez-Valdes JA, Bautista J, Pompa y Padilla JA, Talavera JA, Castrejon JL	2007	Genetic continuity of west and nuclear Mesoamerican populations	International Journal of Dental Anthropology	11	-	16-24
Scherer AK	2007	Bioarchaeological evidence for social and temporal differences in subsistence at Piedras Negras, Guatemala	Latin American Antiquity	18	1	85-104
González- A, Gorostiz A, Rangel-Villalobos H, Acunha V, Barrot C, Sánchez C, Ortega M, Gené M,	2008	Analyzing the genetic structure of the Tepehua in relation to other neighbouring Mesoamerican populations. a study based on allele frequencies of STR markers	American Journal of Human Biology	20	5	605-613
Cucina A, Tiesler V	2008	Morphological affinities and migratory patterns in Precontact Maya populations from the Yucatan Peninsula: a dental non-metric analysis	American Journal of Physical Anthropology, Supplement	Suppl. 46	-	85-85
Gallego CR	2008	Presencia de Reborde Distal Accesorio en Caninos Provenientes de Dos Sitios Arqueologicaos Pre-Agroalfareros de Cuba		13	-	11-14
Hanihara T	2008	Morphological variation of major human populations based on non-metric dental traits	American Journal of Physical Anthropology	136	2	169-182
Ibarra-Rivera L, Mirabal S, Regueiro MM, Herrera RJ	2008	Delineating genetic relationships among the Maya	American Journal of Physical Anthropology	135	3	329-347
Kelso RS	2008	Hypoplastic dental enamel defects among the classic period Belizean maya	American Journal of Physical Anthropology, Supplement	Supp	46	189-189
Nagy A	2008	An osteological analysis of ten human crania from Costa Rica	Annals of Carnegie Museum	76	4	265-278
Aubry BS	2009	Population structure and interregional interaction in pre-Hispanic Mesoamerica: a biodistance study	Dissertation: The Ohio State University	-	-	-
Duncan WN	2009	Supranumerary teeth from two Mesoamerican archaeological contexts	Dental Anthropology	-	-	-
Duncan WN	2011	Bioarchaeological analysis of sacrificial victims from a Postclassic Maya temple from Ixlú, El Petén, Guatemala	Latin American Antiquity	22	4	549-572
Willermet C, Edgar HJH, Ragsdale C, Aubry BS	2013	Biodistance among Mexica, Maya, Toltec, and Totonac Groups of Central and Coastal Mexico	Chungara, Revista de Antropología Chilena	45	3	447-459

APPENDIX F

EUCLIDEAN DISTANCE MATRICES

Each table lists the output for the Euclidean distances calculated in XLSTAT in Excel 2008 and discussed in Chapter 7.
Distances in **bold** are significant below the 0.95 dissimilarity threshold.
The provenience numbers represent the group, the patio, the structure, and the burial number.
For example, in the Cementerio table “A.237.48.14.1” is Patio A, Structure 10L-237, Operation 48/14, Burial 1.

Bosque (Various Groups)

	4.38	4.39	4.41	19.12A	24.7	3.2	4.2	4.4	4.9	4.27	4.29	4.29	4.30
10L.16.4.38	**0**												
10L.17.4.39	3.096	**0**											
10L.17.4.41	2.016	1.693	**0**										
10K.1.19.12A	2.101	1.831	1.747	**0**									
11J.1.24.7	1.881	3.553	2.510	2.731	**0**								
10I.11.3.2	1.220	2.584	1.522	1.850	1.605	**0**							
11L.7.4.2	1.762	2.487	1.835	1.916	1.983	1.305	**0**						
11L.8.4.4	1.925	2.362	1.376	1.901	2.709	1.752	1.534	**0**					
11L.11.4.9	1.615	2.057	1.306	1.407	2.134	1.124	1.376	1.318	**0**				
11L.11.4.27	1.258	3.203	2.082	1.849	1.864	1.334	2.121	2.245	1.882	**0**			
11L.11.4.29	1.442	2.482	1.199	1.839	2.018	**0.850**	1.524	1.172	1.021	1.536	**0**		
11L.11.4.29	1.865	2.651	1.649	2.457	3.060	1.864	2.137	1.359	2.007	2.330	1.418	**0**	
11L.11.4.30	1.533	3.029	1.988	2.095	1.292	1.069	1.092	1.902	1.429	1.599	1.429	2.484	0

Cementerio (Group 10L-2)

	40.3a	40.5	48.1.1	48. 10.1	48.10. 3	48.11. 2	48.11. 3	48.12. 1	48.13. 1	48.13. 3	48. 13.4	48. 13.5	48. 13.6	48.13. 8	48. 13.9	48. 14.1	48. 16.1	48. 2. 1	48.6.1	48.6. 2	48.6. 4	48.6.5	48.6. 8	48.6. 7	48.6. 9	48.8. 1a	48.8. 1b	48.8. 1c	48.9. 2	7. 3a	7.3c
A.0.40.3a	**0**																														
A.0. 40.5	**0.818**	**0**																													
A.32.48. 1.1	1.429	1.572	**0**																												
B.41. 48.10.1	1.093	1.434	2.080	**0**																											
B.41. 48. 10.3	**0.697**	1.017	1.468	1.248	**0**																										
B.41. 48. 11.2	1.091	1.462	1.749	1.231	1.301	**0**																									
2.238. 48. 11.3	1.025	1.256	1.304	1.696	1.202	1.222	**0**																								
B.42. 48. 12.1	0.952	1.190	1.664	1.045	0.984	0.964	1.545	**0**																							
B.86. 48. 13.1	1.133	1.496	1.739	1.845	1.618	1.975	1.562	1.871	**0**																						
B.44. 48. 13.3	1.702	1.973	1.401	2.581	2.052	2.205	1.779	2.321	1.313	**0**																					
B.45. 48. 13.4	1.276	1.567	1.715	1.819	**0.846**	1.765	1.764	1.284	1.965	2.276	**0**																				
B.46. 48. 13.5	1.219	1.903	1.590	1.469	1.377	1.336	1.679	1.304	1.736	1.968	1.440	**0**																			
B.47. 48. 13.6	1.371	1.464	1.859	1.319	1.110	1.981	1.946	1.391	2.015	2.596	1.380	1.808	**0**																		
B.87. 48. 13.8	1.631	1.662	1.479	2.067	2.071	2.065	1.677	2.124	1.296	1.384	2.556	2.143	2.229	**0**																	
B.48. 48. 13.9	2.431	1.833	2.486	2.800	2.588	2.802	2.554	2.470	2.726	2.982	2.746	3.158	2.437	2.395	**0**																
2.237. 48. 14.1	1.468	1.528	1.814	1.757	1.274	1.956	1.774	1.293	2.032	2.633	1.378	1.833	1.578	2.509	2.627	**0**															
B.84. 48. 16.1	1.541	1.610	**0.786**	2.293	1.417	1.897	1.574	1.776	1.868	1.376	1.560	1.828	1.991	1.820	2.691	1.986	**0**														
A.30. 48. 2.1	1.954	1.794	3.120	1.972	2.080	2.193	2.397	1.878	2.623	3.443	2.412	2.793	2.314	3.138	2.665	2.110	3.195	**0**													
A.33. 48.6.1	2.591	2.930	2.150	3.064	2.990	2.754	2.752	2.973	2.389	1.567	3.214	2.371	3.211	1.924	3.624	3.581	2.362	4.279	**0**												
A.33. 48.6.2	**0.925**	0.959	1.676	1.436	1.126	**0.940**	1.311	**0.842**	1.888	2.133	1.589	1.645	1.803	2.092	2.368	1.586	1.732	1.725	2.884	**0**											
A.34. 48.6.4	1.276	1.310	2.099	1.134	1.180	1.351	1.647	0.962	2.218	2.836	1.603	1.751	1.598	2.545	2.621	1.136	2.255	1.585	3.585	1.132	**0**										
A.33. 48.6.5	1.196	1.747	1.578	1.625	1.596	1.145	1.594	1.235	1.691	1.746	1.845	1.123	2.009	1.847	2.866	2.104	1.830	2.555	2.055	1.282	1.961	**0**									
A.33. 48.6.8	1.949	1.946	2.763	1.493	1.781	1.628	2.212	1.505	2.988	3.538	2.122	2.284	1.995	3.179	2.950	2.016	2.889	1.731	4.103	1.651	1.005	2.427	**0**								
A.33. 48.6.7	1.628	1.462	1.662	2.175	1.968	2.002	1.423	2.246	1.664	1.620	2.551	2.429	2.265	1.008	2.223	2.681	1.847	2.935	2.328	1.952	2.509	2.083	2.977	**0**							
A.33. 48. 6.9	1.967	2.054	2.501	1.847	1.834	1.217	1.904	1.469	2.872	3.185	2.170	2.283	2.423	2.963	3.163	2.207	2.521	2.223	3.858	1.573	1.568	2.139	1.417	2.793	**0**						
A.29. 48. 8.1a	1.614	1.622	1.552	1.984	1.746	2.198	1.726	2.200	1.521	1.646	2.273	2.205	1.838	1.104	2.645	2.497	1.611	3.218	2.352	2.225	2.497	2.223	3.050	1.114	2.966	**0**					
A.29. 48. 8.1b	1.480	1.806	1.527	1.549	1.713	1.111	1.517	1.448	2.062	2.112	2.014	1.352	1.925	1.735	2.585	2.335	1.916	2.861	2.266	1.658	1.989	1.222	2.214	1.840	1.982	1.967	**0**				
A.29. 48. 8.1c	**0.521**	**0.884**	1.282	1.084	**0.653**	**0.944**	**0.839**	**0.904**	1.359	1.815	1.300	1.321	1.353	1.591	2.420	1.463	1.404	2.124	2.702	1.021	1.259	1.324	1.861	1.560	1.667	1.502	1.295	**0**			
B.29. 48. 9.2	1.750	1.889	1.562	2.304	1.466	1.588	1.714	1.644	2.513	2.187	1.637	1.972	2.268	2.598	3.167	2.096	1.197	2.958	2.984	1.479	2.043	1.860	2.422	2.424	1.834	2.408	2.068	1.568	**0**		
7.3a	1.448	1.968	2.067	1.829	1.590	1.107	1.839	1.310	2.224	2.282	1.689	1.222	2.363	2.669	3.340	2.080	2.064	2.450	2.801	1.223	1.714	1.192	2.081	2.702	1.848	2.796	1.814	1.591	1.603	**0**	
7.3c	**0.925**	**0.808**	1.539	1.278	**0.891**	1.158	1.321	**0.776**	1.761	2.154	1.367	1.747	1.291	1.851	2.095	1.529	1.546	1.897	2.980	**0.927**	1.297	1.493	1.743	1.755	1.536	1.793	1.499	**0.705**	1.566	1.777	0

Copan Valley (Various Groups)

	4.55	4.1	4.7	24.1	4.4	24.5A	24.24.8	24.9	27.10	27.11	27.3	27.4	27.6	27.9	3.1	3.3	34.2A	34.3	59.2.5	59.2.5
HG.4.55	**0**																			
12G.33.4.1	1.336	**0**																		
9P.35.4.7	1.414	**0.463**	**0**																	
34D.24.1	1.659	1.180	1.186	**0**																
18A.24.4	1.682	0.964	1.047	1.415	**0**															
25B.24.5A	1.599	1.124	1.251	1.905	1.446	**0**														
4N.24.24.8	2.150	1.486	1.486	1.222	1.647	2.037	**0**													
18D.24.9	1.719	1.239	1.340	1.287	1.751	1.926	**0.943**	**0**												
3O.29.27.10	1.481	**0.856**	0.975	**0.801**	1.001	1.460	1.067	0.976	**0**											
3O7B.29.27.11	2.128	1.529	1.597	1.347	1.528	1.950	1.429	1.413	1.050	**0**										
3O7A.29.27.3	1.537	0.967	1.014	1.285	**0.522**	1.597	1.634	1.567	**0.851**	1.300	**0**									
3O7A.28.27.4	1.503	**0.808**	**0.807**	**0.859**	0.971	1.632	1.205	1.039	**0.479**	1.190	**0.763**	**0**								
3O7B.29.27.6	1.767	**0.871**	1.085	1.137	1.045	1.562	1.351	1.232	**0.814**	**0.903**	**0.942**	**0.828**	**0**							
3O7B.29.27.9	1.916	1.140	1.281	1.047	1.200	1.795	1.227	1.208	**0.743**	**0.867**	1.055	**0.936**	**0.883**	**0**						
3.1	2.135	1.461	1.311	1.591	1.547	1.544	1.950	2.166	1.567	2.161	1.757	1.487	1.766	2.000	**0**					
3.3	2.112	1.822	1.824	2.161	1.768	2.179	2.814	2.765	2.166	2.899	1.847	2.036	2.245	2.566	1.900	**0**				
34A.34.2A	1.734	**0.714**	**0.811**	1.176	0.996	1.190	1.307	1.334	**0.774**	1.493	1.046	**0.846**	0.954	1.225	1.244	1.783	**0**			
34A.34.3	1.829	0.966	1.124	1.554	1.225	1.623	1.699	1.527	1.198	1.975	1.364	1.100	1.442	1.382	1.569	2.098	1.183	**0**		
59.2.5	1.524	**0.692**	**0.762**	1.315	0.963	1.490	1.240	1.196	0.986	1.748	1.088	**0.849**	1.118	1.332	1.510	1.954	**0.909**	**0.888**	**0**	
59.2	1.975	1.994	2.041	1.570	2.187	2.355	1.714	1.430	1.376	1.487	1.843	1.640	1.871	1.470	2.721	3.117	1.943	2.354	2.183	0

