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Remembering the Ancestors: Mortuary Practices and Social Memory in Pacific Nicaragua

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Remembering the Ancestors: Mortuary Practices and Social Memory in Pacific Nicaragua

by

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Abstract

Examination of mortuary practices at Sonzapote and El Rayo provides an opportunity to understand how people in pre-historic Pacific Nicaragua constructed social memory and identity. Interments located on the side of Mound 14 at Sonzapote are dated to the Sapoá period (800-1250 CE), and are the result of post-abandonment mortuary rituals. The association of the dead with monumental architecture and statuary creates a connection between the present and the past, whether those buried on Mound 14 were related to the original inhabitants, or associated with influxes of migrant populations. El Rayo provides an example of how the living interacted with the dead through secondary interment and commingling, and consists of dedicated cemeteries where memories and identities were constructed. This research examines how interment practices represent the creation of social memory and identity at these sites, and how these people related themselves with their dead, past, present, and future.

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Chapter 1 Introduction

Social memory has become a popular topic of study within archaeological discourse, which is in large part because "acts of cultural remembering seem to be an element of humans' fundamental anthropological make-up" (Erl1 2011: 13). How we remember the past is dependent upon our present frame of reference, which affects our perceptions and remembrances. While the word "memory" may bring several ways to recollect the past to mind, social memories are not coterminous with individual, everyday memory, nor the ability to retain knowledge. Rather, social memories are constructed by groups through gatherings where beliefs about the past are negotiated and revalidated (Assmann and Czaplicka 1995). Arguments abound regarding whether social memory is a term that should be widely applicable or not, which has led to more stringent adherence to definitions that differentiate social memory and other processes involved in the propagation of culture (Berliner 2005). Social memory has an intrinsic connection to the formation of social identity (Erl1 2011), which is how groups and individuals define themselves, and how those groups and individuals are conceptualized by others (Jenkins 1994). Memories are created during mortuary ritual based on the types of identity the group or individual hope to construct, which depends on many factors, such as whether the group is elite, or part of a migrant group (Wallis 2008).

Through the examination of mortuary practices at the Sonzapote and El Rayo archaeological sites we can see the material results of activities relating to memorialisation of the dead. Zapatera Island is located within the northern portion of Lake Nicaragua. It is the second largest island within the lake, and the location of several archaeological sites. Research conducted on Zapatera Island at sites such as Punta de las Figuras and Sonzapote has typically

focused on issues surrounding the chronology and function of these sites (eg. Baker and Smith 2001; Bruhns 1992), with many researchers examining the associated stone statuary (eg. Arellano 2010; Bruhns 1992; Lothrop 1921). In July and August of 2013 the Isla Zapatera Archaeological Project investigated questions regarding the chronology and cultural context at the Sonzapote site, and in the process encountered a number of human interments. Questions surrounding the presence of these burials in association with architecture and monuments at the site, and how this may reflect the creation and maintenance of social memory, led to the formulation of this thesis. Excavations at El Rayo, a site located on the mainland not far from modern-day Granada and approximately 10 kilometres north of Zapatera Island, uncovered human burials within two dedicated cemeteries in 2009 and 2010. Subsequent excavations at El Rayo, specifically at the Locus 3 cemetery, provide another example of how people created social memory within Pacific Nicaragua during mortuary ritual. Data from the Sonzapote and El Rayo excavations are presented as cases of how social memory may have been materialized in Pacific Nicaragua.

Research Questions

This research examines the mortuary practices at the Sonzapote and El Rayo archaeological sites, and situates this knowledge alongside our understanding of how social memory is constructed and maintained through mortuary rituals. Preliminary evidence exposed during the 2013 Isla Zapatera Archaeological Project (IZAP 2013) indicates that the initial construction of Sonzapote may have occurred during the Late Tempisque period (1-300 CE), and was followed by Sapoá period (800-1250 CE) interments on the side of Mound 14. This research improves our understanding of why people from the Sapoá period were purposefully burying

their dead in association with architecture from earlier periods. Because of the preliminary early construction date, I pose several iterations of site use. For instance, prior to the Sapoá period it is assumed that Chibchan-related groups inhabited Zapatera Island, followed later by migrations of Mesoamerican groups into the area; the initial construction therefore could be a result of the Chibchan groups, if the preliminary date is correct. Or the construction may have occurred later, and by people with other cultural associations. Regardless, the purposeful interment of individuals alongside monumental architecture indicates a connection between this place and the people who were practicing mortuary rituals at Sonzapote. It will therefore allow us to better understand the identities of these people, and whether the mortuary practices at Sonzapote were carried out by those related to the original inhabitants, or whether new inhabitants were constructing remembrances of their own. This discussion is particularly relevant in the face of current debate surrounding the identity of the inhabitants of Pacific Nicaragua before, during, and after posited influxes of groups of Mesoamerican origin. How might those people who used the Sonzapote site have integrated pre-existing architecture within their social fabric in order to construct a common memory of their past? Whether or not the original construction of the site was carried out by ancestors of those who later used the site for burial, it remains that the association of burials with the site itself would have likely provided a powerful connection between living individuals and their past.

El Rayo underwent excavations in a series of three field seasons, the first two in 2009 and 2010, and the third in 2015. Burials at El Rayo are, for the most part, dated to the Sapoá period, and consist of secondary interments within or around large burial urns. Both Locus 1 and 3 are the focus of attention within this thesis, as these formalized cemetery locations may be

understood as being the result of memory and identity formation, and perhaps even the result of cultural processes involving the integration of migrant groups into the existing populations. Many of the burials present here include multiple individuals within the same urns, and in several cases one individual was an adult, while the other was a child. El Rayo and Sonzapote include the presence of monumental architecture, and mortuary practices involved the interaction between the living and the dead through secondary interment. In both cases it is likely that the burials represent elite mortuary rituals, where the community would participate in commemorative events that would create and maintain memory.

Geographic Setting and Environment

Central America, as used to delineate a geographical region, includes most of El Salvador and Honduras, and encompasses Nicaragua, Costa Rica, and Panama entirely (Lange and Stone 1984). This region is expansive, and is characterised by dynamic geographic and cultural variations throughout time and space. There are three geographic regions within Nicaragua; the Pacific lowlands, the north-central highlands, and the Caribbean lowlands (also known as the Atlantic Watershed or Mosquito Coast) (Karlberg and Sjostedt 2007; Steinbrenner 2010). Pacific Nicaragua, the area most relevant to this body of work, includes the western coast of Nicaragua, where it extends north to Lake Managua, and to the Costa Rica border in the south, and is divided from the north-central highlands by the Diriamba Highlands, which are a series of active volcanoes that run almost parallel to the Pacific Coast (Healy 1988; Steinbrenner 2010). Lake Nicaragua, the largest lake in Central America, fills the southern portion of the Depression of Nicaragua, which extends from the Gulf of Fonseca to the Caribbean side of Costa Rica (Funk et al. 2009). The depression is also situated along the Central American volcanic front, or Diriamba

Highlands (Slate et al. 2013), leading to a geological manifestation based on lava flows and pyroclasts. Some common types of rock present in the region are pumice, basalt, and andesites (Salgado 1996). This means that the soils found on the Pacific Coast of Nicaragua are of recent volcanic derivation, and are renewed frequently, leading to widespread fertility (Lange 1984). The soils surrounding Lake Nicaragua, in particular, have a high clay content, which results in the retention of moisture within the ground (Lange and Stone 1984). Exceptions to this include sites in Rivas such as Santa Isabel where a fine, sandy soil matrix led to excellent preservation conditions (McCafferty 2008). Moisture levels play an important role in the preservation and/or decomposition of human remains, which can be seen in the profusion of poorly-preserved human remains in sites surrounding Lake Nicaragua. Soils present on Zapatera Island are alfisols (Salgado 1996), which are young soils that are usually acidic and fertile (Mayhew 2009), however results of soil pH testing during the IZAP 2013 season indicated that soils at the Sonzapote site are neutral, or at least variable throughout the site centre. These soils are the result of recent geological development, and represent a potential for intensive agriculture; the clay deriving from volcanic products may also be useful in the construction and decoration of pottery vessels (Lange et al. 1992).

Climatically, the Pacific Region has a distinct wet and dry season, and is characterised by high temperatures (Karlberg and Sjostedt 2007). The Pacific Coast of Nicaragua sees a great deal less rainfall than the Atlantic side (Lange and Stone 1984), which means that there are only a small number of major streams that drain into the Pacific Ocean. For this reason the main concentration of populations in pre-historic times were located along the shores of Lake Nicaragua (Lange and Stone 1984; Lange et al. 1992). This was not a static condition, however,

as climate change between the Bagaces and Sapoá period, with the latter being drier, led to a possible movement of people toward fresh water sources (Roman-Lacayo 2013).



Figure 1.1 Map of Nicaragua showing the location of El Rayo and Sonzapote.

Zapatera Island is 52 km² in size, with hills reaching up to 629 m above the lake surface, and is characterised by incredibly dense flora (Arévalo Vásquez 2010). Baker and Smith (2001) describe their difficulty working on the island, as the foliage represented a large impediment to research, and led to limited results in their survey. The IZAP 2013 team encountered similar problems, and we mitigated this with the help of local individuals who cleared a large portion of undergrowth from the site. Zapatera Island is the remnant of a volcano, and is circled by smaller islands formed by craters (Incer 1976).

Zapatera Island is located approximately 15 kilometers from El Rayo, a contemporaneous fishing village which includes domestic and cemetery remains located on the Asepe Peninsula. The modern city of Granada sits at the base of the Mombacho volcano, and several debris avalanches have affected the region (Stansell 2013), which created the Asepe Peninsula. As seen in Figure 1.2 the peninsula is composed of basalt and andesite slabs that form a semi-circular projection into Lake Nicaragua (Incer 1976).

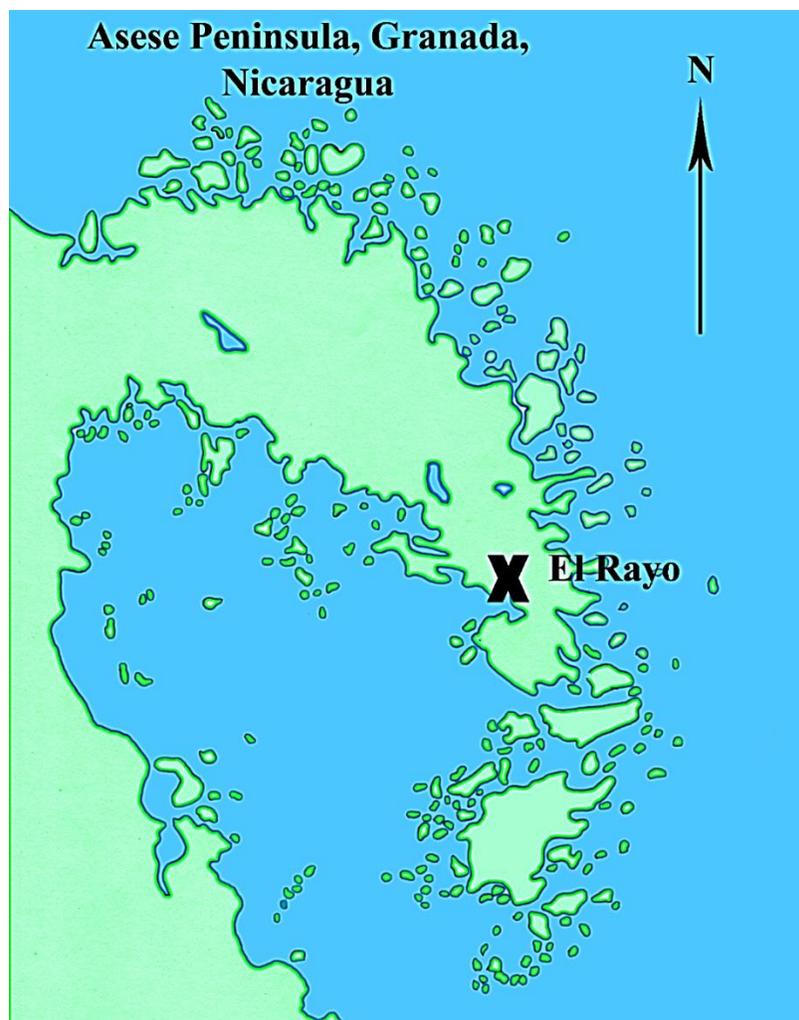


Figure 1.2 Map of the Asepe Peninsula that extends into Lake Nicaragua, showing the location of the El Rayo archaeological site.

Organization of Thesis

This thesis is composed of seven chapters in the following order; introduction, theory, cultural context, method, description and analysis of burials at Sonzapote, description and analysis of burials at El Rayo, and discussion and conclusions. This introductory chapter has served to contribute a general summary of the location and environment in which this research has taken place, and outlines the rest of this thesis. The following Chapter 2 is an overview and discussion of the theoretical foundations of this thesis, which deals with social memory, identity, and mortuary practices, and briefly discusses the usefulness of feminist theory as applied to this body of work. Social memory is an oft-debated concept, and this chapter examines its applications, and how, in particular, it may be seen in the material culture of Sonzapote and El Rayo.

Chapter 3 identifies the research region in greater detail, and discusses the history and current state of archaeological research within Pacific Nicaragua, and that of Zapatera Island and El Rayo in particular. Focus is directed to the archaeological study of mortuary practices, and overviews of previous research carried out on Zapatera Island, El Rayo, and other contemporary sites are provided. Chapter 4 covers the methods used in the excavation of human remains at Sonzapote and El Rayo, followed by how the data were recorded and analysed within the laboratory.

Chapter 5 presents the description and analysis of burials from Sonzapote, and includes mortuary profiles that describe the context for each of the burials. Results from analysis of ceramic, lithic, and geographic aspects of the site will be presented to gain a broader and more

in-depth understanding. Chapter 6 regards data from the El Rayo site, and follows the format of the previous chapter.

Chapter 7 presents a brief summary of mortuary practices at Sonzapote and El Rayo, and discusses the manner in which the data may be related to theory, proposing a connection between burials and architecture that may be viewed as a process involving the construction and maintenance of social memory. Following this, limitations and suggestions for further research are presented.

Chapter 2 Theory

Throughout this chapter there are two major theoretical perspectives that are examined, as they are the basis for understanding the materials analysed in this thesis. I start by describing the past and contemporary study of mortuary practices within anthropology and archaeology, and follow this with a discussion of collective memory studies. The intersection between mortuary practices and collective memory is given focus, and is bolstered through examination of several case studies. This chapter ends by presenting a variety of problems that may be found in the application of collective memory studies, and provides arguments for how and why collective memory is a useful and relevant theory to apply to mortuary practices at Sonzapote and El Rayo.

Mortuary Practices

Mortuary practices are both technical and ritual in nature (Binford 1971), and may exhibit evidence for the social organization of a group, their trade, ideology, migrations, identity, or social memory (Carr 1995; Chesson 2001a). Mortuary practices must always be understood within their specific historical and social contexts (Parker Pearson 1999), which requires the analysis of archaeological evidence from throughout the surrounding region, and through time. It is assumed in the Saxe-Binford mortuary program that individuals' differences in things such as status and identity will be evident upon their interment (Gillespie 2001). But, as Gillespie (2001) points out, we need to move beyond this to incorporate historical and cross-cultural variation. The problematic nature of ascribing an individual identity based on what they are buried with must also be taken into consideration (Briggs 1992), as burial rituals are carried out by those who are alive on behalf of the decedent or decedents. In light of recent trends ascribing agency to

objects, Williams (2015) points out that while we must keep in mind that burials are conducted by the living, we are often too quick to label dead bodies as an “inert substance” (2015: 274). Bodies, it is argued, should not be seen as simply sources of osteological data or symbolic meaning, but as mnemonic and social agents themselves (Williams 2008, 2015). I will incorporate methods for the analysis of mortuary practices laid out by Binford (1971), Carr (1995), and Saxe (1970), but agree with recent scholarship that criticises the limitations of these approaches. I will therefore be aligning the theoretical basis of this research with feminist theories. Feminist scholarship is especially relevant to our understanding of mortuary practices, identity, and social memory as it allows us to reflexively and critically consider our own perspectives in order to avoid, or at the least acknowledge, the projection of our own assumptions into the past (Alberti 2012; Blackmore 2011). This includes the recognition that collective memory is the result of individuals, and that we must consider the individual lived lives of people alongside general trends in data (Joyce 2001; Wertsch and Roediger 2008). This will necessitate the detailed recording and analysis of individual mortuary contexts at Sonzapote and El Rayo, and the situation of these materials in the specific historical and cultural boundaries of the sites (Briggs 1992).

Early Mortuary Practices Theory

In the late 19th century rational-idealists such as Tylor (1871) and Frazer (1886) proposed that there were correlations between mortuary practices and the forms of belief held by those who participated in the rites (Binford 1971), in which these theorists argued that burial practices were solely determined by religion (Bartel 1982). The first study of mortuary practices within the United States was conducted by Yarrow (1880, 1881), who saw mortuary practices as

indicative of the philosophies held by the people who conducted the rites. These very early studies were based within a classical evolutionary scheme, which proposes a pre-determined series of developments that each culture goes through (Binford 1971).

In the 1960s major changes in theoretical foundation as a result of Durkheim, and other sociologists, led to a focus on social organization as the largest determinant for practices (Binford 1971; Carr 1995). This meant that rather than understanding burial practices as the result of simple processes, such as the need to deal with a corpse, we need to understand burial ritual as the result of many social variables (Binford 1971). Research that focused on the universal occurrence of religious belief (Bartel 1982) was dispelled by Binford (1971), Saxe (1970) and their contemporaries, who were part of the New Archaeology (O'Shea 1984). The new focus of mortuary analysis in the Saxe-Binford program was to understand ancient social systems (O'Shea 1984), as there is an assumption that status differences between people in life will be displayed at their death (Gillespie 2001). As stated by Binford (1971:25), "variability must be understood in terms of the organizational properties of the cultural systems themselves." The papers by Binford and Saxe were part of an edited volume that sought to emphasize the social contexts of mortuary practices, and served as a launching point for later mortuary research; it soon faced a degree of criticism from several sides, most notably from those adherents of post-processual archaeology (Chapman 2003).

Contemporary Mortuary Practice Theory

Post-processual archaeology has argued that the Saxe-Binford program is too narrow, and proposes that burials are also the result of processes that form things such as social identity

(Joyce 2001). Burials are the result of complex practices, and we are able to approach archaeological data through the perspective that these practices are the result of how social identities are shaped during an individual's lifetime, and as a consequence of their relationships to others (Joyce 2001). The emotional, social, and personal relationships that were constructed and maintained during the lifetime of an individual are embodied during burial rites, and therefore may be seen in the material results of such practices (Joyce 2001; Clayton 2011). As such, the symbolism embedded within burial practices is not merely related to the individual identity of the interred person during their lifetime, but also the identities of individuals, families, and communities who created idealized identity through these acts (Halstad-McGuire 2010). This argument is informed by Giddens' (1979, 1984) structuration theory and Bourdieu's (1977) practice theory, and involves consideration of the dialectic between agent and structure (Gillespie 2001). Identity signaled through mortuary practices is seen in the intentional and subconscious actions which create and maintain meaning, identity, and memory (Potter and Perry 2011).

Introduction to Social Memory

A focus on social memory requires that the passing and enduring nature of time is brought to the forefront of the mind, including consideration of how memory links the past with the present (Gillespie 2010). Memory is not objective, and interpretations of the past can change over time, which in some cases may be related to purposeful manipulation of the meaning of the past (Cipolla 2008). The theoretical foundations of this thesis are based on concepts of social memory that have pervaded archaeological research in the past several decades. As such, this chapter discusses the history and current state of research using social memory as a concept, and

will analyse the usefulness of the concept in archaeological applications. Topics discussed herein relate to how social memory may be applied to Sonzapote and El Rayo, and how mortuary practices conducted indicate an intentional act of constructing and maintaining perceptions about their present, past, and future. Archaeological research incorporating social memory theory with mortuary practices are given specific focus, and related concepts of social identity, and landscape are considered as well.

Early Memory Studies

Here it is important to give a brief introduction to the field of social memory by outlining the key theoretical developments of the concept through time. In this it is apparent that the field of social memory is unsettled, and has been characterised by confusion as to what exactly social memory is, and what the term should encompass when applied to social phenomena. I begin by following the origins of memory studies, and continue through time and changing concepts until just before memory studies entered into humanities theory in the 1980s.

The study of memory has a long history which stretches back to the ancient Greeks (Olick and Robbins 1998), and the beginning of Western thought on memory is seen in the work of Plato and Aristotle. A metaphor drawn was of events imprinted upon the mind as if it was made of wax (Boric 2010). The basic framework for memory studies, including metaphors and terminology, was laid out at this time, and continues to influence modern thought on how memory works (Boric 2010). The next group of thinkers have been described as maintaining a “tradition of inwardness” that described memory as being contained within the self (Boric 2010:6). In the early 18th Century, Locke wrote *An Essay Concerning Human Understanding*,

and proposed that each individual holds a personal identity which, while maintained over time, interacts with things other than the self; this raises questions surrounding the self in relation to society (Boric 2010; Megill 1998). Locke argued that the self, and therefore identity, is equivalent to the memories an individual retains (Kihlstrom et al. 2002).

One of the major German philosophers of the late 19th and early 20th centuries was Edmund Husserl, who wrote on the topic of memory and time-consciousness between 1893 and 1926 (Krell 1982). Husserl argued that memory and remembering are a constant flow of lived experience, and that there is a communalisation of experience where there is an analogical transfer of remembrance from the individual into the collective memory (Boric 2010). Memories at this time were considered to be contained within the individual, and this view did not change until the writings of Warburg and Halbwachs in the 1930s (Assmann and Czaplicka 1995; Boric 2010; Wertsch and Roediger 2008). Halbwachs was a student of Emile Durkheim, and argued that the collective, not the individual, is the reason that we are able to remember; this is because we are situated within society and are exposed to many different perspectives (Boric 2010; Olick and Robbins 1998). Both Durkheim and Halbwachs saw memory as only being perceived and verified within social contexts (Gedi and Elam 1996). Halbwachs developed the distinction between communicative/everyday memory, and science, including history, which is important for defining social memory in relation to other types of memory (Assmann and Czaplicka 1995). Halbwachs further argued that there is no possible way that an individual can remember in any coherent and persistent manner outside of a social framework (Olick and Robbins 1998); in this, Halbwachs essentially obliterates individual consciousness (Gedi and Elam 1996). This viewpoint can be seen as setting the stage for future work in the field, but with a twist that brings

the individual to the forefront (Boric 2010; Gedi and Elam 1996; Olick and Robbins 1998). An important aspect of Halbwachs theoretical formulations is his focus on materiality, which is essential to the archaeological application of social memory (Kansteiner 2002). Using Halbwachs' emphasis on materiality allows for the concept of cultural memory to consist of "objectified culture, that is, the texts, rites, images, buildings, and monuments which are designed to recall fateful events in the history of the collective" (Kansteiner 2002:182). Early studies of social memory were therefore dichotomised into individual and collective remembering; this, Olick and Robins (1998) argue, is the reason that there was a lack of interest in studies of memory and tradition until its reappearance within ethnology during the 1970s (Chesson 2001a).

