

Université de Montréal

**Social identities and Isotopic Analyses of the Burials from
the Archaeological Site of Ucanal, Petén, Guatemala**

par Yasmine Flynn-Arajdal

Université de Montréal, département d'anthropologie
Faculté des arts et des sciences

Mémoire présenté
en vue de l'obtention du grade de maîtrise
en Anthropologie
option Archéologie

Juin 2019

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Résumé

Avec les avancées des deux dernières décennies en matière d'analyses isotopiques, les chercheurs étudiant l'ère mayas ont conclu que les sociétés Précolombiennes étaient beaucoup plus mobiles qu'anticipées, bien qu'elles étaient des sociétés sédentaires agricoles avec de grands centres. Les études isotopiques, particulièrement le strontium et l'oxygène, nous permettent d'identifier la présence de migrants à l'aide de la signature géochimique des dents issues des sépultures retrouvées. Les isotopes de strontium présents dans l'environnement sont absorbés par le corps humain et reflètent la géologie particulière du lieu d'habitation d'un individu lors de l'enfance, alors que les isotopes d'oxygène en reflètent les précipitations. Le site archéologique d'Ucanal dans la région de Petén au Guatemala a révélé douze sépultures dans les saisons 2016 et 2017 de fouilles archéologiques. Sur les douze sépultures étudiées, trois individus se sont révélés être possiblement nés à l'extérieur du site. Ces individus mettent au jour deux moyens qu'ont les étrangers de s'impliquer dans leurs terres d'accueil. Ensemble, les analyses isotopiques, les restes humains et les traitements funéraires suggèrent un traitement hostile des étrangers, sous la forme du sacrifice humain et à l'opposé, un traitement particulier en lien avec le culte des ancêtres où les étrangers sont célébrés et commémorés comme fondateurs.

Mots-clés : archéologie, Maya, identités sociales, migration, isotopes, sépultures, bioarchéologie.

Abstract

With the advances in isotopic analyses over the last two decades, scholars working in the Maya area have come to realize that Pre-Columbian people were much more mobile than previously considered, even though many were sedentary agriculturalists with large urban centers. Isotopic analysis of strontium and oxygen of human teeth enables us to identify the presence of migrants since they reflect geochemical and climatic variability of where a person lived as a child. Twelve burials from the archaeological site of Ucanal, in the Petén region of Guatemala, were analyzed for strontium and oxygen isotopes. In addition, a strontium baseline study of faunal remains was undertaken to identify typical values for the Ucanal region. Out of the twelve burials, three individuals were identified as likely foreign-born. Interestingly, they underscore two different ways in which foreigners were implicated in their newly founded homelands. Together with analyses of the human remains and burial contexts, the isotopic results highlight potentially hostile treatment in the form of human sacrifice or potentially reverential treatments in the form of a cult of the ancestors in which foreign peoples were remembered as important founding ancestors.

Keywords: Archaeology, Maya, social identities, migration, isotopes, burials, bioarchaeology.

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Abbreviations

PAU: Proyecto Arqueológico Ucanal

For Abdelhak Arajdal, my father and inspiration.

Acknowledgements

A project like this one would not be possible without the help of many people. First and foremost, my advisor Christina Halperin. Thank you for your counsel, and your constant encouragements. You are more than a professor to me; you are a mentor and a role model. Thank you for believing and never giving up on me. Thank you for your knowledge, you are a true inspiration.

I want to thank Jean-Francois Hélie, my codirector for taking part in this project. I admire your patience and willingness to cooperate with other disciplines to make science better for all.

André Poirier, thank you for your support and your help, my project would not be the same without you.

Katherine Miller Wolf you are another mentor and role model I am fortunate to have such an incredible bioarchaeologist willing to share her knowledge with me. Thank you for taking the time, in your incredibly busy life to teach me.

I also want to thank Carolyn Freiwald, your knowledge of the isotopic question in Mesoamerica was so valuable. Thank you for sharing some samples and data with me.

I want to thank the president of the jury, Isabelle Ribot for her help and comments.

A special thank you to the Instituto de Antropologia e Historia of Guatemala for enabling this research and for their collaboration.

To the best lab partner, Jean-Baptiste Lemoine, you know this project would never have seen the light of day without your support and friendship. You are forever the man of my academic life.

A big shout out to Jose and Andre for collecting the samples with me. Thank you for stepping in the mud, collecting dirty snails and driving on dusty roads with me.

Finally, I want to thank my friends and family. I want to thank my parents, Linda Flynn and Abdelhak Arajdal. I am lucky to have such support from loving parents Thank you for always feeding my curiosity and for shaping who I am as an adult. My main inspiration for this

project was the story of migration that both my father and my mother's family went through to ensure that we had the best possible future. I hope this makes you proud.

Dereck Pip Dubois, my love and my rock. Thank you for always being there for me, you help me grow everyday. This project would not be possible without you.

Anne-Marie, a girl cannot go in life without a best friend. And tea... a lot of tea.

My final thank you goes to Jason Dubois. No one can comfort me better than you.

Introduction

The Pre-Columbian Maya were highly mobile even though they were sedentary agriculturalists and built large urban centers over the last three thousand years. This mobility may have been more pronounced in time of political stress or climatic changes. The Terminal Classic period in the Maya era (ca. 830-1000 AD), in particular, was a time of tremendous political and climatic changes (Halperin and Garrido, 2016). Royal dynasties began to stop erecting stone monuments and numerous settlements declined in population or were abandoned.

Nonetheless, the Maya city of Ucanal, from Petén, Guatemala, seems to have flourished during this time, taking advantage of the power vacuums left by larger polities. New constructions were added to the residential and monumental landscape. Objects traveled from afar to find themselves in the archaeological record of Ucanal. Obviously, objects do not travel on their own, we can thus expect individuals to have migrated from allied polities to Ucanal at this period. For several decades now, archaeologists have conducted isotopic analyses to study migration. Such analyses involve the comparison of isotopic values from human teeth with those of a region's baseline.

Migration is almost always a life changing experience that affects, for best or for worst, the individuals who are uprooted. The first objective of this thesis was to explore the presence of migrants at the site of Ucanal through isotopic analyses. Twelve burials excavated from the Proyecto Arqueológico Ucanal between 2016-2017 were analyzed for strontium and oxygen isotopes. In addition, faunal remains were collected along a roughly 90 km north-south transect bisecting the site of Ucanal to create a local baseline strontium signature for the region, a dataset that was not previously available.

The second objective was to look at social identity through the lens of human migration. Are the migrant individuals treated differently from the local population? Is migration a positive experience at the site of Ucanal? To better understand the social identity of the individuals sampled, age, sex, social status, body modification and burial treatment were considered alongside the isotopic data.

The structure of this study is as follows: the first chapter provides a background to the chronology of the Maya period. The second chapter focuses on the geology and the climate of the Maya area to situate the site of Ucanal and provides a review of the research conducted at

this site since the rediscovery of Ucanal in 1903. The third chapter dives into the isotopic background research in Mesoamerica and the theoretical concepts of migration and social identity as related to burial treatment and human osteology. Chapter 4 presents the materials used for this research: the burials excavated by the Proyecto Arqueológico Ucanal. Chapter 5 looks at sampling and isotopic analyses methods. Chapter 6 presents the results of the isotopic analyses with interpretations of the possible place of origin for the identified migrants. Finally, the seventh chapter discusses the identity of migrants and local individuals from Ucanal as understood from the burial contexts, burial treatments, and human osteological indicators. The conclusion brings forth future avenues of research about the question of social identity in the Maya area.

Chapter 1: Chronology of the Maya area

Although there is no standard chronology used by all the scholars studying Mesoamerica, Antonia Foias (2013)) presents a chronology that matches the one used by the experts and archaeologist at Ucanal and will be used in this work (Table 1).

Table 1: Pre-Columbian chronology of the Maya region

Archaic 3400–1800 BC
Early Preclassic 1800–900 BC
Middle Preclassic 900–300 BC
Late Preclassic and Terminal Preclassic-Protoclassic 300 BC–250 AD
Early Classic 250–600 AD
Late Classic 600–800 AD
Terminal Classic 800–950 AD
Early Postclassic 950–1200 AD
Late Postclassic 1200–1542 AD

Rosemary Joyce describes the chronology as follows: “The Classic period was seen as the development of highest cultural value or complexity. Every period either led up to this peak (from Archaic beginnings, though Preclassic or Formative progressive development) or fell away from it (the Postclassic)” (Joyce 2004, 14). It is important to briefly describe all the periods to better understand the world that shaped Ucanal.

The Archaic period was a time in which social groups living in Mesoamerica consisted of mobile clans of hunter-gatherers-horticulturalists. The impressive Mayan cities as we know them and the hierarchy that comes with it were not yet established. The hunter-gatherers domesticated plants like maize and manioc and created exchange networks of obsidian between them (Joyce 2004, 30). These exchange networks formed repetitive contacts that seems to be the turning point in the evolution of complex Mesoamerican cultures and gave birth to what the archaeologist call the Preclassic period.

The Preclassic (or Formative era) is defined by the birth of social inequalities and the creation of cities where people would live permanently: « (...) the transition from egalitarian

societies to those with hereditary inequality and complex forms of social and political organization must have taken place sometime between the end of the Late Archaic and the beginning of the Middle Formative (...)» (Blake and Clark 1999, 57). Indeed, the first plazas and ballcourts were built during this period, and these features were found throughout many of the other regions of Mesoamerica. Between 900 and 700 BC, temples and E-groups, were emerging in Petén (Foias 2013). E-Groups are characterised by a radial pyramid or platform on the west facing a long rectangular building with three temples on a north south axis to the east of the radial pyramid. Together, they form an architectural group used for astronomical observations, in some cases, and that reflects monumentality and the focus of public ritual in the Maya world (Aimers and Rice 2006, 79). According to Foias, the Late Preclassic marks the birth of the first states in Southern Maya Lowlands, with sites like El Mirador as one of the first capitals in the region (Foias 2013, 9).

The changes that distinguish the Preclassic and the Classic periods in the Maya area are the introduction of writing and written manifestations of the calendar inscribed on public monuments, and the focus of public art on the ruler (Foias 2013, 11), although these characteristics are sometimes found in the Late Preclassic period (Joyce 2004, 16). It is important to keep in mind that most chronologies used by archaeologists are modern conceptions and reflect general temporal boundaries identified in hindsight. Nonetheless, one thing is clear, the Classic period was one of great turmoil. Pronounced social inequalities were on the rise in a changing political landscape where new centers emerged across the Maya area. Royal tombs became more and more numerous due to the increasing degree of social hierarchy. The relations between polities became clearer with an increase in epigraphic texts, which detail the movement of royal peoples to establish dynastic rule in new lands (like in the case of *K'inich Yax k'uk' Mo'*, first ruler of Copan) and of royal princesses that were married to elite men from other regions (Price et al. 2010).

The Late Classic seems to be a logical continuum in the chronology: “The transition between the Early and Late Classic periods across the Maya region exhibits major continuities. Although pottery styles changed, and these are the critical archaeological markers of the onset of the Late Classic (AD 600–800), social, economic, and political institutions appear to have continued mostly unchanged” (Foias 2013, 13).

But during this period, growing numbers of elite groups changed the political landscape of Mesoamerica. Monuments and texts once reserved for royal families became appropriated by noble peoples and small sites under the governance of larger polities. In some cases, smaller sites declared their independence from their overlords to establish their own kingdoms. This political fragmentation was a part of growing trends into the Postclassic period, what many call the Classic Maya “collapse” (Foias 2013, 14).

The very concept of collapse is at the heart of many debates amongst Mayan scholars. (McAnany and Yoffee (2009)) ask the question: do societies fail or just change? Can one actually talk about collapse when millions of people still call themselves Maya today? As McAnany and Negrón (2009) say:

“Certainly, total systemic failure makes a more dramatic plot-line, but with a descendent community of several million people, it is hardly an accurate assessment and is even denigrating to descendants who read that their ancestors “died out» in the tenth century and that they are not related to the Classic Maya who built the cities- now in ruins- on which a mega-million dollar tourist industry has been built” (McAnany and Negrón 2009, 143).

Some even say that the Postclassic was not a period of decay as previously thought, but rather an expansion of the social and economic spheres of society to the detriment of the religious sphere seen in the Classic period (Sabloff 2007).

Study area

The Maya area extends from southern Mexico to Honduras, and from Guatemala to Belize and El Salvador (see figure 1). given the expanse of the region, scholars have divided the landscape in different regions, separating the (southern and northern), and the Pacific coast (see figure 2).



Figure 1: Google Earth map of the Maya region and the location of Ucanal (Halperin and Garrido 2014: Fig. 1)

The site of Ucanal is located in the southern lowlands of north-eastern Guatemala, in the department of Petén. This department is the biggest and northernmost of all twenty-two administrative districts of Guatemala. It is well known as the home of several impressive archaeological sites such as Tikal, Piedras Negras, Uaxactun, El Mirador and Yaxha. It is also where the site of Ucanal is located at UTM N1864187.4 E248171.09, next to the border that separates modern Guatemala and Belize (figure 2).



Figure 2 Map of the Maya region, (adapted by Halperin from Satellite map, NASA-JPL-Caltec PIA03364) (Halperin and Garrido 2019, fig.1)

Chapter 2: Geology and Climate of the Maya area

The presence of a significant amount of geologic variability in the Maya area makes the region an attractive one for isotopic analyses (Hodell et al. 2004, 585). Since strontium 87 (^{87}Sr) is obtained by the decay of rubidium 87 (^{87}Rb), its variation is directly associated with the age of bedrock formations. The older the formation, the higher the strontium ratio ($^{87}\text{Sr}/^{86}\text{Sr}$) value. Strontium is an element of the periodic table with four isotopes present in different ratios: $^{88}\text{Sr}=82.53\%$, $^{87}\text{Sr}=7.04\%$, $^{86}\text{Sr}=9.87\%$ and $^{84}\text{Sr}=0.56\%$. The values used in archaeology is the ratio of ^{87}Sr to ^{86}Sr and is always close to 0.7 (Hodell et al. 2004). The decay of ^{87}Rb to ^{87}Sr has a half-life of 4.8×10^9 years. At such a geological scale, changes are imperceptible in a lifetime, even if the sample is prehistoric (Freiwald 2011, 68), and thus serves as a feasible proxy for provenience analysis of human remains.