Ostumán (Groups 10E-2 and 11E-2)

	45.2	45.5	46.1	46.10	46.11	46.8A	11E.14.46.8B
46.8A	0						
10E.40.45.5	0.071	0					
11E.7.46.1	0.178	0.146	0				
11E.20.46.10	0.152	0.126	0.063	0			
11E.20.46.11	0.175	0.159	0.108	0.084	0		
11E.15.46.8A	0.237	0.224	0.172	0.158	0.097	0	
11E.15.46.8B	0.113	0.099	0.123	0.118	0.126	0.181	0

Rastrojón (Various Groups)

	4.45	4.47	4.43	4.49a	4.49Bb	4.49c	4.49d	64.26	64.36	6N.4.64.41
7M.0.4.45	0									
7M.33.4.47	1.968	0								
7N20.80.4.43	1.730	2.006	0							
7M8.Pl.4.49a	2.155	1.749	1.904	0						
7M8.Pl.4.49b	1.580	1.131	1.930	1.381	0					
7M8.Pl.4.49c	1.415	1.456	1.795	1.182	**0.812**	0				
7M8.Pl.4.49d	1.499	1.137	1.358	1.438	**0.933**	**0.927**	0			
6N.4.64.26	2.283	2.431	1.980	3.080	2.379	2.464	1.960	0		
6N.12.64.36	1.566	1.302	0.978	1.312	1.189	1.130	**0.705**	1.862	0	
6N.4.64.41	1.291	1.300	1.260	1.535	0.950	**0.908**	**0.778**	2.138	**0.859**	0

Salamar (Groups 8L-10 and 8L-12)

	11.1	42.1A	42.1B	42.2	42.3A	42.4	42.5A	42.5B	42.5C	42.6	42.7A
CRIA.11.1	**0**										
8L0.72.42.1A	2.729	**0**									
8L0.72.42.1B	1.141	2.150	**0**								
8L0.73.42.2	1.118	1.850	**0.777**	**0**							
8L0.72.78.42.3A	1.934	1.641	1.642	1.408	**0**						
8L0.72.78.42.4	2.055	2.356	1.636	1.604	1.457	**0**					
8L0.77.42.5A	4.214	1.884	3.482	3.330	3.203	3.933	**0**				
8L0.77.42.5B	1.400	2.672	1.124	1.257	2.234	1.740	4.153	**0**			
8L0.77.42.5C	1.266	1.938	**0.747**	**0.851**	1.312	1.570	3.296	1.521	**0**		
8L2.87.42.6	1.845	2.299	1.726	1.659	2.132	2.639	3.210	2.541	1.496	**0**	
8L2.87.42.7A	1.777	1.249	1.246	**0.909**	1.138	1.821	2.587	2.022	**0.913**	1.456	0

Sepulturas Group 9M-22

	10.2	10.4	10.5	10.6	10.7	10.9	10.10	10.13	10.14	9.1	9.3	9.4	9.6	9.8	9.9	9.10	9.11	9.16	19.1	19.13	19.14	19.16	19.4	19.8	9.5
A.245.10.2	**0**																								
A.195.10.4	2.521	**0**																							
A.193.10.5	2.431	1.315	**0**																						
A.195.10.6	1.595	1.477	1.788	**0**																					
A.193.10.7	3.180	3.247	3.101	3.017	**0**																				
A.197.10.9	1.735	3.173	3.300	2.023	2.961	**0**																			
A.193.10.10	1.842	3.293	3.321	2.210	2.406	1.002	**0**																		
A.199.10.13	1.463	1.568	2.003	**0.589**	3.160	1.824	2.136	**0**																	
A.193.10.14	3.608	1.467	2.084	2.202	4.006	3.972	4.162	2.439	**0**																
B.191C.9.1	1.681	1.112	1.425	0.996	2.620	2.343	2.384	1.010	2.328	**0**															
B.191N.9.3	2.111	3.721	3.676	2.657	2.837	1.386	1.415	2.637	4.627	2.810	**0**														
B.191S.9.4	1.739	1.375	1.448	1.038	2.622	2.042	2.212	0.994	2.278	**0.895**	2.762	**0**													
B.191N.9.6	2.622	4.136	4.195	3.093	2.804	1.394	1.055	2.972	5.014	3.219	1.318	3.065	**0**												
B.191N.9.8	1.521	1.754	1.890	**0.911**	2.375	1.602	1.743	**0.948**	2.699	**0.898**	2.126	**0.877**	2.509	**0**											
B.191S.9.9	2.400	1.063	1.699	1.091	2.848	2.700	2.738	1.262	1.680	1.017	3.271	1.247	3.597	1.401	**0**										
B.191S.9.10	1.879	3.203	3.185	2.227	2.639	1.110	1.234	2.047	4.132	2.235	1.249	2.166	1.493	1.629	2.650	**0**									
B.191C.9.11	1.929	1.564	1.924	**0.723**	3.381	2.316	2.482	**0.816**	2.133	1.351	3.043	1.329	3.374	1.407	1.125	2.465	**0**								
B.191S.9.16	1.894	1.167	1.724	1.296	3.019	2.809	2.752	1.327	2.274	**0.890**	3.338	1.424	3.676	1.614	1.170	2.822	1.484	**0**							
B.190.19.1	3.485	1.534	2.148	2.109	4.103	3.970	4.098	2.418	**0.763**	2.370	4.582	2.394	4.977	2.718	1.815	4.203	2.017	2.220	**0**						
B.191N.19.13	2.025	2.499	2.931	1.571	2.400	1.528	1.288	1.569	3.290	1.790	2.078	1.852	1.983	1.290	1.906	1.763	1.835	2.085	3.182	**0**					
B.191S.19.14	1.630	1.772	1.915	1.554	2.327	2.396	2.318	1.603	2.879	1.017	2.739	1.386	3.119	1.294	1.737	2.389	2.091	1.189	2.900	1.938	**0**				
B.191S.19.16	1.432	2.872	3.015	1.840	3.033	0.993	1.325	1.657	3.882	2.018	1.315	1.988	1.725	1.399	2.558	1.189	2.144	2.549	3.796	1.502	2.231	**0**			
B.189.19.4	1.845	2.306	2.504	1.330	2.558	1.321	1.493	1.205	3.115	1.458	1.996	1.399	2.138	**0.806**	1.697	1.236	1.588	2.088	3.171	1.129	1.899	1.262	**0**		
B.0.19.8	2.118	1.647	2.458	1.189	2.818	2.090	2.306	1.166	2.401	1.330	2.734	1.478	2.994	1.204	1.360	2.372	1.578	1.550	2.386	1.319	1.541	2.009	1.525	**0**	
B.191S.9.5	2.164	**0.904**	1.537	1.030	3.456	2.900	3.016	1.237	1.791	1.118	3.412	1.453	3.890	1.607	1.102	2.994	1.086	1.129	1.610	2.240	1.872	2.495	2.071	1.637	0

Sepulturas Group 9M-24

	4.46	18.1	18.11	18.13	18.14	18.3	18.8	18.9	26.1
26.1	**0**								
213.18.1	1.121	**0**							
212.18.11	2.296	1.484	**0**						
212.18.13	1.382	1.263	1.802	**0**					
0.18.14	1.739	1.262	2.036	1.522	**0**				
212.18.3	2.391	2.131	3.278	2.404	1.722	**0**			
212.18.8	1.601	1.318	1.295	**0.882**	1.794	2.904	**0**		
213.18.9	2.355	1.668	2.402	1.994	1.284	1.433	2.263	**0**	
203.26.1	1.310	1.436	2.405	1.264	1.069	1.818	1.602	1.676	**0**

Sepulturas Group 9N-8 Patio A

	A.82W.8.34	A.83.8.37	A.82C.8.1	A.83.8.2	A.82C.8.6	A.83.8.7	A.83.8.10	A83.8.4
A.83.8.10	**0**							
A.83.8.37	3.865	**0**						
A.82C.8.1	2.589	3.367	**0**					
A.83.8.2	2.277	2.262	1.439	**0**				
A.82C.8.6	3.736	2.883	3.452	2.919	**0**			
A.83.8.7	3.945	1.778	2.643	2.189	2.688	**0**		
A.83.8.10	1.938	2.075	2.317	1.263	2.450	2.445	**0**	
A.83.8.4	3.334	1.774	1.936	1.399	2.468	1.085	1.845	0

Sepulturas Group 9N-8 Patio B

	16.1	16.10	16.11	16.12	16.13A	16.15	16.16	16.18	16.2	16.21	16.22	16.23	16.24	16.25	16.26	16.27	16.29A	16.31	16.5
B.68.16.1	**0**																		
B.74C.16.10	1.511	**0**																	
B.74S.16.11	1.778	2.936	**0**																
B.74S.16.12	2.453	1.156	3.831	**0**															
B.75.16.13A	1.104	1.450	2.307	2.085	**0**														
B.67.16.15	1.926	1.070	3.056	1.362	1.607	**0**													
B.74C.16.16	3.211	2.107	4.294	2.061	2.889	1.829	**0**												
B.74C.16.18	1.804	3.127	**0.895**	4.095	2.483	3.334	4.502	**0**											
B.68.16.2	1.090	1.603	1.768	2.455	1.610	1.855	3.209	1.995	**0**										
B.68.16.21	2.508	1.631	3.797	1.286	1.913	1.928	2.942	4.096	2.743	**0**									
B.68.16.22	1.262	1.536	2.338	2.342	1.381	1.960	3.375	2.526	1.461	2.028	**0**								
B.67.16.23	2.046	1.023	3.183	1.486	1.928	1.465	1.864	3.424	2.275	1.862	2.080	**0**							
B.68.16.24	1.461	1.059	2.481	1.761	1.741	1.610	2.539	2.716	1.411	2.269	1.890	1.364	**0**						
B.68.16.25	1.373	2.557	**0.935**	3.531	2.067	2.964	4.110	1.041	1.659	3.459	2.074	2.830	2.145	**0**					
B.75.16.26	1.021	1.379	1.878	2.102	1.151	1.803	3.204	2.219	1.038	2.038	1.225	1.860	1.208	1.587	**0**				
B.75.16.27	2.096	0.974	3.326	1.167	1.737	1.041	1.763	3.610	1.950	1.800	1.986	1.449	1.755	3.096	1.882	**0**			
B.74N.16.29A	3.078	4.392	2.495	5.260	3.728	4.815	6.044	2.138	3.533	4.987	3.738	4.681	3.969	2.160	3.384	5.042	**0**		
B.74C.16.31	1.573	1.060	2.787	1.542	1.252	1.018	2.640	3.059	1.547	1.582	1.381	1.775	1.727	2.577	1.317	1.211	4.291	**0**	
B.5.16.5	1.730	**0.859**	3.060	1.058	1.291	1.202	2.459	3.355	1.961	**0.924**	1.500	1.248	1.518	2.752	1.360	1.207	4.463	**0.931**	**0**

Sepulturas Group 9N-8 Patio C

	13.10	13.2	13.3	13.4A	13.4B	13.5	13.7
C.73.13.10	**0**						
C.100.13.2	1.061	**0**					
C.100.13.3	1.991	1.627	**0**				
C.71.13.4A	2.870	2.645	1.404	**0**			
C.71.13.4B	2.296	1.887	**0.734**	1.205	**0**		
C.69.13.5	1.178	1.218	1.489	2.284	1.734	**0**	
C.69.13.7	1.717	1.254	1.263	1.946	1.506	1.248	0