Contemporary Research

The revival of interest in social memory, described as a "boom" or "memory craze" by Berliner (2005), occurred in the 1980s within anthropology and archaeology (Gillespie 2010). Some pioneering names in the field of social memory include Pierre Nora, Jan and Aleida Assmann, and Paul Connerton, whose works continue to influence archaeological use of social memory today (Berliner 2005; Van Dyke 2011). A major draw of memory studies may be summed up in a quote: "...'memory' refers to the past as it is *lived* by the social agents" (Berliner 2005:199). Berliner argues that social memory is attractive because it implies a subjective and humanistic approach to the past that focuses on the process of memory work itself, not only on the reliability of memory as a factual source of information. This new phenomenological approach allows researchers to focus on how the world is perceived, and how it may have been perceived in the past (Berliner 2005). Connerton's (1989) major contribution to social memory

theory is usually cited as his division of inscribed memory from that of incorporated memory (Torres-Rouff et al. 2012; Van Dyke 2011). Inscribed memory includes monuments and texts, while incorporated memory includes behavior and bodily rituals (Van Dyke 2009). This separation polarizes material aspects of memory from bodily practices associated with memory building, which has been criticised extensively for being a false dichotomy (Torres-Rouff et al. 2012). It is considered such because bodily practices often have material outcomes, and because the division is too simple (Van Dyke 2011). Regardless, Connerton argued that inscriptive and incorporative practices interact, and memories are reproduced through incorporative practices (Wallis 2008). Connerton is charged with being, at least in part, responsible for the emphasis of cultural continuity in social memory studies, which Berliner (2005) argues has led to a loss of specificity when defining what exactly social memory is, as it equates social memory with culture.

Because there is an excessive amount of descriptions defining what social memory is, it is important to outline the conceptual field that is used within modern studies. One such example is provided by Wersch and Roediger (2008), who developed a series of conceptual oppositions in order to draw out the boundaries of the term. These oppositions include collective memory versus collective remembering, collective remembering versus history, and collective remembering versus individual remembering (Wertsch and Roediger 2008). The first conceptual opposition they use is important, and brings the static connotation of a collective memory to attention (but see Misztal 2003 on Durkheim). It is better, they argue, to think of a "collective remembering" that is process-based and dynamic, involving contestation of individual memories. Based on these oppositions, it is possible to think of collective memory as process-based and

dynamic; to consider questions such as what memories are considered history, and therefore accurate, versus more subaltern remembrances; and bring the lack of focus on collective memory compared to individual memory within academia to attention. These issues are not new within studies of collective memory, but they are important because they help to differentiate our conception of social memory from other forms of memory (see Assmann and Czaplicka 1995).

Some of the most recent work in the field of social memory comes from philosophy and psychology. One argument is that "distributed remembering" is an important aspect of collective memory, as memory is held not solely within the individual, but is a coordinated individual remembrance that draws from the physical environment (Fagin et al. 2013). This, they argue, is because the environment may be altered in ways that help us to remember, which in turn eases the burden of memory on the individual and turns to the outside material world as well. In this way, people can remember more. Archaeological studies of social memory commonly surround places, objects, and bodies. Recent approaches include those which are practice-based, and rely on repetitive practices as seen in the archaeological record (Van Dyke 2011; e.g. Pauketat 2001; Joyce 2008). Practice-based memory studies draw from Giddens and Bourdieu in that there is a focus on the multiplicity of things such as understanding, resistance, and intentional and unintentional consequences. These studies move archaeological research from the static to the dynamic by viewing the materials of the past as being entangled with the people of the past (Van Dyke 2011). In this way materiality may be understood as "the embodied, experiential, and dynamic medium of practice" (Joyce 2015:181).

Another important and pervasive aspect of social memory in contemporary research is the inseparable act of forgetting (Kuijt 2008). Connerton's 2008 publication *Seven Types of Forgetting* highlights the importance of forgetting, and indicates that the act of forgetting is not always seen as a failure, but may instead represent one of seven manners in which we may forget. These include repressive erasure, prescriptive forgetting, constitutive in identity formation, structural amnesia, forgetting as annulment, planned obsolescence, and humiliated silence (Connerton 2008). Boric (2010) points out that forgetting can be just as important an aspect of memory studies as remembering, and may be recognized through defacement or destruction of material culture (see Schortman and Urban 2011 for a case study involving this in Naco Valley, Honduras). Alongside this is the realization that time, and therefore memory, is not always conceptualized as linear; other forms of time, such as cyclical, do exist outside of the Western episteme, and may be seen when studying the production of social memory (Boric 2010; Joyce 2001; Van Dyke 2011).

Social Memory in Archaeology

Anthropological and archaeological research was at the forefront of social memory studies when they reappeared in the 1980s and 1990s (Gillespie 2010; Van Dyke 2011). Archaeological interest in social memory was preceded by those seen in history, anthropology, and geography, and after the initial trickle of social memory studies started to appear in the 1990s and 2000s there has been a veritable flood of work that continues to inundate archaeology today (Van Dyke 2011). Social memory is seen in archaeological research dealing with topics including the reiteration of group identities, the political uses of social memory, collective or forced forgetting, and competing social memories. Though some studies utilize written text, most

focus on non-textual objects that are aides to memory (Gillespie 2010; for a study of textual social memory in the Maya region see Golden 2010). Contemporary social memory studies in archaeology continue to rely on the framework laid down by Halbwachs, often tweaking the theoretical standpoint in order to allow for the existence of individual memory (Berliner 2005; for example Golden 2010). In contemporary studies of social memory the unifying theoretical framework revolves around the concept of a shared social memory that is constructed and maintained by individuals (Berliner 2005; Golden 2010). But whose version of memory is used to construct the collective memory, then? This question is seen over and over again, and the answer is dependent upon the specific social and historical circumstances involved (for example Golden 2010). Social memory is also seen as transforming from something that is linked to specific individuals, regions or communities at one point in time, and into something that has lost its individual contextualization and is then referential and abstract (Kuijt 2008).

Malafouris (2010) brings an interesting spin to studies of social memory in his conception of the Brain-Artifact Interface (BAI), and warns against reductionist and neurocentric views that conflate culture with properties of the individual brain. The BAI is a type of interface that mediates interaction between different entities or processes; in this case, the interface is composed of material objects or practices. An example may be art or stone tools, wherein the brain is materially engaged, and the material traces may be considered an extension of the mind (Malafouris 2004). This is interesting, and is archaeologically applicable, as it settles studies of human memory within the realm of materialization, and places the material world and the mind as an inseparable analytic unit (Malafouris 2004: 53). Assmann (2011:7) touches on this; "cultural memory refers to one of the exterior dimensions of the human memory, which

initially we tend to think of as purely internal – located within the brain of the individual, and a subject of encephalology, neurology, and psychology but not of historical cultural studies, the contents of memory."

The reason that social memory is so appealing within archaeology may very well be linked to the ability of studies of memory's materiality to delve beyond processual research agendas (Van Dyke 2011). It allows the researcher to access a part of the past that is contextualized and focused on people. For some, this is viewed as a manner in which archaeologists can put faces to people in the past, and understand the way in which they experienced their world (for example Chesson 2001b). For others, this is seen dispassionately as a form of historical fiction writing (Assmann and Czaplicka 1998; Boric 2010).

Mortuary Practices and Social Memory

Mortuary practices and contexts are particularly salient in studies of social memory and identity within archaeology, which is related to the deep connection that mortuary practices have with material culture and social memory (Chesson 2010a; Torres-Rouff et al. 2012). This is especially relevant when considering the material remains of ceremonies related to death (Chesson 2010a), as burial patterns and the broad structure of society are strongly linked with social aspects of memory and identity (Cannon 2002). Through the repetition of ritual actions, individuals and collectives create social memory and identity, and those aspects of material culture in which memory is embedded (Kuijt 2008; Torres-Rouff et al. 2012). It is important to consider many fields of study (Chesson 2010a), and to relate social memory and identity to both particularistic and general data in order to gain an increased and more nuanced understanding of

the archaeological record (Joyce 2001). Chesson (2010b) argues that mortuary practice studies are informed and enriched when the creation and maintenance of social memories is considered, as social memory indicates how a group thought about life in the past, and how life should be in the future. The actions that are carried out in funerary practices work at various scales such as the individual, household, or community (Kuijt 2008). These practices must also be considered in relation to their situation; the grave is somewhere that mourners hold emotion, and where they express their ideas about individuals through funerary practices of commemoration (Torres-Rouff et al. 2012). The mortuary rites associated with burial would have been embodied performances that displayed emotion, and the social and personal relationships of the deceased, and these aspects of death and mortuary practices should not be ignored (Joyce 2001:13).

Other important aspects of mortuary studies are the acts of primary and secondary interment. Primary interment is the permanent, or semi-permanent, burial of remains that generally occurs shortly after death; secondary interment, however, involves movement of all or part of remains to another location (Kuijt 2008). These types of interment are necessarily linked, but secondary interments are considered to be imbued with symbolic and literal implications of remembrance, regeneration, and forgetting (Kuijt 2008). These types of events allow for scheduling to occur in which mortuary rituals may happen at a certain time, which in turn may allow a wider audience to participate in singular or multiple individuals' commemorative events (Kuijt 2008).

Commemorative ceremonies may be seen in materials such as grave goods, skeletal remains, funerary structures, and the built environment (Chesson 2001b); all of which are

important for the purposes of this thesis. It should be noted, however, that Goldstein (2000) argues against this view, and points out that secondary burial may not always have anything to do with death. A strong proponent of secondary burial, specifically cremation, as a practice that is strongly tied to social memory and identity is Williams (2004a; 2004b; 2015). Urns, and the use of cremation in conjunction with burial urns, can be a result of specific choices made in how to remember decedents (Williams 2004a). The very nature of dead bodies as material objects has been largely ignored or denied within archaeology, and it is argued that we need to understand human remains as something that the living engage with, and as a source of personhood and remembrance (Williams 2004b). “This approach allows us to consider technologies of remembrance centering on the transformation of the human body as powerful means by which...communities defined social memories and simultaneously distinguished themselves from others” (Williams 2004b:268). Cremation itself, and the mobility of cremated remains, allows a variety of spaces and places to be incorporated into memorialization and mortuary ritual (Williams 2015).

Case Studies: Mortuary Practice and Social Memory

Researchers of prehistoric Britain have uncritically ascribed material phenomenon to ancestor veneration without linking memory between generations with a contextualized and data-supported model (Kuijt 2008). This and other studies have led to a call for research that has sound theoretical standing, and which can demonstrate a strong link between evidence and theory (Kuijt 2008). Kuijt proposes to answer this call, and uses social memory, ritual performance, and time to examine plastered skulls seen in the Pre-pottery Neolithic B period of the Near East. This study was conducted by connecting the presence of these skulls to individual

and collective social relations, identity, and memory. These skulls, it is argued, are not part of some version of ancestor veneration, but instead represent a system of memory and embodiment focused on remembrance, and later forgetting, of the dead. Kuijt sees a striking amount of similarities between the mortuary practices observed at different sites despite the nuanced variation that is also present between these locations; he argues that the variation is a result of technological differentiation and community-specific traditions that work within the overall shared practices and beliefs of these people. This case study also involves the presentation of data to support a trend of social memory moving from individual and contextual to abstract and collective.

This is done by linking the way that skulls are removed from their primary interment contexts, and brought into the community where they are plastered with facial features. Kuijt argues that the skulls maintain their individual identities and memories at this point in the mortuary cycle, despite the possibility that the features plastered on to them were more directed by tradition and specific communities than by the individual's features in life. However, it is argued, the memories associated with the skulls become indirect and collective as time, and therefore generations, pass, and these skulls are reburied in collective caches that represent a collective remembrance. Despite the promise of such a study, Kuijt (2008) has been criticised for not successfully drawing a line from theory to the data (see comments by Belfer-Cohen and Goring-Morris, Clark, and Goldstein in Kuijt 2008). This can be seen in his assumption that the plastered skulls were transferred between social groups, though no evidence directly suggests the geographic movement of these skulls in processions or anything of the like.

In the work done by Torres-Rouff et al. (2012) social memory is defined in the manner of Van Dyke and Alcock (2003), as "the construction of a collective notion (not an individual belief) about the way things were in the past" (Torres-Rouff et al. 2012:2). The authors argue that the repetitive ritual enactments at their site contribute to the production of social memory. This included the placement of remains ovetop of a ruined palace, which they argue facilitated forgetting and the creation of new social memories. In this case, Torres-Rouff et al. use Connerton's division of memory into inscribed and incorporated types, and attempt to view both of these forms of memory at Kish's A cemetery. They wish to investigate commemoration and memorialisation by observing trends of general regularities in burial practice alongside the differences seen in individual burials. Their data set include 154 graves from Kish's A cemetery. Unfortunately, their work is based on previous excavations that have been described as "poor", and has involved reconstruction of the material remains through examination of sources such as field notes, museum catalogues, and archival records. They did, however, reanalyse the skeletal remains themselves, and have described the excavations specific to the A cemetery as being fortunately detailed and diligent. The context among which these burials occurred is described in detail, and includes the presence of a razed palace that was the site of residential construction shortly after its destruction. The burials associated with this study were produced by the occupants of these residences, having been placed under the homes and within the razed palace below. It is argued that this burial practice is implicated in the construction of a collective social memory, and the commemoration of the dead. The purposeful, indeed intentional, homogeneity of the burial practices indicates a purposeful construction of social memory. One obvious criticism is the possibility that the location of these burials, which is related to the location of the residences, is a function of opportunity rather than intention (Van Dyke 2011). But, Torres-Rouff

et al. (2012) argue, the presence of these residences here so soon after the fall of the political centre was probably not a coincidence.

Williams (2004a) examines the way that dead were interred during the time before and after the Roman Conquest in south-east Britain by looking at pottery vessels in relation to cremation. The author argues that the adoption of cremated burial with ceramic vessels is not an issue of "common sense" (Williams 2004a:419), and that this was a distinctive choice made by people to remember the dead in a specific way. This practice led to the dead being remembered and perceived in certain ways by people in the society. Williams uses indirect evidence from Roman and Late Antique written sources to situate his argument, and draws many links to practices of food and drink consumption related to mortuary practices. Evidence from Roman graves includes pottery vessels that may have contained food and drink being placed on funeral pyres, and the argument is that the post-Conquest Romano-British cremations that include pottery vessels were linked to this practice. The consumption of food and drink, he asserts, is an important source of constructing social relationships in life, and in death the sharing and sacrifice of these substances link the living and the dead, and creates a shared social memory and identity. He also implicates sensory factors, such as the smell of food, in creating and situating memories at funerary events. A metaphor is also drawn, one that indicates the consumption of food as an act that parallels the incorporation of the dead into memory. This metaphor, while interesting and thought-provoking, is not situated within a particular context. How is it then drawn? I would argue that Williams should have situated the metaphor within a context-specific social view held by these people in order for that worldview to be provoked without ambiguous bases. Another potentially problematic aspect of Williams' study is the use of several analogies that are drawn

that link how other societies see food, drink, and cremation with the evidence from burials in south-east Britain. The nature of these analogies are acknowledged by the author, but a more in-depth analysis of how these analogies are applicable, and in what ways they are not, would have served well.

Joyce (2001) examines how the place of burials is implicated in the formation of social memory and social identity at Tlatilco, Mexico. She focuses on interments of females at the site, and explicates the specific lives of individual women as seen in the material record, and on the general trends in the data regarding mortuary practice. The site is composed of features that include the presence of burials within a village where bell-shaped storage pits were occasionally used for secondary burial. Joyce found that variation between burials is best associated with spatial clusters, and that these spatial clusters share characteristics such as alignment. This, she argues, is likely because the burials were consistent with the houses and associated yards of the residents, of which the proposed shape and size are drawn from nearby contemporary sites. If it is considered that this postulation is true, then the clusters of individuals interred at Tlatilco were related to specific practices associated with dwelling space. These dwelling spaces, Joyce asserts, likely were comprised of individuals that were members of social Houses (Joyce 2001:14), and therefore participated in House-specific activities. The burial clusters are characterized by varied mortuary practices that indicate different presentations of identity among the dead. There is, however, a great amount of similarity among the burials, and this is argued to have been due to social constraints as to how a person was to be treated in death. Simple summarisation of the information available about female burials at this site is argued to mislead archaeological consideration of these individuals and groups, as this would merge several axes of identity such

as age and class. This is because a particularistic account of these burials is necessary to understand the individual lives of these women. She goes on to describe several burials, that all implied some sort of regularity, but none of which were the same in terms of burial goods, grave preparation, or body position. Joyce indicates that the individual treatment of each interment results from practices carried out by mourners, which present an aspect of social memory that is based on sensual experiences of commemoration, among other factors. The presence of some young women with elaborate grave goods may have been a method the living employed to create social memory and identity in association with these individuals. This treatment of social memory in relation to mortuary contexts remains a powerful and persuasive study more than a decade after being published (see Torres-Rouff et al. 2012; Gillespie 2011).

In the examples presented above social memory theory is applied to archaeological materials. Several different perspectives show how social memory may be understood through monuments (Torres-Rouff et al. 2012), consumption and cremation (Williams 2004a), and dwelling spaces (Joyce 2001), all within mortuary contexts. These examples provide context for how social memory may be understood to have been created at El Rayo and Sonzapote, especially in relation to ritual practices and the material traces left behind. It is apparent that the examination of mortuary practices is intertwined with other theoretical concepts such as identity, monumentality, and consumption; a closer look at how these may be used in conjunction is presented in the following sections.

Mortuary Practices and Identity

“Cultural memory preserves the store of knowledge from which a group derives an awareness of its unity and peculiarity” (Assmann and Czaplicka 1995: 130). This quote taken from Assmann and Czaplicka (1995) situates social memory and identity as related concepts where community and individual identities may be asserted during the creation of memory (Wallis 2008). Certain practices may also lead to the production of different identities and memory; for example, the deposition of remains as an undifferentiated mixture may represent group solidarity (Wallis 2008). As explained by Golden (2010), identity is also implicated in where and how social memory is situated within individuals, as they are part of a variety of social groups that maintain different social identities. Ideology is also used in social memory when social identities are created, and this line of thought inevitably leads into identity politics where groups define and contrast themselves against other groups (Van Dyke 2011). In this, social identities are understood to be constructed by both individuals and groups, and are constructed by definitions created internally and externally to those groups or individuals (Jenkins 1994).

Using concepts related to migrant identity, Halstad-McGuire (2010) examines boat burials conducted by Viking diaspora at Kaldárhöfði, Iceland, and Scar, Scotland, in comparison with one from Vinjum, Norway. The burials created by migrant populations may have been a way for these groups to connect themselves back to the homeland, and construct new identities within the new community (Halstad-McGuire 2010:166). Recent applications of the concept, such as that by Voss (2008b), Osterholtz (2015), and McCafferty and Dennett (2013), indicate that we can use ethnogenesis to study how identity changes through time. In light of migrations

into Pacific Nicaragua, ethnogenesis and hybridization are useful concepts to apply to the changing material culture as new groups move into the region and intermix with the pre-existing population. Salgado (1996) provides a relevant discussion of the interaction between migration and social change, specifically in regards to that seen in Pacific Nicaraguan prehistory, which highlights the diversity of problems archaeologists face when examining the material traces of migration. Some aspects of material culture may change within the influx of new populations, which may manifest as changes in mortuary practices, the emergence of new technologies, and the abandonment of old settlements alongside the appearance of new settlements (Salgado 1996:95-96).

Place, the Built Environment, and Monumentality

Place is important to archaeologists and anthropologists, and monuments are important in the structuring of funerary rites, partially because monuments are created in order to represent something in particular (Chesson 2001b; Barrett 1990; Cipolla 2008). Barrett (1990) argues that the understanding of the past is possible through practical engagement with materials, and monuments allow us to interpret the pre-existing world. Memory is continuously reproduced at these sites through practices carried out, especially when mortuary practices place the dead into the social memory (Wallis 2008). And while the built environment, being any alteration of the environment by humans (Lawrence and Low 1990), is an important aspect of this, the place itself is a key consideration in archaeological studies (Susmann 2013). Archaeological understanding in mortuary studies, especially in relation to how the living and the dead are linked, is enhanced by examining the relationship between people, place and memory (Chesson 2001b). The concept of *lieux de mémoire*, or sites of memory, was developed by Pierre Nora (1989), and is a useful

heuristic tool when considering ancient monuments, landscapes, or past events that leave behind material traces.

Lieux de mémoire reside within three dimensions; material, functional, and symbolic (Nora 1989:19). The symbolic aspect of *lieux de mémoire* separates this from other cultural processes, as does the intentionality behind the will to remember (Nora 1989:19). Using this “entire landscapes may serve as a medium for cultural memory. These are not so much accentuated *by* signs (“monuments”) as raised to the status *of* signs, that is, they are *semiotized*” (Assmann 2011:44). One very promising manner in which *lieux de mémoire* are conceptualized is the assertion that memories are not only found within large monuments, but may be seen in practices and objects (Holtorf and Williams 2006:243). This is because *lieux de mémoire* are dynamic, and can be considered mnemonic processes rather than products (Erl 2011). When built environments, such as monuments or funerary structures, are considered symbolically, they are implicated in the embodiment of meaning within or even between groups (Lawrence and Low 1990). A problematic aspect of *lieux de mémoire* is the nation-centric nature of the concept, which Erl (2011:25) argues may be addressed through use of memory sites wherein other perspectives are present, such as multicultural or postcolonial perspectives. The dynamic nature of Pacific Nicaragua’s populations throughout pre-history provides conditions for the application of *lieux de mémoire*.

Archaeology must also acknowledge that people in the past may have reoccupied old sites not because of some intentional use, but because the location is usable and happens to be there, or because it is a strategic location (Van Dyke 2011). This has led to Van Dyke (2011)

arguing that reoccupation of sites should be shown to have been intentional if social memory is to be discovered. The following two case studies indicate how place is implicated in studies of social memory by Chesson (2001b) and Susmann (2013).