The Maya area can be separated in five different geologic regions with diagnostic geological strontium signature identified in each one (Hodell et al. 2004). These regions are as follows: The Northern Lowlands with a mean value of 0.70888 ± 0.00066 , the Southern Lowlands (where Ucanal is situated) at 0.70770 ± 0.00052 , the Volcanic Highlands and Pacific Coast with the lowest mean value of 0.70415 ± 0.00023 , the Metamorphic Province situated around 0.70743 ± 0.00572 and the highest mean values are located in the final region, the Maya Mountains of Belize with 0.71327 ± 0.00167 (Hodell et al. 2004).

Geology of the Lowlands and of the Maya Mountains of Belize

In general terms, it is possible to predict a trend in the baseline strontium data by looking at the geology of the Maya Lowlands. In the north, the Yucatan Peninsula is characterised by a carbonate platform with outcropping marine limestone (Hodell et al. 2004, 588). In the northern part of the coast, one can find Pliocene-Pleistocene deposits and moving inland into northern Yucatan the deposits consists of Miocene limestone (Hodell et al. 2004, 588). The northern central Yucatan has Eocene limestone whereas the limestone from northern Guatemala and Belize are from the Paleocene the Cretaceous (Hodell et al. 2004, 588). As for the Maya Mountains of Belize, Hodell identified Late Paleozoic sedimentary rocks as well as Volcanic rocks, which foreshadows higher $^{87}\text{Sr}/^{86}\text{Sr}$ values (Hodell et al. 2004, 588). Thus, we expect to

see a general increase of the $^{87}\text{Sr}/^{86}\text{Sr}$ values from north to south inland, but with some overlapping on the coast, because the younger marine carbonates to the north are more radiogenic than the oldest from the south (see figure 3).



Figure 3 Map of $^{87}\text{Sr}/^{86}\text{Sr}$ of the Maya area (Price, Tiesler, and Freiwald 2019, fig:4)

Climate of the Maya Lowlands

The Yucatan Peninsula where lies the Maya Lowlands is comprised in the zone between 16°N and 21°N . This is an area where both temperate and tropical air masses articulate, making it prone to climate change (Dahlin 1990, 245). The Maya Lowlands are warmer and receive

more rain on a yearly basis than the drier, cooler Highlands with an average of 1600 to 2000 mm per year at the base of the peninsula (Dahlin 1990). The precipitations coming from the coast decrease from east to west as it moves inland in the Lowlands (Joyce 2004, 13). These heavy rainfalls create the semi-tropical rain forest that characterise the lowlands, the eastern Yucatan peninsula and the gulf coast of Mexico (Joyce 2004, 13). The forest zone in these areas are known for their high canopies and high density resources, but the Lowland Maya were able to acquire through trade plants such as nopal and maguey, bird feathers, especially from the quetzal, and volcanic rocks such as obsidian whose source locations are in the Highlands (Joyce 2004, 14). These Highland luxury goods were traded in exchange for cacao, jaguars, crocodiles, monkeys and marine resources such as salt, shells and stingray spines (Joyce 2004, 14).

While the Lowlands is considered a relatively wet environment, it is not immune to drought. The Yucatan peninsula (which encompasses The Mexican states of Yucatan, Quintana Roo, and Campeche, as well as Petén, Guatemala and large parts of Belize) for example saw three distinct periods of climate change in the last 3000 years (Curtis, Hodell, and Brenner 1996). Curtis and colleagues identify multidecadal cycles of wet-dry climate: period I ranges from approximately 1590 calibrated years B.C. and 280 calibrated years A.D., period II which corresponds to the period between 280 and 1080 calibrated years A.D. and finally, the third period (period III) ranges from roughly 1080 A.D. to the present using biogenic oxygen isotopes (gastropods shells and ostracod valves) to infer climate change (Curtis, Hodell, and Brenner 1996, 41). The low $\delta^{18}\text{O}$ mean values of the first period correlates with wet conditions, whereas the increase of about 0,6 ‰ in the mean $\delta^{18}\text{O}$ values that characterise the second period reveals a dryer climate (Curtis, Hodell, and Brenner 1996). This more arid climate coincides with the period of decline of the Maya during the Terminal Classic, a period in which Ucanal was thriving.

Ucanal

Bordering the Mopan River, the site of Ucanal is located in a strategic location with easy access to neighboring sites like Naranjo, Caracol, Xunantunich, Buenavista and many more (Martin, Grube, and Wilkinson 2000, Laporte and Mejía 2002, Corzo, Alvarado, and Laporte 1997).

Ucanal was occupied from the Middle Preclassic to the Early Postclassic period. Ucanal is important because it flourished in the Terminal Classic period (ca. 830-1000 AD), a time when the surrounding polities were declining.

Previous investigations done at the site

The first modern record of the site of Ucanal comes from a 1908 map, where Teobert Maler identified the site (Halperin and Garrido 2019). The second modern record comes from Robert Merwin, an archaeologist working with the Peabody Museum of Harvard University. Merwin visited the site in 1914 and documented the monuments whose field notes were published by Sylvanus Morley in 1937 (Graham, 1983). The site seems to have been forgotten until Ian Graham tried to relocate it unsuccessfully in 1967. At the time, the region had been badly damaged by a hurricane a few years prior. Graham finally found the location of the site in 1972 and documented the principal structures and removed several stelae and altars from Ucanal in order to prevent them from being looted and to better conserve them (Graham, 1983).

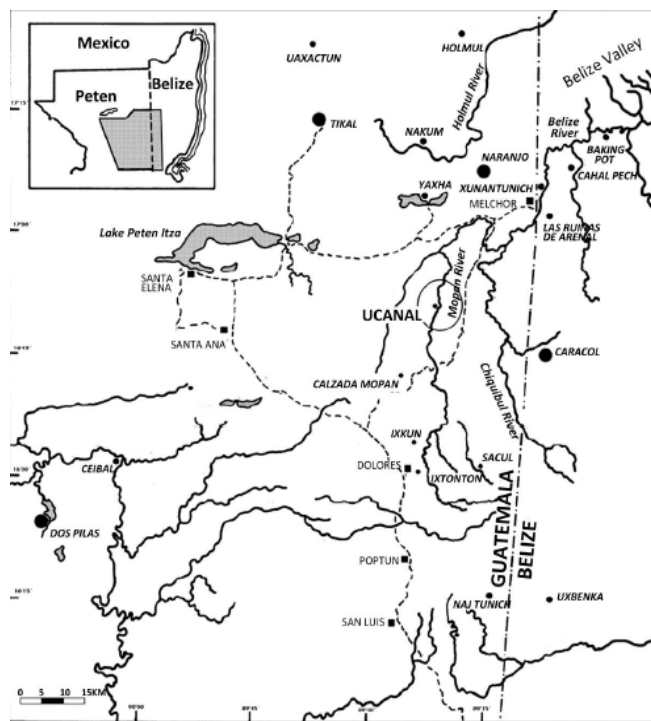


Figure 4 Location of Ucanal and neighboring sites (Halperin and Garrido, 2016, modified from Mejia, 2002)

Following this initial work, the Atlas Project, directed by Juan Pedro Laporte, conducted the first excavations at the site. In the late 1990s, the project created a new map of the site and its structures and conducted test pits in some of the plazas to make a new chronology. This research revealed that the occupancy of the site extends from the Middle Preclassic to the early Postclassic (Laporte 1998, Laporte and Mejía 2002). Interestingly, they also identified new public construction projects during the Terminal Classic such as the building of a ballcourt (A2 and A-3 in Group A), Temple-Pyramids (A-5 and A-12), as well as Structure A-6 (Halperin and Garrido In press, 5). Laporte's team also identified two canals between the urban core to Mopan River (Laporte et al. 2002). They also inventoried 18 stelas and 4 altars in addition to the monuments removed from the site by Graham (Corzo, Alvarado, and Laporte 1997). These altars revealed some of the political relations that Ucanal had with neighboring sites. The Altar 3 of Stela 3, Altar 1 and Stela 4 (see figure 5) all depict prisoners from the years 650 to 849AD (Corzo, Alvarado, and Laporte 1997). Ucanal is also mentioned in the monuments of other sites such as Sacul, El Chal, Ixkun, and Naranjo in Guatemala, as well as Caracol in Belize. For example, Altars 12 and 13 from Caracol represent *Papamalil* as the leader of Ucanal participating in a ritual with *Toob'il Yoatt* the leader of Caracol (Martin, Grube, and Wilkinson 2000, 97).

More recently, the Proyecto Arqueológico Ucanal (PAU), directed by Christina Halperin and Jose Luis Garrido, has been conducting investigations at the site. Since previous investigations focused largely on the site's stone monuments and elite sectors of the site, the PAU project was initiated to provide a more holistic perspective of Maya society. The first season of the project started in the summer of 2014, when the PAU crew mapped the site with total stations. This resulted in the creation of a new map outlining the structures and residential groups encountered during the season, which were later entered in a software program for 2D modeling (Halperin and Garrido 2014). The 2014 season of the PAU recorded an area totaling over 263,000 m² that included 143 structures, 36 architectural groups (70 structures and 22 groups were completely unknown to previous investigators of the site) that, when combined with the data from previous investigations, leads to 553 structures in 155 architectural groups on approximately 1.93 km² (Halperin and Garrido 2014). This first season also helped recognize a special type of architecture specific to the Terminal Classic period in the area: residential

groups with small, low sanctuaries at the center of the residential patio (Halperin and Garrido 2014)

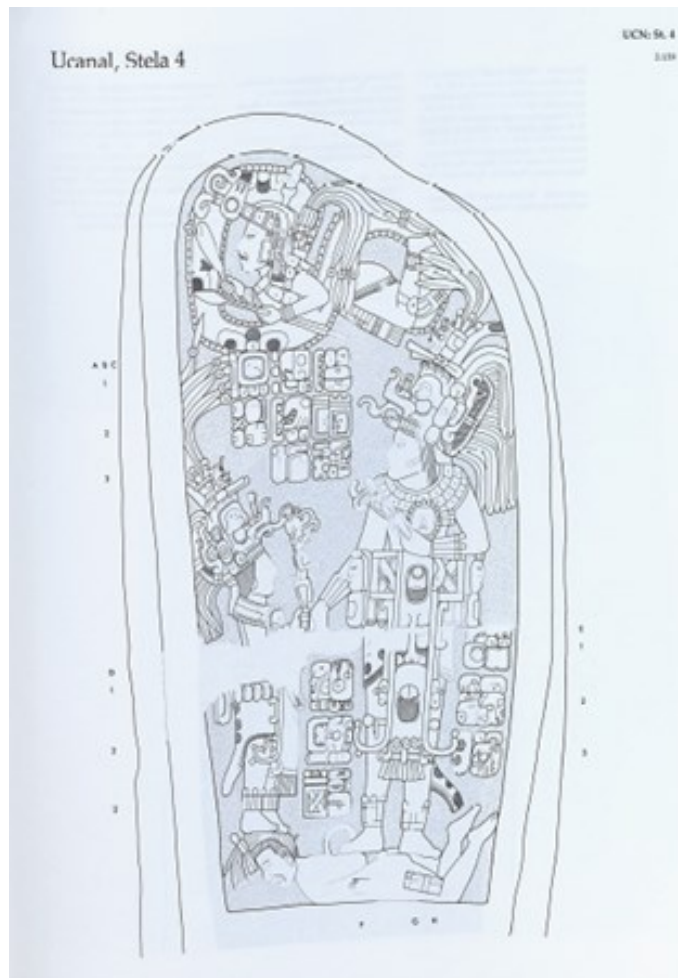


Figure 5 Drawing of Stela 4 from the archaeological site of Ucanal (Graham, 1983, figure 2:159)

Excavations by the PAU begun in 2016 and have continued every season since then to date. Excavations from 2016-2018 have focused on a cross-section of different social status groups, as identified by architectural group size, in order to examine the lives of both elites, middle-status, and commoner households (Halperin and Garrido 2014, 2018, 2017). This research further confirms that occupation remained stable between the Late Classic and Terminal Classic periods. In addition, the project identified three additional flood water canals. Excavations of the canals and one of the public causeways linking ceremonial architecture reveals that major construction projects were being undertaken during the Terminal Classic period. Mapping by the PAU to date reveals that the site is at least 7.5 square kilometers with a

dense nuclear located on an upland zone running north-south parallel to the Mopan River (figure 6) (Halperin and Garrido 2019).

The PAU has excavated a total of 17 architectural groups dating from the Preclassic to the Terminal Classic, seven of which have yielded burials: Groups 119, 130, 133, 139, 141, 150 and E (Cano, Thibodeau, and Flynn-Arajdal 2017, Cotom Nimatuj and Miller Wolf 2017, Halperin, Le Moine, and Flynn-Arajdal 2017, Mongelluzzo 2017). A total of fifteen burials have been recovered from these zones at Ucanal. These burials are described in Chapter 4.