Sepulturas Group 9N-8 Patio D

	17. 12 a	17. 12b	17. 16 a	17. 18	17. 19a	17. 21a	17. 21b	17. 25	17.3	17. 32	17. 33	17. 35a	17. 36a	17. 36b	17. 40	17. 42	17. 45	17.5	17.5	17. 51	17. 53a	17. 54	17. 58	17.6	17. 60	17. 8a	17. 8b	17. 9	17. 48	17.4
D.111.17.12a	**0**																													
D.111. 17.12b	2.593	**0**																												
D.61. 17.16a	2.326	4.682	**0**																											
D.111. 17.18	2.241	1.730	4.128	**0**																										
D.111. 17.19a	2.494	4.757	1.557	4.375	**0**																									
D.63. 17.21a	2.502	1.870	4.502	1.483	4.582	**0**																								
D.63. 17.21b	1.932	4.204	1.250	3.829	1.110	4.159	**0**																							
D.111. 17.25	1.496	3.421	1.856	3.378	1.765	3.417	1.315	**0**																						
D.63A. 17.3	1.362	2.201	3.006	1.360	3.362	1.956	2.688	2.372	**0**																					
D.111. 17.32	1.946	4.164	1.057	3.442	1.777	3.826	1.265	1.690	2.290	**0**																				
D.61E. 17.33	1.852	3.639	1.768	3.205	2.018	3.758	1.328	1.588	2.271	1.610	**0**																			
D.111. 17.35a	**0.842**	2.705	2.225	2.187	2.419	2.514	1.999	1.630	1.290	1.785	1.683	**0**																		
D.61. 17.36a	2.272	2.149	3.991	1.639	3.817	1.683	3.421	2.907	1.813	3.326	2.761	2.105	**0**																	
D.61w. 17.3b	2.166	4.094	2.060	3.561	2.236	3.663	2.439	2.228	2.817	2.081	2.743	1.978	3.562	**0**																
D.61E. 17.40	2.150	1.547	4.266	2.014	4.088	1.523	3.824	2.986	2.284	3.834	3.462	2.219	1.850	3.301	**0**															
D.60S. 17.42	2.625	4.982	**0.668**	4.446	1.367	4.838	1.173	2.072	3.289	1.272	2.036	2.575	4.270	2.273	4.581	**0**														
D.105. 17.45	1.877	2.362	3.555	2.374	3.203	2.046	2.792	2.084	1.961	2.975	2.506	1.968	1.292	3.246	1.896	3.756	**0**													
D.0. 17.5	**0.789**	2.198	2.796	1.969	2.787	2.016	2.409	1.647	1.434	2.336	2.156	0.969	1.821	2.228	1.555	3.118	1.499	**0**												
D.60S. 17.5	0.961	3.112	1.816	2.669	2.040	3.037	1.442	1.135	1.691	1.386	1.478	1.084	2.605	1.989	2.798	2.046	2.104	1.316	**0**											
D.105. 17.51	2.348	1.341	4.294	1.877	4.097	1.816	3.824	3.060	2.193	3.802	3.315	2.212	1.662	3.418	**0.915**	4.578	1.975	1.753	2.841	**0**										
D.63. 17.53a	1.577	3.614	1.692	3.239	2.312	3.594	1.317	1.411	2.064	1.368	1.363	1.792	3.103	2.833	3.524	1.968	2.583	2.113	1.335	3.576	**0**									
D.63. 17.54	1.590	2.713	2.903	2.217	2.680	2.215	2.433	1.863	1.759	2.361	1.982	1.368	1.321	2.420	2.032	3.181	1.178	1.168	1.684	2.016	2.391	**0**								
D.61C. 17.58	1.202	2.327	2.697	1.858	2.998	2.233	2.384	1.841	1.159	2.193	1.688	0.964	1.709	2.690	2.180	3.084	1.667	1.139	1.345	2.148	1.813	1.317	**0**							
D.60S. 17.6	1.409	3.715	1.197	3.256	1.576	3.590	1.147	1.161	2.256	1.182	1.264	1.285	3.050	1.837	3.248	1.553	2.593	1.794	**0.852**	3.301	1.379	1.988	1.711	**0**						
D.61E. 17.60	1.806	4.032	1.586	3.573	0.991	3.781	1.238	1.561	2.610	1.569	1.713	1.588	3.086	1.672	3.299	1.666	2.639	2.060	1.570	3.310	2.087	1.973	2.297	1.181	**0**					
D.63. 17.8a	1.319	2.182	2.899	1.755	2.929	2.222	2.369	1.862	1.124	2.246	1.800	1.139	1.481	2.800	2.119	3.162	1.410	1.122	1.341	1.913	1.991	1.212	**0.779**	1.903	2.289	**0**				
D.63. 17.8b	2.225	4.564	1.167	3.894	1.143	4.278	0.955	1.930	2.780	1.039	1.756	2.076	3.601	2.181	4.086	0.984	3.165	2.674	1.677	4.062	1.855	2.595	2.622	1.309	1.155	2.601	**0**			
D.60S. 17.9	1.804	4.070	1.398	3.345	1.601	3.801	1.414	2.017	2.303	1.212	1.802	1.538	3.259	1.701	3.559	1.468	3.014	2.249	1.509	3.523	1.968	2.318	2.278	1.242	1.007	2.306	**0.904**	**0**		
D.104. 17.48	1.066	2.838	2.123	2.569	2.167	2.891	1.807	1.371	1.775	1.921	1.359	**0.704**	2.237	1.994	2.332	2.463	1.966	1.135	1.121	2.287	1.822	1.333	1.131	1.131	1.404	1.310	2.069	1.648	**0**	
D.161 17.4	2.212	4.314	1.740	3.521	1.734	3.818	1.319	1.960	2.431	1.100	1.679	2.041	3.048	2.515	3.896	1.726	2.665	2.534	1.709	3.858	1.764	2.158	2.325	1.616	1.555	2.272	1.009	1.433	2.117	0

Sepulturas Group 9N-8 Patio E

	15. 10	**15. 11**	**15. 14**	**15. 2**	**15. 25b**	**15. 26b**	**15. 28**	**15. 29**	**15. 3**	**15. 35a**	**15. 35b**	**15. 36**	**15. 39**	**15. 4**	**15. 40**	**15. 42**	**15. 43**	**15. 44**	**15. 45**	**15. 47**	**15. 6**	**15. 64**	**15. 65**	**15. 66**	**15. 67**	**15. 7**	**15.8**
E.93S.15.10	**0**																										
E.94.15.11	1.658	**0**																									
E.97.15.14	2.826	2.337	**0**																								
E.95.15.2	2.090	1.312	1.315	**0**																							
E.108.15.25b	3.478	3.168	1.280	2.247	**0**																						
E.96E.15.26b	1.806	1.690	1.379	1.154	2.107	**0**																					
E.92.15.28	2.207	2.082	1.299	1.255	1.823	1.407	**0**																				
E.108.15.29	2.145	1.652	1.170	**0.933**	1.729	**0.917**	1.051	**0**																			
E.97.15.3	2.366	1.747	1.210	1.102	1.671	1.111	1.292	**0.727**	**0**																		
E.96W.15.35a	3.261	3.063	1.186	2.116	1.157	1.922	1.544	1.768	1.526	**0**																	
E.96W.15.35b	2.917	2.908	1.622	1.907	2.141	1.773	1.439	1.803	1.755	1.308	**0**																
E.92.15.36	1.707	1.382	1.386	**0.748**	2.176	**0.745**	1.207	**0.830**	1.007	2.021	1.778	**0**															
E.92.15.39	2.637	1.820	1.625	1.320	2.029	1.737	1.717	1.281	1.225	2.257	2.406	1.227	**0**														
E.96.15.4	1.949	1.826	1.527	1.195	2.132	1.223	**0.602**	1.013	1.120	1.683	1.346	1.025	1.742	**0**													
E.92.15.40	2.407	1.848	1.363	1.053	2.031	1.503	**0.743**	**0.917**	1.266	1.894	1.769	1.270	1.558	**0.918**	**0**												
E.93C.15.42	3.172	2.827	1.684	2.110	1.830	2.223	1.405	1.604	1.969	1.943	2.252	2.223	2.321	1.777	1.225	**0**											
E.93C.15.43	2.601	2.349	1.744	1.587	2.453	1.455	1.825	1.578	1.478	1.930	1.218	1.312	1.925	1.508	1.909	2.699	**0**										
E.93S.15.44	1.875	1.450	1.831	1.237	2.279	1.543	1.210	1.232	1.113	2.155	2.191	1.084	1.233	1.075	1.299	2.195	2.016	**0**									
E.96C.15.45	2.633	2.022	1.014	0.960	1.600	1.436	1.028	**0.797**	1.095	1.726	1.805	1.196	1.220	1.281	**0.727**	1.398	1.818	1.411	**0**								
E.96E.15.47	2.717	1.911	1.177	**0.943**	1.827	1.475	1.439	1.068	0.957	1.826	1.837	1.065	**0.767**	1.454	1.251	2.110	1.463	1.358	**0.836**	**0**							
E.93S.15.6	**0.843**	1.256	2.530	1.782	3.204	1.508	2.145	1.743	1.969	3.094	2.825	1.339	2.120	1.855	2.176	2.967	2.242	1.666	2.301	2.280	**0**						
E.96E.15.64	**0.575**	1.544	2.641	1.888	3.363	1.582	2.027	1.884	2.189	3.117	2.662	1.507	2.496	1.723	2.125	2.900	2.296	1.841	2.397	2.511	**0.709**	**0**					
E.92.15.65	2.533	2.056	1.321	1.478	1.531	1.583	1.164	1.155	0.964	1.569	2.000	1.294	1.010	1.278	1.282	1.813	1.978	**0.947**	1.145	1.097	2.219	2.435	**0**				
E.92.15.66	2.755	2.276	1.051	1.245	1.490	1.492	1.273	1.016	1.040	1.529	1.678	1.291	1.260	1.429	1.156	1.657	1.657	1.501	**0.628**	**0.859**	2.387	2.534	1.121	**0**			
E.95.15.67	3.444	3.030	1.275	1.840	1.829	1.911	1.875	1.781	1.858	1.573	1.536	2.075	2.444	2.034	1.807	2.002	1.921	2.597	1.485	1.769	3.207	3.170	2.245	1.419	**0**		
E.93S.15.7	1.444	2.550	3.667	2.942	4.373	2.513	3.045	3.041	3.161	3.925	3.234	2.478	3.446	2.636	3.254	4.110	2.810	2.789	3.530	3.435	1.777	1.442	3.393	3.563	4.089	**0**	
E.93S.15.8	2.077	1.201	2.040	1.276	2.809	1.432	1.988	1.362	1.631	2.824	2.566	1.121	1.480	1.776	1.773	2.690	1.819	1.735	1.783	1.539	1.503	1.804	1.955	2.060	2.709	2.712	0

Sepulturas Group 9N-8 Patio F

	15.17	15.19b	15.20	15.21	15.22	15.30	15.31	15.37	15.51	15.52	15.53	15.54	15.56	15.59	15.60	15.61	15.62	15.63
F.90.15.17	**0**																	
F.90. 15.19B	2.136	**0**																
F.90. 15.20	1.836	1.332	**0**															
F.91. 15.21	1.911	**0.944**	0.960	**0**														
F.90. 15.22	2.035	1.687	**0.833**	1.294	**0**													
F.90. 15.30	1.269	1.786	1.457	1.695	1.813	**0**												
F.90.91. 15.31	**0.939**	1.832	1.210	1.468	1.397	0.988	**0**											
F.91C. 15.37	1.817	3.162	3.016	2.972	2.830	2.302	2.209	**0**										
F.90. 15.51	1.614	1.059	**0.649**	**0.921**	**0.919**	1.419	1.194	2.675	**0**									
F.90. 15.52	1.697	3.190	2.806	3.100	2.762	1.906	1.887	1.545	2.596	**0**								
F.91W. 15.53	2.888	2.374	2.608	2.591	2.549	2.329	2.495	3.031	2.379	2.648	**0**							
F.91C. 15.54	1.547	3.213	2.825	3.080	2.787	2.010	2.032	1.260	2.536	0.994	3.123	**0**						
F.91S. 15.56	2.254	1.535	1.462	1.536	1.969	1.459	1.885	3.023	1.428	2.928	2.321	2.905	**0**					
F.91S. 15.59	2.144	1.132	1.059	**0.828**	0.973	2.022	1.708	3.132	**0.945**	3.246	2.711	3.196	2.035	**0**				
F.91S. 15.60	2.766	1.023	1.912	1.382	2.123	2.358	2.485	3.348	1.661	3.686	2.637	3.635	1.622	1.655	**0**			
F.91S. 15.61	2.334	1.498	1.556	1.561	1.293	1.845	1.776	2.636	1.304	2.670	1.765	2.860	1.773	1.532	1.620	**0**		
F.90.91. 15.62	1.434	1.736	1.729	1.870	1.897	1.056	1.440	1.843	1.385	1.781	2.129	1.741	1.452	2.117	2.049	1.557	**0**	
F.90.91. 15.63	1.293	1.535	1.264	1.622	1.672	**0.856**	1.128	2.363	1.021	1.957	2.279	1.966	1.309	1.880	2.120	1.681	**0.787**	**0**