Case Studies: Social Memory and Place

Chesson's (2001b) work at Bab edh-Dhra', Jordan, examines pre-urban mortuary practices during the Early Bronze Age, and how social memory was created at sites where ritual commemoration occurred. This site is located within the southern Levant, and was present at a time when urbanization was beginning. Interments here during the EB IA period are exclusively within shaft tombs, and are asserted to have been a representation of how social memories were created, negotiated, and reproduced. The tombs are characterized by one to five chambers, and each chamber holds one to five individuals. Grave goods include pottery and stone vessels, ceramic figurines, wooden objects, beads, and stone. These objects were placed within the graves in a certain manner, and so were discrete parts of the skeletal remains. This is evident in the organized piles of skeletal material, wherein skulls were generally laid together on a woven mat, and other skeletal aspects were separated out. In this case there is no evidence for primary interment, and the location of where these individuals were primarily interred is still unknown. Based on dental analysis, the author is able to conclude that the individuals within each shaft tomb are more closely related in a genetic sense than between shaft tombs. Several observations are made at this point: first, that people would have travelled to this location in order to inter their dead in secondary burial rituals; second, that genetically related groups were placed in collective tombs; third, the material culture associated with each of the graves is part of a

specific social group identity; and fourth, a strict set of rules were followed during the process of interment that led to segmentation of grave goods and skeletal remains (Chesson 2001b:106).

Susmann (2013) examines place at Mesara in southern Crete from 4000-200 BCE, and seeks to link ideology and memory to landscape. Buildings here eventually can be seen as dominating the collective memory, and are therefore the holders of memory. This is because the buildings are part of a network of memories and associations that were held in the minds of individuals and collectives prior to their construction. In Phaistos, court-centred buildings have a long continuity, and questions therefore arise about whether these specific locations are chosen as centres of power. The evidence suggests that there were central buildings in these locations prior to the construction of the court-centred buildings, which supports this claim. In this case, the region is one where the Mesara people had longstanding presence, as it is where their earliest ancestors inhabited and where memories had been embedded into the landscape. The social memory is present in forms of architecture; first, the specific location is important in regards to social and political power; and second there is a re-creation of the environment in times of change that affected how continuity was maintained, and what symbols were of importance. Therefore, Phaistos in terms of general location was remembered as significant, and when the Mycenaean took over power, the court-centered building was remembered by them as a place of power. For the Minoans however, the memory is not simply of power, but of associations they have with this location and their ancestral past. This highlights how different groups of people will hold different memories and significance for the same place. For the Mesara people, the location of the building itself was somewhere that social memory was embedded, and which a connection was maintained. The author stresses the importance of recognizing individuals in the

formation and maintenance of social memory; after all, individual remembering forms the collective remembering. But it is also important to understand that people that inhabited different groups, or had different identities, would have held different collective memories. An example here are the lower classes of individuals who would not have come into contact with the court-centred building at Phaistos because of class separation and geographical distance, and yet would still have maintained a social memory of the location. Elites, however, would have come into contact with the building, and would therefore have a collective memory that was built of remembrances in which many individuals had first-hand experience with the location.

These examples tie into how built environments impact the creation of social memory. In Chesson's (2001b) example people would have been moving through the landscape to conduct specific mortuary rituals. This process led to the creation of social memory. In Susmann's (2013) example meaning ascribed to locations was re-created through the construction of new buildings. These cases present similar circumstances, at least in part, for the creation of social memory as that seen at El Rayo and Sonzapote. This is because the ritual practices carried out at Sonzapote involved pre-existing architecture, and in both cases people would have interacted with the built environment during these rituals.

Some Concerns

Another argument for the origin of interest in the field is expounded upon by Berliner (2005), who argues that it is a turn back to the age-old question of cultural transmission through time and generations, except this time memory is what facilitates the continuity of culture. This in effect allows anthropologists a different way of conceptualizing cultural continuity, and

Berliner points out that it is critical to maintain a stringent understanding of our uses of memory in research, as the overextension of the concept has led to a loss of terminological specificity. This can be seen in the use of the term "social memory" to refer to anything involving human cognition, identity or culture (Berliner 2005). Berliner argues that social memory has even come to be coterminous with culture in some studies, and sees this as deeply problematic and the cause of much confusion in relation to what exactly social memory is. Van Dyke (2011) agrees, and argues that the conflation of identity, culture, and social memory limits the explanatory usefulness of these research agendas. The problem of definition, as in many other fields of study, is also wildly apparent in studies of social memory within archaeology (Berliner 2005; Gillespie 2010; Wertsch and Roediger 2008). The reason for this may stem from the broad range of disciplines within which the concept has been developed, as argued by Wertsch and Roediger (2008), or perhaps it is because of the wealth of theoretical information that researchers draw on, and the specific theoretical standpoints that each researcher adheres to (Gillespie 2010). One way to circumvent these conflations is to see memory as something that is intentional. Van Dyke (2011) argues this point because, otherwise, we risk overextending the concept of social memory to be coterminous with culture. This is important, again, because social memory can then maintain its "analytical unity" (Van Dyke 2011:245).

Summary and Conclusion

Acts associated with death, and the consequent material manifestation of interment, enable archaeologists to glimpse into the lives of people who existed in the past. We are able to examine skeletal remains themselves, the spatial arrangement of those remains, and may further hypothesize the social and personal context of the burials. Social memory is a concept that

allows us to consider how people view their own past and present, and how they may have memorialised their past through practices and cultural materials that are available for archaeological analysis. Mortuary contexts, monuments, and landscape may be used to examine the construction and maintenance of social memory, as these are important aspects of remembrance, and serve as signifiers to those who see and participate in them. Application of social memory at Sonzapote is particularly relevant based on the use of certain locations for interment, and the use of older post-abandonment mounds for burial of individuals. Based on our understanding of social memory as being constructed through intentional acts of remembrance or forgetting (Van Dyke 2011), it is likely that social memory was constructed, maintained, and transformed at El Rayo and Sonzapote through mortuary practices.

Chapter 3 Cultural Context

The aim of this chapter is to provide context for the research questions investigated within this thesis by presenting information about Central American archaeology and ethnohistory. This includes a summary of cultural development in Pacific Nicaragua, a general overview of Central American archaeological research, and a summary of archaeological work conducted within Pacific Nicaragua. Sonzapote and El Rayo are within the Greater Nicoya subarea, which is discussed in the following section.

Brief Introduction to Southern Central America and Terminology

The terms used to describe the region that stretches between Honduras and Colombia are diverse, and none have been used without criticism or debate. Some of the problems associated with these terms are their pejorative connotations, their emphasis on similarity despite variation, and especially their designation of the region as *not* Mesoamerican or central Andean. Terms that have been used include the Circum-Caribbean Area, Lower Central America, the Intermediate Area, the Chibchan Area, and the Isthmo-Colombian Culture Area. Sheets (1992) argues that the pejorative implications of the term “Intermediate Area” has directly affected research, as it is too embedded in comparison with societies to the north and south. The same applies to “Lower Central America,” which has been argued to indicate not only geographic location, but some sense of lower cultural evolution (Hoopes and Fonseca 2003). Within this thesis terms such as “Southern Central America” and “Pacific Nicaragua” are used, as these are associated with geographic regions rather than specific groups of people, or a passageway between regions.



Figure 3.1 Map of Central America that delineates the Greater Nicoya cultural subregion.

Shifting focus to the Greater Nicoya sub-region of southwestern Nicaragua and northwestern Costa Rica brings attention to another conceptual area that has faced criticism. The original concept of the Greater Nicoya region was developed by Norweb (1961), and he considered the area to be a subarea of Mesoamerica (Salgado 1996). Norweb saw the Greater Nicoya region as a corridor of sorts, wherein ideas and people were passed through from Mesoamerica to the north, and the central Andes to the south (Norweb 1964; Salgado 1996). The concept of the Greater Nicoya region as an area of transition, migration, and the result of influence from the north and south, is parallel to the concerns regarding the rest of Central America.

Pacific Nicaragua is located within the northern sector of the Greater Nicoya sub-region (Figure 3.1), from northwestern Costa Rica through to southwestern Nicaragua. The two main sources of information that have contributed to our understanding of the region are historical accounts written by chroniclers, and archaeological research. The following section provides a synopsis of ethnohistorical knowledge of Pacific Nicaragua, and a history of archaeology.

Pacific Nicaragua Ethnohistory and Archaeology

Ethnohistoric documents from the time of the Spanish Conquest and colonization of the Greater Nicoya region provide information regarding the cultural identities of the people living in the region at that time. This information was written, with very little exception, by Spanish chroniclers without the direct input of the people of the Greater Nicoya (Steinbrenner 2010). One major problem with using the ethnohistorical data to delineate cultural groups is that group names are not used consistently by chroniclers, or omitted altogether (Niemel 2003). Gonzalo Fernández de Oviedo y Valdez is the most important source of information in regards to southern Central America (Steinbrenner 2010), as his chronicles detail indigenous areas prior to their complete control by the Spanish, and are derived from first-hand experience. Several other Spanish chroniclers' works are available, including Torquemada, Guarros, and Herrera (Bovallius 1886). Sources of information regarding a Mesoamerican cultural identity prior to and during Contact is derived from linguistics and history, and elaborated upon by studies in art history (McCafferty and Dennett 2013). Gil Gonzales Davila and other chroniclers emphasized Mesoamerican characteristics of Greater Nicoya cultures, which directly impacted research and interpretations of the region (Abel-Vidor 1981:88).

Early archaeological investigations in Nicaragua were carried out by individuals such as Ephraim Squier, Thomas Belt, Frederick Boyle, and Carl Bovallius (Baker and Smith 2001; Niemel 2003; Steinbrenner 2010), and these studies mostly focused on the possible connection between Nicaragua and Mesoamerica (Steinbrenner 2010). Archaeological research within Nicaragua became more popular after Ephraim Squier's 1852 publication "Nicaragua: Its People, Scenery, Monuments and the Proposed Interoceanic Canal" brought popular attention to the region (Steinbrenner 2010), which included a focus on Zapatera Island, where he visited Punta de Las Figuras and Sonzapote (Baker and Smith 2001). Squier's investigation of Punta de Las Figuras described stone-faced mounds arranged in no discernable pattern alongside a number of statues that were located around the mounds (Salgado 1996; Squier 1852).

Culture Historical, Processual, and Post-Processual Archaeology

Archaeology in Pacific Nicaragua has generally followed the footsteps of individuals including Gordon Willey (Niemel 2003; Steinbrenner 2010), which has resulted in the widespread presence of a cultural historical approach (Politis 2003). The culture history in use now is not coterminous with that of the past, which can be attributed to the influence of processual and post-processual approaches (Hoopes 2005; Politis 2003). This is because culture-historical research objectives have been augmented by elements of processual, and to some degree post-processual, archaeology (Politis 2003). For instance, the work of Coe and Baudez (1961) in the Nicoya Peninsula provided chronological periods based on ceramic types that are linked with those still used today, albeit in a revised format developed in the 1990s (Niemel 2003), and have been further refined by McCafferty and Steinbrenner (2005) using radiocarbon dates. In terms of processual and post-processual approaches to archaeology, there is not an even

distribution across Central America; processual archaeology is more prevalent, however in some regions post-processual research has emerged in clusters (for example Schortman and Urban 2012, 2011 in northwestern Honduras; McCafferty and McCafferty 2011 in Pacific Nicaragua; and Hoopes 2005, Sheets 2011 in Costa Rica).

Zapatera Island



Figure 3.2 Map of Zapatera Island. From Bovallius (1886).

Carl Bovallius visited Central America in the late 1800s, and went to several sites originally investigated by Squier, including those on Zapatera Island (Bovallius 1886). Bovallius' investigation of Sonzapote included the discovery of pottery, lithics, and at least 34 more statues than previously known (Bovallius 1886). His investigation of Zapatera Island is

particularly important because of maps he produced, which indicate the position of the statues in relation to the mounds at Sonzapote at the time that he visited the site (Baker and Smith 2001).

Bruhns' (1974) fieldwork on Zapatera Island included investigation of both Punta de la Figuras and Punta del Zapote (now known as Sonzapote, after the nearby settlement), where the objective was to establish a date for monumental sculptures. Baker and Smith (2001) describe investigations that were carried out on Zapatera Island during 1986, which found and described five previously unknown sites, and described three previously known sites in more detail. Punta de las Figuras is located on the northwestern corner of Zapatera Island, and is at least 100,000 square meters in size, with a site centre composed of 31 mounds (Baker and Smith 2001). The site contains petroglyphs, dispersed ceramics, basal fragments of statues, and some small amounts of obsidian (Baker and Smith 2001). Following their survey, Baker and Smith (2001) describe Sonzapote as being at least 30,000 square meters in size, with at least 16 mounds at the site centre. In their investigations they encountered extensive ceramic dispersal of both decorated and undecorated varieties, alongside remains of statues, stone petroglyphs, mortars, *metates*, and pieces of chert. They collected a small ceramic figure of a jaguar from the area around the mound they designated "9".

Ometepe Island

Boyle and Bransford examined sites on Ometepe Island, the largest island in Lake Nicaragua (Baker and Smith 2001), and Boyle observed that the monumental statues found there and elsewhere seemed to have been produced by more than one cultural group (Stone 1984). Bransford was the first to name Luna polychrome, and argued that secondary urn burials were a

characteristic of mortuary practices on Ometepe Island (Haberland 1992). Bransford additionally excavated in Rivas, where he recorded Bocana Incised ceramic vessels and human interments (Niemel 2003). In 1958 Haberland re-visited Ometepe Island, and he went on to conduct surveys and test excavations near Moyogalpa; in 1962-1963 Haberland conducted more excavations on the portion of the island created by the Concepción volcano (Haberland 1992).

Stone Statuary

Sonzapote is well-known for monumental sculptures, which include both male and female forms adorned with zoomorphic headdresses (Bovallius 1886; Bruhns 1992; Guido Martinez 2004; Lothrop 1921; Navarro Genie 2007). These individuals are seated upon thrones, and are relatively large, generally five to ten feet tall (Arellano 2010). Monumental sculptures such as these are present throughout lower Central America, including on Ometepe Island, Nicaragua, and Las Mercedes, Costa Rica (Bruhns 1992). Bruhns (1992) points out that the statues found on Zapatera have headdresses similar to those seen in Mesoamerica, but are also similar in style to those found in Costa Rica, especially those along the Atlantic Watershed. Bruhns (1992) also argues that the sculptures have a general association with burials at sites such as Sonzapote, though it is difficult to assert this based on the scant excavations, and the difficulty associated with the removal of these monuments from the site prior to excavations. However, it should be noted that monuments have been found at the Los Angeles site on Ometepe Island, where Haberland (1992) encountered a large cemetery (Navarro 2005). The statues from all of these locations have been associated with the concept of an "alter ego". Arellano (2010) describes this as the interaction between the animal and human aspects of the sculptures, where the individual is represented alongside their alter ego; this concept of an alter ego is seen in both

Mesoamerican and South American cultures (Paz 1995). Alter ego statues are characterized by an anthropomorphic figure with another figure crouched over their back and shoulders (Reichel-Dolmatoff 1972). The alter ego animal is tonal, which is the belief that there is a unifying connection between human and animal that expresses physical and spiritual identity (Paz 1995).

Cultural Development

Chibchan-speaking peoples once resided within southern Central America and northern South America (Hoopes 2005), however when Spanish conquistadores arrived in the 1500s they encountered peoples with Mexican-derived language and culture, which included the Nicarao, Chorotega, and Maribio (Niemel 2003). The most recent nomenclature and dates of Greater Nicoya chronology were developed with attention to absolute dates alongside settlement patterns, ceramic styles, and mortuary patterns (Niemel 2003; Vasquez et al. 1994). The new periods are as follows: Orosí (2000 - 500 BCE), Tempisque (500 BCE - 300 CE), Bagaces (300 – 800 CE), Sapoá (800 – 1250 CE), and Ometepe (1250 – 1522 CE). McCafferty and Steinbrenner (2005), based on a number of radiocarbon dates from the Santa Isabel Project in the Rivas department of Nicaragua, determined that many Ometepe period ceramic diagnostics were actually introduced in the Sapoá period, which indicates a need for a reconceptualization of the ceramic sequence within the Greater Nicoya.

Neither Niemel (2003) nor Salgado (1996) found evidence of settlements prior to 1000 BCE, and very few sites in Pacific Nicaragua are positively identified as belonging to the Orosí period: Ometepe Island, Villa Tiscapa, Ayala, Tisma, and Ticuantepe (Román-Lacayo 2013; Salgado 1996). At Tisma and Ticuantepe Orosí and Tempisque period occupation was limited to

small sedentary populations (Román-Lacayo 2013:70), similar to those described by Salgado (1996:129). Although the Tempisque period is better represented archaeologically in Pacific Nicaragua, it shows no evidence for a settlement hierarchy (Niemel 2003:220). Tempisque Period ceramics do not have a well-defined sequence within Pacific Nicaragua, as archaeological investigation of the Tempisque period has been sparse, however the presence of external ideas and materials indicate that there were connections between the Greater Nicoya and regions to the north and south by this time (Espinosa 1999; Platz and Dennett 2011). This is most salient in the presence of Usulután-like negative resist wares in the Managua region, as these have been analysed and determined to have been produced both locally within Pacific Nicaragua, and traded from Honduras (Dennett and McCafferty 2011; Dennett et al. 2011; Healy 1988; Lange et al. 2003; Niemel 2003; Platz and Dennett 2011).

The following Bagaces period involves an increase in settlements, with earthen mounds appearing at some sites in Rivas alongside a three-tiered settlement system (Niemel 2003). A two-tiered settlement hierarchy appears in the Granada region at this time, alongside increased interaction with southern Honduras (Salgado 1996).

The Sapoá period is characterized by an increase in the number of sites (Salgado 1996), including a 325% increase in settlements in the Granada region (Carmack and Salgado 2006). Tepetate, a site found just north of modern Granada, has been argued to be a regional centre during the Sapoá and Ometepe periods that was integrated into the periphery of the Mesoamerican world system (Carmack and Salgado 2006). Santa Isabel was a regional centre in the Rivas region during the Sapoá period, and is considered to be very similar to Tepetate

(Niemel 2003:229). Obsidian is found in the Rivas area during this period, and these were, for the most part, from Guinope, Honduras (Niemel 2003). The Sapoá period transition is associated with the appearance of white-slipped polychrome ceramic wares with iconographic connections to the Mixteca-Puebla style of central Mexico, and Sacasa Striated utilitarian wares (McCafferty and Dennett 2013). Sacasa Striated ceramics were often shaped in a manner that is reminiscent of a shoe, elongated with the opening appearing on one side; because of this they are known as "shoe-pots."

The survey by Salgado (1996) indicates that there is a decline in settlements during the Ometepe period, which corresponds to a decline in population. The same pattern is presented by Niemel (2003) for the Rivas region, though in both cases the three-tiered settlement hierarchy remained.

The settlement and subsequent cultural development on Ometepe Island is described by Haberland (1992), and follows the changes seen on the mainland in general, however some departures in the form of time lags are present. Haberland (1992) also connected several changes in material culture with the arrival of newcomers, which is also seen in the materials of the mainland.

Migrations and Culture Change

Migrations into Pacific Nicaragua are documented ethnohistorically, and may have occurred first at the Bagaces to Sapoá period transition at 800 CE with the arrival of the Chorotega people, followed by another migration of Nicarao people at the transition between the

Sapoá and Ometepe periods, at approximately 1250 CE (McCafferty and Dennett 2013). Evidence cited for these migrations has included changes in ceramic vessels, burial practices, and the appearance of Mesoamerican themes in iconography (McCafferty and Dennett 2013). It is important to note, however, that ethnohistoric records that discuss the migrations from Mesoamerica into Nicaragua are often full of contradictory information (Niemel 2003), which has resulted in a great deal of emphasis in archaeological research on when and who arrived, if at all, and what repercussions this had on the people who already resided in the area.

The possibility of contact between Greater Nicoya and cultures to the north is not a new concept. Coe and Baudez (1961) described ceramics found in the Zoned Bichrome Period in the Nicoya Peninsula of northern Costa Rica that have connections with El Salvador and/or Honduras. Coe and Baudez (1961) also connected ceramics with black-on-red zoned decoration with Utatlan Ware from the Guatemala highlands, and Usulután-like negative resist ware with ceramics from Honduras.

One of the avenues explored when examining culture change during the late Sapoá period has been iconographic analysis. Amaroli and Bruhns (2013) have discovered evidence of Mixteca-Puebla style polychrome pottery in El Salvador during the Cihuatan Phase, dating to the early Postclassic (Bruhns and Amaroli 2009). Any similarities between ceramics in the Greater Nicoya region and those to the north are assumed to be Mesoamerican in origin, however Steinbrenner (2010) argues that the styles may actually represent a continuity of local potting tradition within the Greater Nicoya, with perhaps some influence from the north, or replication of style. Las Vegas Polychrome vessels dated to between 800-950 CE (Joyce 1986) are found in

central Honduras, and exhibit similarities to those in the Greater Nicoya region, and are close enough in appearance to be confused with Papagayo vessels. In the Sapoá period, within the Greater Nicoya region, polychrome Vallejo vessels appear (McCafferty and Steinbrenner 2005). These vessels show continuity with previous vessel types in the area, such as Papagayo, but include an incorporation of more International Style imagery from central Mexico (Keller 2012). This and other research highlights the importance of ceramic materials in archaeological research within the region, and the recent focus of stylistic analysis on evidence of autochthonous development of potting traditions.

According to ethnohistoric interpretations both the Chorotega and Nicarao inhabited the mainland of Nicaragua near Zapatera Island at the time of contact. Bovallius (1886:5) argued that the Nicarao, or *los Niquiranos*, lived along the isthmus between Lake Managua and Lake Nicaragua, and on the islands within Lake Nicaragua, and that these migrants from Mexico displaced the Chorotega who had settled there previously. Recent research within the region has argued that rather than complete replacement of previous Chibchan inhabitants, there was an integration of migrant populations with the autochthonous society present (McCafferty and Dennett 2013), resulting in a hybrid culture in the Sapoá period. Steinbrenner's (2010) ceramic analysis supports this argument and, as discussed previously, indicates that original inhabitants likely continued to contribute to the material culture of the Greater Nicoya region even after the arrival of migrant populations. This was postulated by Haberland (1992:116) in the case of Ometepe Island during the Gato phase (1000 -1200 CE), where he considered that the migrants “co-existed with the older inhabitants... demonstrated by the intensifying traditions of the Gato phase.” On Ometepe Island the introduction of white-slipped polychromes during the Santa Ana

phase (1400-1550 CE) may be indicative of the second wave of migrant populations, however Haberland (1992) argues that these new people were not Nicarao nor Chorotega, but rather from the eastern coast of Southern Central America.