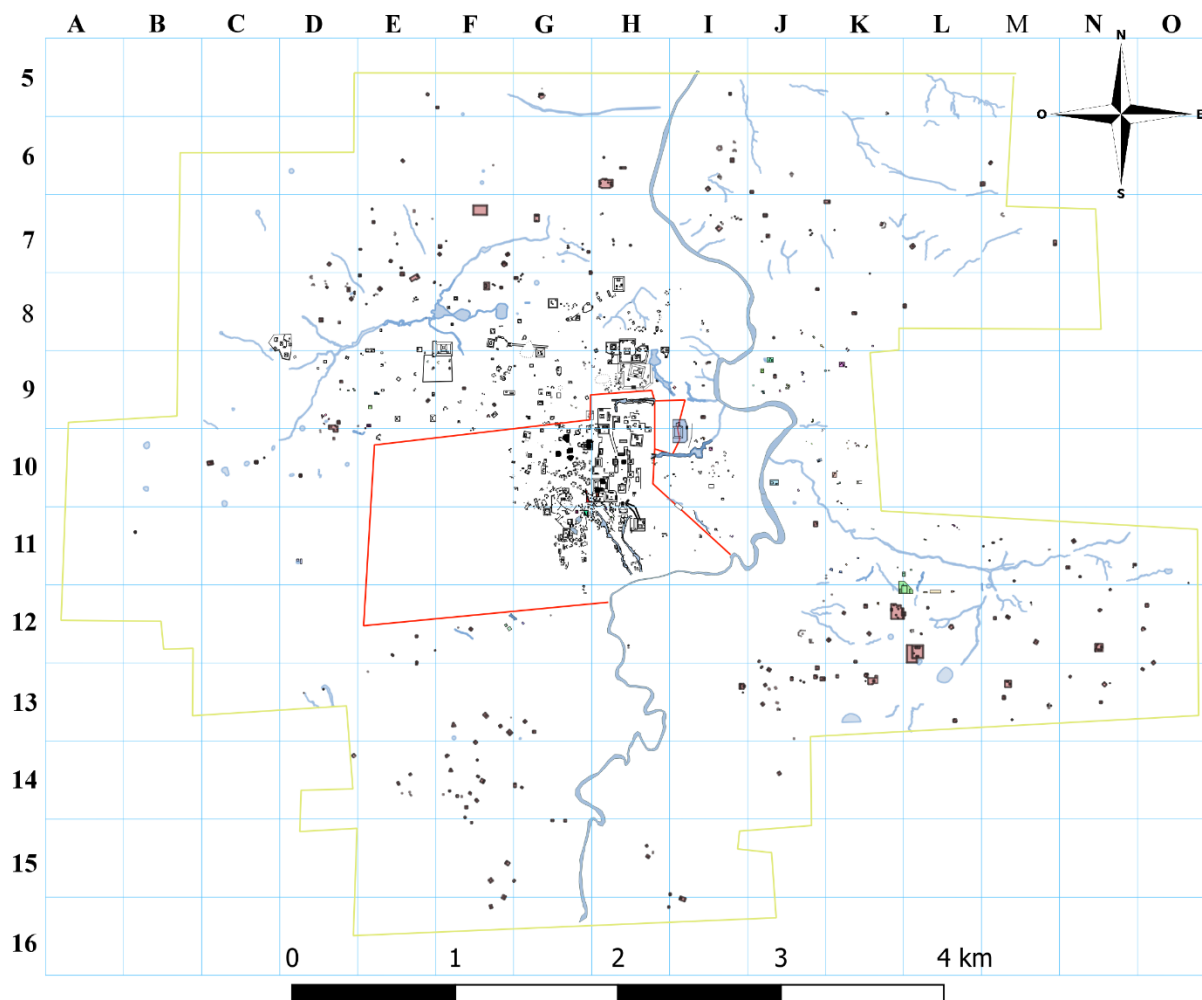


Figure 6 Map of the archaeological site of Ucanal (Le Moine, 2019: fig 7.19) where the limits of the National park are in red and the limits of the survey area are in beige.

Chapter 3: Theoretical background

Isotopic analyses have been employed to gather insight on identity in Mesoamerica. Strontium and oxygen isotopes have been conducted in a number of studies to look at the migration of commoners, sacrificial victims, and royalty. Elites sometimes migrated to new sites during their lives to establish new polities (one of the many examples is the case of the Copan dynasty see Price et al. (2010)). But commoners appear to have moved just as much, especially in times of political or climatic changes. Freiwald (2011) reported movement in the Belize Valley of both elite and commoner peoples, rich and poor, in the rise of new sites in the Belize political landscape like Esperanza and Floral Park as well as changes in the Xunantunich political landscape (Freiwald 2011). Many studies report population movement within and between various regions including Belize (Freiwald 2011, White, Longstaffe, and Law 2001, Wrobel et al. 2017), Guatemala (Wright et al. 2010, Wright 2005, 2012, Scherer, de Carteret, and Newman 2015), Honduras (Price et al. 2014, Price et al. 2010, Miller 2015, Miller Wolf and Freiwald 2018) and Mexico (White, Price, and Longstaffe 2007, Price et al. 2018, White et al. 1998, White et al. 2002, White, Longstaffe, and Law 2001).

Elsewhere in Mesoamerica, isotopic studies indicate that sacrificial victims were often born outside the regions where they were buried. Several examples of this pattern has been document at the large urban metropolis of Teotihuacan, revealing that the foreign experience with a new community a violent one (White et al. 2002, White, Price, and Longstaffe 2007, Spence et al. 2004). White and her colleagues demonstrated that the Moon Pyramid and the Feathered Serpent Pyramid of Teotihuacan both had their own sets of sacrificial victims coming from distinct regions with very few overlaps in the isotopic values. Foreigners were chosen for burial in the Moon Pyramid whereas both local and foreign soldiers were buried at the feathered Serpent Pyramid. Although many also had their hands tied behind their backs, it is theorized that they acted perhaps as symbolic protectors of the state (White, Price, and Longstaffe 2007). It is important to note that Teotihuacan holds a unique space in Mesoamerica, and its experience might not relate to the Maya experience.

Sometimes the outcome is positive, the migrant acclimates well, perhaps stays in the new location for the rest of his days, successfully starts a new life and a new lineage or dynasty

is underway. The founding father of the dynasty of Copan, *K'inich Yax K'uk' Mo'* appears to be a lord from Belize who moved from Caracol as a child and grew up in the central Petén, probably Tikal, before moving once more to Honduras to become the first king of Copan (Price et al. 2010).

One of the problems with isotopic analyses for identity studies is that the geographic scale of isotopic value change does not necessarily correspond with cultural conceptions of foreign and local. Individual from the same geologic region may be from separate polities and may correspond to different cultural groups. The contrary is also possible, an individual with a foreign signature, but coming from a site with close political ties, may have an easier transition than someone coming from a closer site with tenuous political or social relations. Furthermore, only first generations immigrants are discernible, which can obviously obscure a whole dimension of the social experience of migration.

Factors of identity

Isotopic analyses are thus a great way to provide insights on migration, but place of origin is only one way of looking at an individual's identity. Identity is multidimensional and constructed by a series of factors and actors. It is constructed around biological factors such as age and sex. Age is an important factor in identity, but also in the study of such a phenomenon. Children hold a special place in the Maya world because they are thought to reside in a liminal place between the world and the underworld (Ardren 2015, 84). It is also a liminal place between birth and the full time societal participating adult (Kamp 2001). For years scholars dismissed the importance of childhood in archaeology (Inglis and Halcrow 2018). Maybe because the traces of this period seem scarce in the material record, but nothing could be farther from the truth. Proof of children's participation in society include burial practices, skeletal remains, clothing and ornaments, toys etc. (Kamp 2001, 2). Furthermore, the place of children in past societies are often obscured by the western vision of childhood carried by the scholars studying them. If childhood is seen as a playtime today in the western world, it would be wrong to apply these standards to past societies. Children often participated in chores and other economic activities, were considered valued members of the community, and helped develop kinship and social networks (Ardren 2015, 84). Although ethnographic or ethnohistoric accounts of

childhood are not always accurate representations of children in the past (De Lucia 2010), they help provide a lens for archaeological investigations.

Age and sex

Children were sometimes buried with ornaments such as spondylus (*Spondylus princeps* or *Spondylus calcifer*) that aimed to link them to water and the other world (Freidel, Reese-Taylor, and Mora-Mann 2002). Kings and other members of the elite also wore spondylus shells to associate with the power of the sea (Ardren 2002). Because of their young age, children are believed to hold a connection to the sea, place of origin and source of life (Ardren 2015, 93) and an ability to contact the divine (Ardren 2011, 134). Water is a locus for symbolism in the Maya world. Cenotes and water reservoirs are a common place for rituals and sacrifices because water is seen as a gate to the underworld and an axis mundi (a pivotal point in the universe) (Isendahl 2011). Although the presence of child sacrifice in the epigraphic or iconographical record is not explicit, in the great cenote of Chichén Itza two thirds of the sacrificial victims recovered are sub-adults (Ardren 2011). This find is noteworthy because cenotes are viewed as the home of *Chac*, god of rain and water, who could bring death or grant life with the power of water (Ardren 2011, 140). The importance of water in Maya cosmology has been demonstrated elsewhere (Isendahl 2011, Lucero and Fash 2006, Brady and Ashmore 1999), but it emphasizes the importance of children in society.

Children are not the only ones who are wrongly forgotten in the bulk of Maya studies. The study of women in the past through the lens of a feminist archaeology only started in the 1980's with Conkey and Spector urging us to abandon the androcentric views often perpetrated in all academic disciplines, but most particularly in archaeology (Conkey and Spector 1984). The fact that until recently most ethnographers were male and thus had access to male informants on the field relegated the research to an androcentric vision (Conkey and Spector 1984, 4). It is within this framework that women are often pushed back to the realm of the private and domestic. They are seen as passive actors in everyday life and thus put aside when it comes to research questions. But women in the Maya area held a central place in some political structures, and three are recorded rulers: two at Palenque (Lady *Ol Nal* and Lady *Zac Kuk*), Mexico and the third one in Guatemala at the site of Naranjo (Lady six sky). Some Maya women were given the metaphorical appellation of woman warrior to connote their power and political

importance (Hewitt 1999). They are also taking an integral part of the economy by being the main producers of textile weaving and taking part in farming (Robin et al. 2006). Colonial records such as the Dresden Codex show women harvesting fields and planting maize and the Popul Vuh describes farming as ideally male and female work (Vail and Stone 2002). Weaving was probably a female activity in all of Mesoamerica (McCafferty and McCafferty 1991, Chase et al. 2008) and both commoners and elite women would be participating. Chase and Chase argue that the weaving of fine cotton textiles was “a female gendered prerogative that reinforces status distinctions and ritual associations as well as community or polity identity” (Chase et al. 2008, 130). Not studying women would be ignoring a whole section of the community and would diminish the understanding that one could have of it.

Cranial and body modification

One way to consider Maya identity is through the concepts of embodiment and body modification. Embodiment is the performance of self through the body. It refers to the cultural acquisition made by an individual and performed through the physical self. It is the connection between that embodied experience and the social aspect of identity that translates into body modification (Geller 2006). Identity is expressed through the body by objects like clothing, headdress, piercings and tattoos. Most of these expressions however are lost in time and invisible to archaeologists. Cranial and dental modifications are visible in the archaeological record and very common in all of the Maya area. Although different types of cranial modifications are present, standardizations of practices do exist, and two major types emerge: tabular and annular which are in turn divided in oblique or erect (Geller 2011, 243). The first studies on the question of cranial modification usually revolved around description and classification or on the impact of the modified cranium on one's health (Geller 2011, 242, Duncan and Hofling 2011, 1), but the meaning of these modification was rarely investigated. It is believed that the Maya would modify the head of their young to protect their souls and keep it in place (Duncan and Hofling 2011). This method was then necessary for socialisation, embodiment, protection and a sense of belonging. Geller links cranial modification to a “process of becoming”, a way to maintain an insider status (Geller 2011). If social identity was expressed by the modification of the cranium, it explains the prevalence of the methods in the Maya area.

Dental modification can fill the same goals and push the identity aspect even further. Cranial modifications are performed by the mother in the first years of the life of the individual and once the bones fuse together, the modification is static. Dental modification can occur numerous time in one's life and can mark a shift in identity (Geller 2006). Geller also mentions that the addition of modification on a dentition already modified could indicate a promotion from one social or religious position to another (Geller 2006, 288). Furthermore, dental modifications are accompanied by the aspect of pain contrarily to the cranial modification which are considered painless (Blackwood and Danby 1955). Pain can be used as a way to sacrifice a part of the self in order to gain access to a shared social universe (Morinis 1985). The types of dental modifications are plentiful (see figure 31 in discussion chapter). Williams and White in their study of the dental modifications of Lamanai, Belize, concluded that the regional differences in dental alterations represent affiliation to a local or regional political structure or kinship lineage (Williams and White 2006, 148). Although Geller argues that no such affiliation can be made (Geller 2006). In Mesoamerica women tend to have heavily modified teeth, more so than men at least in some sites (Geller 2006). The fact that the women of the assemblage have heavily modified teeth underscores their respected status in Maya society.

Burial treatment

Burial treatment is yet another way to look at identity. Welsh created a synthesis of Maya burials from the Lowlands in the 80's (Welsh 1988). This work enables scholars to have a look at the patterns at play in the funeral treatments of the deceased in the Maya Lowlands throughout time and space. Since the 1980s, similar studies have been conducted to update such identified patterns (Miller 2015, Novotny 2015, Plumer 2017, Fitzsimmons and Shimada 2011, Thompson 2005)

Burials in the Maya area are found in a range of architectural contexts, from caves to temples to residences (Welsh 1988). Cemeteries are generally absent from the Maya area and the dead were more often than not buried under or around the house. Rather than a simple graveyard, houses were then seen as communication ground with valued ancestors. A place where generations continued to interact. Ancestor veneration, or worship is practiced throughout the Maya area and is consistent with the internment of ancestors within the residential grounds (Barnhart 2002).

On multiple occasions, the bodies located in graves were revisited, moved, rearranged and sometimes part of an individual was moved to another location. This reflects the concept of partibility. This concept refers to the custom of burying “body parts in absence of a whole body, such as a lone finger, scattered teeth, a decapitated skull, or long bones crossed over each other” (Geller 2012, 117). Partibility is a concept where an individual is not considered by his or her body as a dividual person (Geller 2012) the Mayan body is partible, permeable and should be considered in relation to its surroundings (Duncan and Schwarz 2014).

Partibility serves a plethora of purposes, from veneration to desecration, from remembrance to forgetfulness (Geller 2012, 2014). The decapitation of an individual can be seen as an act of desecration (Duncan 2005), whereas taking a part of an ancestor’s body is seen as a way to maintain communication and revere this individual (Geller 2012, Duncan 2005). Sacrifice, as mentioned earlier, was common in the Maya world. Humans, like precious objects, were sacrificed to communicate with the gods, or as part of calendric events (Ardren 2011, Vail and Hernández 2007, Berryman 2007). Ancestor veneration and human sacrifice are sometimes hard to differentiate in the archaeological record. But both methods are linked to the possibility of connecting a part of the individual’s persona to a part of his physical body. They both connect with the relationship carried by the living with the dead through time.