Sepulturas Group 9N-8 Patio H

	17.43	22.10a	22.10b	22.11	22.13c	22.14	22.16	22.17	22.21a	22.22	22.26a	22.28b	22.23	22.25	22.26d	22.27	22.28	22.31	22.33	22.34	22.35	22.37	22.38	22.39	22.4	22.40	22.41	22.44	22.45	22.8	22.8	22.9B	22.42
H.17.43	**0**																																
H.13. 22.10a	1.711	**0**																															
H.13. 22.10b	1.467	2.044	**0**																														
H.64. 22.11	2.455	1.209	2.893	**0**																													
H.76. 22.13c	1.145	1.586	1.756	2.032	**0**																												
H.64. 22.14	1.911	1.079	2.165	1.072	1.303	**0**																											
H.13. 22.16	1.289	1.415	2.106	1.815	**0.814**	1.278	**0**																										
H.76. 22.17	1.271	1.393	2.057	2.023	1.121	1.422	1.039	**0**																									
H.110S.22.21a	3.461	2.521	3.555	2.829	3.498	2.917	3.418	2.843	**0**																								
H.64. 22.22	1.132	1.763	1.562	2.191	**0.552**	1.448	1.053	1.459	3.814	**0**																							
H.110S.22.26a	1.792	2.505	1.413	3.295	1.933	2.724	2.201	2.553	4.230	1.743	**0**																						
H.110S.22.28b	1.471	1.736	2.194	2.104	**0.854**	1.437	0.965	**0.786**	3.158	1.315	2.518	**0**																					
H.76. 22.23	2.349	3.593	2.121	4.385	2.665	3.569	2.845	3.058	5.226	2.416	1.891	3.020	**0**																				
H.110C.22.25	2.719	1.933	3.481	1.739	2.386	1.942	2.338	1.911	2.769	2.700	3.966	2.197	4.824	**0**																			
H.110S.22.26d	1.353	1.279	1.414	2.133	1.174	1.500	1.521	1.322	2.812	1.444	1.972	1.350	2.926	2.502	**0**																		
H.110C.22.27	1.474	1.142	2.007	1.570	**0.719**	0.991	**0.916**	1.196	3.156	1.025	2.153	1.155	3.172	1.990	1.193	**0**																	
H.110C.22.28	1.682	1.566	2.417	1.983	1.463	1.499	0.973	**0.945**	2.864	1.803	2.743	0.964	3.213	2.323	1.664	1.484	**0**																
H.110N.22.31	1.596	1.783	1.369	2.200	1.320	1.342	1.596	1.581	3.464	1.096	2.155	1.636	2.661	2.807	1.625	1.540	1.912	**0**															
H.110S.22.33	1.772	2.806	2.451	3.592	2.199	2.926	2.134	1.681	3.778	2.346	2.757	1.982	2.422	3.338	2.387	2.551	2.004	2.511	**0**														
H.110N.22.34	2.018	3.429	2.207	4.063	2.274	3.231	2.508	2.580	4.954	2.047	2.241	2.532	1.177	4.251	2.821	2.853	2.859	2.292	1.885	**0**													
H.110N.22.35	2.356	1.692	2.850	1.768	1.500	1.398	1.394	1.566	3.018	1.949	2.938	1.289	3.837	2.026	1.780	1.146	1.426	2.269	2.901	3.505	**0**												
H.64. 22.37	2.283	2.169	2.381	2.305	1.521	1.546	1.562	1.797	3.537	1.755	2.777	1.271	3.177	2.986	1.785	1.765	1.508	1.740	2.811	2.932	1.605	**0**											
H.110N.22.38	2.791	1.847	3.432	1.229	2.172	1.511	2.076	1.968	2.963	2.473	3.829	2.008	4.746	**0.925**	2.465	1.749	2.132	2.566	3.544	4.211	1.572	2.488	**0**										
H.110C.22.39	2.230	1.119	2.780	1.010	1.887	1.196	1.836	1.686	2.589	2.109	3.226	1.967	4.282	1.074	1.924	1.322	1.994	2.181	3.221	3.867	1.682	2.571	1.049	**0**									
H.76. 22.4	1.545	2.445	1.273	3.032	1.388	2.220	1.767	2.088	4.168	1.176	1.351	1.824	1.651	3.687	1.705	1.926	2.209	1.460	2.402	1.661	2.585	1.810	3.443	3.072	**0**								
H.110C.22.40	2.836	1.968	3.446	1.306	2.283	1.585	2.248	2.204	3.296	2.478	3.909	2.311	4.797	1.061	2.621	1.875	2.481	2.595	3.721	4.247	2.001	2.772	**0.703**	1.060	3.536	**0**							
H.110C.22.41	2.747	1.946	3.430	1.843	2.322	1.933	2.338	1.828	2.604	2.710	3.928	1.990	4.779	**0.684**	2.305	1.978	2.189	2.784	3.315	4.256	1.816	2.708	1.020	1.325	3.570	1.414	**0**						
H.110N.22.44	2.345	1.735	2.787	1.633	1.676	1.116	1.689	1.389	2.611	2.046	3.343	1.267	4.020	1.639	1.846	1.467	1.435	1.948	2.842	3.498	1.157	1.600	1.268	1.461	2.719	1.642	1.433	**0**					
H.0. 22.45	1.768	1.436	2.609	1.308	1.274	1.104	1.163	1.103	2.983	1.597	3.010	1.046	3.754	1.451	1.735	1.160	1.287	1.829	2.640	3.218	1.379	1.790	1.175	1.257	2.481	1.429	1.420	1.086	**0**				
H.64. 22.8	1.626	2.552	1.951	2.897	1.196	2.046	1.586	1.763	4.294	1.039	2.295	1.461	2.195	3.195	2.011	1.851	2.059	1.386	2.175	1.578	2.421	1.697	2.970	2.845	1.207	3.007	3.133	2.318	2.025	**0**			
H.64. 22.8	2.057	1.395	2.804	1.809	1.869	1.611	1.632	1.326	2.392	2.229	3.125	1.683	3.946	1.535	1.853	1.424	1.433	2.408	2.513	3.539	1.448	2.482	1.686	1.216	2.985	1.936	1.625	1.441	1.483	2.813	**0**		
H.76. 22.9b	1.189	1.530	1.663	1.962	**0.532**	1.149	**0.782**	1.237	3.617	**0.484**	1.981	1.095	2.561	2.532	1.313	**0.902**	1.456	1.074	2.303	2.241	1.700	1.446	2.268	1.942	1.310	2.316	2.506	1.767	1.378	1.128	1.997	**0**	
H.74. 22.42	1.372	1.437	1.286	1.991	1.129	1.193	1.188	1.371	3.145	1.110	1.899	1.338	2.584	2.808	1.213	1.317	1.389	**0.837**	2.338	2.398	1.905	1.349	2.528	2.113	1.264	2.667	2.722	1.809	1.671	1.542	2.110	**0.914**	**0**

Sepulturas Group 9N-8 Patios I and J

	4.16	17.10	17.47	17.57	17.61	21.1A
IJ.55.4.16	**0**					
IJ.60N.17.10	2.085	**0**				
IJ.113.17.47	4.114	2.524	**0**			
IJ.112.17.57	2.423	1.617	3.121	**0**		
IJ.112.17.61	1.637	2.822	4.755	2.374	**0**	
IJ.20.21.1A	2.326	1.153	2.165	2.137	3.111	0

Sepulturas Group 9N-8 Patio K

	17.22	17.24	17.31	17.34A	17.34B	17.39	17.55	17.56
K.17.22	**0**							
K.107.17.24	1.803	**0**						
K.106.17.31	1.817	**0.793**	**0**					
K.107.17.34A	2.837	1.509	1.961	**0**				
K.107.17.34B	2.846	1.276	1.403	1.429	**0**			
K.106.17.39	1.176	2.089	1.990	3.227	3.189	**0**		
K.107.17.55	1.889	2.457	2.776	3.287	3.535	1.640	**0**	
K.107.17.56	1.522	1.650	1.367	2.967	2.576	1.272	2.183	0

APPENDIX G

INTERPRETATION OF SPATIAL TRENDS WITHIN PATIOS: RADIOGENIC STRONTIUM AND BIODISTANCE DATA WITH MDS PLOTS

A short discussion of two patio groups, Sepulturas 8N-11 and Salamar Groups 8L-10 and 8L-12 is found in the Chapter 7. This appendix presents the results of the remaining archaeological groups. As a reminder, each MDS plot has been coded to convey various forms of data. In the following figures, individuals in *italics* are female with a (◆) symbol, **bold** are male with a (**−**) symbol, and those of undetermined sex are in regular typeface with a (•) symbol. Individuals sampled for radiogenic strontium isotope are identified by the color of the range of radiogenic strontium values as shown in the table below.

Color	Zone	$^{87}Sr/^{86}Sr$ Values
Yellow	1	0.70434 - 0.70575
Blue	2	0.70632 - 0.70740
Orange	3	0.70741 - 0.70797
Green	4	0.70803 - 0.70898
Red	5	0.71018 - 0.71538

As was discussed in the Chapter 7 (Section C) burial numbers have been coded to convey the maximum amount of information. Please see this section of Chapter 7 for details on the burial coding system and Chapter 3 for the archaeological plan maps for each patio. In the discussion, simplified numbers, as described in that the same section of the results chapter, will identify burials.

El Bosque (10I, 10K, 10L, 11J, 11L)

The Bosque region was one of the smaller sample sizes in the current study and included individuals from dispersed architectural groups within the area (**Figure 10**). The Bosque sample clustered with the neighboring Cementerio region in nearly each statistical test and reflects a close affiliation between these two regions adjacent to Copan's Acropolis on the south and west. Only two non-local individuals were identified, a female (Burial 4-28) and a male who was placed in an extended position with no grave goods (Burial 19-12A) (**Figure 73**).

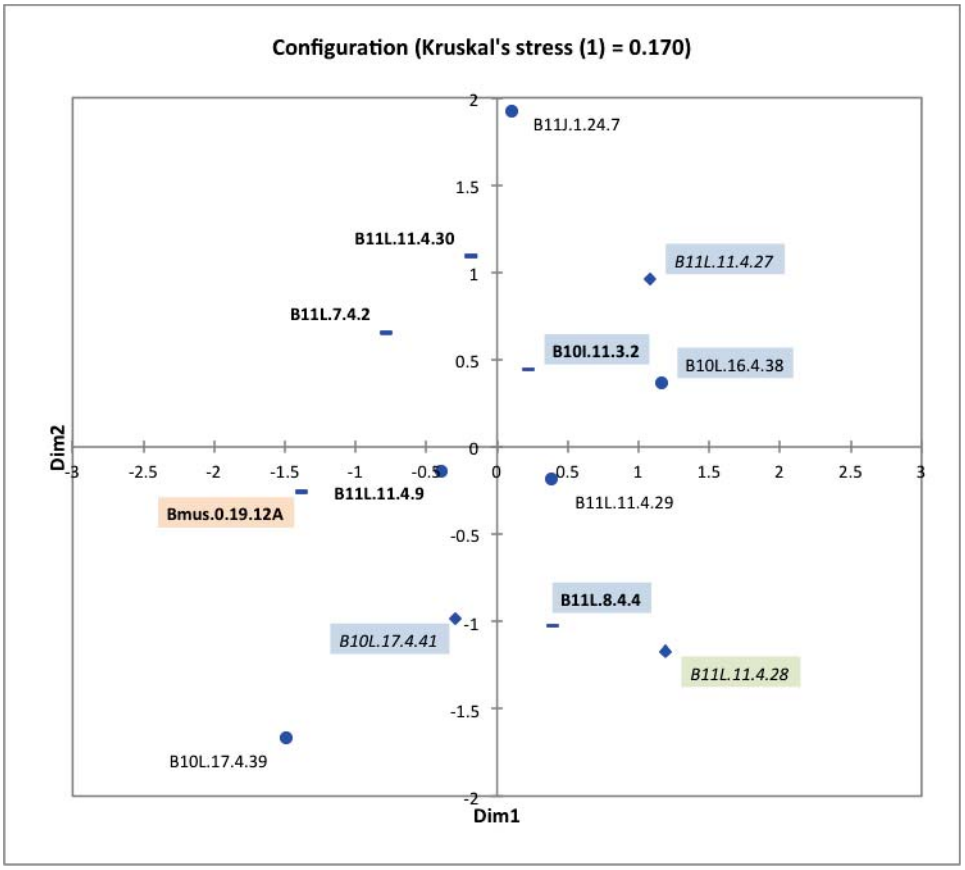

Figure 73: MDS plot of Euclidean distances for the El Bosque neighborhood.

El Cementerio (10L-1, 10L-2)

The Cementerio neighborhood is a prominent Type 4 site located immediately to the south of the Copan Acropolis and is a region thought to be the residence of Copan's 16th and final ruler, K'inich Y'ax Pasaj Chan Yopat, and his noble family (Andrews and Bill, 2004) (**Figure 11**). The Cementerio sample clustered with the neighboring Bosque region in nearly each statistical test and reflects a close affinity between the regions.

Based on the few dental metrics included in the Euclidean distance matrix, individuals from Structure 10L-33 do not appear to cluster (**Figure 74**). Andrews (2014) posits that this was an ancestral shrine turned residence and interestingly, three of the five burials in the prone position at Copan are found in this building (Burials 48/6-1, 48/6-5, and 48/6-7), and two individuals in this position have potentially non-local radiogenic strontium isotope values (Burials 48/6-5, 48/6-5). Burials 48/13-1 and 48/13-9 were inhumed with imported Ulua Valley ceramics in Structure 10L-44 of Courtyard B.