Table 3.1 Summary of time periods and associated characteristics.

Time Period	Characteristics
Orosi (2000 - 500 BCE)	Small sedentary populations. Likely Chibchan-speaking.
Tempisque (500 BCE – 300 CE)	External ideas and materials present (trade).
Bagaces (300 CE – 800 CE)	Three-tiered settlement systems. Trade present.
Sapoá (800 CE – 1250 CE)	New ceramic technology and iconography, and change in mortuary practices. Migration of Chorotega into Pacific Nicaragua.
Ometepe (1250 CE – 1522 CE)	Decline in settlements and population. Migration of Nicarao into Pacific Nicaragua.

Mortuary Studies in Pacific Nicaragua

Mortuary practices have been the focus of archaeological study at several sites in Nicaragua, and these demonstrate the highly variable nature of mortuary practices in the region (McCafferty et al. 2013b). This section discusses data from excavations in Pacific Nicaragua, and seeks to consolidate knowledge of mortuary practices throughout the region. Excavations conducted at Ometepe Island by Wolfgang Haberland (1992) are some of the most prolific, and are described alongside those by Espinosa et al. (1999) at the Malacatoya site. An in-depth discussion of burial practices at sites excavated in the 2000s by a team led by Dr. Geoffrey McCafferty will follow, and include Santa Isabel, and Tepetate; El Rayo is discussed in detail within Chapter 6 (McCafferty et al. 2013b).

Studies focusing on mortuary practices are particularly difficult to conduct in Southern Central America due to the poor preservation of human skeletal remains as a result of high moisture content in the soil, meaning that the most often used data are from the spatial context of artifacts (Briggs 1992). Archaeology examining mortuary practices began in Nicaragua during the late 1880s, and was conducted at locations such Ometepe Island, Rivas, and Managua (Wilke 2012). Ometepe Island was originally excavated by Bransford in the late 1800s, where he encountered funerary urns with flexed skeletons, and artifacts such as gold and ceramic beads in association with the interments (Bransford 1881). The Los Angeles cemetery of Ometepe Island underwent extensive excavation under the direction of Wolfgang Haberland, and is dated between the Tempisque and Sapoá periods (Haberland 1992; Wilke 2012). The Los Angeles cemetery is characterised by both primary and secondary burials, including urn burials, and is an example of a formal cemetery (Haberland 1992). Although only a portion of the cemetery at Los Angeles was excavated, 59 primary burials were encountered from the Gato phase (corrected date 950-1100 CE), alongside a number of burial urns that contained the remains of young children (Haberland 1992). The vessels used for these burials were shoe-pots that featured an inverted vessel used to cover the opening. The Gato phase burials also included multiple individuals within a single urn, which in Burial 22 included three mandibles (Haberland 1992:91). During the later San Lazaro Phase (1300-1400 CE) at the San Lazaro site, shoe-shaped vessels and large *ollas* were used as primary and secondary urn burials (Haberland 1992). Urn burials in *olla* or shoe-pot vessels continued in burials on Ometepe Island into the Santa Ana Phase (1400-1550 CE) (Haberland 1992). Despite having 53 known archaeological sites on Ometepe Island, more research is needed to understand how these sites relate to one another (Niemeel 2005), and why the pattern of primary burials was replaced by secondary urn burials. A

possible contemporary site to the burials exhibited during the San Lazaro Phase (1300-1400 CE) on Ometepe Island (Haberland 1992) is described by Espinosa et al. (1999) for the Malacatoya site. The site is located near modern Malacatoya on the northern edge of Lake Nicaragua, and is characterised by 12 known burials. Ten of these burials were within urns, while the other two interments were primary burials within domestic contexts (Espinosa et al. 1999). Burials I, III, V, VI, and IX were within Sacasa Striated vessels, including several that were shoe-pots (Espinosa et al. 1999).

Santa Isabel, located in the Rivas region of Nicaragua, dates from 900-1250 CE, and includes primary burials in flexed and extended positions, and secondary urn burials (McCafferty et al. 2013a). Burials are generally located on mounds, except for a group of burial urns that were located north of Mound 5 (McCafferty et al. 2013b). Primary burials consist of an adult and sub-adult buried together in parallel flexed positions, and a lone sub-adult buried alongside a turtle carapace. The adult primary burial was also associated with a burial urn containing the teeth of a six-month-old infant. Burials within urns at Santa Isabel tend to be within Sacasa Striated type vessels of the shoe-pot shape, and included individual and multiple infants within each vessel (McCafferty et al. 2013a). Few burial accompaniments were found within urn burials at Santa Isabel, with the exception of a stingray spine (McCafferty 2008).

The Tepetate and El Rayo sites are located near the modern-day town of Granada, with El Rayo on the Asese Peninsula that reaches into Lake Nicaragua. Tepetate yielded mortuary information dating from 1000 - 1200 CE. Included at this site are secondary burials within urns, and burials that appear to have been located around, or atop of, these urns; individuals recovered

were all adults (McCafferty et al. 2013a). In addition to two clusters of urn burials found at the site, there is evidence of a possible stone-lined tomb that was likely looted at some point (McCafferty et al. 2013a). There is also evidence that the remains had undergone some degree of cremation (McCafferty et al. 2013a). Excavations during 2009/2010 at El Rayo are described in detail within Chapter 6; mortuary practices at the site are described in detail within Sacha Wilke's Master's thesis (2012), and the forthcoming publication by McCafferty et al. (2013a). The burials at El Rayo provide an excellent opportunity to examine culture change that may have been the result of migrations into the region (McCafferty et al. 2013a), as the occupation of the site spans the Bagaces and Sapoá periods.

Located on the shore of Lake Managua is Las Delicias, a site where Tempisque period materials dominate, and where rescue excavations have uncovered a substantial number of mortuary remains. Initial excavations were conducted in 2008, exposing an extensive cemetery with 50 human interments in both primary and secondary burials (Moroney Ubeda 2011). A variety of grave offerings were found, including ceramics, lithics (*metates*, obsidian, greenstone beads and figures), and faunal materials (shells, turtle shells, and armadillo) (Moroney Ubeda 2011). The primary burials were both extended and flexed, with one individual being buried face-down without any grave offerings. Secondary burials were either in the form of bundles, or within urns; bundle burials had the least amount of grave offerings, while the urn burials were some of the richest (Manion and McCafferty 2015; Moroney Ubeda 2011). Patterns discernible from the 2008 excavations showed that extended burials tended to be oriented west-east, south-north, and north-south (head and then feet respectively), and the only individual buried in an east-west orientation was buried face-down.

There are no records of burials from Zapatera Island other than those briefly mentioned by Bruhns (1992), and Arellano's (2010) assertion that there are burial grounds at the site of Las Cañas.

Summary and Conclusions

When we discuss regions such as Central America and the Greater Nicoya our terminology is often burdened by negative connotation. Early archaeological and ethnohistorical research established a tradition of comparing southern Central America to those cultures present in the north and south, effectively labelling southern Central America as a zone resulting from the influence of Mesoamerica and the central Andes. Archaeological research has continued to compare and contrast southern Central America with other regions, especially Mesoamerica. However, recent research emphasises autochthonous development and how possible migrations into the area may have affected social change (for example Niemel 2003; Roman Lacayo 2013). This focuses on the changes seen during the transitions between the Bagaces and Sapoá periods, and the Sapoá and Ometepe periods, which are related to the migration of new people into the region. During the first transition changes in mortuary practices, ceramic technologies, and settlement patterns are seen in the archaeological record.

Mortuary archaeology has been a major component of research in Central America, and the practices already known from Pacific Nicaragua illustrate the highly dynamic nature of burial rites in both time and space. A general trend exhibited by several of the sites discussed above is the presence of primary extended burials in the Tempisque and Bagaces periods, followed by a

change to a preponderance of secondary burials, especially in specific cemetery contexts within urns. In the Sapoá period shoe-pot vessels are used extensively for the purpose of secondary burials, although the manner of use is different depending on the site. While interments from regions surrounding Zapatera Island have been the focus of intensive archaeological investigation, those on the island are relatively unknown. Similarly, there are many unanswered questions regarding when sites such as Punta de Las Figuras and Sonzapote were constructed and by whom.

Chapter 4 Methods

Methods used within this thesis were chosen based on their analytical utility in answering questions regarding mortuary practices, and the connection between those practices and the construction of social memory. The following chapter includes a description of the Isla Zapatera Archaeological Project 2013 (IZAP 2013) field season, and the Proyecto Arqueológico Granada, Nicaragua (PAGN 2015) field season. Protocols used in the field, and in the lab for analysis, are described.

IZAP 2013 Field Season

The Isla Zapatera Archaeological Project took place from July 15th to August 15th in 2013. The project included graduate students from the University of Calgary, undergraduates from the National Autonomous University of Nicaragua, and several Nicaraguan archaeologists. The project was headed by Dr. Geoffrey McCafferty, and funded by a National Geographic seed grant (titled Archaeological Investigations on Zapatera Island, Nicaragua), which allowed some preliminary investigation of the Sonzapote site. The main objectives of this field season were to create a topographic map of the site, inventory mounds and monuments, and conduct excavations with the aim of finding material culture that could provide dates for the occupation of the site. Work at Sonzapote was restricted to eight days in the field, as there was limited funding for a longer field season, and because of problems obtaining permits to work at Sonzapote. Regardless, by the end of the field season a topographic map of the site core was completed, alongside an inventory of mounds and monuments, and some preliminary excavations (McCafferty 2014).

Excavations were carried out in two separate locations, which were called Locus 1 and Locus 2. Locus 1 was located at Mound 14, and Operation 1 was on the southwest corner of Mound 14, which had good architectural integrity, and was initiated in order to gain a better understanding of the occupation and use of the mound. Locus 1, Operation 2 was located on the southeast side of Mound 14, and was conducted where a looter's trench had been, with the intention of examining the construction of the mound, including construction history. Locus 2 was placed in the pathway between Mound 8 and Mound 9, in order to examine chronological and functional aspects of material culture. Excavations were conducted with the use of hand tools including trowels, brushes, dust pans, wooden and plastic anthropological excavation tools, and all soil was screened through a 5mm mesh screen.

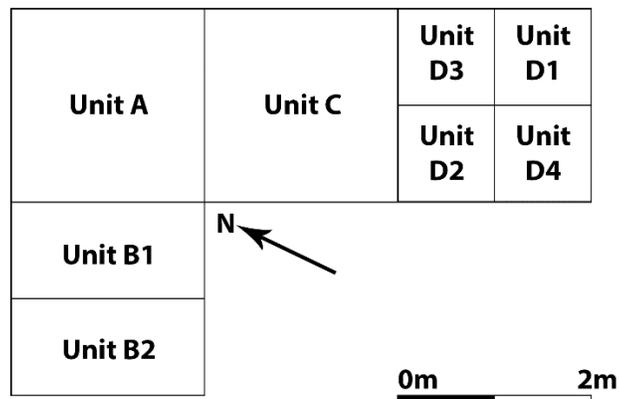


Figure 4.1 Layout of Locus 1, Operation 1.

During the excavations carried out in Locus 1, Operation 1, human remains were found representing a total of six burials with an MNI of eight. This excavation consisted of four contiguous units that were 2m x 2m, designated Unit A, Unit B, Unit C, and Unit D. These units were placed on the slope of Mound 14, with Unit B downhill from Unit A. Unit B was divided

into two 1m x 2m sections, with Unit B2 being the main focus, and Unit B1 excavated in a small 40cm x 50cm extension in order to reveal a feature extending between Units B1 and B2 (Figure 4.1). Unit C was cleared, which allowed investigations of the structure of the mound, but no artifacts were recovered within this unit. Unit D was the subject of intensive excavation, and was divided into four quadrants of 1m x 1m; these were labelled Units D1, D2, D3, and D4 (Figure 4.1). All of these units (D1-D4) contained human remains or burial urns.

Throughout the duration of the excavations wooden and plastic tools were utilized when osteological materials were encountered in an effort to minimize damage to the fragile bone material. Contextual data were recorded during the excavation process, including scaled drawings, and photos. If there was any indication that dentition would be discovered, masks and gloves were donned, as the teeth were considered potentially useful in future ancient DNA analysis. When osteological materials were removed from the ground, they were often taken piece-by-piece after being thoroughly documented and placed within tinfoil bags. If the materials were too fragile to be removed individually, then the surrounding soil matrix was removed alongside the human remains.

During the course of survey and excavation each field worker kept detailed notes pertaining to the work they completed, including impressions of the site, scaled sketches of excavation units, and other data such as mound dimensions. The field notes were written in either Spanish or English, depending on the crew member. Coupled with this was photography of the site, especially of the excavations which included human remains. These photographs include those prepared with photoboard, scale, and north arrow, alongside those that focus on

certain details within the units. These resources were utilized in this thesis, and were especially pertinent for excavations conducted on the final days of field work, when I was working in the lab rather than the field. For data from these latter burials the context of the burial urns and offerings were re-created by examining the artifacts and remains in the lab, and field notes and pictures from excavation.

PAGN 2015 Field Season

Data from the El Rayo site were collected during excavations carried out in 2009 and 2010, and most recently in 2015, by Dr. Geoffrey McCafferty and international teams. The burials excavated in the initial 2009 and 2010 field seasons are described in Wilke (2012) and McCafferty et al. (2013a), are summarised in this thesis. The original excavation years provided information about 27 individuals representing burials from three separate loci. The Proyecto Arqueológico Granada, Nicaragua was conducted in July of 2015 (PAGN 2015), and included expansion of previous excavations that took place in Locus 3, a cemetery site where urn burials and commingled remains were found. These new excavations investigated previously-known burial urns that were uncovered in the 2009/2010 field seasons, and four urns that were discovered when a 0.5m x 5m trench was excavated. The units within the trench, each 0.5m x 1m in dimension, were expanded whenever an urn was discovered to span a full 1m x 1m excavation unit. During these excavations an additional 13 individuals were recovered from in and around burial urns at Locus 3. Field protocols used during the PAGN 2015 excavations are the same as those described previously for IZAP 2013.

Laboratory Analysis

Once materials were removed from the ground during both the IZAP 2013 and PAGN 2015 field seasons, they were taken back to our field laboratory for cleaning and analysis. Because of the moist condition of the ground, the human osteological remains were wet, and had soil adhered to them; in order to clean and analyse the materials, they were first laid out to dry for 24-48 hours, and then soft-bristled brushes were used to remove most of the soil.

Analysis was conducted using established standards published by Buikstra and Ubelaker (1994), and White et al. (2011). Procedures outlined by Buikstra and Ubelaker (1994) for commingled or incomplete remains include recording each bone element individually, or in clusters of related bones (such as foot, hand, or ribs). Because of the poor preservation of remains at Sonzapote and El Rayo, known elements were recorded separately from unknown, and the context of recovery was often an important aspect of identification. For age-at-death estimates the burials were classified as child or adult, with dental development providing some additional information when available. Sex estimates were not conducted, as no indicative aspects, such as os coxae, were sufficiently preserved, or present at all. Due to time constraints detailed notation of pathology was not completed, however presence of dental defects, such as linear enamel hypoplasia or caries, and porotic hyperostosis were noted.

All data were recorded in an Excel spreadsheet, and included bag numbers (indicating which locus, operation, and unit the materials were from), unit, level, and feature number. The spreadsheet was used to record, where applicable, species, element, fragment count, side, portion, measurements, sex, minimum number of individuals (MNI), dental condition,

epiphyseal fusion, weathering, and comments. The basis for the format in which the data were presented derives from the standards developed by Buikstra and Ubelaker (1994).

A portion of the remains were photographed using a black velvet background and scale, in order to present visual data of the human remains. Due to time restrictions, not all fragments could be photographed, and elements that could be identified were given priority.

Mortuary Profiles

Mortuary profiles have been compiled for each of the burials from the IZAP 2013 and PAGN 2015 field seasons, and these include an inventory of all skeletal materials recovered, including identification and analysis, alongside notation of any burial offerings. This includes the ceramic analysis provided by Jorge Zambrana and Geoffrey McCafferty for the IZAP 2013 materials. These were constructed in order to gain an in-depth understanding of each burial, and the associated cultural materials.

The profiles are a modified adaptation of Harris' (2010) mortuary profiles, which combined a large array of information for each individual examined, including age, sex, completeness, orientation, wealth score, burial type, and burial position. Because the materials from Sonzapote and El Rayo were poorly preserved, many of those categories could not be utilized. However, burial type, burial position, age (whether adult or child), burial context, and grave offerings were included when possible. A detailed list of all osteological materials present for each burial, including fragment counts, are provided. Each of these profiles has been included in the appendix.

Chapter 5 Description and Analysis of Excavation and Burials, Sonzapote

Sonzapote Excavations

Results from the IZAP 2013 field season include the production of a topographic map of the centre of the site, and detailed mapping of 11 out of 17 mounds that comprise the site centre (McCafferty et al. 2013b). Those mounds that were mapped in detail include both round and rectangular shapes. Excavations that uncovered human remains during the IZAP 2013 field season were located on the southeast corner of Mound 14, a relatively large rectangular mound measuring 22m x 12m, which was chosen as the site of exploratory excavations based on well-preserved architecture of the mound, and a looter's trench on the southwest corner. This would allow us to gain insight into the construction of the mound, and the function of the site.

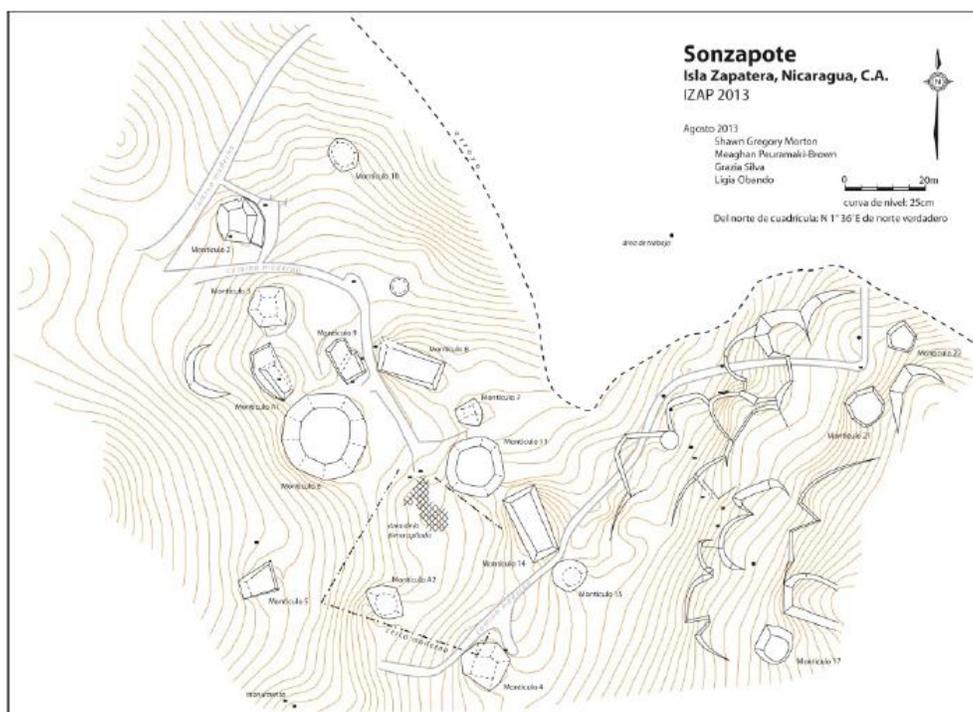


Figure 5.1 Topographic map produced during the IZAP 2013 excavations. Map by Shawn Morton, Meaghan Peuramaki-Brown, Gracia Silva, and Ligia Obando.

Mounds and Monuments

A total of 11 mounds were investigated during the IZAP 2013 explorations alongside description of a variety of monuments consisting of stone statuary, petroglyphs, and modified bedrock outcroppings (McCafferty et al. 2013b). The analysis of mounds included mapping of the structures, measurement of the dimensions of the mounds, and notation of whether any features such as dry-laid stone architecture remained. In the case of several mounds, petroglyphs were located near or atop the mound. Some of these petroglyphs are of anthropomorphic figures, while others are pecked circles in various arrangements, or are abstract lines (McCafferty et al. 2013b).



Figure 5.2 Petroglyphs from Sonzapote.

Mound 3 is of interest, as there are the remains of upright stones laid in rectangular patterns, which may be indicative of burial cysts; these remain unexcavated, and therefore with unclear purpose. Almost all of the statues that were noted by the monument inventory were located next to mounds, including two associated with Mound 9 that were likely within inset niches around the perimeter of the mound. Mound 14 is located on the southeast edge of the site

centre, and is oriented lengthwise to the northwest and southeast. Two looter's trenches were identified on Mound 14, one atop the mound, and one larger area on the eastern length of the mound that reached into the centre of the architecture. Mound 14 is one of four rectangular mounds found in the site centre, while the remaining seven mounds described in the 2013 IZAP explorations were round.