Body orientation

The grave itself and the position of the body in the grave is also a valuable angle when looking at identity. In a region like the Maya Lowlands, where skeleton preservation is often poor at best, gathering information from many contexts is important. Geller insists that to understand mortuary practices, researchers should collect information on grave location, type, and architecture, grave goods and presence of other bodies (or body parts) (Geller 2012, 117). The orientation of the body is noteworthy when studying human burials because some positions are considered standard or common to the area and others are more unique. In the Maya area, buried individuals that lacks a concrete funeral context are often interpreted as having suffered an unnatural death (Tiesler 2007, Lucero and Gibbs 2007). Body orientation and funerary patterns are also paramount for the study of identity because specific rites, cultural customs and symbolism are rather hermetic and a non-member of a group may have difficulties accessing

this information (Weiss-Krejci 2006). For example, the prone position (buried face down) is often seen as a sign of a deviant burials because it is rarely seen in the archaeological record, that is outside of Belize (Weiss-Krejci 2006). Weiss-Krejci studied a sample of 3989 individuals buried in over 67 sites across the Maya area (Weiss-Krejci 2006). Out of this impressive sample only 7% were buried face down, but if this percentage is regrouped in time and space it is found to have been a “hallmark of the Belize River Valley” (Weiss-Krejci 2006, 50). This is to show that burial patterns are another way to look at a person's identity. Individuals are more than an isotopic signature and the more information is gathered about their funeral patterns, biology, age, grave goods and body modification, the clearer the social identity becomes. Chapter four will present the data from the recovered burials from Ucanal so the identity discussion can be made in link with all the previously enumerated aspects.

Chapter 4: Ucanal burials and their context

This chapter presents the burials under study. Each burial is detailed and put in its context. The burials were all excavated between the 2016 and 2017 field seasons of the Proyecto Arqueológico Ucanal under the direction of Dr. Christina Halperin and Jose Luis Garrido. They are presented in a chronological order from the Late Preclassic to the Terminal Classic. All the architectural groups that yielded burials are represented on the following map (figure 7).

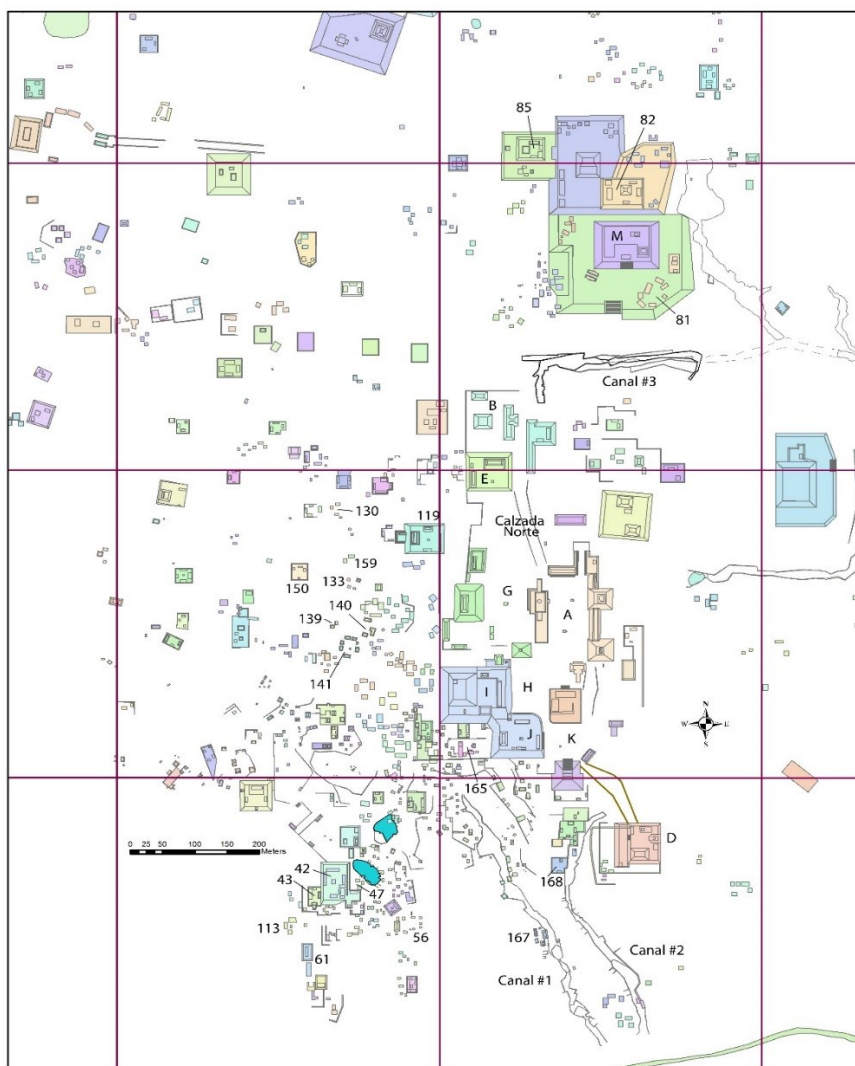


Figure 7 Map of Ucanal with architectural groups excavated up to 2018 and indicated by group labels (PAU 2014-2018; Atlas survey 1998-1999) (Halperin and Garrido, 2019: fig 6)

Late Preclassic Burials

Burials 6-1 and 6-3

A total of three burials were excavated from Group 139, operation 6, sub-operation A. Group 139 is rather small and is composed of only two structures surrounding a small patio (Cano, Thibodeau, and Flynn-Arajdal 2017, 137). The first construction phase of this group dates to the Terminal Preclassic period. It was continuously renovated throughout the Late Classic and Terminal Classic periods. Group 139 is considered a Rank 3 residential group (Halperin and Le Moine 2019).

One of the burials found in the patio floor foundation was a neonatal individual placed in a vase (Burial 6-1) (Cano, Thibodeau, and Flynn-Arajdal 2017, 142). This burial was not analysed for this thesis due to the very young age of the individual. However, other forms of documentation by the PAU provide details of the burial. The measurements of the long bones, 7.8 cm for the femur and 6.4cm for the humerus, indicate that the infant was between 35 to 42 weeks old at the time of death (Miller Wolf 2019, 205). Because of the young age, pathologies are absent or invisible for this individual. The infant was buried with small shells, inside a Late Preclassic Paila type jar (Miller Wolf 2019, 205). Inside the jar was a fragment of another ceramic vessel, a Terminal Classic cream ware of Acordeon Inciso type that covered the remains like a lid (Miller Wolf 2019, 205). Found immediately under this burial was the skull of an adult male (Burial 6-3).

Burial 6-3

Burial 6-3 was an adult male estimated to be 35-45 years of age at the time of death. He exhibited a rare dental modification of the D7 type. The burial was located within Late Preclassic period patio floor fill (1.5 m from the ground surface) at the center of Group 130 in Sector G-10 (Cano, Thibodeau, and Flynn-Arajdal 2017). Although this group was modest in size and falls in the Rank 3 (commoner) architectural size classification (Halperin and Le Moine 2019) it was occupied over many generations from the Late Preclassic to Terminal Classic periods. The residential architecture had been rebuilt many times over the course of its occupation. The

burial was located directly below Late Preclassic/Terminal Preclassic Burial 6-1, the infant burial placed in a jar. Only the head and shoulders of Burial 6-3 were exposed (figure 8).



Figure 8 Photo of Burial 6-3, cranium and jade necklace (Cano et al. 2017 photo 7.16)

The individual appeared to have been placed in a cist in an extended, supine position with the head facing south. The bones were poorly preserved, and the cranium appeared to have collapsed from the weight of patio fill. Because Burial 6-3 was found at the very end of the field season, it was impossible to open up further excavation to recover the entire burial. Rather than excavate a partial burial, archaeologists decided to expose the skull, sample a single tooth for isotopic analyses, and leave the remaining bones in place. The excavation unit was refilled as per standard protocol at the end of the field season. As such, no information on pathologies are available.

Late to Terminal Classic

Burial 11-1

This child burial was found in Group 130. This low status residential group was composed of four structures, one at the north, another at the west and two smaller structures on the southern border of the group, leaving the east part open (Cano 2018, 75). It ranks on the third level of volumetric analyses and does not seem to have had a speciality domestic ritual structure. The majority of the activities from this group took place during the Late and Terminal Classic periods (Cano 2018, 95). Although quite small, this residential group proved to be rich in cultural material and exhibited material from Petén as well as from Belize (Cano 2018). The burial was of a child placed in a small pit in Structure 130-4 with rocks above the torso and legs either placed as protection or grave markers (see figure 9-10). This was a child of 7-8 +/- 2 years old, with the teeth eruption bringing the age closer to 7 (Miller Wolf 2019:207). This individual had evidence of cranial modification, but due to bad preservation, the modification type was indiscernible (Miller Wolf 2019:207). This child showed signs of hypoplasia, a transversal line or pit on the teeth, proof of enamel formation deficiency.

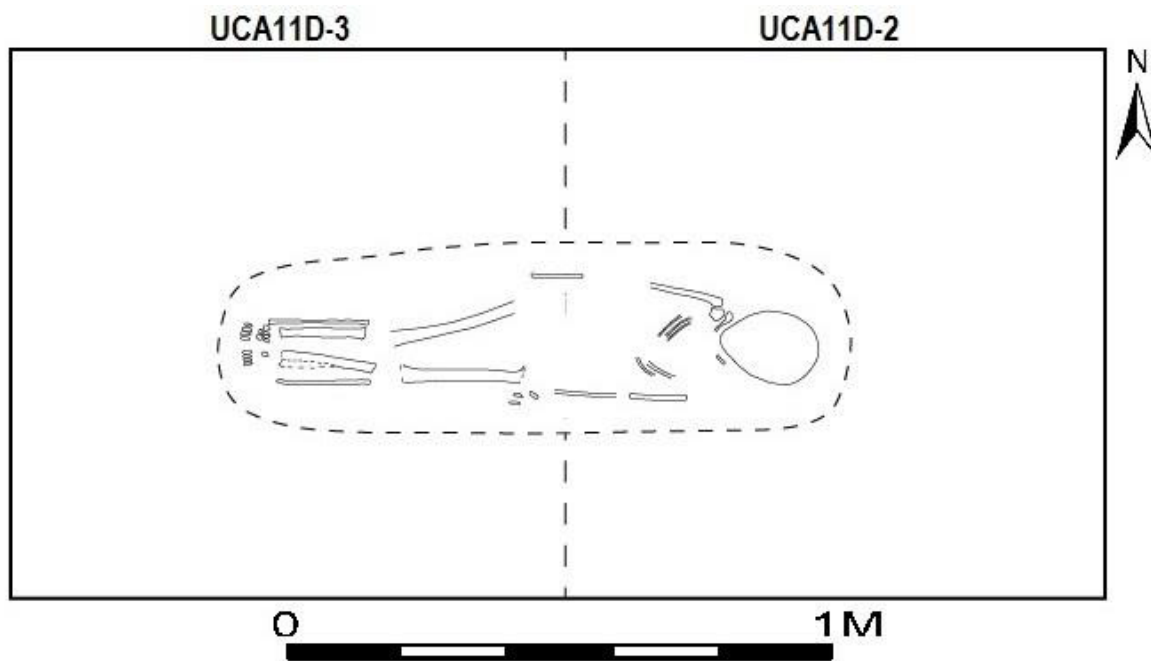


Figure 9 Drawing of Burial 11-1 (Cano, 2018, figure 5.23)

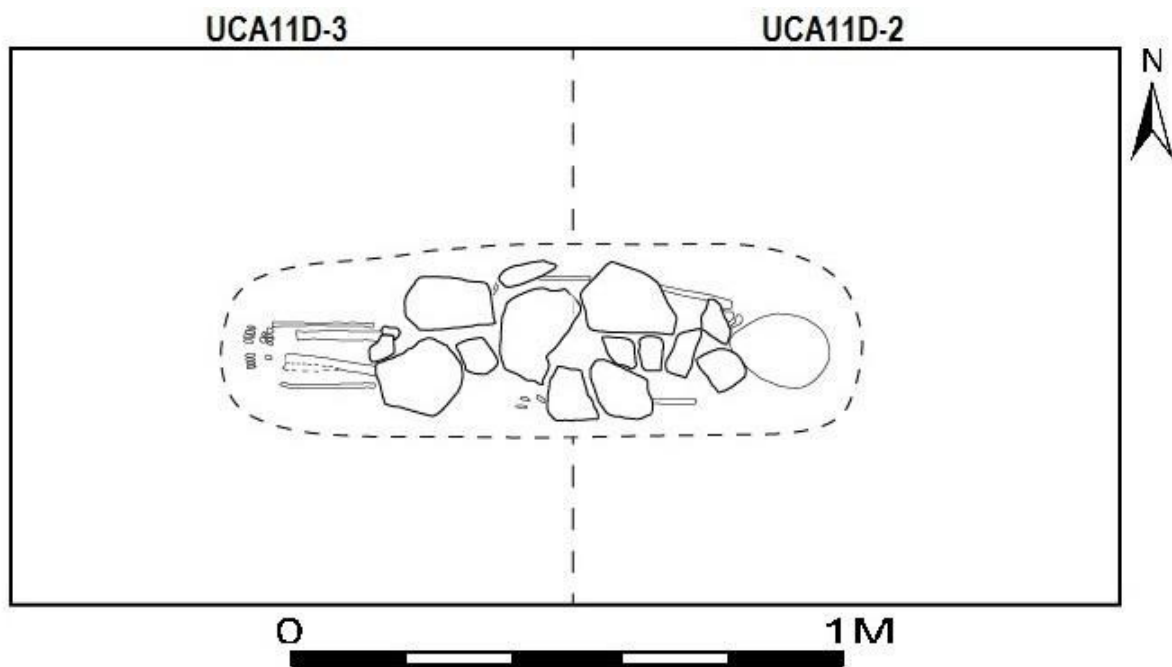


Figure 10 Drawing of Burial 11-1 with protecting rocks. (Cano, 2018, figure 5.23)

Burial 13-1

Burial 13-1 was poorly preserved. Most information, such as sex and stature are unknown. It was however possible to determine that the individual was their late 20's or early 30's (Miller Wolf 2019, 208). It is unknown if this individual had pathologies, but none were found on the remaining poorly preserved bones. Unfortunately, it is impossible to determine if cranial modification was present.

This burial was approx. 2 meters east of Burial 13-3 in elite Group 119. It was located at the eastern edge of a small, Late Preclassic platform in the construction fill of the group's principal patio floor (Cruz Gomez 2018). The grave consisted of a modest cist with rock slabs placed around and over the body. The individual was placed on his or her back in a north south alignment with a slight 10 degrees shift to the east (Cruz Gomez 2018, 129). Another burial, Burial 13-4, was found between the Late Preclassic platform and Burial 13-1. Both burials

appear to have been intrusive features in the Late Preclassic platform fill since their burial appears to have partially destroyed the eastern Late Preclassic platform wall. They date to the Late or Terminal Classic period.