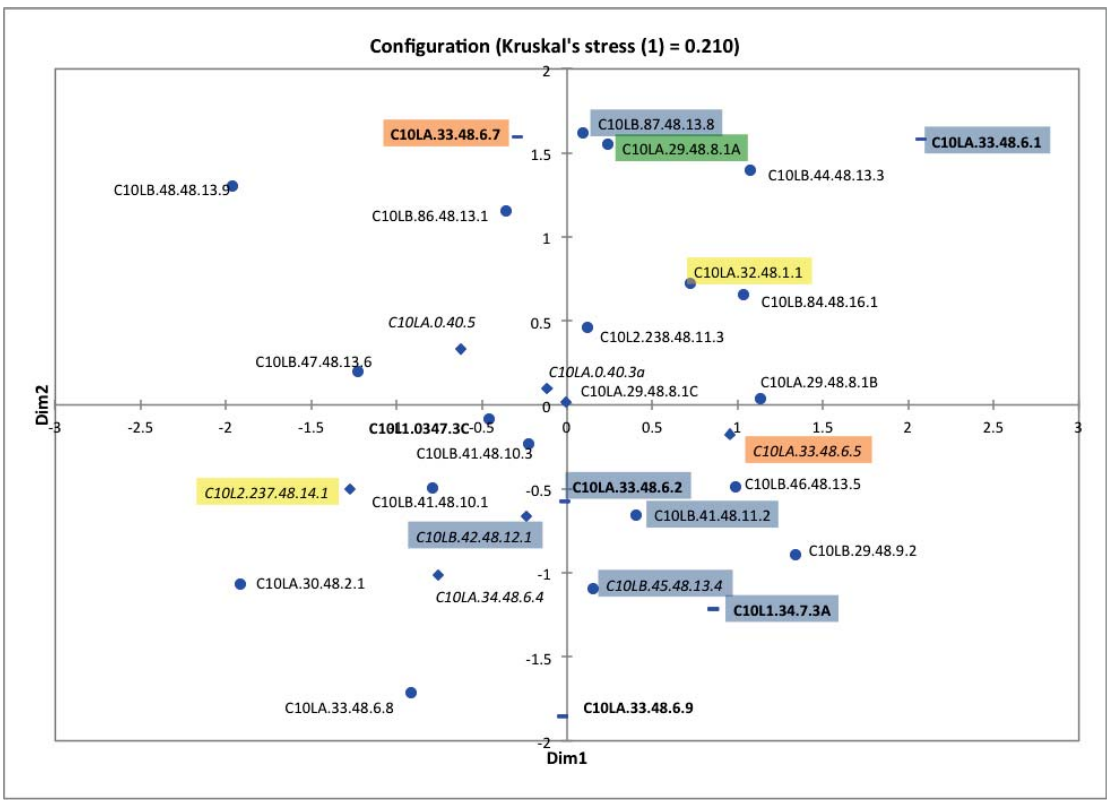

Figure 74: MDS plot of Euclidean distances for the Cementerio neighborhood.

Copan Valley and Hinterlands (3O-7, 4N-5, 9P-5, 12G-6)

Like the Bosque region, the Copan Valley includes a sub-sample of individuals from throughout the valley and various residential groups (**Figures 12-15**). The region has clustered with the Sepulturas regions throughout statistical analysis and suggests some affinity between the regions.

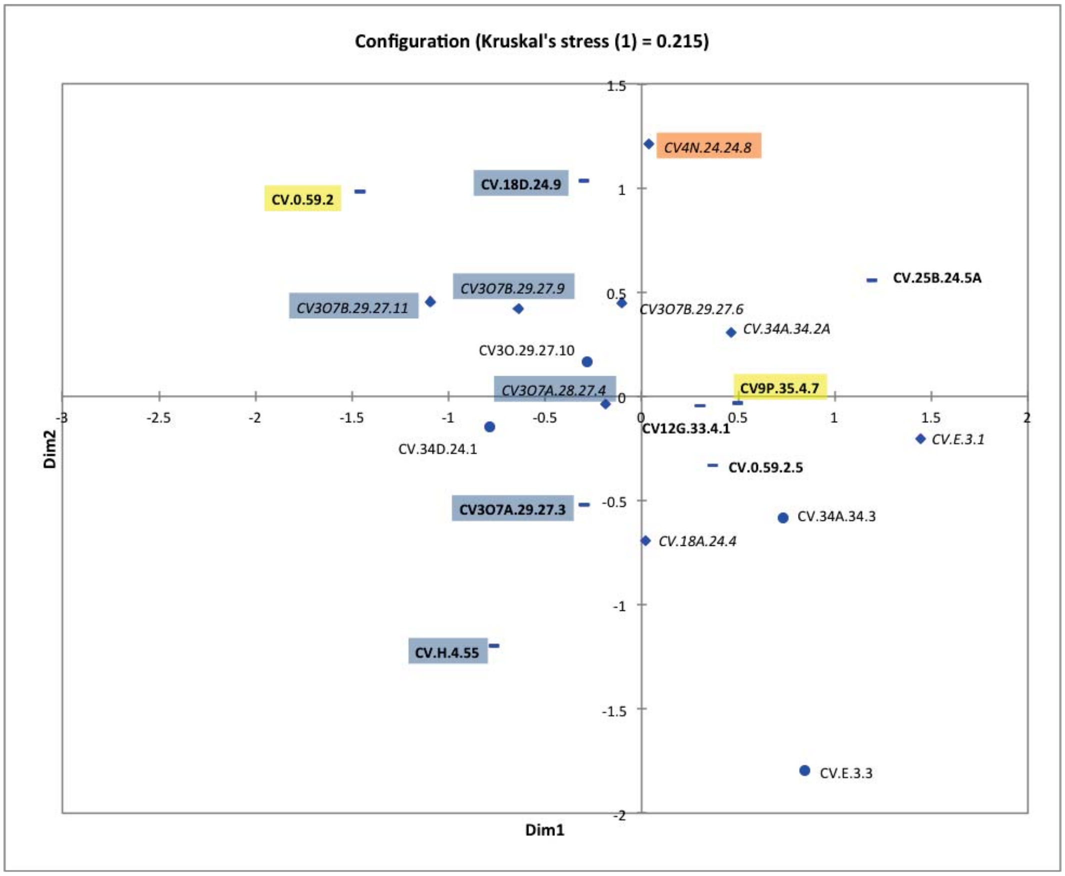

Figure 75: MDS plot of Euclidean distances for the Copan Valley sample.

The clearest pattern to emerge from the analysis of Euclidean distances is that Group 3O-7 represents a residential group of local individuals that appear to cluster in the MDS plot (**Figure 75**). The only male in the group, Burial 27-3, is located in a large tomb in the center of Structure 3O-29, but he is at the margins of a potential cluster.

Ostumán (10E-6, 11E-2)

From the results presented in this chapter, it is evident that the Ostumán neighborhood is the most divergent from all other Copan samples. Ostumán is located 3.5

km from the site center in the hinterlands of the Copan Valley, which may contribute to its unique suite of dental measurements. It includes two groups, Group 10E-6 and Group 11E-2 (**Figure 16**). These groups have monumental architecture, imported Ulua ceramics (Burial 45-5 and 46-1), unusual burial positions including seated (Burial 45-2) and prone (Burial 46-10) burials, and a shaft tomb (Burial 46-1). The Euclidean distances between individuals within this neighborhood are the smallest of any neighborhood in the study and range from 0.063 to 0.172 (**Figure 76**).

The male in Burial 46-1 was buried with imported Ulua Valley ceramics in a shaft tomb in the main structure of Group 11E-2, described by Whittington (1989) as the principal residence of the group. Shaft tombs are uncommon at Copan and are often associated with Western Mexico (Taylor, 1970). Unfortunately, this individual was not part of the random sampling for radiogenic strontium isotope analysis.

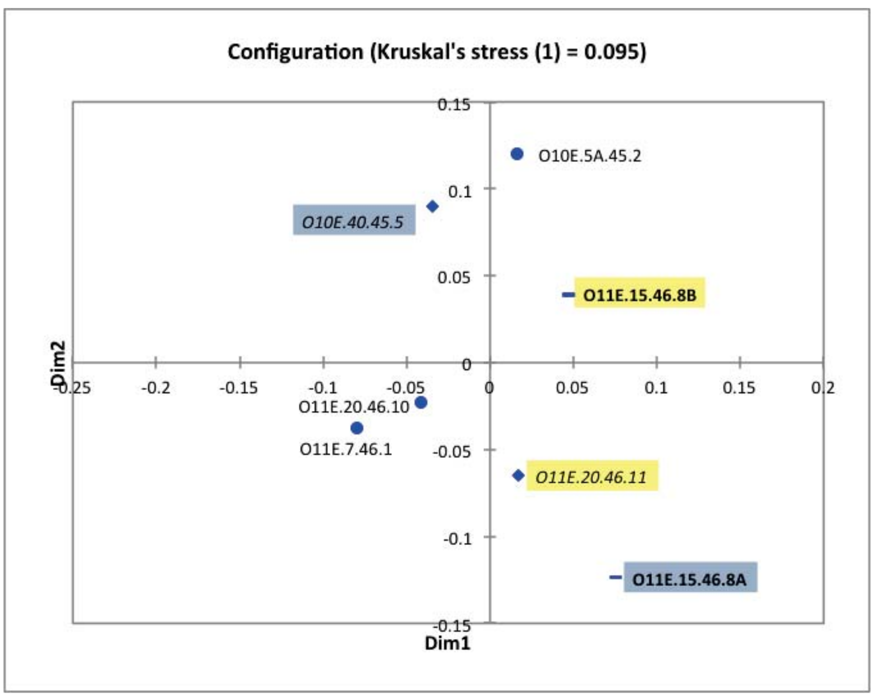

Figure 76: MDS plot of Euclidean distances for the Ostumán neighborhood.

Rastrojón and Chorro (6N, 7M)

Although the burial sample from the Rastrojón and Chorro regions is small, the Euclidean distance MDS plot is displayed here (**Figure 81**). In Group 6N-1, the Type 4 site with monumental architecture with rich sculptural façades, all three burials were included in the radiogenic strontium isotope analysis (**Figure 17**). An individual of undetermined sex and a male (Burials 64-R26 and 64-R36) demonstrate potentially local $^{87}Sr/^{86}Sr$ values and an adult of undetermined sex was potentially non-local (Burial 64-R41).

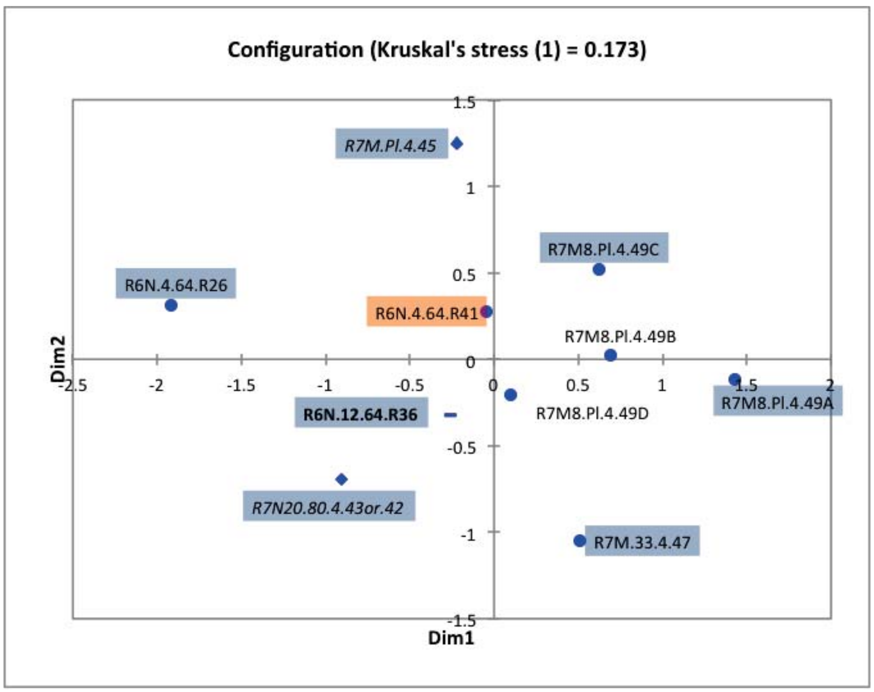

Figure 77: MDS plot of Euclidean distances for the Rastrojón/Chorro neighborhood.

Within Group 7M-8 four adults of undetermined sex were deposited disarticulated in a pit grave with a local ceramic vessel (**Figure 19**). Radiogenic strontium isotope values were obtained for two individuals who were likely of local origin (Burials 4-49A and 4-49C).

Sepulturas

The Sepulturas region was originally separated into two regions that separated Group 9N-8 from Groups 8N-11, 9M-22, and 9M-24. However, the statistical tests have revealed how similar these regions are to one another.