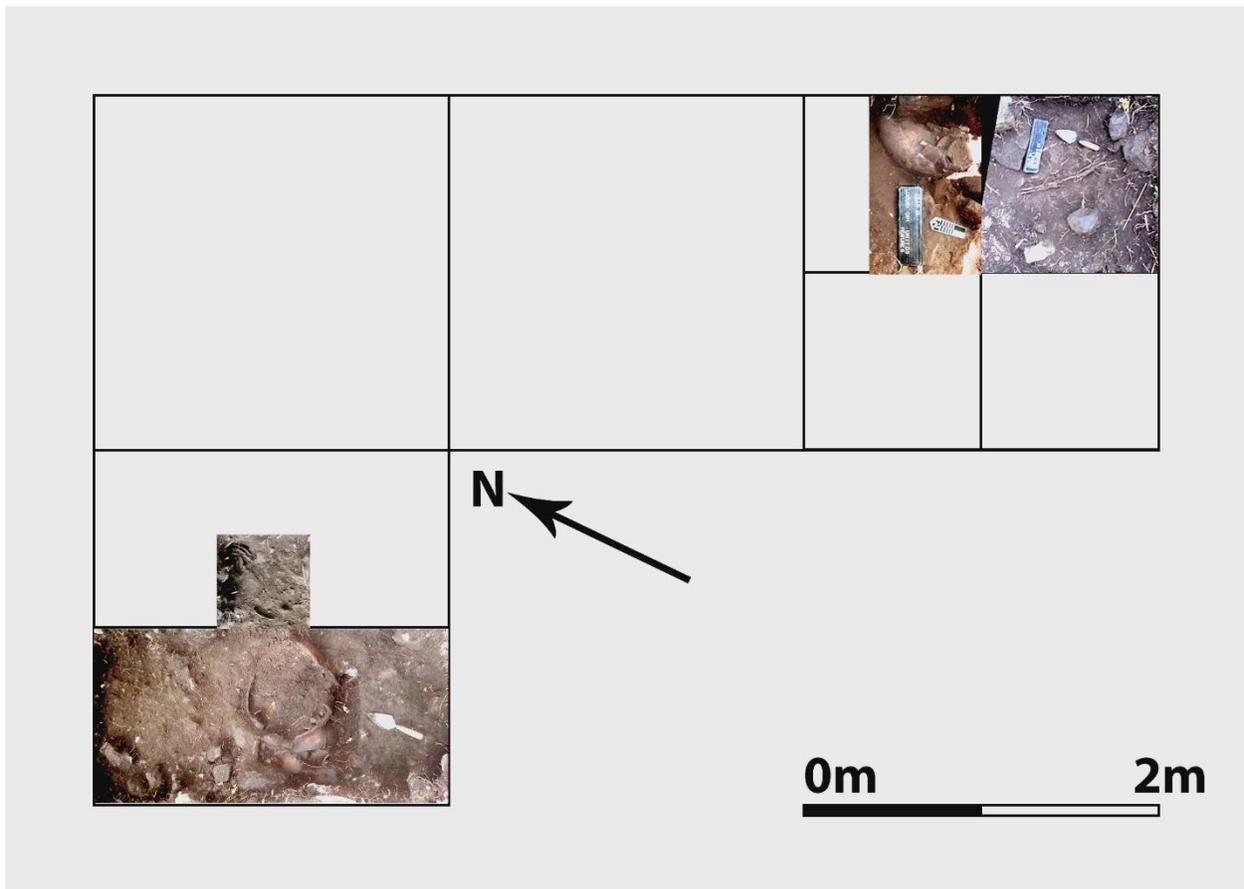


Figure 5.3 Composite map of burials uncovered in each unit in Locus 1, Operation 1.

Excavations on Mound 14 encountered a series of human interments, including a single primary burial in an extended position, and several secondary urn burials. The following chapter lists the burials explored during the IZAP 2013 excavations, and provides a description and analysis of these materials.

Burial 1

Located in Locus 1, Operation 1, Unit B1, and extending five centimeters into Unit B2, this burial is designated as Feature 1. Feature 1 itself also includes the urn burial designated Burial 2. Burial 1 was exposed within the profile of the northeastern wall of Unit B2, and was explored by opening a small 40cm x 50cm section of Unit B1, delineating the extent of the human remains. Burial 1 was likely an urn burial that was highly disturbed by bioturbation. There was a packed earth and cobble surface here, which is above the one from the B2 unit. The MNI of this burial is one.

Ceramic materials associated with this burial include fragments of vessels dating to the Bagaces and Sapoá period, including Leon Punctate and Papagayo. The ceramic type Jobo Rojo Incised is indicative of the Late Tempisque or Early Bagaces period (Jorge Zambrana Fernandez, personal communication 2013), and Leon Punctate of the Bagaces period. This burial cannot be assigned to a specific time period, however the ceramics closely associated with the skeletal materials that were likely part of an urn.



Figure 5.4 Plan view of Unit B1, showing the variety of ceramic sherds within the unit.

Burial 2

Located in Locus 1, Operation 1, Unit B2, and designated as Feature 1. This is an urn burial containing poorly preserved human remains. The urn itself was identified as Espinoza Red Banded by Jorge Zambrana Fernandez, and was found to be resting upon a compacted cobble and earth walking surface. This surface has been argued to have been associated with the construction of Mound 14 (McCafferty 2014), and the placement of this urn cut through the upper B1 surface. This burial is most likely from the Late Tempisque or Early Bagaces period, based on the presence of an Espinosa Red Banded ceramic used as a burial urn. The skeletal inventory for Burial 2 includes a total of 449 fragments, and an MNI of 2.

The majority of the skeletal material was located within the Feature 1 burial vessel, including three proximal fibula heads, several fragments of the lower extremities, cranial

fragments, and two teeth. On the outside of the burial vessel cranial fragments, vertebral fragments, carpal and metacarpal fragments, and various long bone fragments were found; it is possible that these fragments are part of Burial 1, as Burial 1 was affected by bioturbation, and was located uphill of Burial 2.

Ceramic materials found in association with this burial include types from the Late Tempisque/Early Bagaces period, such as the Espinosa Red Banded vessel and Leon Punctate sherd, and from the later Sapoá and Ometepe periods. Those from the Sapoá period include Papagayo and Sacasa Striated.



Figure 5.5 Left: sherd of the Espinosa Red Banded ceramic composing the urn in Unit B2. Right: the burial urn in situ at Unit B2.

Feature 8 is a vessel that was also found within Unit B2, however no skeletal materials were associated with this vessel. The vessel itself is of an unidentified orange slip utilitarian ware.



Figure 5.6 Feature 8.

Burial 3

Burial 3 was located in Locus 1, Operation 1, Unit D1, and designated as Feature 2. Human long bones were discovered within the southeast quadrant of the unit, and continued across the unit in approximately an east-west direction fairly intact, with the femur located northwest of the tibia, indicating that the head of the individual would likely have pointed to the northwest. The distal end of the tibia terminated at a boulder, and likely continued underneath. Excavation continued after removal of these remains, and a second articulated set of lower extremities was found just southeast of the first group. These remains were also extremely fragile, and a root had grown through the medullary cavity of the tibia, breaking the bone apart but holding it together for removal. Ceramic sherds were dispersed throughout the unit, including one Luna polychrome fragment, Castillo Engraved, Madeira, Chavez White on Red, alongside a large amount of pumice. The ceramic materials cannot be positively associated with Burial 3, and therefore are not positive indicators of when the individual was interred.

In summary, this burial consists of lower extremities of an individual, possibly from the Sapoá period. The total number of fragments from this burial was 391. The MNI for this burial is 1.



Figure 5.7 Left: the first lower extremity found for Feature 2, showing the femur, and tibia. Right: the second lower extremity found for Feature 2, with the femur, tibia, and fibula with a root growing through the medullary cavities present.

Burial 4

Burial 4 was located in Locus 1, Operation 1, Unit D2, with some of the material extending into Unit D4. The burial includes two urns located close together. Within the Feature 4 vessel, a Castillo bowl, four complete deciduous teeth, tooth fragments, and fragmented left and right petrous pyramid sections of the crania were found. Within the second urn, a Sacasa Striated vessel, five adult teeth were found alongside 43 fragments of long bone, and flat bone, and portions of a highly fragmented occipital bone. The MNI of this burial is two, with one adult, and one child aged 9 months \pm 3 months. Associated ceramic materials indicates that these burials

are from the Sapoá period, with the possibility that the child burial in the Castillo Engraved vessel is from the Sapoá Period.

Other ceramic types found near these burial urns include Chavez White on Red, Papagayo, and Lago Negro Modelled; the first of these is associated with the Bagaces period, while the others are associated with the Sapoá period.

Burial 5

This is an urn burial found within Unit D3 of Locus 1, Operation 1, and is designated Feature 6. The burial vessel is a small Sacasa Striated shoe-pot. A reconstructable Castillo bowl was associated with this urn, which likely served as a protective cover. Skeletal material recovered from within the urn was highly fragmented, and could only be determined to be mammalian; some scattered skeletal material was located around the outside of the vessel, however this was also highly fragmented. Based on the context of the osteological materials within the urn, it is likely to be human, and has been included in the overall MNI for the burials excavated during IZAP 2013. The MNI for this burial is therefore 1.



Figure 5.8 Left: reconstructable Castillo ceramic vessel. Right: the Sacasa Striated Shoe-pot in Unit D3.

Burial 6

Located in Locus 1, Operation 1, Unit D4. This is a burial urn with monochrome ceramic materials, alongside human remains, and is designated as Feature 7. Listed as Sacasa Striated by Ligia Galeano, the urn was surrounded by rocks. Two teeth were found in level 3. The Sacasa Striated urn had a thick everted rim, with a flat, rectangular stone on top. Six greenstone beads were found within this vessel.



Figure 5.9 Left: burial urn within Unit D4. Right: greenstone beads found within the Feature 7 vessel.

Summary of Burials, Sonzapote

The six burials from Sonzapote's Locus 1, Operation 1 delineated within this chapter yielded an MNI of eight individuals. With the exception of one individual aged approximately 9 months \pm 3 months, the burials consisted of adults, with the exception of Burial 5, for which an age estimate could not be determined. The majority of these interments were secondary, which is a trait generally associated with the Sapoá period in Pacific Nicaragua, with a single individual interred directly into the ground in an extended position. All of the burials presented highly fragmentary skeletal remains, with teeth and thick cortical bone being the best preserved portions.

Ceramics

The ceramic materials associated with these burials were indicative of a long period of use for Mound 14 as a site of interment, or possibly two separate components. Ceramic materials from the Late Tempisque/Early Bagaces period are present in Burial 2, while at Burials 4, 5, and 6 Sacasa Striated urns and polychrome types such as Papagayo are indicative of the Sapoá period. It is possible, based on the presence of Castillo Engraved ceramics, that some of the burials occurred as late as the Ometepe Period, however Castillo Engraved ceramics are now more closely associated with the Sapoá Period (McCafferty and Steinbrenner 2005; Steinbrenner 2010:67). Two of the burials are not positively dated; Burial 1 was too badly disturbed, while Burial 3 may be datable to the Tempisque or Bagaces period, but only tentatively. In any case, the presence of Jobo Rojo Excised, Leon Punctate, Chavez White on Red, and Espinosa Red

Banded types indicates that the occupation of the Sonzapote site was earlier than previously thought.

Burial Accompaniments

Burial accompaniments were rare, and the major exception to this was the presence of six greenstone beads within the urn of Burial 6. Several reasons for the lack of burial accompaniments may exist, including the possibility that the sample examined is small; the burials are also within a close spatial region, and additional excavations at Sonzapote may expose different forms of mortuary practice. However, the relative lack of funerary accompaniments within Pacific Nicaraguan mortuary contexts is documented at several sites during the Bagaces and Sapoá periods, including Santa Isabel (McCafferty et al. 2013a), Ometepe Island's Los Angeles cemetery (Haberland 1992), and at the El Rayo site in previous excavations (Wilke 2012).

The mortuary practices described here for the Sonzapote archaeological site may be compared with those seen at the El Rayo site, which is roughly contemporaneous to the Sapoá period. Differences and similarities in practices between the sites will be seen in the following chapter, which examines several years' worth of excavations at El Rayo.

Table 5.1 showing all burials from the IZAP 2013 excavations

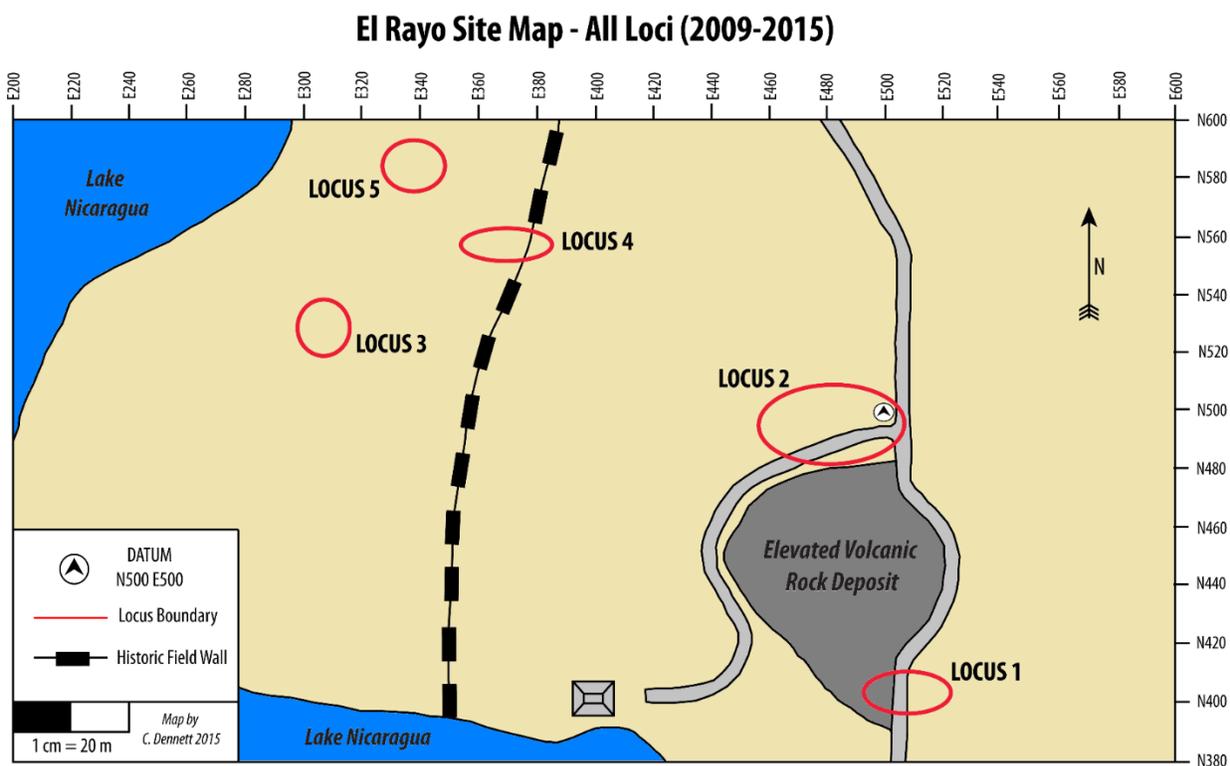
Burial #	Burial Type	Age	MNI	Period	Grave Accompaniments/Associated Materials
1	~Urn	N/A	1	Sapoá	Variety of ceramics, including Casillo Engraved, Papagayo, Leon Punctate, Jobo Rojo Excised, Sacasa Striated, Leon Punctate, and various plainwares.
2	Urn	N/A	2	Late Tempisque/ Early Bagaces	Variety of ceramics, including Castillo Engraves, Jobo Rojo Excised, Papagayo, Sacasa Striated, Leon Punctate, and various plainwares.
3	Extended	Adult	1	N/A	Various ceramics, including Papagayo, Castillo Engraved, Lago Negro Modelled, Leon Punctate, Chavez, Madeira, Luna, and various plainwares.
4	Urn	One adult; one 9 month \pm 3 months	2	Sapoá/ Ometepe	Urns were Sacasa Striated and Castillo Engraved. Other nearby ceramics include Papagayo, Castillo Engraved, Lago Negro Modelled, Chavez, and a variety of plainware.
5	Urn	N/A	1	Sapoá	Variety of ceramics, including Castillo Engraved, Lago Negro Modelled, Leon Punctate, Jobo Rojo Excised, Sacasa Striated, and various plainware.
6	Urn	N/A	1	Sapoá	Greenstone beads. Variety of ceramics, including Castillo Engraved, Jobo Rojo Excised, Sacasa Striated, and a variety of plainware.

Chapter 6 Description and Analysis of Excavation and Burials, El Rayo

This chapter provides data from the initial 2009 and 2010 excavations at the El Rayo site, alongside analysis from the papers and Master's thesis written about these excavations.

Following is a description and analysis of the results from the 2015 excavations that expanded upon those excavations already conducted at Locus 3. A summary of these data will conclude the chapter.

El Rayo Excavations and Burials 2009/2010



Originally encountered by Salgado (1996) during regional surveys, El Rayo was classified as a nucleated village of the Sapoá and Ometepe periods. A single statue is known to have been located at the site, and is pictured in Salgado's dissertation (1996:376). Initial excavations at the El Rayo archaeological site were conducted in 2009 and 2010 by Dr. Geoffrey McCafferty and his team, funded by a SSHRC Standard Research Grant. During these excavations three separate loci were investigated. Locus 1 is located on the northeast periphery of the site where a road-cut exposed a cluster of secondary burial urns. Locus 2 is in the southeast quadrant of the site, and consists of domestic materials. Locus 3 is located atop a hill on the northwest portion of the site, which overlooks Lake Nicaragua, and is a dedicated burial area (see figure 6.1). Wilke (2012) describes the burial data from the 2009 and 2010 field seasons within her Master's thesis, and this is the basis for the following discussion of excavations. Skeletal data was also adapted from Wilke's thesis, and the details of this are presented in Appendix B. Skeletal analysis from the entire El Rayo site from these excavations determined an MNI of 27; 15 adults, nine individuals that were adolescent or younger, and two that were undetermined. While burials were discovered in all three Loci investigated, Locus 1 and 3 will be given focus, and Locus 2 only briefly discussed.

Because El Rayo spans the Bagaces to Sapoá transition we are able to examine how material culture changes between these periods. Wilke (2012) made several arguments that are relevant here. First, it was argued that there is a change in the location of burials between the Bagaces and Sapoá periods, wherein burials shift from domestic to formal contexts; this is attributed to the use of formal cemeteries to mark territories (Wilke 2012). It should be noted, however, that the Locus 1 cemetery was used from the Bagaces period through to the Sapoá

period. Second, the earliest burials at El Rayo, from the Bagaces period, are generally primary interments with individuals arranged in extended or flexed positions; burials from the Sapoá period, however, are secondary, with remains scattered outside of and occasionally inside of burial urns (Wilke 2012; McCafferty et al. 2013a). Primary burials at El Rayo decrease in frequency between the Bagaces and Sapoá periods, but are still in use in the later period, particularly in the case of the wealthiest burial at the site (McCafferty et al. 2013a). The osteological remains found in the Sacasa Striated shoe-pots and other urns showed evidence of having been cremated in an open fire (McCafferty et al. 2013a).

Locus 2

Locus 2 is a domestic area dating to 600-1250 CE (Wilke 2012: 3), and the burials here were from the Bagaces period based on form and associated ceramic materials. Burials from the Bagaces period are primary, with a lower number of prestige goods associated with the interred individuals. Three individuals represent the Locus 2 burials; a fetus that was found in a trash deposit, and two primary burials of adult individuals.



Figure 6.2 Individual 25 at Locus 2, El Rayo. Photo courtesy of Geoffrey McCafferty.

Locus 1

Locus 1 is described by Wilke (2012) as a dedicated cemetery that was utilised over a period of time, with newer burials intruding into older burials. The burials were densely concentrated throughout Locus 1, and skeletal material was present both within and around the vessels (McCafferty et al. 2013a). The materials at Locus 1 were exposed by a road-cut that severely impacted the area, and the excavations were spatially constrained; the area that the cemetery covered is much larger than could be excavated.



Figure 6.3 Features 13 and 20 at Locus 1, El Rayo. Showing large cobbler and smaller vessel within urn.

Vessels at Locus 1 were large *ollas* and Sacasa Striated urns, with some isolated skulls outside of the urns. While skeletal material was not found often within the urns themselves, other burial accompaniments such as smaller vessels, lithics (cores, *metates*), and volcanic cobbles were included. At both Locus 1 and Locus 3 burial urns were bolstered on the inside and outside through the use of stone cobbles and ceramic sherds. The presence of primarily interred

individuals alongside Bagaces period ceramics underneath later Sapoá burials indicates that Locus 1 was used continuously through both periods (Wilke 2012). The burials at Locus 1 appear to have been part of a communal cemetery, which may contrast with those from Locus 3, which may have been more restricted (McCafferty et al. 2013a).

Locus 3



Figure 6.4 Map of Locus 3, El Rayo, showing the 2009/2010 and 2015 excavations. 2009/2010 Operation 2 was located 10 metres south of Operation 3.

Burial 16, located at Locus 3, Operation 3, uncovered a series of 18 vessels that appeared to be placed in a north-south alignment on the top of a hill. Many of the vessels were located on a similar level, and were dug into a volcanic tuff substrate; some, however, were deposited atop of the other vessels. Several flat rocks covered a section of Burial 16, with some on top of the vessels; these rocks form a surface or monument associated with the burial vessels and other offerings. Skeletal materials from this burial were found within three shoe-pots that were investigated, and outside of the vessels were two clusters of comingled bones. Those urns that were not investigated were reburied for future investigations, and were the focus of excavations during PAGN 2015.

Burial accompaniments at Locus 3 include both lithic and bone tools, with the distribution indicating that one of these items is located with each of the shoe-pot vessels. Smaller vessels were also located between the larger burial urns with no particularly emphasized burials; Wilke (2012) suggests this is indicative of individuals considered as equals having been interred here.



Figure 6.5 Burial 14 from 2009 excavations at Locus 3, El Rayo.

Locus 3 presented a second area approximately 10 metres south and downhill of the cluster of vessels at Operation 1, and these two burials were not laid out in the same pattern seen at Operation 1. Burial 14 contained vessels associated with both the Bagaces and Sapoá periods (Wilke 2012:22), while Burial 15 presented vessels only associated with the Sapoá period. The burials were located with Burial 14 just under Burial 15, with Burial 14 being at least two individuals that were partially articulated, and comingled, and that were associated with a bird-shaped ceramic *ocarina*. Burial 15 also had an MNI of two, and these individuals were interred in a disarticulated cluster with artifacts on two sides; a notable inclusion in the burial is a copper bell.

Seven of the eight Sapoá period burials described by Wilke (2012) are argued to have evidence indicative of compound disposal processes, possibly as a result of at least one reduction process (for example, cremation). This may have been accomplished through various methods, however the presence of burning on a significant number of bones indicates that cremation is a likely possibility.

El Rayo Excavations and Burials 2015

In July and August of 2015 excavations were conducted at the El Rayo site that investigated the burials urns located at Locus 3, and explored architecture at Locus 4 and Locus 5. Locus 4's architecture was large, and was located approximately 40 metres downhill from the Locus 3 cemetery. Burials examined during the Proyecto Arqueológico Granada, Nicaragua 2015 (PAGN 2015) excavations are listed by associated feature herein, or unit if a feature was not assigned, and include remains discovered in Locus 3. Excavations at Locus 3 allowed us to gain a better understanding of the distribution and contents of burials at this cemetery site, including exposure of the known series of vessels from Operation 3 in 2009/2010, and investigation of an exploratory trench to the west of the original excavation units. The results of these excavations are presented below.