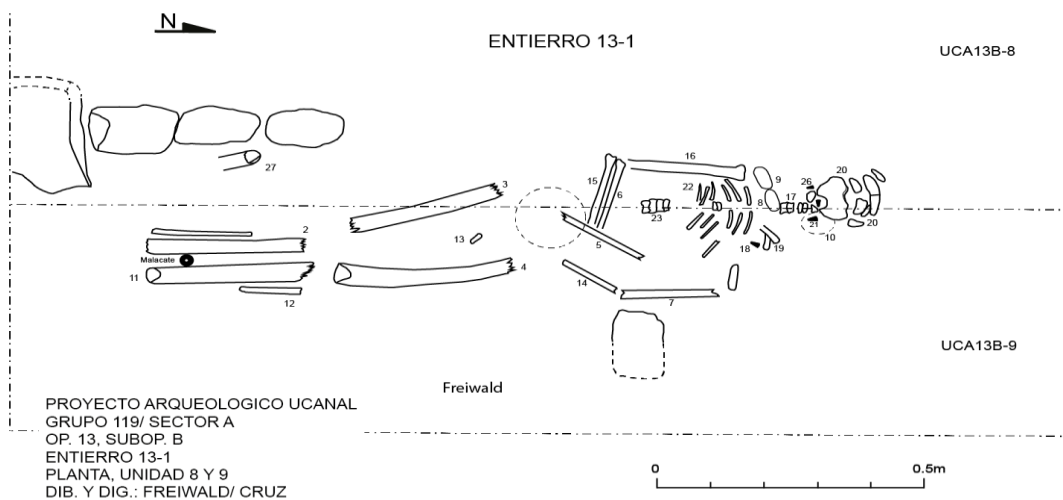
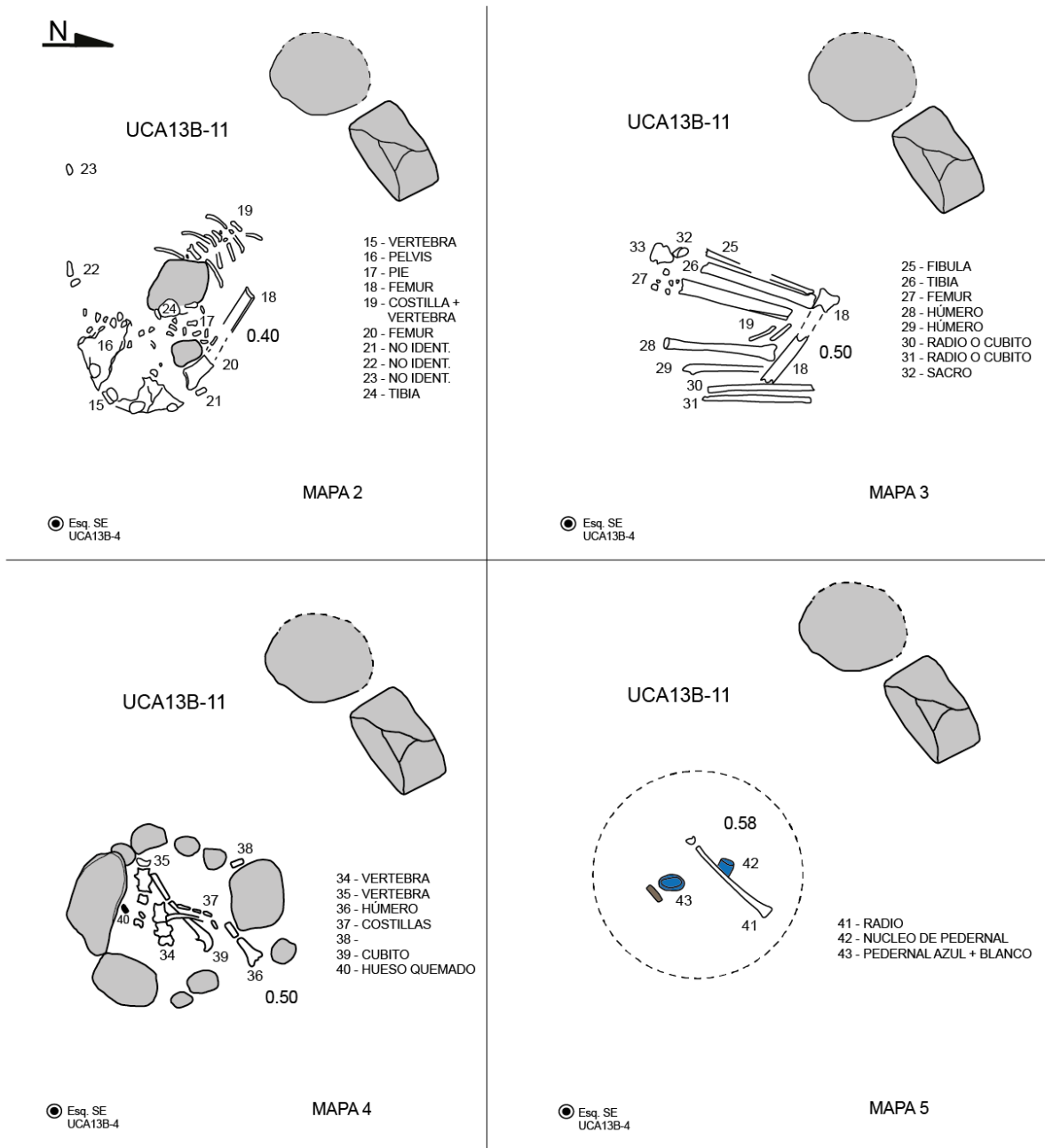


Figure 11 Drawing of Burial 13-1 (Cruz Gomez, 2018 figure 7.18)

The second burial of the group (Burial 13-2) was located just east of an altar in the form of a low platform located in the center of the residential patio (Cruz Gomez 2018, 129). This burial was not analysed for this present study, because it consisted of a bone bundle without the jaw, making teeth analyses impossible (see figure 12). This bundle was likely placed as an offering to the altar (Cruz Gomez 2018, 129).



PROYECTO ARQUEOLOGICO UCANAL
GRUPO 119/ SECTOR A
OP. 13, SUBOP. B
PLANTA, UCA-13B-11/ENTIERRO 13-2
DIB. Y DIG.: HALPERIN/ C. CRUZ

- Hueso quemado
- Pedernal
- Piedra

0 0.5 m

Figure 12 Drawing of lower levels of Burial 13-2 (Cruz Gomez, 2018:146 figure 7.21b)

Burial 13-4

The last burial associated with Group 119 (Burial 13-4) was placed immediately under Burial 13-1. This individual has an unknown sex since the typical sex markers are ambiguous and contradictory (Miller Wolf 2019, 211). This individual was buried in the Late Classic or Terminal Classic period, but was intrusively placed in a Preclassic patio floor fill (Miller Wolf 2019, Cruz Gomez 2018) (see figures 13-14).

Burial 13-4 is an individual of unknown sex, around 30-40 years old (Miller Wolf 2019:211). This person had a robust mastoid process but a gracile mental eminence as well as a gracile mandible. The femur and humerus are robust, but the clavicle and zygomatic are gracile, making it impossible to clearly determine biological sex (Miller Wolf 2019:211). The individual had osteoarthritis in the glenoid fossa with microporosity as well as ante mortem teeth loss on both the mandible and maxillary. A B4 dental modification was present on the maxillary canines, and the incisors showed signs of repeated use as tools (Miller Wolf 2019:212).

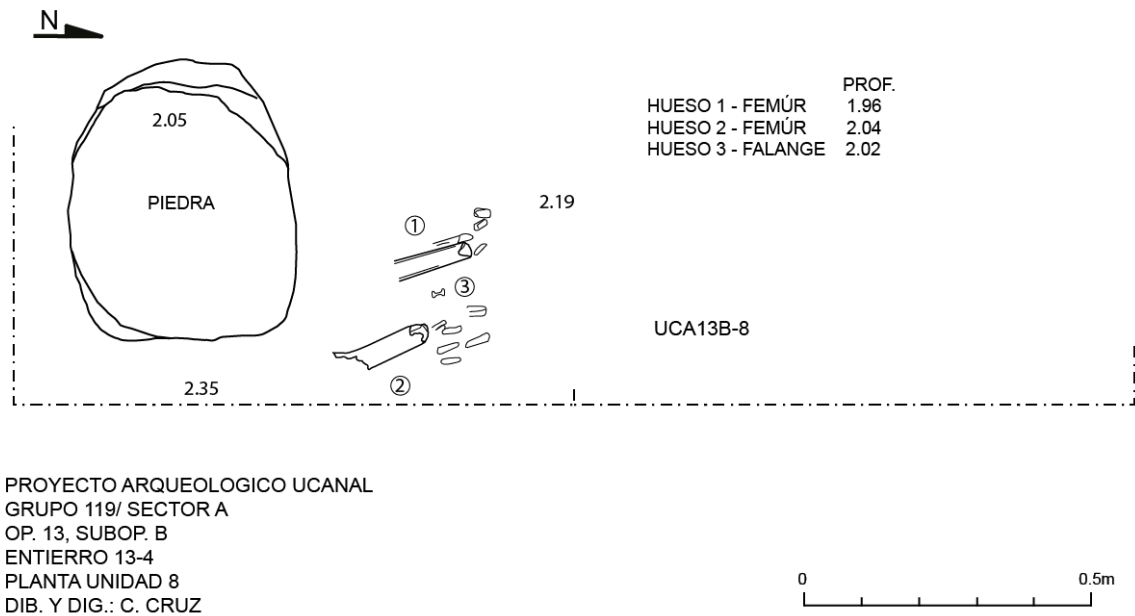


Figure 13 Drawing of the first level of Burial 13-4 (Cruz Gomez, 2018: 148, figure 7.24)

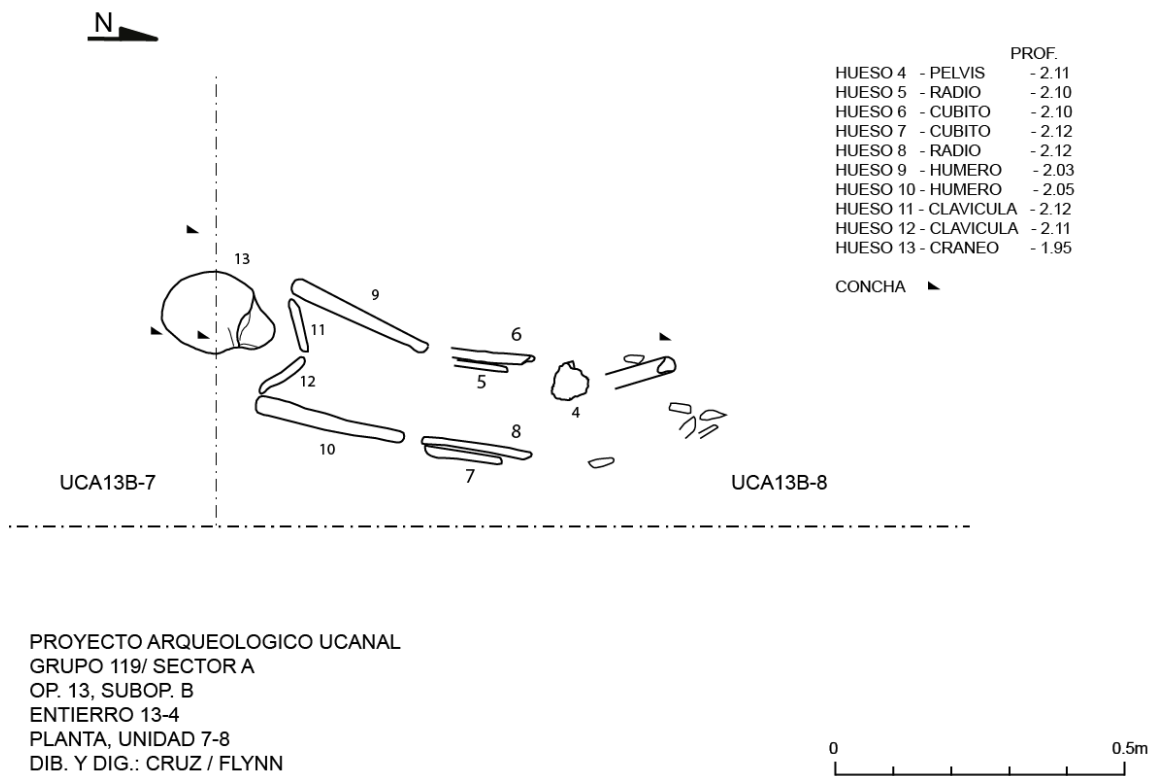


Figure 14 Drawing of the second level of Burial 13-4 (Cruz Gomez, 2018:148, figure 7.25)

Burial 14-1

The last burial identified by the members of the PAU in the 2017 field season (Burial 14-1) was unearthed during the excavations of residential Group 150. This group is composed of four low structures constructed on a raised platform (Ramirez and Garrido 2018, 151). It falls under the Rank 2 size category, although the architecture was modest with simple platforms upon which perishable structures sat. Burial 14-1 was excavated close to the western wall of Structure 150-2 and is dated to the Late to Terminal Classic period (Ramirez and Garrido 2018, 156). This adult female (see figure 15) had heavy modified teeth with inclusion of jade and pyrite (see discussion chapter for more information).