9M-22, Patio A and B

Group 9M-22 is a Type 3 site that was primarily domestic and has been suggested that it was an enclave of foreign craft producers (Diamanti, 1991) (**Figure 24**). Of the 12 individuals sampled for radiogenic strontium isotope analysis, seven are local and five are potentially non-local (**Figure 78**). They include one subadult (Burial 9-8), three adult males (Burials 9-9, 10-10, and 19-1), and one adult male (Burial 10-13). Two individuals not included in the $^{87}Sr/^{86}Sr$ sample were buried with imported Ulua ceramics in Structure 9M-191 of Patio B (Burials 19-13 and 19-16). Burial 10-7, a female with a local $^{87}Sr/^{86}Sr$ value, is a clear outlier on this MDS plot.

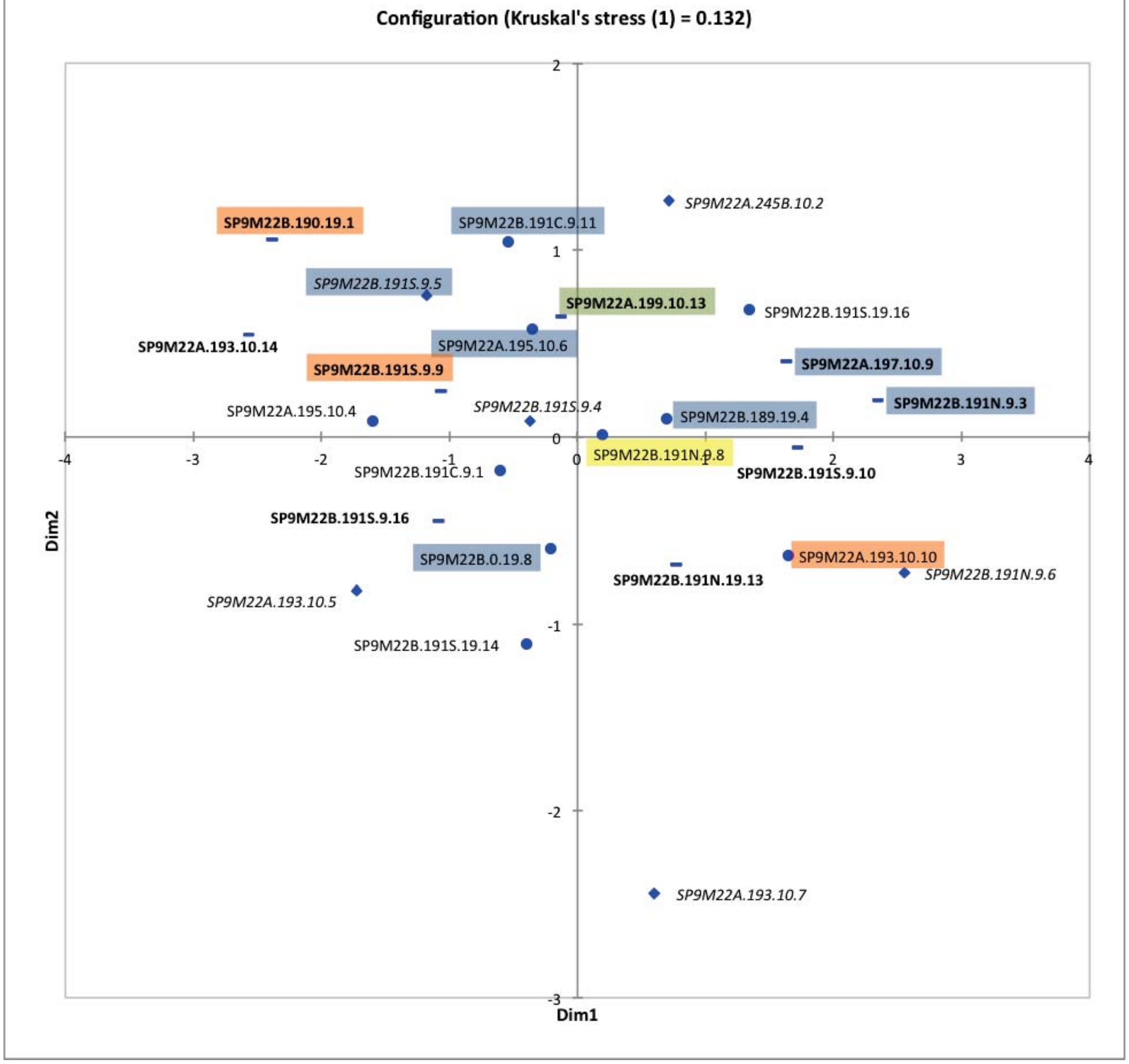

Figure 78: MDS plot of Euclidean distances for Group 9M-22 from the Sepulturas neighborhood.

9M-24

The small burial sample from Group 9M-24 derives primarily from Structure 9M-212 (**Figures 25 and 79**). Four burials were included in the radiogenic strontium isotope sample and only one non-local individual was identified; a male interred with local grave furnishings.

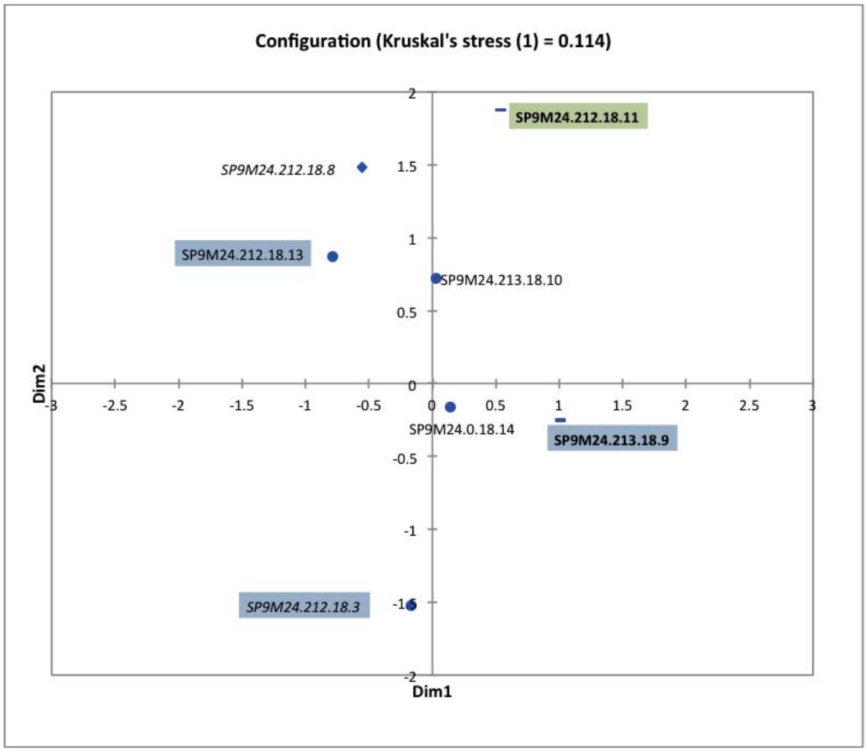

Figure 79: MDS plot of Euclidean distances for Group 9M-24 from the Sepulturas neighborhood.

9N-8, Patio A

Patio A is the location of the elaborate "House of the Bacabs" and its hieroglyphic bench that records the kin affiliations of the 'lord' of Group 9N-8 (**Figure 26**). The patio served a primarily ritual and political function. It is also thought to have been the residence of the highest status members of the 9N-8 complex, in Structures 9N-82 and 9N-83. Yet, Patio A is the most divergent of the Sepulturas 9N-8 patios and in a number of tests does not cluster with the Sepulturas or any other region in the Copan Valley. Given the importance of this patio to Sepulturas, this pattern was surprising.

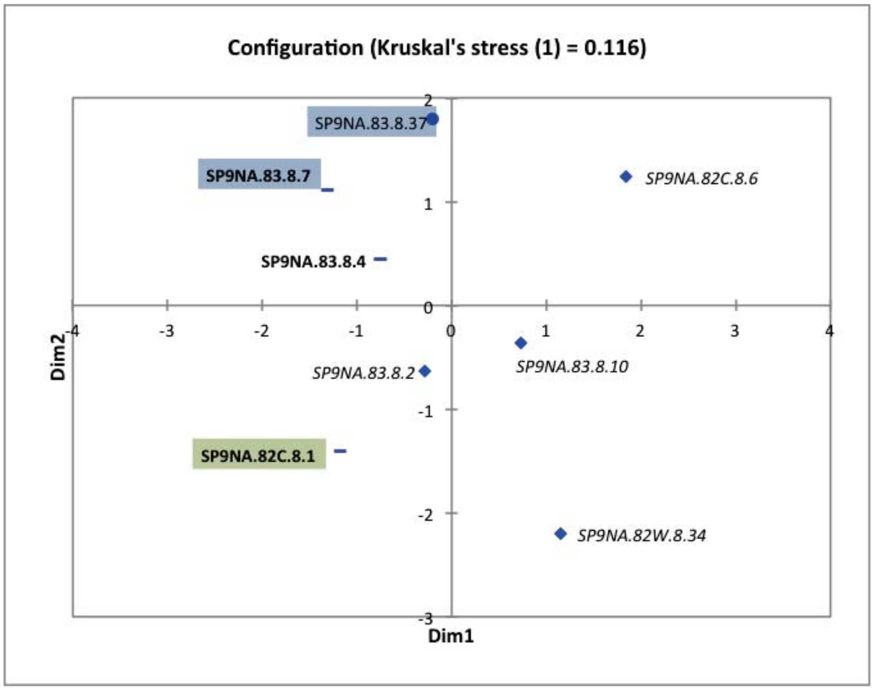

Figure 80: MDS plot of Euclidean distances for Patio A from the Sepulturas Group 9N-8 neighborhood.

Additionally, few burials seem to cluster in the MDS plot of Euclidean distances (**Figure 80**). Two of the three burials sampled for $^{87}Sr/^{86}Sr$ analysis were local (Burial 8-7 and 8-37). The potentially non-local individual was an adult male (Burial 8-1) recovered from the room collapse of Structure 9N-82. While this patio represents the heart of the neighborhood, it does not appear to have been closely related to the rest of Sepulturas, as evident in the results of the statistical tests reported in Chapter 7. The burials deposited within the structures may have originated from outside of the Sepulturas neighborhood in a region of the Copan Valley not identified in this study.

9N-8, Patio B

Patio B was likely a residential patio group with the principal residents occupying Structures 9N-67 and 9N-74 (**Figure 27**). Previous statistical analysis has shown that

Patio B is more similar to Sepulturas Group 9N-8 patios than any other regions within the Copan Valley. Three of the five potentially non-local individuals identified in Patio B were buried in the principal residences. They include three adult females (Burial 16-15, 160-24, and 16-27) and two adult males (Burial 16-23 and 16-29a). There are several possible clusters of burials in the MDS plot of Euclidean distances (**Figure 81**). Patio B does appear to be the residence of a related group of individuals in which unrelated non-local individuals were buried in prominent locations within the Patio's primary residential structures.

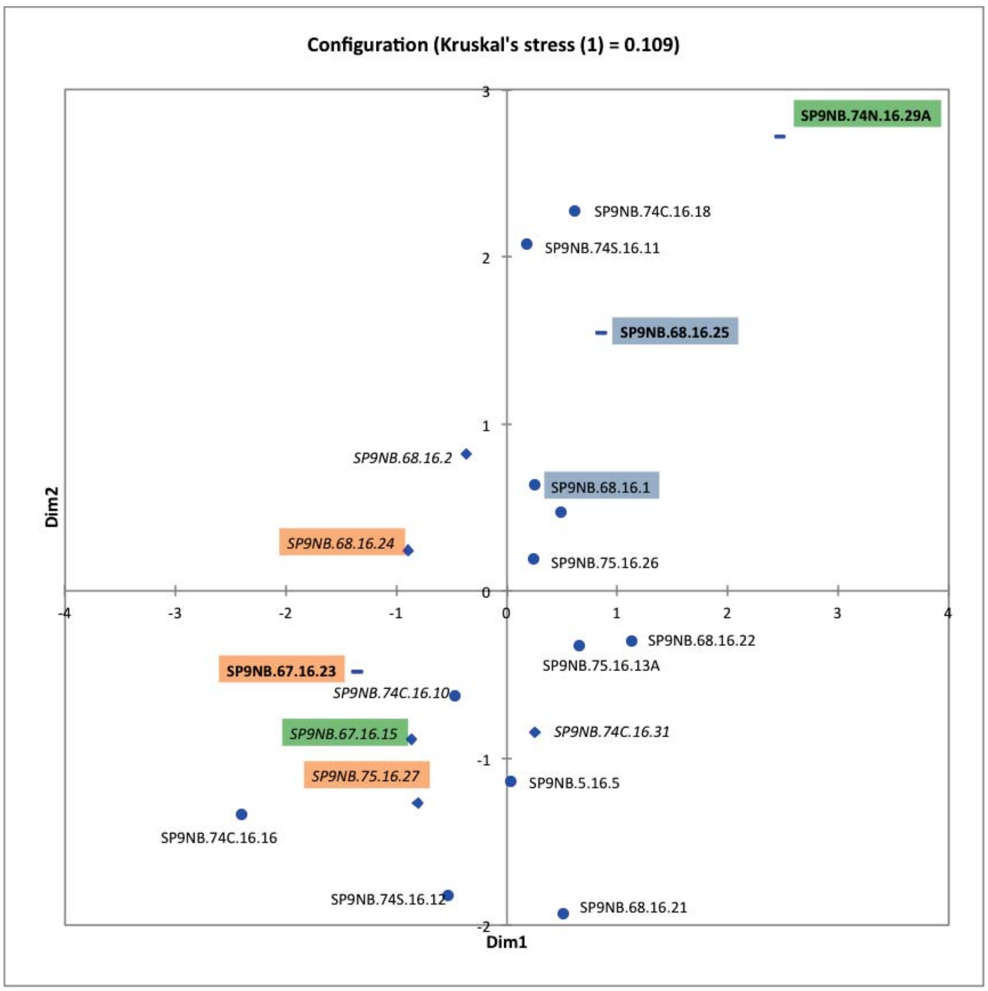

Figure 81: MDS plot of Euclidean distances for Patio B from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio C

Patio C was a residential patio adjacent to Patio B. Diamanti (1991) suggests that the principal residence was Structure 9N-69 (**Figure 28 and 82**). Three non-locals were identified through radiogenic strontium isotope analysis and include two females (Burial 13-2 and 13-10) and one male (Burial 13-4A) all from Zone 3. The female was disarticulated and secondary to a non-local female (Burial 13-2) in the storage platform of Structure 9N-100 while the subadult was buried across the patio in a looted tomb with an adult male in the ceremonial Structure 9N-111. The MDS plots may suggest that this residential group was not of a familial group or that the small sample did not include potential family members.