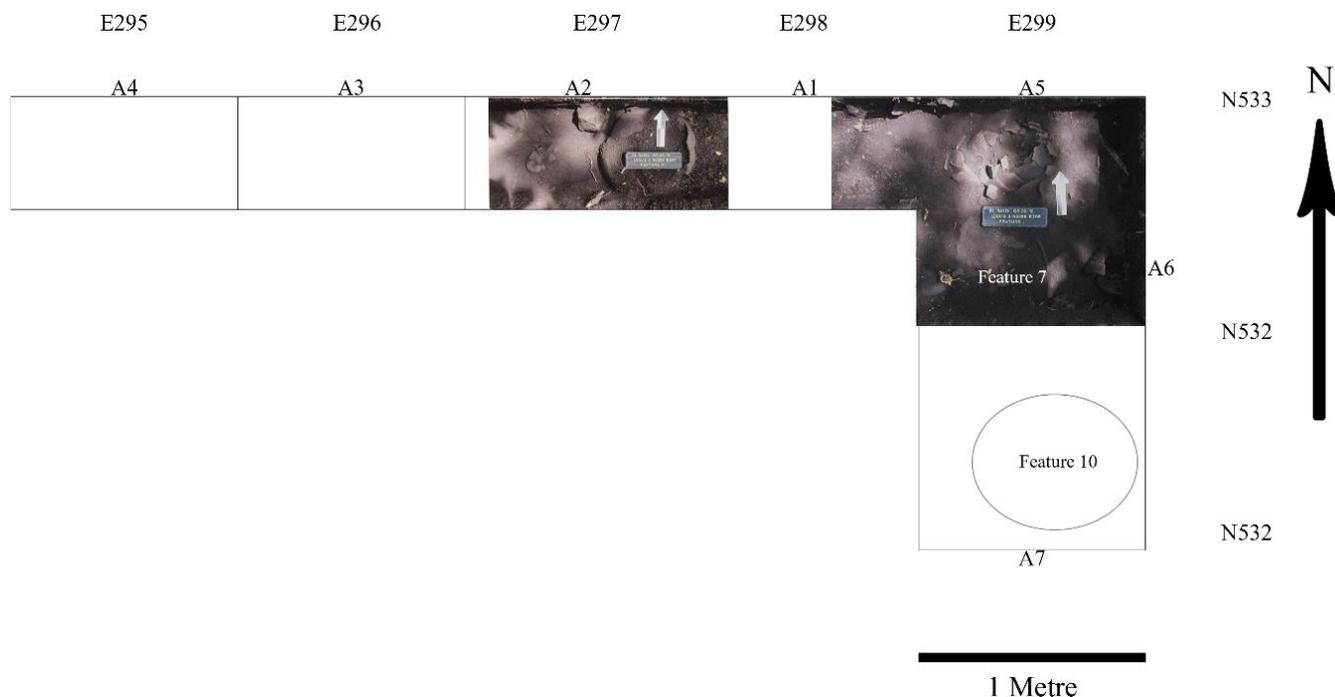


Figure 6.6 Diagram showing the location of the new excavation trench and units at Locus 3.

Unit A1 and A5

Unit A1 was a .5m x 1m unit located at N532.5 E298, and included approximately five centimetres of the Feature 3 urn within the western portion, and a scattering of skeletal material in the eastern section. This includes eight upper permanent teeth, one lower premolar, and an undetermined molar. Unit A5, which was located west of Unit A1, included an urn designated Feature 1 alongside skeletal remains from around the Feature 1 urn. The MNI of this area is two, and represents a scattering of skeletal material between the Feature 1 and Feature 3 burial vessels.

A compacted surface was encountered here between 70-72cm below datum, and this continued across Unit A1 and A5, excepting near where the vessels were placed.

Feature 1

The burial urn designated Feature 1 is a Sacasa Striated shoe-pot vessel with applique on the toe. The MNI for this burial is one, as indicated by the teeth present within the vessel. Other than dentition, fragments of the lower extremities, the crania, and the hand(s) were present; of these, two elements were burned. Some faunal material was found within the vessel, including from a bird and a mammal.



Figure 6.7 Feature 1 burial vessel, showing the crushed vessel before removal.

Feature 3

The round vessel designated as Feature 3 was located within Unit A2 for the most part, with approximately five centimetres intruding into Unit A1. Three teeth were located within the vessel itself, with an additional three scattered around the outside. The MNI of Feature 3 is one, as indicated by dentition and skeletal materials within the vessel; osteological remains within the vessel were highly fragmentary, and in several cases showed evidence of burning. The only

faunal remains found in association with Feature 3 were located outside of the vessel, and are identified as bird bones.



Figure 6.8 Feature 3 vessel.

Feature 4

Feature 4 is a Sacasa Striated shoe-pot with a hole in the toe of the vessel; the urn was oriented north-south, which was in line with several other vessels. A large volcanic cobble was located within the vessel, alongside some highly fragmented human remains, and faunal materials. A large portion of a deer tibia was found to extend from the middle of the vessel to the north; other faunal materials are a fish vertebra, and turtle bone.

While the osteological remains within Feature 4 were often too fragmentary to identify, the presence of teeth, cranial bone, and longbone fragments is indicative of an MNI of one. One of the cranial bones was identified as parietal, with some areas possibly displaying porotic hyperostosis.



Figure 6.9 Feature 4 vessel with large cobble inside.

Feature 5

This vessel was located partially beneath a large tree root, and is a Sacasa Striated shoe-pot with applique on the toe. Skeletal materials within the vessel are highly fragmented, and indicate that at least two people were interred within. This number is based on the presence of fully developed and worn permanent dentition alongside a deciduous molar; in addition, some of the skeletal remains (tibia and radius) were rather small in comparison to others. A permanent upper right first molar presented two caries, and a lower permanent molar had a single carie. Several fragments of burned bone were present. Faunal remains inside of the vessel are avian. Near the bottom of the vessel a ceramic spindle whorl with web-like designs was found, along with a smaller ceramic vessel. The presence of a smaller vessel within the larger burial urn is more commonly seen in Locus 1 burials, and the presence of this provides a point of continuity between the two cemetery locations.



Figure 6.10 The Feature 5 urn showing the rim of the vessel.

Feature 7

Feature 7 is a shallow urn burial within Unit A6. The contents of the vessel were very few, but did include a small worked bone needle, a fragment of chert, and faunal remains from both mammal and avian sources. Human skeletal materials were located around the outside of the urn, leading to an MNI of one for the burial; this number is indicative of the skeletal materials outside of the vessel only.

A walking surface was located in the northeastern portion of Unit A6 at approximately 64 cm below datum. The surface was likely breached in order to put the Feature 7 urn in place.



Figure 6.11 This picture shows Features 10, 7, and 1 from the bottom of the image to the top. Facing north..

Feature 8

Feature 8 is a secondary urn burial, with the vessel being a Sacasa Striated shoe-pot with applique on the toe, and the rim and back missing. The vessel was oriented with the toe facing south, and was in line with a series of other shoe-pot vessels located in Operation 1. Most of the skeletal material associated with Feature 8 was located within the burial vessel, however some portions, including the distal portion of a radius shaft, were scattered outside. This may have been a result of damage to the structure of the urn, but since clusters of skeletal material are apparent outside of several vessels in the area, they may have been intentionally placed outside of the vessel.

The main individual within the urn was a 10 ± 2.5 year-old that was placed within the urn in semi-articulated sections. Skeletal portions found within the vessel indicate the order of placement within the vessel, from bottom to top of the vessel, were in the following groups. First, the maxilla and frontal bone were placed upside-down in the southeast of the vessel, with a femur in the southwest; semi-articulated ribs were placed next, alongside a humerus and metacarpals or metatarsals, with a tibia placed in the north of the vessel; next was a first rib, mastoid, part of the cranial vault, and the mandible. At the bottom of the urn, under the maxilla of the main individual, was a second mandible of an adult, which was positioned upside-down in the east of the vessel. The maxilla of the younger individual was positioned directly above the adult mandible.



Figure 6.12 Level 3 within Feature 8 showing the maxilla of the main individual positioned atop the second individuals' mandible.

Feature 10

Feature 10 is a secondary urn burial, with a minimum of two individuals interred inside and around the vessel. The MNI is based on teeth located in association with Feature 10, some of which were well-worn permanent teeth, with some deciduous teeth present; tartar was present on one of the teeth. Development of the deciduous teeth indicate that the younger individual was approximately 6 months \pm 3 months, while the second individual is classified as adult. Burned bone fragments were present around the vessel alongside faunal remains identified as turtle and avian. Burned bone was also present inside of the Feature 10 vessel, as were turtle bones. A single bead was found in association with Feature 10.

Feature 11

This secondary urn burial consists of a Sacasa Striated vessel with extremely fragmented skeletal remains found within. The vessel was located under a slab of rock, which had covered the opening and crushed the vessel. No identifiable osteological elements were present within the vessel itself; long bone fragments were present, but could not be positively identified as human. Some small lithic materials and ceramic sherds were found inside, along with some small rocks, which is a characteristic shared with Locus 1.

Unit A3 and A4

Remains found within the A3 and A4 Units, which were located furthest to the west, included some fragmentary human skeletal material alongside the remains of a likely modern butchering event. Human osteological remains were not prevalent, however fragments of long

bones and skull were apparent. Mammal remains from the units were identified as bovine, and included evidence of butchery, which was most apparent in the right astragalus of a bovine with obvious cut marks.

Summary of El Rayo Burials

Excavations during three separate years at the El Rayo site have produced insight into how burials at the site were spatially arranged, and what types of rituals may have produced these material results. A minimum of 13 additional individuals were recovered from Locus 3, Operation A during the 2015 excavations. These excavations improve our knowledge of the Sapoá-period cemetery at Locus 3, and provide new insight into the extent of the burials. In particular, Feature 8 gives a higher resolution to the practice of including more than one individual, often one younger and one older, in the same burial vessel.

Burial Patterns

Many of the burials that were found within ceramic vessels indicate a pattern involving the placement of multiple individuals from different age groups within the same urn. Examples of this are seen in Feature 5, Feature 8, and Feature 10. Analysis of the 2009/2010 excavations, conducted by Andrea Waters-Rist, indicate that in multiple-individual interments where age could be determined, there was at least one individual under the age of eight (Wilke 2012:33). While this pattern continues to be found in the data recovered from the 2015 excavations, Feature 8 indicates that the younger individual was 10 ± 2.5 years old, which potentially increases the range of the age of the younger individual seen in Locus 3 multiple interments.

Ceramics and Burial Accompaniments

Wilke (2012) noted that ceramics from previous periods continued to be used later at the El Rayo site, and this is noted strongly in the case of Feature 8 from PAGN 2015 where Bagaces and Sapoá period ceramic sherds were interred together with the individuals. The presence of a single significant burial item with each burial in Locus 3 continued to some degree in further investigation, as indicated by the worked bone needle in Feature 7, and the ceramic spindle whorl in Feature 5. Not every vessel contained what was termed a significant artifact. For example, Feature 11 contained only longbone fragments, small lithic flakes, and some ceramic sherds. It is possible that other vessels found underneath the slabs of stone, as was the case for Feature 11, would be similarly barren; future investigation of the vessels would confirm.

Secondary Interment

Questions surrounding the particular manner in which these individuals were prepared for burial have been raised previously (Wilke 2012), and remain an intriguing aspect of the El Rayo mortuary rituals. Possible iterations of how the dead at El Rayo's Locus 3 were defleshed may be considered, especially because many of the burial vessels were placed within dug-out areas, bones were often at least partially disarticulated, and burned bone is present in small quantities within many of the burials. Wilke (2012) discussed several scenarios of processing that may have occurred at El Rayo, including the possibility of burial with later disinterment, fermentation within pots, and cremation. Based on the presence of burned bone at Locus 1 and 3 from

2009/2010 excavations, and Locus 3 from 2015 excavations, I would argue that at least partial cremation played some role in processing human remains.

Built Environment

The flat stone slabs that are located at Locus 3 may be associated with a staging area, or another type of architecture. This area is located at the top of the hill where the Locus 3 cemetery is located. The presence of architecture in association with burials at El Rayo contrasts with that of Sonzapote primarily because El Rayo's architecture probably represents a contemporaneous addition to the cemetery, while Sonzapote's burials were placed upon pre-existing architecture.

In the following chapter the excavation data from El Rayo and Sonzapote is presented alongside the theoretical consideration offered for the practice of social memory. The data are linked to theory with the help of other cases where social memory could be inferred, and how social memory was constructed through mortuary ritual at Sonzapote and El Rayo is considered. The wider implications for social identity, and how this is important in Pacific Nicaraguan archaeological research, are considered.

Table 6.1 El Rayo 2015 skeletal data.

Unit/ Feature	Burial Type	Age	MNI	Period	Grave Accompaniments/Associated Materials
A1	N/A	N/A	2	N/A	Lithic flakes, possible utilized flake.
Ft. 1	Urn	Adult	1	Sapoá	Sacasa Striated shoe-pot urn.
Ft. 3	Urn	Adult	1		Lithic flakes.
Ft. 4	Urn	Adult	1	Sapoá	Deer tibia, fish vertebra, and turtle bone.
Ft. 5	Urn	Sub- adult, & adult	2	Sapoá	Spindle whorl, smaller vessel.
Ft. 7	Urn	Adult	1		Worked bone needle, fragment of chert, and faunal remains.
Ft. 8	Urn	Adult, & 10±2.5 year old	2	Sapoá	Papagayo Mombacho Incised, and Potosi ceramic sherds.
Ft. 10	Urn	Adult, & 6 months ± 3 months	2	Sapoá	Turtle bone, bird bone. Bead.
Ft. 11	Urn	N/A	N/A	Sapoá	Small lithic fragments, ceramic sherds.

Chapter 7 Discussion and Conclusion

Memory is not always bound within any single individual, or a particular object, and can be part of a network of people and the physical world working together to construct an understanding of the past (Fagin et al. 2013). Two archaeological sites in Pacific Nicaragua are considered within this thesis, each providing an example of how social memory was created and maintained through mortuary ritual. As with most archaeological applications of social memory theory (Gillespie 2010), this research focuses on non-textual aides to memory, such as human osteological remains, monumental sculptures, and architecture. By investigating social memory it is possible to enrich our understanding of how people in prehistoric Pacific Nicaragua viewed their own past (Chesson 2010b), and how their social identities were a construction of how they viewed themselves (Assmann 2011). This chapter serves to connect the data that have been described from Sonzapote and El Rayo with social memory theory, and discuss what this means for our interpretation of these sites, and the broader Pacific Nicaragua subarea. Included in this are questions raised regarding the use of secondary burials, and built environments, specifically monuments and architecture, to incorporate remembrance of the past into their social fabric. Lastly, limitations that may affect this research are considered, followed by suggestions for future research.

Mortuary Practices at Sonzapote and El Rayo

We are able to compare and contrast the mortuary practices conducted at the El Rayo and Sonzapote sites with each other, and with those seen at other sites within Pacific Nicaragua. The

Sonzapote site is characterised by several burials located atop pre-existing monumental architecture and with very little grave accompaniments. The original estimation for the construction and occupation of Sonzapote was between 800-1522 CE, which covers the Sapoá and Ometepe periods (Salgado 1996; Baker and Smith 2001); with the discovery of Late Tempisque (1-300 CE) and Early Bagaces (300-500 CE) period materials in association with the construction of Mound 14, this date has been challenged. Six burials were investigated altogether: a single primary interment, and at least seven individuals within five secondary burial contexts. The remains associated with these burials were highly fragmented, and with the exception of Burial 6, there was a distinct lack of grave accompaniments.

El Rayo is a site where two formal cemeteries are located, with both the Locus 1 and 3 being sites of densely clustered burial urns. Excavations at El Rayo have revealed that interments were conducted often in a manner that placed multiple individuals within or around a single urn. It is possible that the individuals interred within the urns were placed inside at the same time as one another, after having been excarnated in some manner; however, it is also possible that the urns were used in sequential burial rituals. Some of the urns at Locus 3 were covered by other urns, or even by the stone slabs; because of this, it is possible to argue that the cemetery underwent multiple burial events during the Sapoá period. Wilke (2012) described a variety of possible defleshing scenarios, which may be narrowed down based on the lack of cut marks, and the presence of some burned bone in many of the burials. The skeletal remains from Sonzapote had a single case of small mammal gnawing, which indicates that for most of the remains found here and at El Rayo were not exposed to animals during defleshing. Sonzapote exhibited the occasional burned bone fragment, while El Rayo's Locus 3 had burned bone in Feature 1,

Feature 3, Feature 4, Feature 5, Feature 8, and Feature 10. This indicates that at least in the case of El Rayo, reduction of dead bodies involved some form of cremation, although it may have been in the form of partial cremation in combination with other processes.

Osteoarchaeology at Sonzapote and El Rayo

Despite the poor preservation of human osteological remains at most sites within Pacific Nicaragua, Andrea Waters-Rist has shown that we still have the ability to analyse aspects of these populations including demography and paleopathology (McCafferty et al. 2013a). Waters-Rist (McCafferty et al. 2013a) describes the results of detailed analysis of osteological materials from Santa Isabel and El Rayo, providing data related to linear enamel hypoplasia (LEH), porotic hyperostosis, caries, and the demographic make-up of the mortuary populations.

Burials at Santa Isabel were found within a small area, and represent few, mostly sub-adult, individuals. In contrast, El Rayo's Locus 1 and 3 are larger cemeteries with a range of ages represented among a larger number of individuals. El Rayo's demographics from 2009/2010 data are arguable representative of a population experiencing "normal" attritional mortality (McCafferty et al. 2013a:20). The skeletal materials from PAGN 2015 follow the same pattern, with 11 individuals that were classified as adult and sub-adult; 7 adults, and 4 sub-adults. At Sonzapote the MNI was eight, with one of those individuals aged to 9 months \pm 3 months, and the remaining seven of undetermined, but likely adult, age. McCafferty (2008) argues that based on the demographic composition of Santa Isabel's burials, there are likely more burials located elsewhere. This may also be postulated for Sonzapote, although the small sample size makes any

definitive observations unlikely, and questions regarding whether Sonzapote was a site of domestic occupation at the time of the burials are yet to be answered.

At both Santa Isabel and El Rayo we see linear enamel hypoplasia (LEH) and porotic hyperostosis. One canine from the PAGN 2015 field season was noted to have LEH, and one case of porotic hyperostosis was noted for a fragment of a parietal. While enamel hypoplasia was not observed for the IZAP 2013 materials, without detailed analysis of dentition it is not possible to say whether it is present or not. LEH is indicative of stress during childhood, as this marker occurs during tooth development (Roberts and Manchester 2005). LEH observed in 2009/2010 at El Rayo were all developing in children between 3-4 years old, which is indicative of common episodes of physiological stress during childhood at El Rayo (McCafferty et al. 2013a).

Dental calculus was observed at both Santa Isabel and El Rayo, while caries were observed at El Rayo only. This was first established during the 2009/2010 field seasons, with caries observed again from the PAGN 2015 materials, and within the population examined during IZAP 2013 at Sonzapote.

Social Memory at Sonzapote and El Rayo

We are able to apply social memory theory to the mortuary practices seen at Sonzapote and El Rayo by examining several different manifestations of how these sites were imbued with meaning through rituals, linking the present and the past (Borgstede 2010). These rituals promote the creation of shared remembrances through incorporation, as group members participate in

events at locations that act as mnemonic devices (Hastorf 2003). I examine how social remembrances would have been formed at Sonzapote and El Rayo through several media, including built environments, monumentality, and the interaction between the living and the dead during secondary burial rituals. Beyond these we are able to formulate ideas about how social memory may be manipulated through interaction with the built environment, and how the process of identity formation may impact funerary rituals.

The Built Environment and Monumentality

El Rayo and Sonzapote may be considered *lieux de mémoire*; these are locations where materiality, functionality, and symbolic meaning combine, and where remembrances are incorporated through ritual practice (Nora 1989). In this way, these people gained an interpretive understanding of the past through their engagement with the landscape (Wallis 2008). The Sonzapote site is characterised by not only monumental architecture, but also petroglyphs and large stone statuary. At El Rayo's Locus 3 a cluster of burial urns was placed in association with some kind of staging platform, or architectural base, and was a short walk uphill from a substantial building designated Locus 4. While the context of the architecture is different for each site, the built environment would have served as a mnemonic device. Monuments are erected with a specific meaning in mind (Chesson 2001b; Barrett 1990; Cipolla 2008), and are therefore able to evoke particular thoughts and feelings within those individuals who interact with them. Hastorf (2003) argues that the physical environment and objects associated with these rituals are the visible result of memory. This meaning may change through time, as social memory is created within the framework of those who are alive to maintain it (Rigney 2008). Memorialization is a dynamic process wherein the meaning ascribed to the sites change with

time. Certainly, the meaning and function of Sonzapote changed; from the construction and initial use of the site, to the later reuse of Mound 14 as a location of mortuary ritual.

The act of purposefully burying the dead on top of Mound 14 indicates negotiation of social memory, as people connected the past and present. The Sonzapote site can be analysed in relation to a few different iterations of how peoples were connecting with their past through funerary ritual. If the Sonzapote site was indeed constructed during the Late Tempisque period, it is likely to have been conducted by Chibchan people, while later construction in the Sapoá period provides the possibility of Chorotegan-speaking groups (Carmack and Salgado 2006). Burials on the corner of Mound 14 are from after the abandonment of the site, during the Sapoá period, based on the presence of diagnostic ceramic types such as Sacasa utilitarian wares and white-slipped polychromes (Healy 1980; McCafferty and Dennett 2013).

Sonzapote's monumental architecture, which is surrounded by petroglyphs and statuary, is not an experience that could be ignored. Mortuary rituals conducted here, possibly by elite individuals, would involve movement through the site that would create discursive knowledge of the mortuary practices. These practices involve the reuse of pre-existing monumental architecture, which raises the possibility that those who conducted mortuary rituals at Sonzapote did so with the intention of creating new meaning and memories associated with this site.

Urns at El Rayo's Locus 3 include multiple-individual interments, and three (Features 5, 8, and 10) examples were of younger individuals interred with older individuals; the 2009 and 2010 excavations provide even more cases of younger and older individuals being buried

together, with the majority of those involving an adult alongside an individual under the age of 8 (McCafferty et al. 2013a). Feature 8 was the most complete urn burial at El Rayo, containing portions of an adolescent 10 ± 2.5 years old, and the mandible of an adult. Two ceramic sherds were included in the Feature 8 burial, one of which was a Papagayo Mombacho Incised polychrome dated to the Sapoá period, and a sherd of Potosi Applique that is dated from the Bagaces and into the Sapoá period. The cemetery at El Rayo's Locus 3 is at the apex of a hill, and the burial vessels found there were seemingly placed in specific alignment with one another, and the structure formed by stone slabs. This represents a built environment where rituals took place, and where groups of people could have gathered. Many of these urns were placed either on, or into, the volcanic tuft substrate, and bolstering of the vessels through the use of ceramic sherds and rocks indicates they may have been kept in the open, rather than immediately buried once deposited. The implications of continued interaction with deceased individuals through secondary burials, and even cremation, can be considered alongside the use of built environments with monuments and architecture to strengthen our understanding of how memory was constructed.