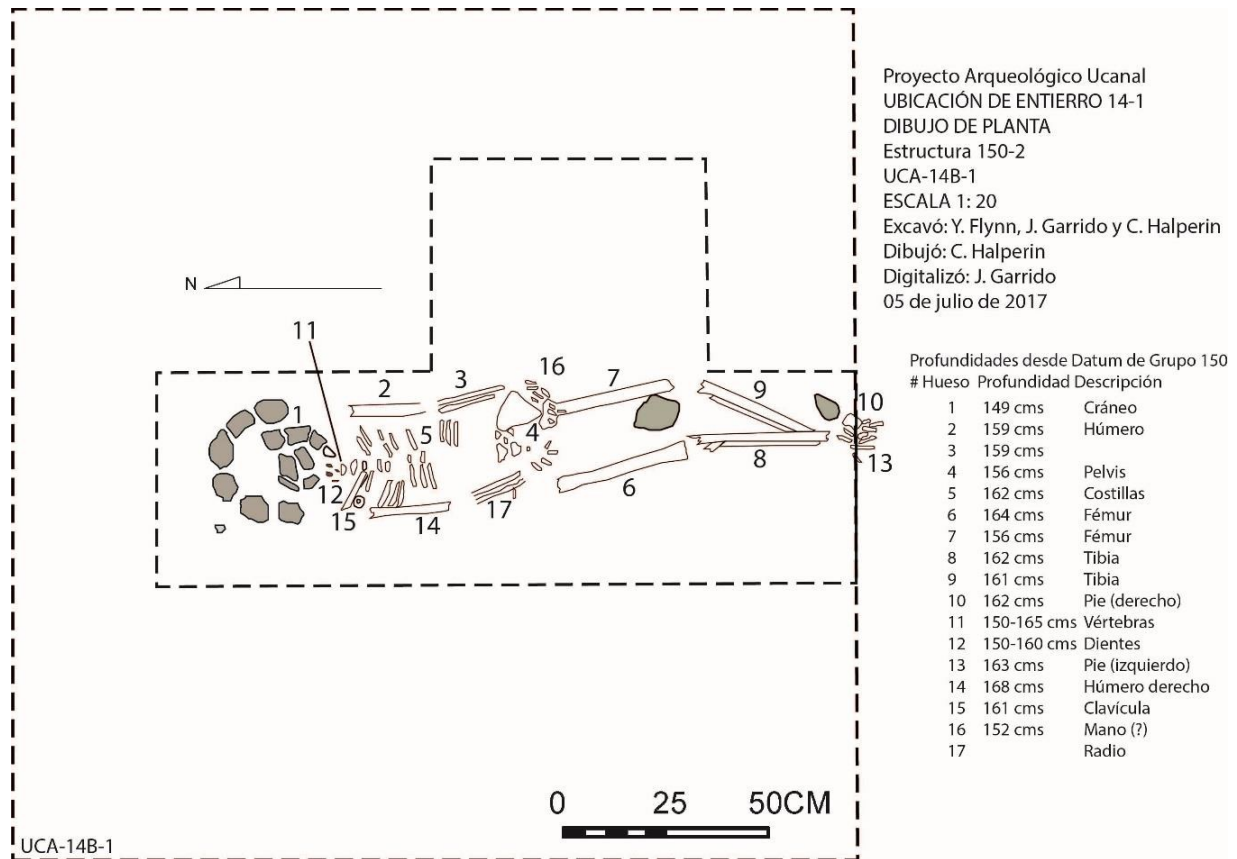


Figure 15 Drawing of Burial 14-1 (Ramirez and Garrido, 2018: 171, figure 8.23)

The burial was interred parallel to the front step of an eastern building in Group 150, Sector G-10 (Ramirez and Garrido 2018). This group, a Rank 2 (middle-status) residential group, consisted of several perishable structures with stone foundation platforms located on an elevated square-shaped platform. The burial appears to have been intrusive, in which the woman was placed in the foundation of the platform patio floor after the final phase of architecture was constructed. If this was the case, the burial dates either to the Late or Terminal Classic periods (Miller Wolf 2019:213). The woman was placed in an extended, supine position with the head to the north. She was buried within a pit but covered on her sides and on top of her body with small rocks. Besides the large ceramic sherd that covered her feet, the only other durable grave good associated with the body was a sculpted limestone spindle whorl situated near her right clavicle. The association between women and spindle whorls will be further discussed with Burial 13-3 in the discussion chapter.

Terminal Classic Burials

Burial 3-1

Burial 3-1 (UCA03B-6) was found in Group E (Operation 3, sub-operation B). Group E is considered to be an elite residential complex and is nestled between the public plaza zones of the site. It is among the largest groups at the site based on the volumetric ranking system of the site with its architecture volume at 24578.07 m³ (Rank 1). It was occupied from the Preclassic to the Terminal Classic periods. Structure E-2 was found in the middle of the patio of Group E and is identified as an altar comprised of a platform of two rows of cut stone (Mongelluzzo 2017). This altar contained a cache comprising two bowls placed lid to lid. Inside the ceramic bowl cache was a sculpted head of jade of significant size (Halperin, Hruby, and Mongelluzzo 2018). Burial 3-1 was found in a pit, in the fill of the patio floor just east of the altar. This individual was buried in an extended, prone position (see figure 16).

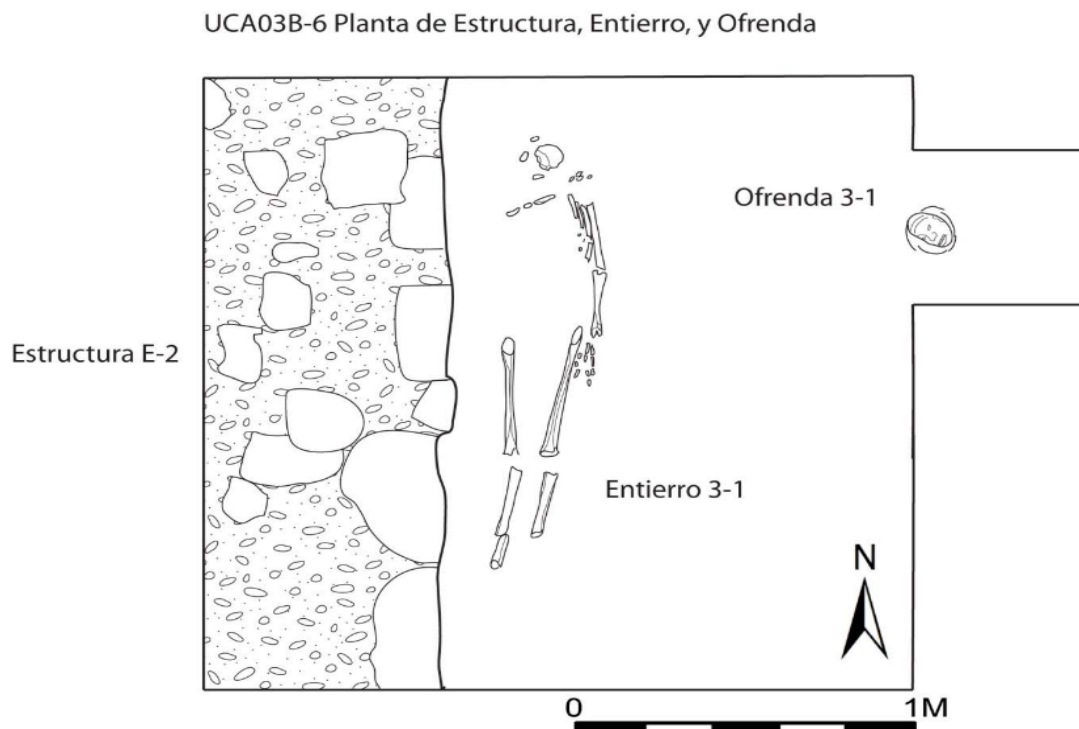


Figure 16 Drawing of Burial 3-1 (Mongelluzzo 2016, figure 4.11).

The individual in Burial 3-1 was a young adult male in his twenties (Miller Wolf 2019:202). The burial was close to the ground surface (36-58 cm) and was severely damaged by taphonomic processes. Not all of the bones of the individual were present, but those that did remain revealed robust muscular markers in the long bones. This individual showed some pathologies, especially around the tibiae. The anterior crest shows swelling typical of periostitis. The tibiae also shows signs of additional ossification due to subperiosteal hemorrhage (Miller Wolf 2019:202).

Burial 4-1A and B

Group 141 is a Rank 2 group between 201 and 1000m³ it is considered a middle status residential group of medium size (Halperin and Le Moine 2019). It was occupied extensively during the Terminal Classic (Cotom Nimatuj and Miller Wolf 2017). The group consists of eight structures that surround a residential patio containing a low altar at its center. The amount and nature of the lithic material unearthed suggests that chert production occurred at the group (Cotom Nimatuj and Miller Wolf 2017, 102). Excavations were conducted in two structures. One of these structures, a low altar at the center of the residence, yielded two burials: 4-1A and 4-1B (4-1B was unearthed after the completion of the analyses for this thesis). The individual in burial 4-1A was found in a small pit just to the east of the shrine (Halperin and Garrido In press, Cotom Nimatuj and Miller Wolf 2017). Although the buildings in the group date from at least the Late Classic to Terminal Classic periods, the altar at the center of the patio was constructed during the Terminal Classic period, and the individual appears to have been buried at the same time as the construction of the altar. This individual was covered by a large Garbutt Creek Red type bowl (Cotom Nimatuj and Miller Wolf 2017, 86) (see figure 17).

Burial 4-1A is the Terminal Classic burial of a male between 30 to 35 years old with a tabular oblique cranial modification (Miller Wolf 2019:203). This man had several pathologies (Miller Wolf 2019, 203), such as micro porosities, bone erosion of the left maxillary, osteoarthritis in the glenoid fossa of both scapulae as well as along most of the spine, hip and fingers. The right fibula exhibits woven bones, expansion of the diaphysis and blood vessels impressions. The right radius and ulna are far more developed than the left, with prominent muscles markers showing a differential use of the right arm. He also had a supernumerary

articular facet on the fifth phalanx, an indication of a sesamoid bone or sixth finger (Miller Wolf 2019:203).

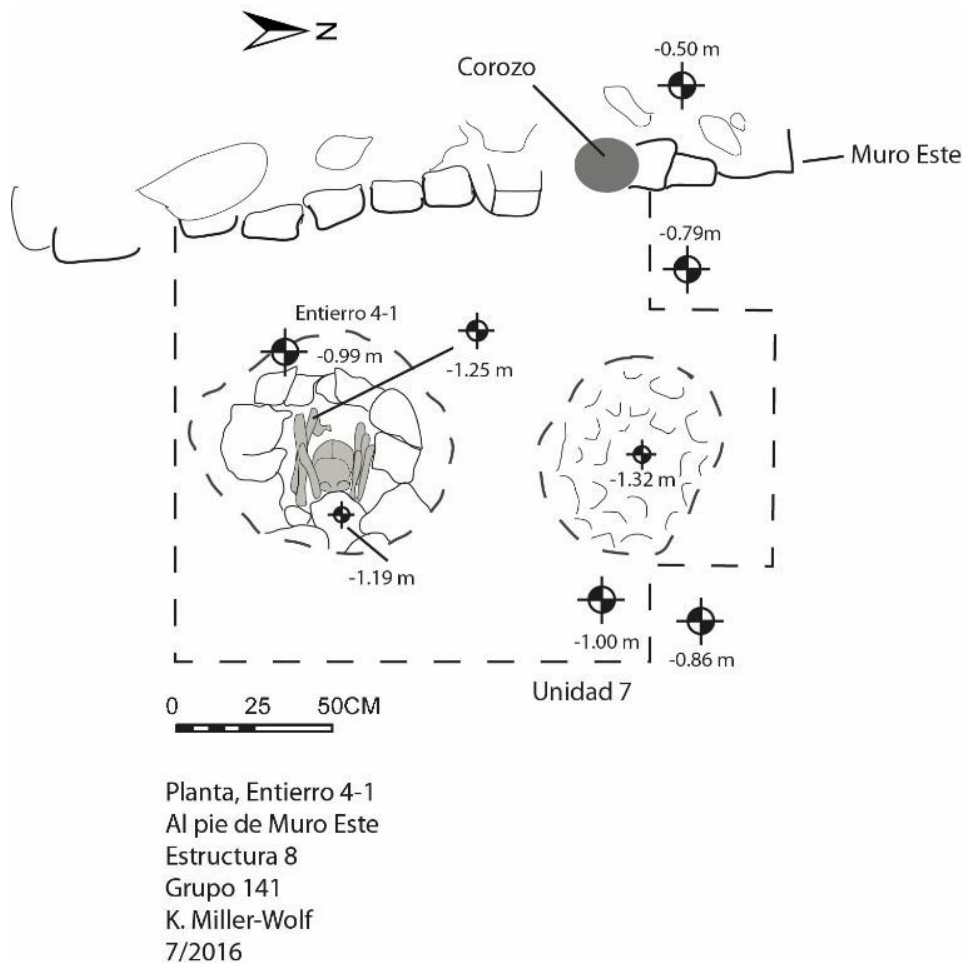


Figure 17 Drawing of Burial 4-1A (Cotom Nimatuj and Miller Wolf, 2016, figure 5.13)

This individual shows signs of dismemberment (Miller Wolf 2019). This dismemberment was visible on the long bones. The epiphyses were removed before the burying of the individual on the proximal left and right humerus (see figure 18), the left and right proximal tibiae and fibulae, the proximal left and right femurs.



Figure 18 Arm bones of individual 4-1A showing signs of dismemberment and flaying. (Miller Wolf 2019:204, figures 8.9 and 8.10)

Both clavicles and scapulae also exhibit cut marks that are commonly associated with flaying (Tiesler 2007). Miller Wolf (2019:204) identifies this treatment on the body as being post-mortem, but before the body was placed in the cist.

Discovered underneath the Burial 4-1A, the individual labelled 4-1B is an adult female and was probably the main event for the burial. Aged between 20-30 years this young adult did not display any pathologies, but she had a tabular oblique cranial modification as well as a D2 type dental modification (see figure 31 in the discussion chapter) (Miller Wolf 2019, 198). This individual seems to have been forcefully pushed in a small cist and was therefore uncovered in a tightly flexed position (Miller Wolf 2019, 198). This burial was devoid of grave goods, only two small jade beads were found in association with the body, but it seems that the individual placed directly on top (4-1A) may have been an offering for this woman.

Burial 6-2

Burial 6-2 is of a child buried with marine shells and bone and jade beads (see figure 19). The child is estimated to be of 5 to 6 +/- 1,5 years of age and of unknown sex (Miller Wolf 2019:205). This individual did not show signs of cranial modification. They had traces of pathological periostitis or normal periostitis for this stage of developmental growth. The burial was placed in a small oval pit and covered with small stones. The pit was located within one of the stone foundations of a modest residential building, Group 139, located in Sector G-10 of the site (Cano, Thibodeau, and Flynn-Arajdal 2017). Based on architectural volume, the residence

is classified as a Rank 3 group, which likely corresponds to a commoner status of the residents (Halperin and Le Moine 2019). Compared to the other burials in this group (Burials 6-1 and 6-3), which are Late to Terminal Preclassic in date, this child was buried during the Tepeu 2 phase of the Late Classic.