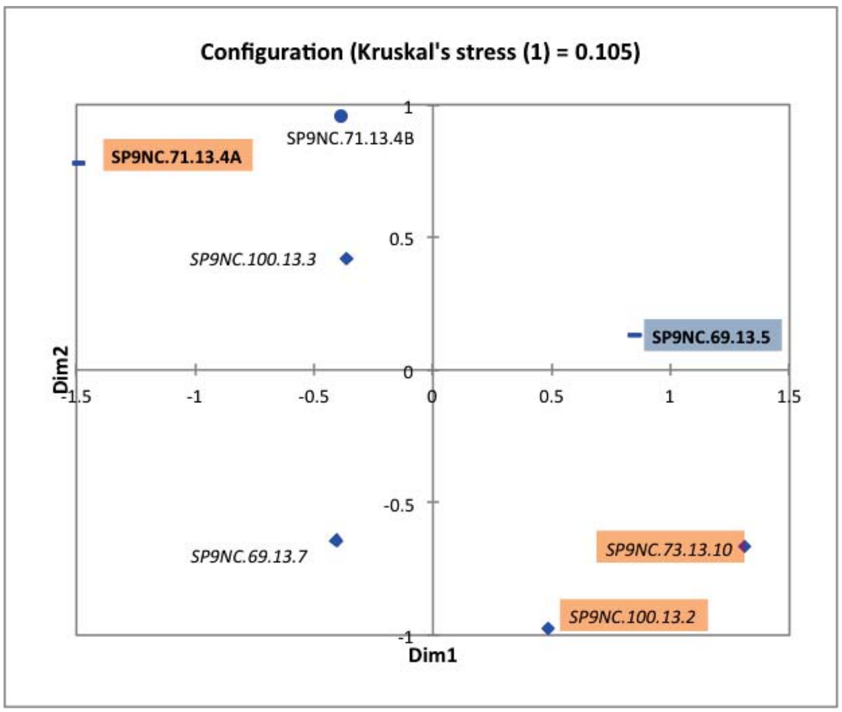

Figure 82: MDS plot of Euclidean distances for Patio C from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio D

Patio D was densely populated with structures crowded around a small plaza (**Figure 29 and 83**). This patio has been the subject of discourse for decades as it has been hypothesized to be an autonomous ethnic enclave of a non-Maya population and the residence of Lenca traders or foreign hostages distinct from all other patios in the Group 9N-8 complex (Diamanti, 1991; Gerstle, 1988; Rhoads, 2001). Like the Salamar neighborhood, the biodistance and radiogenic strontium are particularly illuminating. As the prior statistical tests have revealed, Patio D is, in fact, not different than other patios within the larger Sepulturas region and often clusters with Patios F and H. These results suggest that this patio is not an enclave of a distinct ethnic group (i.e. non-Maya, Lenca, or otherwise foreign).

Of the thirteen individuals from Patio D included in the $^{87}Sr/^{86}Sr$ analysis sample, only three were potential non-locals (Burial 17-9, 17-40, and 17-48). Only 5% (3/55) of potentially non-local individuals at Copan have $^{87}Sr/^{86}Sr$ values that exceed 0.7090. Two of these burials (Burials 17-9 and 17-48) are found in Patio D and include two women buried in the neighboring residential structures of 9N-60 and 9N-104. All individuals interred with imported Ulua vessels (Burials 17-21A, 17-21B, and 17-5) or imported whistles (Burial 17-32) had $^{87}Sr/^{86}Sr$ values that suggest that they were local to Copan.

Patio D appears to be have some affiliation in the MDS plot but does not seem to be an ethnic enclave given the variety of radiogenic strontium values. Overall, Patio D represents a diverse sample of residents. Diamanti (1991) suggested that this patio was an area of very highly specialized craft producers. Given the diversity of the biological and strontium data, perhaps this patio was occupied by a group unified by artistic skill rather than biological affiliation or place of origin.

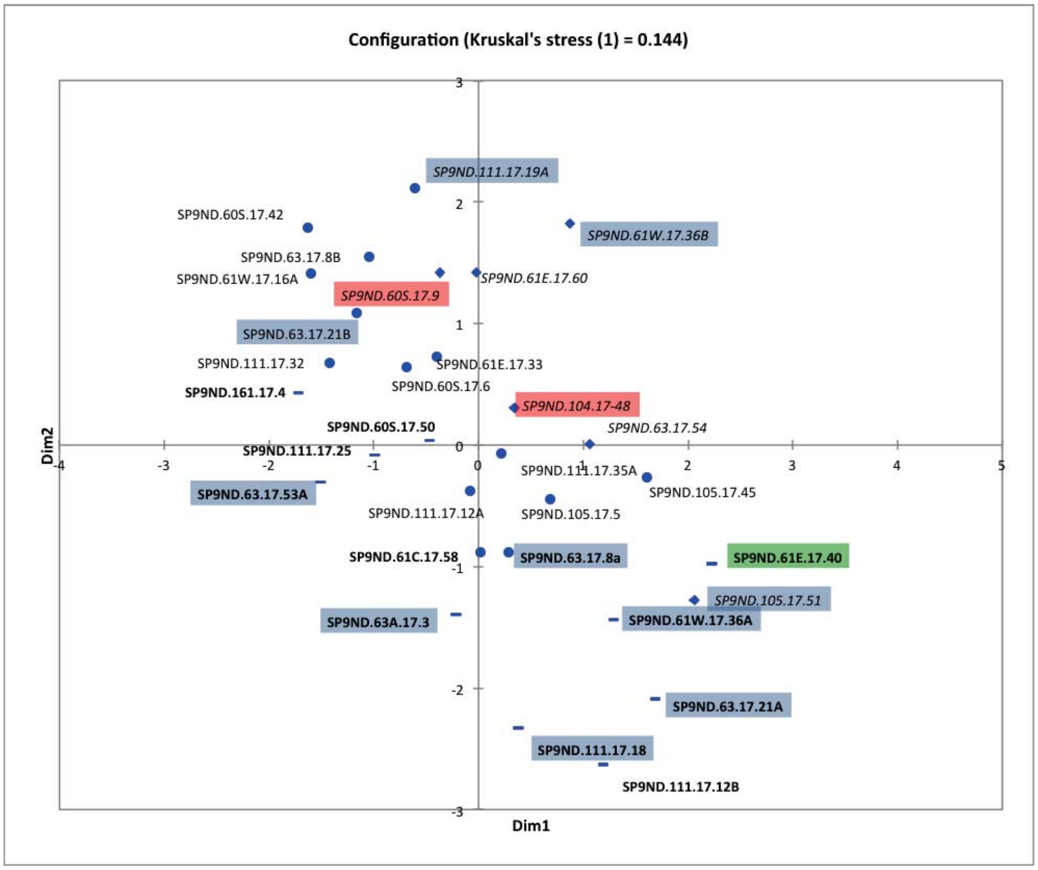

Figure 83: MDS plot of Euclidean distances for Patio D from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio E

Patio E is located below the platform that supports Patios A, B, C, D, H, and K and unlike these other patios, was open and easily accessed on all sides (**Figure 30 and 84**). Archaeological evidence indicates that this patio was primarily residential with some craft production that could have supported the patios on the main platform of the 9N-8 complex. As prior statistical tests have shown, Patio E clusters with Sepulturas patios in Group 9N-8 and with Group 9M-22 Patio A.

Of the eleven individuals sampled for $^{87}Sr/^{86}Sr$ isotope analysis, eight were non-local, including two females (Burial 15-11 and 15-29, and 15-35B), one subadult (Burial 15-45), and three males (Burials 15-3, 15-43, and 15-47). Burial 15-35B represents the third individual with the $^{87}Sr/^{86}Sr$ value that exceeds 0.7090.

Based on the MDS plot of Euclidean distances, the radiogenic strontium isotope analysis and the previous statistical tests, Patio E appears to represent a diverse sample of residents much like Patio D. Diamanti (1991) suggested that this patio was a non-elite complex that served as retainers for the residents of the elite patios in Group 9N-8. Given the diversity of the biological and strontium data, it appears that residence in this group was not tied solely to biological affiliation or place of origin.

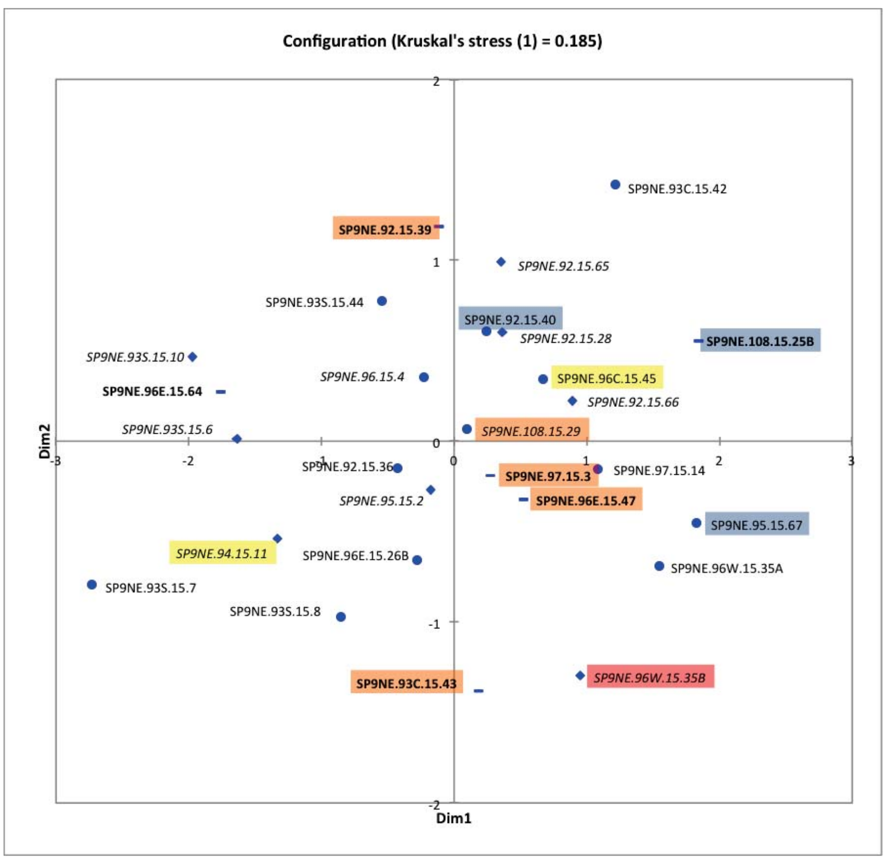

Figure 84: MDS plot of Euclidean distances for Patio E from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio F and M

Patio F is immediately south of Patio E and was a residential patio focused on ornament and textile production (**Figure 31 and 85**). Access was more limited than to Patio E but similar diversity is observed within the sample. Prior statistical tests have shown that Patio F clusters with the Sepulturas region and often with Patios D and H. Nearly all burials in Patio F were deposited in Structures 9N-90 and 9N-91 in close proximity to each other. Five of the nine burials sampled for radiogenic strontium isotope analysis were potential non-locals and include two adult females (Burials 15-21 and 15-54), an additional adult female (Burial 15-62), one male (Burial 15-22), and one individual of undetermined sex (Burial 15-17). Patio M was largely destroyed by river erosion and the sample included only two individuals, a single subadult (Burial 15-27) and one local male (Burial 15-23).