Secondary Burials and Cremation

Sacasa Striated shoe-pot burials are commonly found as archaeological materials in Pacific Nicaragua from the Sapoá period onward. These and other large ovoid urns were in use at Santa Isabel, where infants and sub-adults were those interred within, while sub-adults and adults were interred within and around them at Tepetate and El Rayo (McCafferty et al. 2013a). This pattern of use was seen at Sonzapote, with five out of six burials being within urns, however only one of the individuals was a child. The vessels themselves, through their use and/or reuse in

mortuary contexts, may gain significance in the process (Williams 2015). This ties into the idea of secondary burials with the reduced remains interred within ceramic vessels being a way in which a 'second body' is created for the deceased, wherein the interaction between remains and the living is a source of memory (Williams 2004b:277-278). Secondary burials are rife with possibility for social memory construction for reasons related to the interaction with these remains during movement and manipulation, and the ability of mortuary events to be scheduled. The implication of this for the El Rayo and Sonzapote communities is that a larger audience may have participated in the mortuary rituals, and these rituals were when groups assessed and shared collective identities and memories (Chesson 2001). Kuijt's (2008) example of skulls removed from primary interment and plastered is an extreme example of how the living interact with the dead's physical remains. This, and the presence of secondary burials within Pacific Nicaragua, indicate engagement between the living and the dead. While in some cases, such as Kuijt (2008) and Torres-Rouff et al. (2012), the burials occurred inside of households, the El Rayo and Sonzapote burial rituals were public events.

At Sonzapote, and especially El Rayo, we see interment of multiple individuals within or around single urns. Certain portions of individuals are interred, with the lack of whole individuals inexplicable by preservation alone (Wilke 2012; Briggs 1993). El Rayo's Locus 1 underwent successive burials through time, with newer burials intruding upon older burials (Wilke 2012). The Locus 3 cemetery probably involved at least two depositional events, both of which would have been open to the public. Williams (2015) argues that cremated remains, and I would argue most post-reduction remains, are more likely to be used in communal monuments in successive episodes. This is because of the mobility of such remains. This indicates that

mortuary ritual at El Rayo, and likely Sonzapote, involved continued physical engagement with the dead, in which the bodies of the dead acted as mnemonic agents (Williams 2004b).

Manipulation of Social Memory

Schortman and Urban (2011) examine how control of social memory can be seen through the strategic use of material culture. In the case of Naco Valley, the physical landscape is manipulated through destruction and defacing of the La Sierra site, and the symbols of Late Classic rulership. Sonzapote does not present such an extreme example; however, the intentional reuse of the site for later burials represents a purposeful connection to the Sonzapote site by later peoples. Whether these were people related directly to the original inhabitants, or new migrants into Pacific Nicaragua, meaning and memory was negotiated through mortuary ritual.

The application of social memory by Torres-Rouff et al. (2012) presents a case similar to that seen at Sonzapote as well. The authors encountered burials atop a ruined palace structure, which had been placed through the floors of domestic structures into the palace ruins. The Sonzapote data do not include the large number of burials (154) seen at Kish's A Cemetery, nor were the mounds at Sonzapote the location of later domestic structures. The important similarities between Kish's A Cemetery and Sonzapote are the presence of interment on top of earlier architecture, as there is intent behind the reuse of these sites. In Kish's A Cemetery the burials were conducted through the floor of domestic housing, which based on spatial constrictions, does not permit a large number of people to participate in the burial rituals. I would actually ascribe a stronger case for social memory formation at Sonzapote based on the possibility of public use of the site; the same argument may be made for El Rayo.

Manipulation of symbolic meaning through the construction of new memories and remembrance at established sites such as Sonzapote does not need to be large scale, involving defacement or complete erasure. These monuments, these *lieux de mémoire*, are part of a dynamic system of memorialization that is constructed by individuals interacting and practicing rituals at any one time.

Identity

The Bagaces to Sapoá transition at many sites, including El Rayo, has been established as a time of change; mortuary practices are observed to switch from primary interments in extended or flexed positions to secondary burials associated with urns, white-slipped ceramics are introduced, and some iconographic imagery similar to that seen in Mesoamerica appears (McCafferty and Dennett 2013; Salgado 1996; Niemel 2003; Wilke 2012). McCafferty and Dennett (2013) have already established the likelihood of ethnogenesis and hybridization at the El Rayo site, and the PAGN 2015 excavations bolster this argument. Social memory and identity are connected to ideology and how groups would have defined and contrasted themselves (Van Dyke 2011); the identity of those people buried at El Rayo's Locus 3 is tied strongly with materials from the Sapoá period. It is possible that the alteration in mortuary rituals between the Bagaces and Sapoá periods represents the later peoples' expression of migratory identity (Halstad-McGuire 2010), and that the inclusion of a small number of materials from earlier periods in burials such as that seen in Feature 8 represents a desire to also acknowledge a continuity with the past. At Sonzapote, the renegotiation of meaning may even be considered in

light of cultural transformation following the integration of migrant populations with the pre-existing peoples.

One important distinction that may be made between Sonzapote and El Rayo is the type of identity produced. While both sites are indicative of public mortuary rituals, the Sonzapote burials are almost completely devoid of grave accompaniments (with the exception of Burial 6), while the majority of El Rayo burials generally included at least one significant artifact. These artifacts were not uniform across the burials at Locus 3, and may be an indicator of individual identity rather than group solidarity. As many of these burials included multiple individuals, perhaps there is a connection between these artifacts and household identity.

Limitations

The greatest limitation encountered with the data for Sonzapote is the very small scale of the excavations, which investigated the southern extent of Mound 14, but no other mounds. This raises questions regarding site use after abandonment; for instance, was the presence of burials on Mound 14 an exception, or were these found throughout the site? Whether or not this is true, the creation of social memory and identity remains, though it would be possible to gain a greater understanding of this process with more in-depth investigation.

Feminist critique of social memory studies has pointed to the profusion of elite-based materials at the expense of other social groups (Van Dyke 2011). Sonzapote and El Rayo are both sites that may be elite in nature; El Rayo's cemeteries have been described as representing possible elite burial grounds (McCafferty and Dennett 2013), and Sonzapote is arguably a

ceremonial centre (Bruhns 1992). This lends to the visibility of elite and dominant memories, with other alternate memories subsumed within these processes. This may be mitigated by examining the overall trends in mortuary practices throughout Pacific Nicaragua to understand how people from throughout the region constructed and maintained social memory, whether through the use of built environments, or secondary burials.

Further Research

Dating techniques used for the recent Sonzapote and El Rayo excavations are based on ceramic sequencing, and the types of burials present. A clearer picture of events at the sites would be afforded with radiocarbon dates, and would be a worthwhile avenue of future research. Additionally, the expansion of Locus 3's excavated area at El Rayo would likely uncover additional burials; this could indicate the extent of the cemetery, and perhaps give a better picture of how the location was used.

Summary and Conclusions

Excavations at Sonzapote and El Rayo presented evidence for how people in prehistoric Pacific Nicaragua conducted funerary rituals, and how these and the built environments at these sites were used in the formation of social memory. Arguments made within this thesis are based on the presence of burials on top of pre-existing architecture at Sonzapote, and the contrasting example provided by El Rayo's cemetery at Locus 3. The data examined in the past chapters came from three field seasons of excavation at El Rayo, and a single field season at Sonzapote;

while most of the information presented is based on human osteological remains, the overall material findings have been taken into consideration.

The application of social memory theory allows us to consider how the people of prehistoric Pacific Nicaragua conceptualized their own past, present, and future (Chesson 2010b). I have argued that the cemetery at Locus 3, El Rayo, was a location where social memory was inscribed upon the landscape through interaction with the dead, and where groups would have come together to reminisce and construct understanding of the past. Similarly, those individuals who participated in funerary rituals at Sonzapote would have interacted with the processed remains, and were part of practices that symbolically and physically tied their dead to the pre-existing monumental architecture at Mound 14. Whether these people were descendants of those who constructed the Sonzapote site is unknown, but their purposeful reuse of the site indicates that they intended to create remembrance of their dead in association with Sonzapote. At both sites it is likely that the groups who participated in these mortuary rituals were elites, which would indicate that we are seeing a specific type of memory and identity being constructed.

It is apparent that no single media could be consulted in order to understand how social memories were constructed at El Rayo and Sonzapote. Nor could concepts such as social identity be set aside when examining the material traces of mortuary ritual within the framework of social memory theory. Despite the highly fragmentary nature of human osteological remains at these sites, we are able to make connections to how people related themselves and their dead to the past, and how this would have represented how they saw their present and future.

Appendix A

Mortuary Profiles Sonzapote

Site: Sonzapote	Locus: 1	Operation: 1
Burial: 1	MNI: 1	Period: Unknown

Burial Type: likely a secondary urn burial that was disrupted by bioturbation.

Comments: located within Units B1 and B2, and considered part of Feature 1. Highly fragmented. Beneath this burial was a packed earth and cobble surface, which was above the surface mentioned in Burial 2. Adult.

Burial Accompaniments/Associated Materials: associated ceramics include fragments of the following types; Castillo, Leon Punctate, Papagayo, Jobo Rojo Incised, Lago Negro Modelled, Sacasa Striated, unidentified utilitarian ware, unidentified orange slip utilitarian ware, unidentified orange slip serving ware, unidentified plain serving ware, orange slip incised serving ware, unidentified plain with crenelated rims, and pinched applique plain utilitarian ware.

Skeletal Inventory: total of 47 fragments/pieces.

Bag Number, Unit/Feature	Level	Skeletal Elements
018, B1, F1	1	<ul style="list-style-type: none"> • Left hallucial proximate foot phalange, distal end and shaft; • Humeral lateral epicondyle; unidentified phalange; long bone fragments; LM₂ • Unidentified crania fragments; right zygomatic, fragment of zygomatic; orbital portion of frontal
037, B1, F1	3	<ul style="list-style-type: none"> • Right fibula fragment, proximal portion of shaft • Intermediate foot phalange; metacarpal, proximal portion; long bone shaft fragment, possibly humeral • One fragment of mastoid; 18 fragments of crania, including occipital; left temporal fragment with external acoustic meatus, and additional fragments; undetermined incisor
043, B1	2	<ul style="list-style-type: none"> • Long bone fragments
049, B1	3	<ul style="list-style-type: none"> • Long bone fragments • Four rib fragments • Adult incisor and premolar

Site: Sonzapote	Locus: 1	Operation: 1
Burial: 2	MNI: 2	Period: Late Tempisque/Early Bagaces

Burial Type: secondary, within urn.

Comments: located in Unit B2, and designated as Feature 1. This is a highly fragmented burial, with more than 300 longbone and cranial fragments that were too small for identification found within the urn itself. The urn was set upon a compacted earth and cobble surface, which likely was associated with the construction of Mound 14. Another packed surface was found in B2, which this burial urn was likely deposited through. One adult, one of unknown age.

Burial Accompaniments/Associated Materials: ceramic materials associated with this burial include the following types; Castillo, Jobi Rojo Excised, Papagayo, Sacasa Striated, Leon Puntaedo, orange slipped incised, pinched applique plain utilitarian ware, unidentified orange slip utilitarian ware, unidentified orange slip serving ware, unidentified plain utilitarian ware, unidentified plain with crenelated rims, and unidentified plain serving ware. There was also a grey ware with an applique arm. Of note, the burial urn was identified as Espinosa Red Banded, which indicates that the burial is dated to the Late Tempisque or Early Bagaces period.

Complete Skeletal Inventory: total of 449 fragments/pieces.

Bag Number, Unit/Feature	Level	Skeletal Elements
000, B2	Surface	<ul style="list-style-type: none"> • Femur fragments
008, B2, F1		<ul style="list-style-type: none"> • Clavicle, sternal end; • Left talus, almost complete (80%); tibia shaft fragments; left tibia fragment, nutrient foramen intact; fibula shaft fragments; femur fragment, proximal • Crania fragments
011, B2	3	<ul style="list-style-type: none"> • Radius fragments, shaft and distal portion • Crania fragments
016, B2	4	<ul style="list-style-type: none"> • Fragments of vertebra • Carpal fragment; metatarsal/metacarpal fragments • Longbone fragments; one discoloured (burned) fragment
021, B2, F1		<ul style="list-style-type: none"> • Upper left incisor; RM_{1 or 2}; unidentified lower molar, worn; crania fragments; mastoid process, two; • Long bone fragments; left radius, shaft fragment; 3 proximal fibula heads; two femur shaft fragments, small diameter

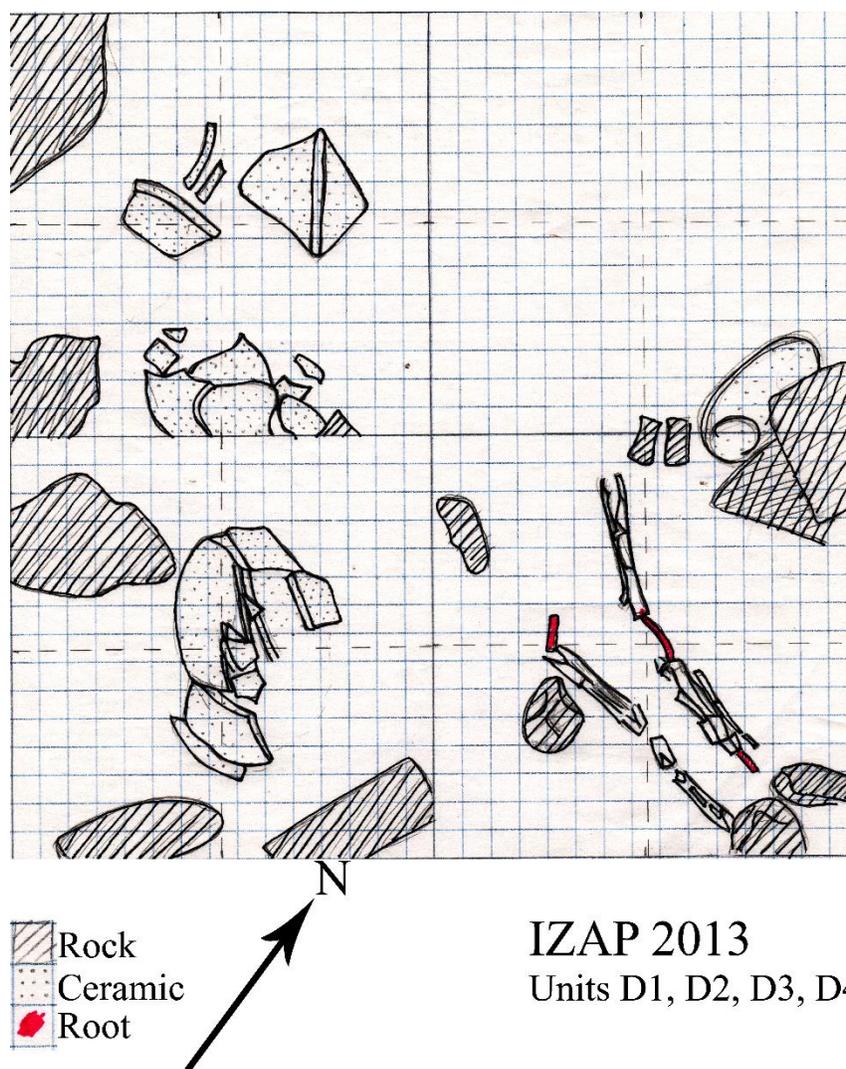
Site: Sonzapote	Locus: 1	Operation: 1
Burial: 3	MNI: 1	Period: Unknown

Burial Type: Primary burial.

Comments: located in Unit D1, designated Feature 2. Based on the size of the remains, it is possible that this was an adult.

Burial Accompaniments/Associated Materials: ceramic materials associated with this burial include Papagayo, Castillo, Lago Negro Modelado, Leon Puteado, Chaves, Madeira, Luna polychrome, an everted lip grey slip tecomate, and a variety of unidentified utilitarian and serving wares (unidentified plain utilitarian ware, unidentified orange slip utilitarian ware, unidentified orange slip serving ware, and unidentified plain serving ware). Fragments of a Sacasa Striated vessel were also located nearby.

Diagrams:



A. 0.1 Composite field drawing of the D Units.

Complete Skeletal Inventory: total of 391 fragments/elements.

Bag Number, Unit/Feature	Level	Skeletal Elements
5, D1	2	<ul style="list-style-type: none"> • Tibia fragments, distal • Metacarpal shafts • Misc. bone fragments
9, D1, F2		<ul style="list-style-type: none"> • Rib fragment • Two femur shafts, fragmented, both left and right; two tibia shafts, left and right; left fibula shaft • Bone fragments from lower extremities
23, D1	3	<ul style="list-style-type: none"> • Proximate foot phalange, distal portion; two metatarsal/phalange shafts • Longbone and misc. fragments

Site: Sonzapote	Locus: 1	Operation: 1
Burial: 4	MNI: 2	Period: Sapoá

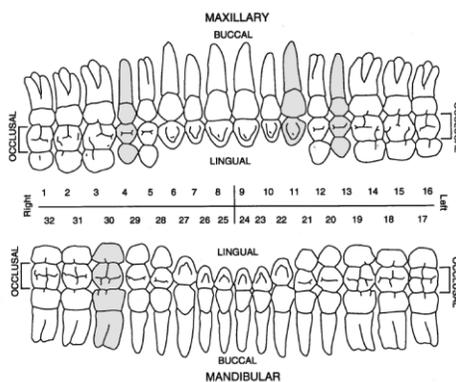
Burial Type: secondary urn burials.

Age: One individual is an adult, based on the presence of permanent teeth with some wear; other individual is a child of 9 months \pm 3 months based on the lower deciduous molars being present, but having no root development.

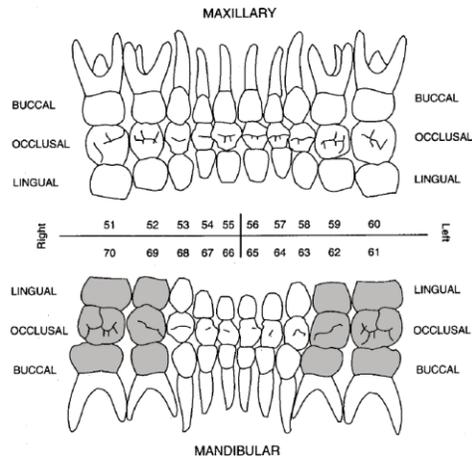
Comments: located in Unit D2 and extending into Unit D4.

Burial Accompaniments/Associated Materials: ceramics found in association with these two burial urn, which were Sacasa Striated and Castillo, included the following types; Papagayo, Castillo, Lago Negro Modelled, Chavez, and a variety of unidentified utilitarian and serving ware (unidentified plain utilitarian ware, unidentified orange slip utilitarian ware, and unidentified orange slip serving ware).

Diagrams:



A. 0.2 Adult tooth inventory, indicating all but one of the teeth present. Unidentified lower left premolar. Diagram modified from Buikstra and Ubelaker 1994.



A. 0.3 Deciduous tooth inventory, indicating all but one of the teeth present. Unidentified maxillary molar. Diagram modified from Buikstra and Ubelaker 1994.

Complete Skeletal Inventory: total of 47 fragments/elements.

Bag Number, Unit/Feature	Level	Skeletal Elements
15, D2	2	<ul style="list-style-type: none"> • RP⁴; RM₁; LP⁴; LC¹; LP_{3 or 4} • Flat and longbone fragments • Petrous pyramid fragments
47, D2, F4		<ul style="list-style-type: none"> • Petrous pyramid fragments; RdM₂; LdM₁; RdM₁; LdM₂; unidentified deciduous molar; tooth fragments

Site: Sonzapote	Locus: 1	Operation: 1
Burial: 5	MNI: 1	Period: Sapoá

Burial Type: secondary, urn burial.

Comments: located with Unit D3, and designated Feature 6. This urn burial was highly fragmentary, and no specific elements could be discerned.

Burial Accompaniments/Associated Materials: ceramics associated with this urn burial include the following types; Castillo, Lago Negro Modelato, Leon Punteado, Jobo Rojo Excised, Sacasa Striated, and a variety of unidentified utilitarian and serving wares (unidentified plain utilitarian ware, unidentified orange slip utilitarian ware, and unidentified plain serving ware).

Complete Skeletal Inventory: total of 24 fragments.

Bag Number, Unit/Feature	Level	Skeletal Elements
30, D3	2	• Bone fragments, long bone fragments
44, D3, F6		• Bone fragments
51, D3	3	• Bone fragments
53, D3/D1		• Bone fragments

Site: Sonzapote	Locus: 1	Operation: 1
Burial: 6	MNI: 1	Period: Sapoá

Burial Type: secondary, urn burial.

Comments:

Burial Accompaniments/Associated Materials: six greenstone beads. Ceramics associated with this urn burial include the following types; Jobo Rojo Exiso, Castillo, Sacasa Striated, and a variety of unidentified utilitarian and serving wares (unidentified orange slip utilitarian ware, unidentified plain utilitarian ware, and unidentified plain serving ware).

Diagrams:

Complete Skeletal Inventory: total of 7 fragments/elements.

Bag Number, Unit/Feature	Level	Skeletal Elements
42, D4, F7	3	• Bone fragments • Molar, permanent
48, D4, F7		• Permanent molar, permanent incisor

Appendix B

Mortuary Profiles El Rayo

Site: El Rayo	Locus: 3	Operation: A
Unit: A1	MNI: 2	Period:
N532.5, E298		

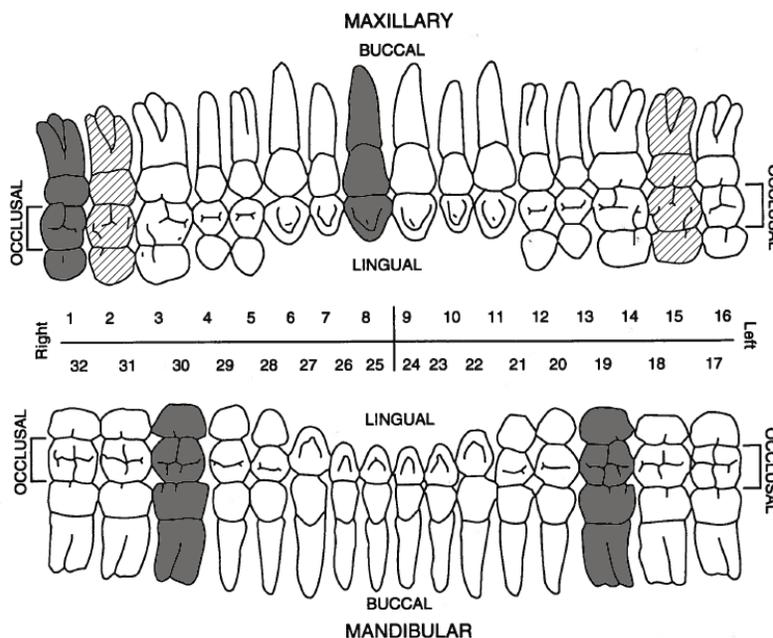
Burial Type: unknown

Burial Accompaniments: lithic flakes, possible utilized flake.