Figure 19 Photo of Burial 6-2 (Cano et al. 2017, photo 7.8)

Burial 8-1

Burial 8-1 was excavated from Group 133. The excavations conducted in this group started late in the field season, so only small test pits were conducted (Halperin, Le Moine, and Flynn-Arajdal 2017, 163). Nonetheless, these test pits reveal that the group was the residence of a family or families that produced ceramics. Figurine molds and ceramic sherds were found in high numbers. It falls into the Rank 3 residential group category and was composed of 4 low stone platforms (from 10 to 50 cm high) on which perishable structures sat (Halperin, Le Moine, and Flynn-Arajdal 2017, 163). The architectural group was small compared to others in the same

neighborhood and is classified as a commoner residential group. In the fill of one of these structures (Structure 133-4) the remains of a subadult were placed in a small pit, in a seated position (Halperin, Le Moine, and Flynn-Arajdal 2017, 165) (see figure 20). This burial dates to the Terminal Classic period and consists of a child estimated to be 5-6 +/- 1.5 years old (Miller Wolf 2019:207). Of undetermined sex, (s)he doesn't have any signs of cranial modification. The pathologies are scarce, but hypoplasia is present without any other evidence of stress (Miller Wolf 2019:207).

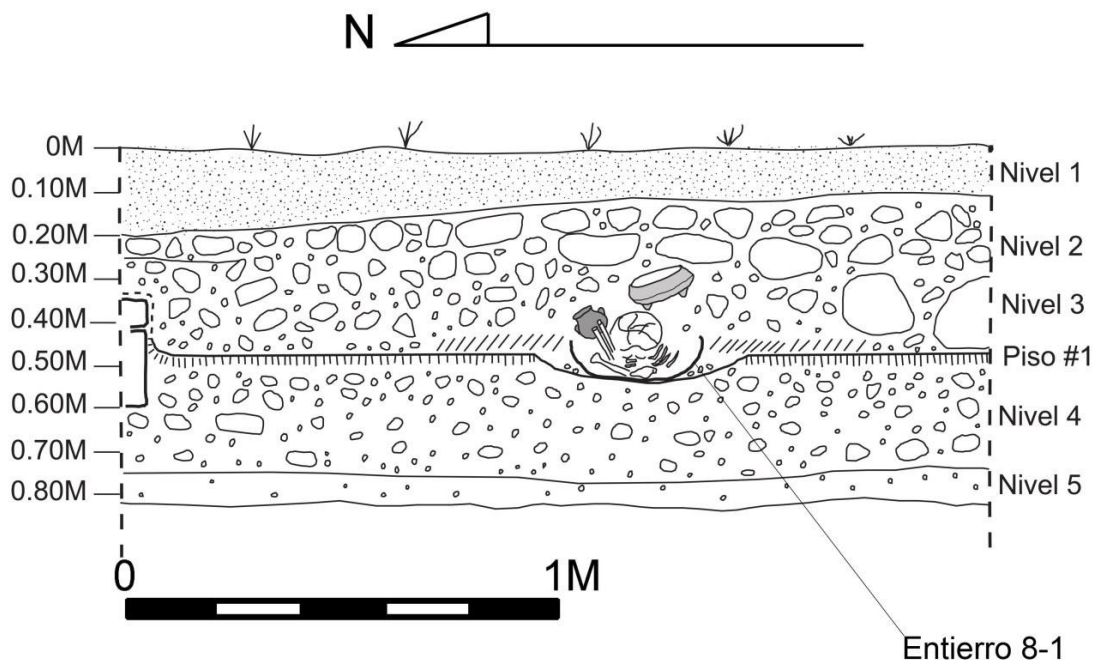


Figure 20 Drawing of Burial 8-1 (Halperin et al, 2107, figure 8.3).

Burials 13-3

Burial 13-3 is the last burial from Group 119, Operation 13 (with the previously mentioned Burials 13-1, 13-2 and 13-4). It is the second biggest group the volumetric analyses scale (rank 1) among the groups with burials and is considered to have been occupied by the elite (Halperin and Le Moine 2019). All four interments were found associated with an altar (structure 119-2) at the center of the group. The occupation spans from the Late Preclassic to

the Terminal Classic (Cruz Gomez 2018). Although the occupancy seems to correspond to a long period of time, all burials were dated to the Terminal Classic or Late Classic to Terminal Classic (Miller Wolf 2019).

Burial 13-3, a single severed skull (see figure 21) was first thought to be associated with the post-cranial remains of Burial 13-2, since it was found directly below it. Laboratory analyses, however, indicated that it was a separate individual (Miller Wolf 2019, 209).



Figure 21 Decapitated head of Burial 13-3 (Cruz Gomez, 2018:147 figure 7.23)

Burial 13-3 is male between the ages of 30 and 40 years old (Miller Wolf 2019:209). His burial was different from the rest of the sample in that the burial contained nothing but a severed head. This cranium showed clear signs of decapitation. No post cranial bones were found except the first and second cervical vertebrae and the hyoid. C1 and part of C2 were found under the mandible (Miller Wolf 2019:209) (see figure 22). C2 is cut in half leaving only the odontoid process (see figure 23-24). These are an indication that the decapitation occurred while the subject was still alive (Miller Wolf 2019:209). Although only the skull was available, some

information could still be gathered. This man exhibited a tabular oblique cranial modification and had particularly robust mastoids, mandibles, occipital and frontal bones, his nuchal crest was especially pronounced (Miller Wolf 2019, 209).

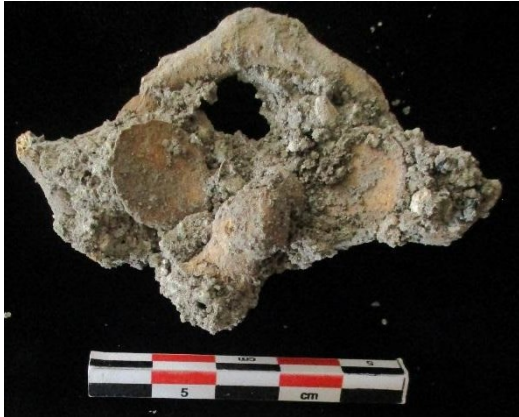


Figure 22 severed vertebrae (C1 and odontoid process of-C2) from individual 13-3. (Miller Wolf 2019:210, figure 8.15).



Figure 23- 24 Cervical and Hyoid bone of individual 13-3 showing signs of decapitation. (Miller Wolf 2019:211, figure 8.16 and 8.18).

Chapter 5: Methods

This chapters reviews the methods for (1) gathering and analysing the baseline faunal samples (shells, animal bones) for a small valley region along the Mopan River in eastern Guatemala and (2) for analysing archaeologically excavated human teeth from the site of Ucanal. All the samples were analysed at the Geotop laboratories, a multi-university research center dedicated to the geosciences and located at Université du Québec à Montréal (UQAM).

Data collection

Baseline samples

Strontium values obtained by sampling human teeth need to be compared to a baseline of the region of burial to infer migration. The construction of a strontium baseline can be achieved with rock, plant, or animal samples. Considering that these materials present different strontium ratios, however, organic samples are preferred since they are closer to the comparative sample (human teeth) (Sillen et al. 1998). Blum and colleagues (2000) examined the changes of strontium values on different trophic levels from forests in the northeast of the United States. They concluded that the $^{87}\text{Sr}/^{86}\text{Sr}$ values did not change from one level to another (Blum et al. 2000). According to Sillen et al. (1998) the composition of the isotopes of strontium varies widely between soil and plants and other organic samples, making the biologically available strontium a better choice for baseline samples. The sampling of small animals such as rodents, snails or rabbits are preferred because they have a more limited home range than other fauna. Herbivores feed on local plants, and the strontium values in their bones reflect the average food of their lifetime and what would be available to humans of the same region (Price, Burton, and Bentley 2002, 125). Furthermore, small animal provide a homogenous form of strontium signal (Price, Burton, and Bentley 2002). In this study, we sampled snails because they are easy to collect, abundant in Guatemala, and easier to export than other small rodents.

All baseline samples were collected by hand, and locations were registered with a handheld GPS (GNSS/GPS, Trimble Geo7X). The region sampled includes the site of Ucanal but extends south to the town of Dolores, west to the town of el Remate, and as far north as the principal east-west road from Flores, Guatemala to Benque Viejo, Belize. The 100km sample

collection route targeted an alluvial floodplain of the Mopan River where the site of Ucanal is located as well as the higher elevation zones to the south, the foothills of the Maya Mountains. To get a good idea of the strontium signature of the area, between two and five samples were gathered at every location (see table II). Snails shells were collected every ten or so kilometers, although not all samples collected were analyzed due to constraints in funding.

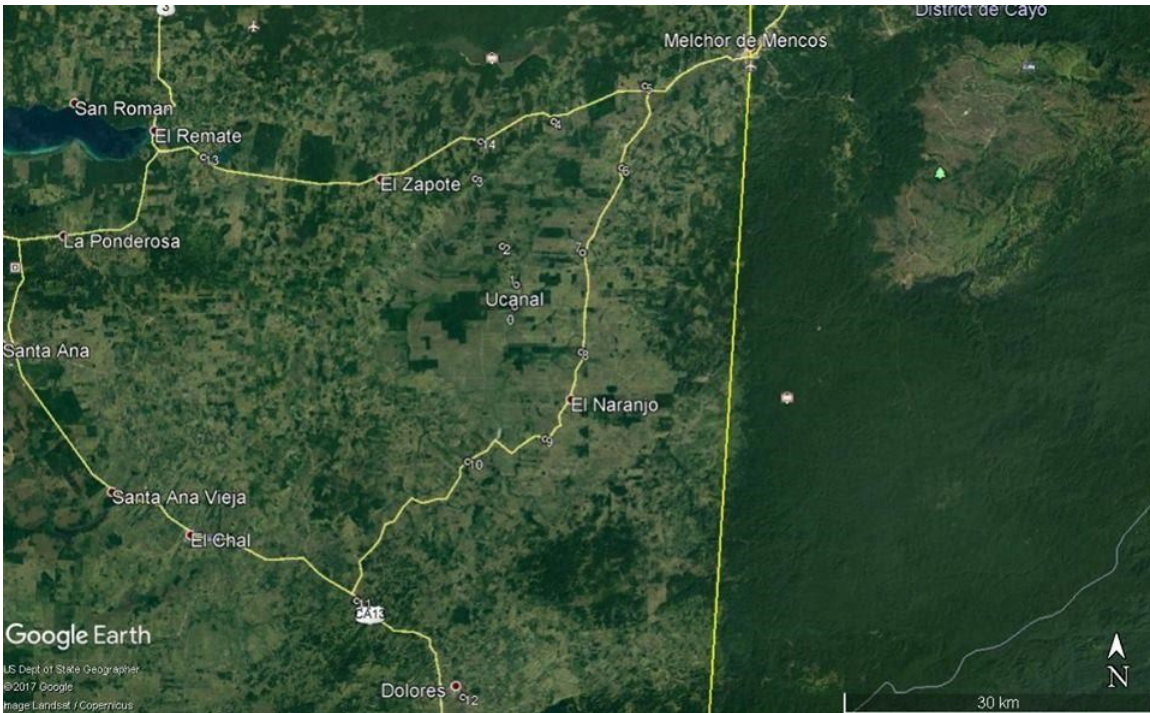


Figure 25 Map of baseline area from Google earth

The sampling was done on the side of the road, by foot in a radius of roughly fifty meters from the road. Dr. Freiwald, the project’s zooarchaeologist, also provided a few samples taken by herself on the ground surface at the site of Ucanal. Once collected, the specimens were identified by species, put in separate bags and labeled. After the field season, they were washed and dried in the laboratory. The snails were then separated into two distinct bags to prevent any loss of information or samples during transportation and exportation.

Table 2: List of analyzed baseline samples

Sample number	Location	Type of sample	Number of samples analyzed	North	East	Date
BL1	Ucanal	Snail (species info)	2	16° 50' 41.29168	89° 22' 00.15781	23-06-2017
BL4	Between San Antonio y la Polvora, side of the road	Snails	1	16° 56' 56.92929	89° 23' 57.05057	23-06-2017
BL5	La Polvora, side of the road	Snails	3	16° 59' 56.75581	89° 19' 38.21600	23-06-2017
BL10	Near El Bombillo, side of the road	Snails	3	16° 43' 45.69261	89° 20' 19.96401	23-06-2017
BL12	Near the entrance of Dolores, side of the road	Snails	2	16° 35' 26.17451	89° 30' 25.30152	23-06-2017
BL13	Dolores, side of road, path in forest	Snails	3	16° 30' 26.46365	89° 24' 42.97272	23-06-2017
BL16	Ucanal, off platform, group 119, sector A	Animal bone, Nine Banded Armadillo (<i>Dasypus novemcinctus</i>)	1	247993	1864305	15-06-2017
BL17	Ucanal, on the path to the site	Animal bone, Agouti, (<i>Dasyprocta punctata</i>)	1	248047	1864186	16-06-2017

Human teeth

A total of 12 individuals from 14 formal burials excavated were analyzed for strontium and oxygen isotopes. With the exception of Burial 4-1B excavated after the export of teeth for this study, the isotope sampling tried to target 100% of the excavated burial collection for analysis collected to date. Two burials, however, were of individuals too young to sample. With the exception of one isolated tooth from the fill of Burial 3-1, all other teeth were collected from within formal burial contexts. Although the project has excavated numerous isolated teeth from Late Classic and Terminal Classic period construction fill (Miller Wolf 2019), these teeth were not sampled because rich contextual information was lacking, such as type of burial, context of burial, grave goods etc.

Some of the burials at the site possessed individuals with dental modification or dental loss. In such cases, none of the modified teeth were sampled because of the destructive nature of the analyses. If a tooth was already out of the alveola, it was preferentially selected to diminish any invasive procedure on the maxilla or mandible. Although it is usually the same tooth that is privileged in isotopic studies, due to the taphonomic processes and the sensitive nature of the sampling, the available tooth was selected hence, some discrepancy exists in the type of tooth sampled (see Appendix 1). For the analysis, we exported a tooth from every burial at Ucanal,

but in the end failed to sample three of the human teeth: sample numbers 2, 8 and 12. Sample 3 was rejected because it derived from a necklace where two human teeth were present, and thus we decided to avoid the possibility that they both belonged to the same individual. Numbers 8 and 12 were excluded because of their young age in which their tooth enamel were still fully formed (see table III).