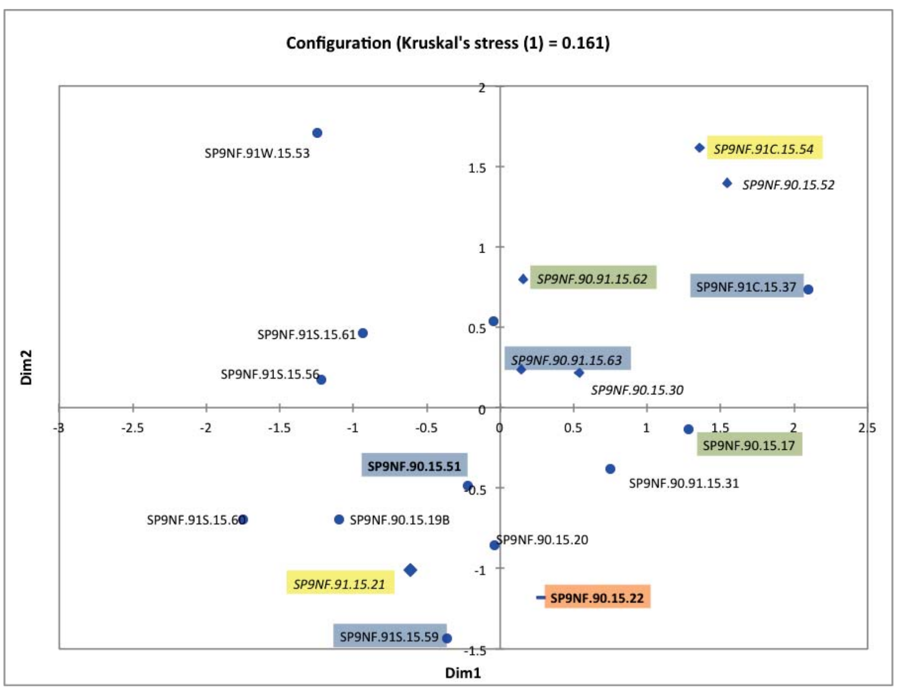

Figure 85: MDS plot of Euclidean distances for Patios F and M from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio H

Patio H, like Patio D, has been suggested to constitute a residential group of specialized craft producers with ties to potentially to non-Maya peoples. Structure 9N-110 was the principal residence of the patio open to east and bordered by Patios D and K (**Figure 32**). As the prior statistical tests have revealed, Patio H is not statistically different from other patios within the larger Sepulturas region and often clusters with Patios D and F. These results suggest that this patio does not represent a ethnic group with distinct biological dental measurements.

Of the 13 individuals included in the $^{87}Sr/^{86}Sr$ sample, three were potential non-local and include one individual of undetermined sex (Burial 22-8), one female (Burial 22-35), and one male (Burial 22-41). Significant Euclidean distances were not observed within the patio. The burials with small Euclidean distances also seem to show spatial proximity, a pattern that has not been widely observed at the site. However, it should be noted that most of the interments in Patio H occur in Structure 9N-110 with its contiguous northern, central, and southern segments. Given that significant Euclidean distances were not observed for most of the burials in Patio H, it appears that residence in this group was not tied solely to biological affiliation.

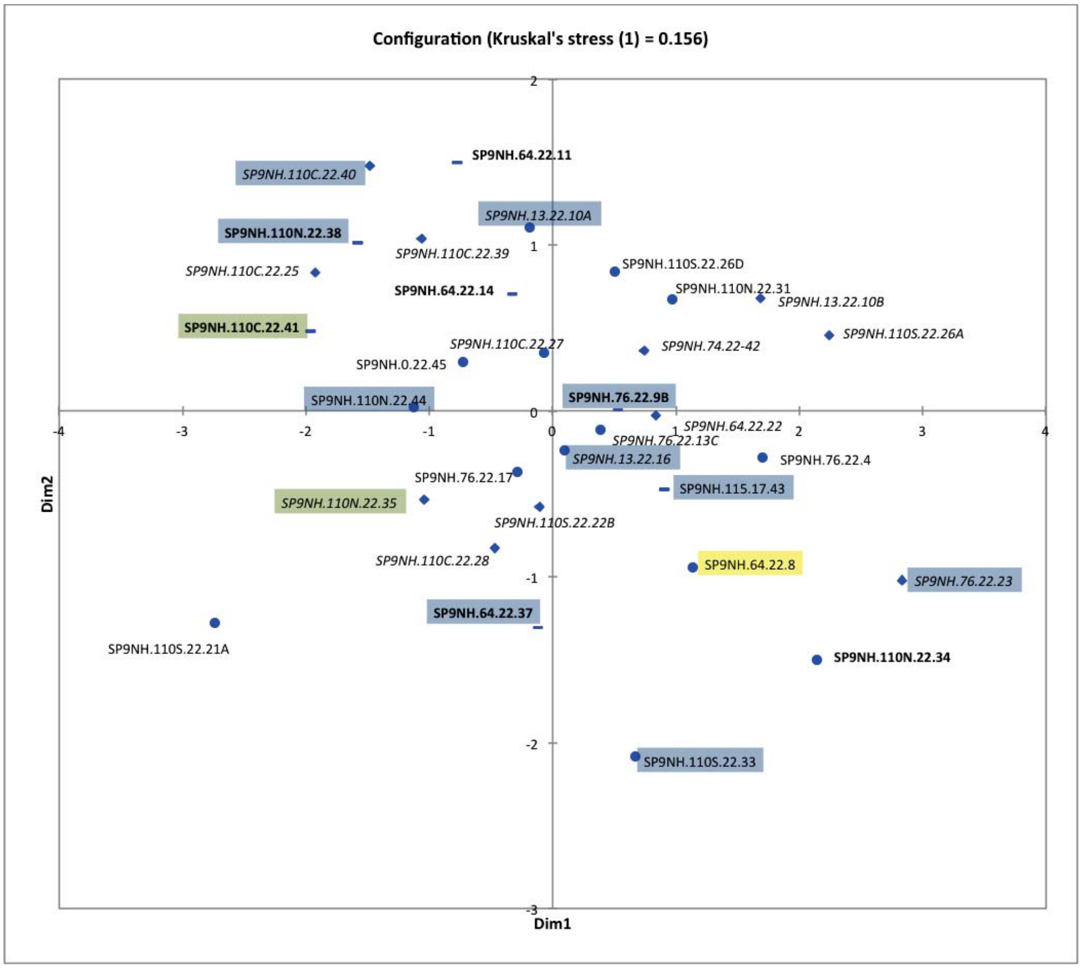

Figure 86: MDS plot of Euclidean distances for Patio H from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio I and J

Patios I and J are small peripheral patios in Group 9N-8 that were not excavated as extensively as others in the region (**Figure 33**). Patios I and J cluster with the other Sepulturas patios in all statistical tests but are not closely affiliated with any of the patios in Group 9N-8. This may result from the small sample size or may reflect real differences in Patios I and J.

Of the four individuals sampled for radiogenic strontium isotope analysis, three were potentially non-local and include two males (Burial 17-61 and 21-1A) and one female (Burial 17-47). There were no significant Euclidean distances among individuals in the sample from Patios I and J (**Figure 91**). All three of the males in the sample were interred in tombs. Burial 21-1A, the only burial from Patio J, was entombed without grave furniture in an extended position in Structure 9N-sub20. Burial 17-61 in Structure 9N-112 was accompanied by a monochrome vessel of undetermined origin. Structure 9N-55 on the northwestern edge of Patio I is the location of the tomb of Burial 4-16. The absence of biological affiliation and the diversity of radiogenic strontium data in this small sample suggest that Patios I and J were not the residence of a familial group. However, the sample size, the incomplete excavation, and disuse of these patios by the end of the Late Classic make this interpretation tentative.

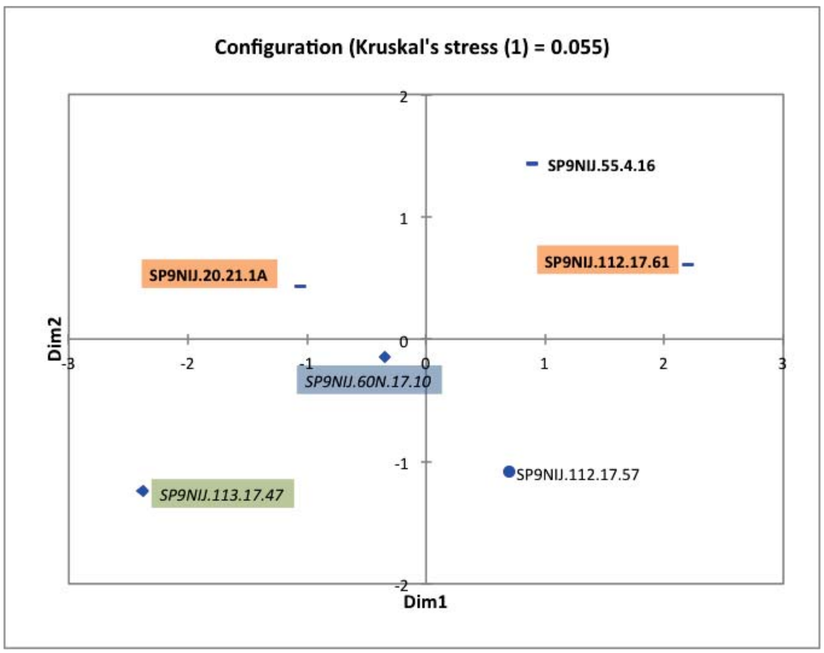

Figure 87: MDS plot of Euclidean distances for Patios I and J from the Sepulturas Group 9N-8 neighborhood.

9N-8, Patio K

Patio K is the easternmost patio in Group 9N-8, borders Patios H and D, and has clustered with the Sepulturas patios in all statistical analysis. Only two structures of Patio K remain after extensive river erosion. All the burials in the sample come from the residential Structure 9N-105 and Structure 9N-107 (**Figure 34**). All three of the burials sampled for $^{87}Sr/^{86}Sr$ isotope analysis are local and include a male (Burial 17-34A), female (Burial 17-56), and an individual of undetermined sex (17-31) (**Figure 92**). An imported Ulua ceramic was recovered from the burial of an adult of undetermined sex (Burial 17-39).

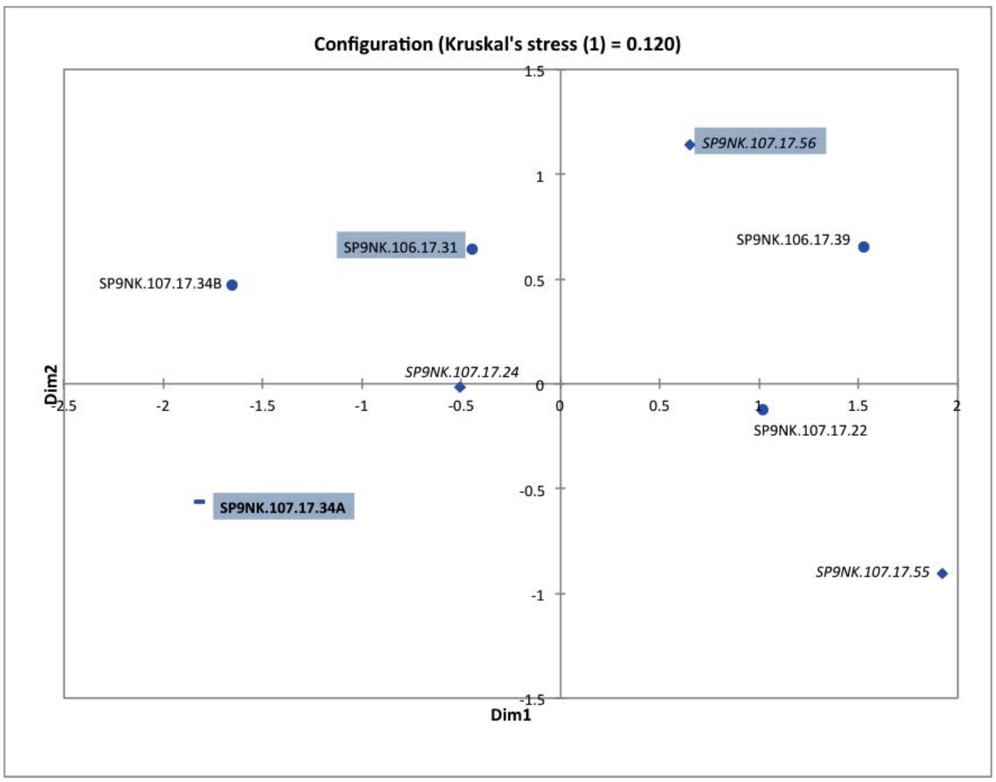

Figure 88: MDS plot of Euclidean distances for Patio K from the Sepulturas Group 9N-8 neighborhood.