Comments: Includes eight upper permanent teeth, one lower premolar, and an undetermined molar. These were found in the eastern portion of the unit, and were closer to the urn in A5, designated Feature 1. Based on the sherds present in the northeastern portion, there may have been a highly fragmented vessels to the north, which may be the origin of the teeth. At 70 and 72 cm below datum a compacted earth floor was found, which continued across the unit.

Material from excavations around Feature 1 in A5, directly east of unit A1, are likely associated with the materials from the eastern portion of A1. These include material from bags 041-043, which includes six teeth, a hand phalange, tibia and fibula fragments.

Diagrams:



B. 0.1 Identified dentition for A1, and outside of Feature 1 in A5. Solid fill indicates presence of one of the designated tooth; striped fill indicates presence of two of the designated tooth.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
001	1	I ² ; RM ³
002	2	C ¹ ; lower P; 3 tooth fragments
003	3	Tibia fragment; distal hand phalange; unidentified metacarpal; RM ² ; upper M; tooth fragment; upper P; P ⁴ ; undetermined molar; LM ²

Site: El Rayo	Locus: 1	Operation: A
Burial: Feature 1	MNI: 1	Period: Sapoá
Unit: A5	N532.5, E299	

Burial Type: secondary urn burial with teeth and skeletal material scattered outside.

Burial Accompaniments: burial urn itself is a Sacasa Striated shoe-pot vessel with applique on the toe.

Comments: based on the presence of teeth, it would appear that one individual was located within the Feature 1 urn, while there were two individuals outside of the urn (refer to the profile for Unit A1 for more information).

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
041	1	<ul style="list-style-type: none"> • Longbone fragment
042	2	<ul style="list-style-type: none"> • Intermediate 3rd left phalange, hand, burned • RI¹, unworn; LM², very well-worn; LM₁, unworn
043	3	<ul style="list-style-type: none"> • RM₁, unworn; RM², well-worn; I¹, very well-worn • Turtle bone fragment • Distal tibia shaft; two fibula fragments, mid-shaft, right; longbone fragments • Cranial fragments; some burned fragments
044, F1	1	<ul style="list-style-type: none"> • Fragment of anterior proximal tibia shaft • Longbone and crania fragments
045, F1	2	<ul style="list-style-type: none"> • Possible ungulate mandible; bird longbone fragments • Cranial and longbone fragments • LM₁ • Distal phalange, hand
047, F1	3	<ul style="list-style-type: none"> • Proximal pollical phalanx, burned; intermediate phalange, left, burned • Left lateral tibia condyle, proximal portion burned; distal fibula shaft; longbone fragments • Unidentified premolar; LP₄, slightly worn • Cranial fragments; fragment of internal acoustic meatus

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 3	MNI: 1	Period:
Unit: A2, A1	N532.5, E298/E297	

Burial Type: secondary urn burial.

Burial Accompaniments: lithic flakes.

Comments: Within the Feature 3 urn were three teeth. Around the urn were longbone fragments and faunal remains, and three human teeth. The burial urn was fragmented, and extended approximately 3 cm unit A1. The urn was a (????), round vessel. There was a cobble near the northwestern section.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
011	1	<ul style="list-style-type: none"> • LM² • longbone fragment
012	2	<ul style="list-style-type: none"> • Tooth fragments • RM² with cavity
013	3	<ul style="list-style-type: none"> • Left bird femur; bird bone fragment • Upper molar, worn
014, F3	1	<ul style="list-style-type: none"> • Long bone fragments; burned bone • RM₁; M^{1 or 2}, half of; fragment of unknown molar
015, F3	2	<ul style="list-style-type: none"> • Fragments of molar; fragments of upper molar • Longbone fragments; burned femur/tibia fragment • Crania fragments • Non-human tooth fragment
017, F3	3	<ul style="list-style-type: none"> • I¹, well-worn; M₂ with cavity; one well-worn and fragmented molar

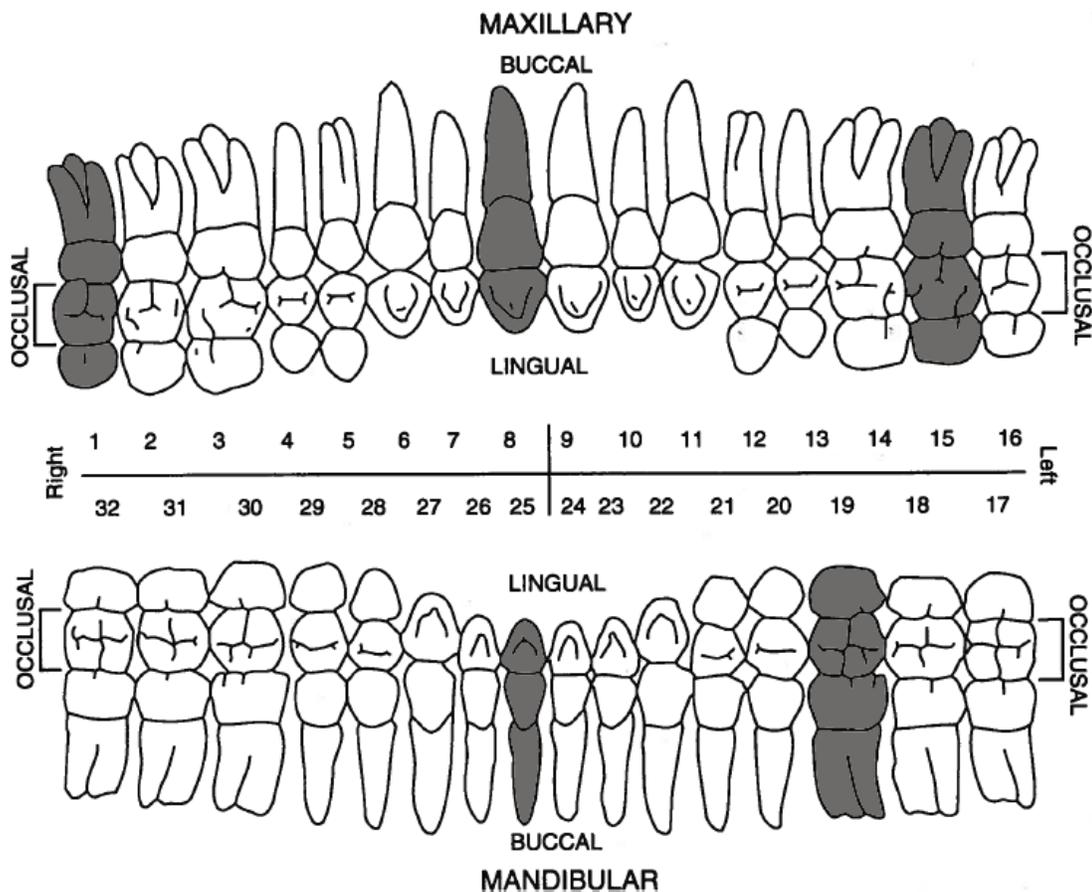
Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 4	MNI: 1	Period: Sapoá
N534, E300		

Burial Type: secondary urn burial.

Burial Accompaniments: Faunal materials found within the vessel include a deer tibia, an unidentified thoracic vertebra, a fish vertebra, and turtle bone.

Comments: Large cobble found within the vessel, alongside a fairly intact deer tibia that extended out of the back of the vessel to the north. Skeletal remains were highly fragmentary, with cranial fragments (including a portion of a parietal bone with possible hyperostosis), the head of an ulna, and a hand phalange identifiable.

Diagrams:



B. 0.2 Identified adult teeth found within Feature 4.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements

061	4	<ul style="list-style-type: none"> • Crania and longbone fragments
063, F4	2	<ul style="list-style-type: none"> • Crania fragments; fragments of parietal bone, with possible porotic hyperostosis • Faunal thoracic vertebra • Fragment of tooth; LM², well-worn; RM³; lower incisor
064, F4	3	<ul style="list-style-type: none"> • Small fish vertebra; medium sized mammal vertebra; large portion of a deer tibia shaft; turtle bone • Burned bone fragments, crania, longbone, spongy • LM₁, unworn; RI₁, small amount of wear; RI¹; I²; unidentified lower molar • Right intermediate 2nd phalange, hand • Left ulna head without shaft

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 5	MNI: 2	Period: Sapoá
N533, E300		

Burial Type: secondary urn burial.

Burial Accompaniments: burial vessel is Sacasa Striated. Stone spindle whorl found in level 5. Smaller vessel found inside (#077).

Comments: This burial is highly fragmentary, with portions from at least two individuals represented. This number is based on the presence of fully developed and worn permanent dentition alongside a deciduous mandibular second molar. This tooth and skeletal remains of small-sized long bones, including tibia and radius, indicate the presence of a child.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
071, F5	1	<ul style="list-style-type: none"> • Small tibia, distal portion; longbone fragments • Irregular bone fragments
072, F5	2	<ul style="list-style-type: none"> • Fragment of small radius; femur fragment; burned bone fragment; fibula fragment • Intermediate hand phalange • Burned spinous process and right inferior articular facet • One piece of worked human bone (three parallel grooves) • M^{1 or 2}, well-worn; RI₁, half of; RI₂, two caries • Fragment of bird bone
074, F5	3	<ul style="list-style-type: none"> • RP⁴; tooth fragment • Right lunate • Longbone, flatbone, and crania fragments • Bird femur
075, F5	4	<ul style="list-style-type: none"> • RM¹; lower molar with cavity; dM₂ • Crania fragments • Vertebra fragments • Metatarsal/metacarpal fragments

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 7	MNI: 1	Period:
Unit: A6	N532, E299	

Burial Type: feature 7 is the designation of a shallow burial urn located in the A6 Unit.

Burial Accompaniments: a small worked bone needle, a small fragment of flint, and mammal and bird remains.

Comments: materials within the urn vessel were scarce, however a piece of flint and a worked bone needle were present. Around the outside of the urn was where the majority of the skeletal material was located. Possible walking surface was located just east of the feature 7 urn, at approximately 64-67cm below datum.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
055, F7	1	<ul style="list-style-type: none"> • Small worked bone needle • Fragment of bird bone; small mammal bone fragments
052	2	<ul style="list-style-type: none"> • Crania fragment • Longbone fragment, possible tibia or femur
053	3	<ul style="list-style-type: none"> • Unidentified premolar; fragmentary lower molar; LM₁ • Longbone fragment
054	4	<ul style="list-style-type: none"> • Longbone fragment • Femur shaft, distal • C¹, well-worn; M₂, well-worn

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 8	MNI: 2	Period: Sapoá

Burial Type: secondary urn burial.

Burial Accompaniments: two ceramic sherds; one Papagayo Mombacho Incised, and one Potosi.

Comments: The vessel was oriented with the toe facing south, and was in line with a series of other shoe-pot vessels located in Operation 1. The main individual within the urn was a 10±2.5 year old that was placed within the urn in semi-articulated sections.

Complete Skeletal Inventory:

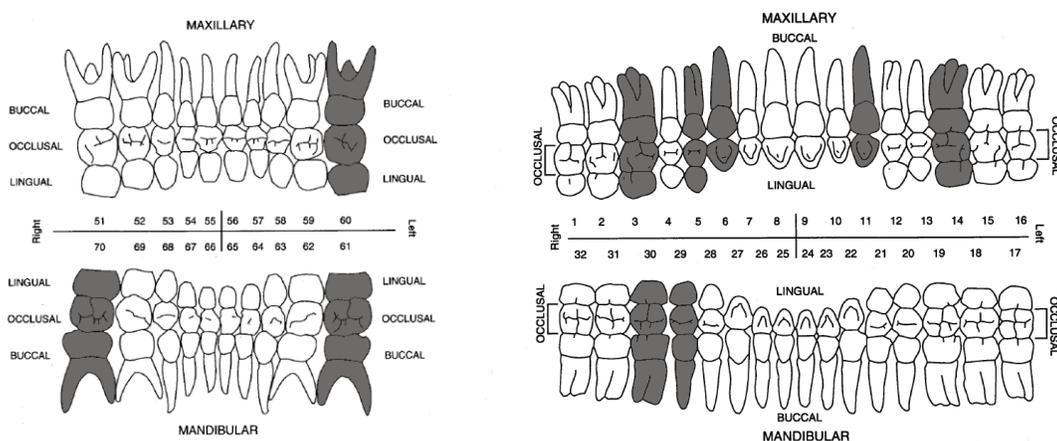
Bag Number, Unit/Feature	Level	Skeletal Elements
121	1	<ul style="list-style-type: none"> • RM³; • Crania fragments; internal acoustic meatus • Distal radius
122, F8	1	<ul style="list-style-type: none"> • Highly fragmented longbone, tibia; fibula fragments; longbone fragments • Turtle shell fragment • Burned bone fragment • Petrous pyramid fragments; fragment of left zygomatic process; fragment of temporal, mastoid partially intact; crania fragments • RP_{3 or 4}, still developing root; dM₂; C₁; RI and LI; LM₁ • Left 1st rib, no distal or proximal ends; rib fragments
124, F8	2	<ul style="list-style-type: none"> • Shaft of proximate humerus of small individual, five additional fragments; radius shaft; second proximate humerus shaft, with several additional fragments; fragment of a small scapula (acromium and blade); distal shaft of femur, likely left • Mandible fragments; foramen cecum area of frontal bone with frontal crest; fragment of supraorbital margin with sinus; frontal/parietal fragment; one occipital superior to hypoglossial canal • RM₁; RdM^{1 or 2}; LI²; RP³; RM³; RM²; RM¹
125, F8	3	<ul style="list-style-type: none"> • LM³; RM²; RdM¹; I^{1 or 2}; • Longbone fragments; tibia shaft fragment, distal end • Maxilla with teeth; fragments of secondary mandible; crania fragments; fragments of secondary mandible with teeth still embedded

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 10	MNI: 2	Period:
Unit: A7	N531, E299	

Burial Type: urn burial

Burial Accompaniments: Turtle bone and bird bone. Bead.

Comments: The MNI is based on the presence of a permanent first maxillary molar alongside a deciduous mandibular first molar, the later having a crown still in development. This indicates the younger individual was approximately 6 months \pm 3 months. The teeth associated with the older individual tended to be well-worn, which made identification more difficult. Some burned bone.
Diagrams:



B. 0.3 Left: Deciduous teeth associated with Feature 10. Right: identified adult teeth associated with Feature 10.

Adult Tooth Inventory:

Tooth	Total
Incisor	2 upper; 1 lower
Canine	2 upper; 1 unidentified
Premolar	P ³ or 4 RP ³ RP ₄ 5 unidentified
Molar	RM ¹ RM ₁ LM ₁ LM ¹ 4 unidentified
All	22

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
111	1	<ul style="list-style-type: none"> • Longbone and flat/irregular bone fragments
112	2	<ul style="list-style-type: none"> • RM¹; P^{3 or 4}; unidentified worn molar; RP³; RC¹; LdM₂; LM₁; I₁ • Ungulate tooth fragment; turtle bone; small bone, fish or bird
113	3	<ul style="list-style-type: none"> • RP₄; LC¹; unidentified premolar; unidentified lower premolar; LdM²; unidentified premolar; unidentified premolar; well-worn molar crown; I^{1 or 2}; worn molar crown • Burned longbone fragments • Right third metatarsal
114	4	<ul style="list-style-type: none"> • Unidentified canine, worn; RM₁ • Vertebra with centrum, thoracic or lumbar; rib fragments; vertebra fragments • Longbone fragments • Bird scapula
115, F10	1	<ul style="list-style-type: none"> • Longbone and flatbone fragments; cranial fragments • LM¹; RdM₂ still developing; badly worn molar crown
117, F10	2	<ul style="list-style-type: none"> • Burned longbone • I^{1 or 2}, half of; worn premolar with tarter • Humeral shaft, small; longbone fragments; flat and irregular bone fragments
118, F10	3	<ul style="list-style-type: none"> • Longbone fragment • Cranial fragments; internal acoustic meatus
119, F10		<ul style="list-style-type: none"> • Longbone fragment • Two turtle bone fragments

Site: El Rayo	Locus: 3	Operation: A
Burial: Feature 11	MNI: N/A	Period: Sapoá
N534, E301		

Burial Type: secondary urn burial.

Burial Accompaniments: some small lithic materials, and ceramic sherds.

Comments: this burial was highly fragmented with no identifiable skeletal material.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
151, F11	1	<ul style="list-style-type: none"> • Longbone fragments
153	1	<ul style="list-style-type: none"> • Longbone and crania fragments
154, F11	2	<ul style="list-style-type: none"> • Longbone fragments

Site: El Rayo	Locus: 3	Operation: A
Unit: A3 and A4	MNI: 1	Period:
N532.5, E295/296		

Burial Type: unknown

Burial Accompaniments: N/A

Comments: This represents scattered and fragmented human skeletal remains alongside the remains of a likely modern butchering event.

Complete Skeletal Inventory:

Bag Number, Unit/Feature	Level	Skeletal Elements
021, A3	1	<ul style="list-style-type: none"> • 1 human femur fragment
022, A3	2	<ul style="list-style-type: none"> • Bovine talus/astragalus (R) with cut marks, and two additional mammal bone fragments
023, A3	3	<ul style="list-style-type: none"> • 1 human distal radius shaft (~2cm) and possible fibula fragment
031, A4	1	<ul style="list-style-type: none"> • 2 human crania fragments
032, A4	2	<ul style="list-style-type: none"> • 1 femur shaft fragment. Modern bovine tooth
033, A4	3	<ul style="list-style-type: none"> • LM² and 1 unidentified bone fragment. Large ungulate bone.
034, A4	4	<ul style="list-style-type: none"> • Cranial fragments
035, A4	5	<ul style="list-style-type: none"> • Several fragments of cow teeth

Mortuary Data from El Rayo 2009/2010

This information is summarised and adapted from Wilke (2012).

Location/Burial #	MNI	Time Period	Notes	Accompaniments
Locus 1, Operation 1, Burial 1	4	Sapoá	Three Sacasa Striated urns with remains within, and scattered remains outside. Individual 4-1 was 18-35 y/o.	Sacasa Striated shoe pots; Madeira Madeira bowl; volcanic rock; chert core; one earspool; one pendant; Rivas Red pot.
Locus 1, Operation 2, Burial 2	1	Sapoá	Individual 29-1 was 18+ y/o, within vessel. Scattered remains outside of vessel.	Papagayo Mandador tripod vessel; white-slipped bowl; Rivas Red bowl.
Locus 1, Operation 2, Burial 3	4	Sapoá	Individual 3-1 was 18-30 y/o; Individual 3-2 was 30-40 y/o; Individual 3-3 was 6 mnths +/- 4 mnths. Aged individuals within single Sacasa Striated shoe pot. Fragmentary remains in second Sacasa Striated urn.	Two Sacasa Striated shoe pots; large lance point; Pataky perform vase; Rivas Red bowl; six small vessels within larger shoe pots; Papagayo Alfredo bowl.
Locus 1, Operation 2, Burial 4	2	Transition b/t Bagaces-Sapoá	Individual 35-1 was 3-15 mnths. Individual 35-2 was 30-40 y/o. Both in a single burial urn.	One Sacasa Striated effigy vessel; one Rivas Red effigy vessel; one Plain Monochrome Vessel.
Locus 1, Operation 2, Burial 5	1	Unknown	Individual 25-1 was 18+ y/o. Within urn.	Red Rim burial urn; White-Slipped tripod; 72 turtle bones; spindle whorl.
Locus 1, Operation 2, Burial 6	1	Sapoá	Individual 17-1 was 18+ y/o.	Unidentified urn; 38 turtle bones.
Locus 1, Operation 2, Burial 7	2	Bagaces	Extended burial. Crania and articulated long bones. Primary positions.	Stone mano; ceramics.
Locus 1, Operation 3, Burial 8	2	Sapoá	Individual 5/7-1 was 6.5 +/- 1 year. Individual 5/7-2 was 18+ y/o.	Sacasa Striated shoe pots and olla; volcanic bolstering rocks; four lithic points; three ear spoons; basalt core; 25 whole net sinkers; eight

				broken net sinkers; 100+ ceramic beads.	
Locus Operation Burial 9	1, 4,	1	Sapoá	Individual 31-1 was 2 +/- 1y/o.	Sacasa Striated shoe pots; Castillo bowl; Plain Monochrome bowl; a complete hunchback figurine.
Locus Operation 1, Burial 10	2,	1	Transition b/t Bagaces- Sapoá	Individual 44-1 was 40+ y/o and likely a female. Semi-flexed primary burial.	Greenstone fragment.
Locus Operation Burial 11	2, 1,	1	Bagaces	Individual 26-1 was 30-40 y/o, and likely a male.	Two Rivas Red bowls; Tola Trichrome vessel; a bone bead; fragment of ear spool; expedient scraper; utilized flake.
Locus Operation Burial 12	2, 2,	1	Bagaces	Individual 43-1; unknown age/sex.	Expedient biface.
Locus Operation Burial 13	2, 4,	1	Bagaces	Individual 45-1. Fetus in utero.	N/A.
Locus Operation Burial 14	3, 2,	2	Transition b/t Bagaces- Sapoá	Individual 40-2 was 18-30 y/o. Individual 40-1 was 3.5 +/- 1 y/o. Some additional commingled remains.	Jaguar tooth pendant; two bone weaving picks; ceramic ocarina; Pataky composite silhouette; bottom portion of Pataky periform jar.
Locus Operation Burial 15	3, 2,	2	Sapoá	Individual 32-1 was 30 mnths +/- 3 mnths. Individual 32-2 was 15-18 y/o. Disarticulated group.	Net sinker; fragment of ceramic bird figurine; copper bell; Plain Monochrome olla; Papagayo Mandador; Pataky vessel.
Locus Operation Burial 16	3, 3,	>4	Sapoá	Individual 33-1 was 30 mnths +/- 6 mnths. Individual 33-2 was 8 +/- 1 y/o. Individual 33-2 was 18-25 y/o. Individual 33-3 was 30-50 y/o. Commingled and burned bone recovered.	12 Sacasa Striated shoe pots; large rocks within the vessels; lithic blade; tripod grinding stone; bone weaving pick; two ear spool fragments; five stone tools; one ceramic bead. Large round vessel; fragmented claw pendant; fragmented net sinker.

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