Table 3: Tooth sample from the burials of Ucanal, and age of crown formation (Smith 1991, fig. 1)

Sample	Location	Coded location	Context	Tooth	Age of crown formation	Date of excavation
1	On top of structure 4	UCA-8A-1-3-360	Burial 8-1	Xrm2	In utero to 0.5 yo	01-07-2016
2	On top of structure 4	UCA-8A-1-3-360	Burial 8-1	URP2	3 to 6.5 yo	01-07-2016
3	On top of structure 4	UCA-8A-1-3-360	Burial 8-1	NA	NA	01-07-2016
4	East of central altar	UCA-3B-6-5-182	Burial 3-1	XLC	0.5 to 4 yo	03-07-2016
5	On top of Burial 3-1	UCA-3B-6-5-182	Fill on top of Burial 3-1	XML2	3.5 to 6. yo5	11-06-2016
6	Est of structure 8, under the bowl from offering 4-1	UCA-4A-7-3-484	Burial 4-1	XLM1	0 to 2.5 yo	02-07-2016
7	Under the wall of Unit 3	UCA-6A-3-10-335	Burial 6-2	Nrm2	In utero to 0.5 yo	28-06-2016
8	Under the wall of unit 3	UCA-6A-3-10-335	Burial 6-2	NA	NA	28-06-2016
9	In front of sub-operation, A	UCA-6A-1-9-346	Burial 6-3	XLI2	0.5 to 4 yo	01-07-2016
10	At the western base of the structure foundation (structure 150-2)	UCA-14B-1-4-1118	Burial 14-1	NLM1	0 to 2.5 yo	05-07-2017
11	On top of structure 4, group 130, in front substructure 3.	UCA-11D-2-8-848	Burial 11-1	NRM1	0 to 2.5 yo	28-06-2017
12	On top of structure 4, group 130, in front substructure 3.	UCA-11D-2-8-848	Burial 11-1	NA	NA	28-06-2017
13	In front of buried Preclassic platform	UCA-13B-8-5-1055	Burial 13-4	XLM1	0 to 2.5 yo	27-06-2017
14	In front of buried Preclassic platform	UCA-13B-9-5-1048	Burial 13-1	XLI1	0.5 to 4 yo	21-06-2017
15	East of Altar 1	UCA-13B-11-3-1054	Burial 13-3	XLI2	0.5 to 4 yo	24-06-2017

Methods for Isotope analysis

All the samples (teeth, snails or animal bones) were cleaned in an ultra sonic bath in deionised water for as many 10 minutes intervals as needed to remove all the dirt and debris visible. Once cleaned and completely dry, the samples were drilled with a diamond tip Dremel. The drill was thoroughly cleaned with compressed air and deionised water between each sample. The powder was then collected and put in foil. Each sample was then weighed and separated between the oxygen and the strontium protocols.

Oxygen and Carbon

As animals and humans do not process oxygen in the same way, only human teeth were analyzed for oxygen (Wright 2012, Longinelli 1984, Chenery et al. 2012). The samples were weighed in glass micro-crucibles to obtain 100 μg of CaCO_3 . This represents approximately 2 mg of enamel powder. The samples were then transferred in borosilicate conical bottom vials closed with septum caps. They were subsequently inserted in a 90°C heated rack. After 1 hour in the heated rack, the samples were analyzed with a Micromass model Isoprime isotope ratio mass spectrometer coupled to a MultiCarb system in dual inlet mode.

Normalisation

Because the expected results are close to our internal standard, the data was normalised to the NBS19-LSVEC scale using one internal reference material (CaCO_3 $\delta^{13}\text{C}=+2,21\pm 0,03\text{‰}$ $\delta^{18}\text{O}=-1,48\pm 0,03\text{‰}$). Results are given in delta units (δ) in ‰ vs VPDB, and then the difference between this scale and the VSMOW scale were calculated for the $\delta^{18}\text{O}$ for a better comparison to other available datasets.

Error

The overall analytical uncertainty (1σ) was better than $\pm 0.05\text{‰}$ for $\delta^{13}\text{C}$ and $\pm 0.08\text{‰}$ for $\delta^{18}\text{O}$. These uncertainties are based on the propagation of uncertainties of the normalization of the internal reference materials and the samples but does not include the homogeneity nor the representability of the sample (Jean-François Hélie, personal communication, 2018).

Strontium

The data analyses of Strontium isotopes followed protocols established by the Geotop laboratories in Montreal. The analysis of strontium required approximately 20 mg of enamel or shell. The powder was deposited in a Teflon beaker and weighed. The sample was dissolved in HCl 6N acid and dried overnight on a 100 degrees Celsius heating plate. Once completely dried, the sample was covered with 0.5 ml of HNO_3 3N. The strontium purification protocol begins here. Each individual sample is washed with water in a *Bio-Spin* column and purified in resin Sr-Spec with HNO_3 3N six times, until only strontium remains. It is then extracted with deionised water and dried overnight. Once extracted, the strontium is placed on a filament to be

analysed with the Thermo Scientific Triton Plus thermal ionization mass spectrometer. Concentrations were assessed by comparing the samples against the universal standard, NBS 987 (André Poirier, personal communication).

Human teeth identification

All human teeth were identified following the human bone manual by White and Folkens (2005)). Identifications were then reviewed and corrected by the Ucanal Archaeological Project's human osteology specialist, Dr. Katherine Miller-Wolf. Because of the destructive nature of the analysis, photographs of every side of the teeth were taken before isotope sampling.

Chapter 6: Results

This chapter presents the strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) data for all human teeth sampled from the site of Ucanal as well as the faunal samples from the baseline study. It also presents the oxygen ($\delta^{18}\text{O}$) values for all human teeth sampled from the site of Ucanal. The oxygen and strontium data were then combined to get a more complete isotopic profile for each individual.

Oxygen data.

Table 4: Oxygen isotope values for the burials from Proyecto Arqueologico Ucanal, field season 2016-2017. $\delta^{18}\text{O}$ expressed in ‰ vs VPDB ($\pm 0,05\text{‰}$ at 1σ).

Sample number and Burial	$\delta^{18}\text{O}$
M1 (Burial 8-1)	-5.19
M2 (Burial 8-1 necklace)	-4.28
M4 (Burial 3-1)	-6.29
M5 (Fill on top of Burial 3-1)	-6.20
M6 (Burial (4-1)	-6.18
M7 (Burial 6-2)	-5.95
M9 (Burial 6-3)	-6.88
M10 (Burial 14-1)	-5.88
M11 (Burial 11-1)	-6.29
M13 (Burial 13-4)	-5.62
M14 (Burial 13-1)	-6.87
M15 (Burial 13-3)	-7.25
Mean	-6.07
Standard deviation	0.80
Two standard deviations	1.60
Range at 1σ	-5.27 to -6.87

The teeth from the twelve burials were analysed for the $\delta^{18}\text{O}$ in the carbonate of the enamel. The population studied show great variation (between -7.25 to -4.28) in the oxygen isotope values. Unfortunately, as oxygen fractionation is governed by species specific

parameters, such as body temperature, it is impossible to produce a valid baseline from faunal remains that can be compared to human data (Wright 2012). It is thus from other studies of human remains conducted throughout the Maya area and beyond that we can gather information regarding immigration. Table V shows the oxygen data collected by other scholars in the Maya area.

Table 5: Mean isotope values from archaeological sites in the Maya area, data from (Freiwald 2011, 268) and (Somerville, Schoeninger, and Braswell 2016, 152).

Calakmul	-1.2
Campeche	-2.9
Belize river valley	-2.9
Mountain Pine Ridge streams	-3.55
Pusilha	-3.3
Caracol	-3.4
Tikal	-3.8
Copán	-4.1
Kaminaljuyú	-5.0
Macal River	-3.2

Within the Ucanal data, 9 out of 12 burials are in the $\delta^{18}\text{O}$ in ‰ vs VPDB ($\pm 0.05\%$ at 1σ) -5.27 to -6.87 cluster. These samples likely represent a local signature for the Ucanal site. On the other hand, the lower and higher values likely reflect immigrants to the site. For our sample, this means that the tooth taken from the necklace worn by the child in Burial 8-1, and the severed head from Burial 13-3 were foreigners. A value as high as -4.28 suggests that the individual was likely from a region closer to the coast, whereas the value in the -7.25 range suggests that the individual probably migrated from a site further inland or higher up in altitude.

Nonetheless, the interpretation of oxygen data must be undertaken with caution since many factors could influence the identified oxygen values. First, the food eaten by one individual can be enriched in heavier ^{18}O isotopes if it is boiled prior to consumption (Daux et al. 2008, Wright et al. 2010). Additionally, children who are breast fed may have higher $\delta^{18}\text{O}$ values than those who are not breast fed because breast milk is enriched in ^{18}O

compared to drinking water (Roberts et al. 1988). Thus, even different teeth in a single individual may have different isotopic signatures (i.e.: premolars and first molars may have a similar value, but it may differ greatly from the third molar formed later in the individual's development). This is the case in Wright et al. (2010)'s study, where the third molars have a 0.7 ‰ lower $\delta^{18}\text{O}$ average than the first molars and premolars studied for the same burials. Furthermore, seasonal precipitations vary from one season to another, and from one year to another, adding yet another possible source of variation within a sample of individuals buried at the same site but dating to different time periods. We cannot rule out such variation since we did not systematically sample the same tooth nor many teeth samples from the same individual. Price et al. (2010) recorded the same kind of problem with intra-tooth variation in their study of migration at the site of Copan, Honduras. Their results highlight significant variation not only between individuals, but also within individuals. As such, they recommend that oxygen isotopes should be used simply to identify locals from foreigners, but not to determine the exact place of origin (Price et al. 2010).

In this study, as well as many others (Wright et al. 2010, Wright 2012, Price et al. 2010, White, Price, and Longstaffe 2007, Price et al. 2018, Freiwald 2011, Price et al. 2014), the oxygen isotope values are used in tandem with strontium data which provides a more robust interpretation of who was born locally to the region or outside the region.

Strontium

The sixteen samples collected at the site of Ucanal itself as well as along a north-south transect encompassing the alluvial floodplain created by the Mopan River combined with other baseline studies in the Maya area and beyond (Hodell et al. 2004, Freiwald 2011, Price et al. 2010) compared to the strontium values from the human samples at Ucanal, show three individuals that could have been born outside of the immediate Ucanal region.

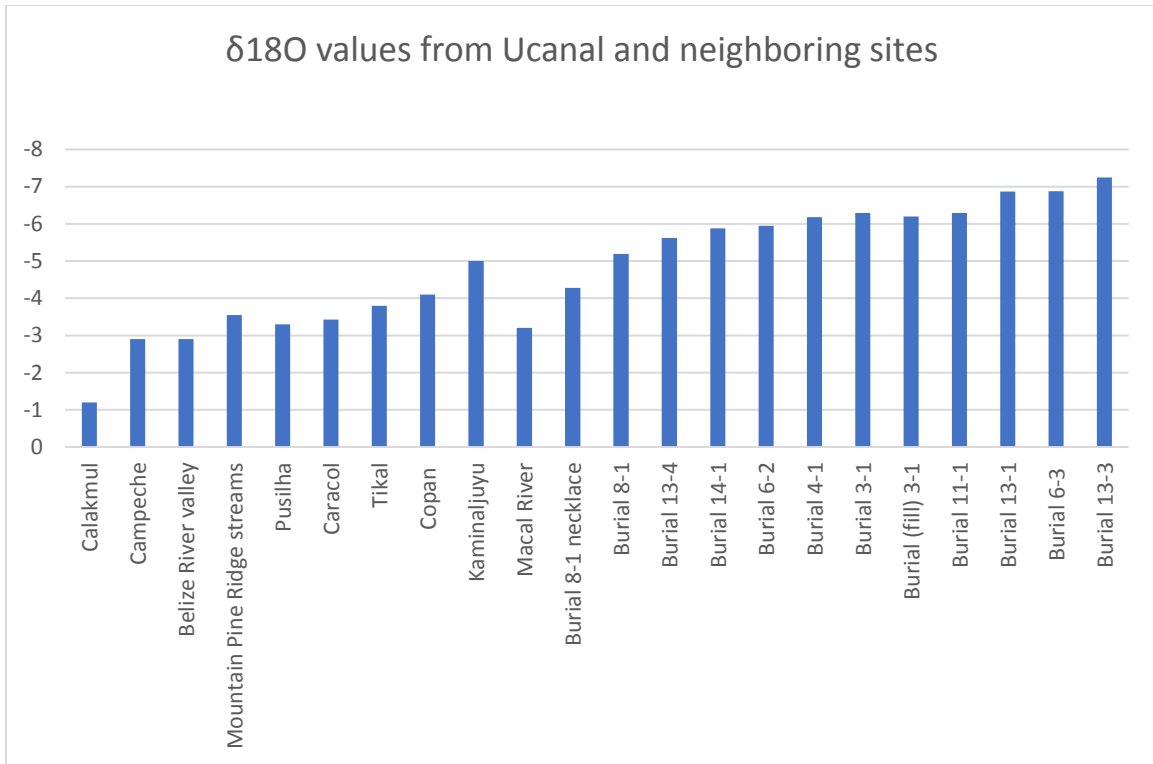


Figure 26 Oxygen isotopes data in ‰ vs VPDB from Ucanal and neighboring sites. Data from (Freiwald 2011, 268), (Price et al. 2010, table 1:23), (Somerville, Schoeninger, and Braswell 2016, 152)

Baseline

The baseline values for the site of Ucanal show variations based on faunal species. The highest value was from a nine-banded armadillo (*Dasybus novemcintus*) shell collected at the site. The other three values are from snail shells and a rib from what was possibly an agouti (*Dasyprocta punctata*). The values are presented in table VI. The mean for the five faunal samples from Ucanal is: 0.70808. But if we remove the armadillo, the mean suddenly drops to 0.70782. Since all animals eat and roam at different speeds and on different sized areas, all the species from the Ucanal samples were included.

Table 6: $^{87}\text{Sr}/^{86}\text{Sr}$ baseline data for Ucanal.

Sample type	$^{87}\text{Sr}/^{86}\text{Sr}$	Sample type	$^{87}\text{Sr}/^{86}\text{Sr}$
Snail	0.7078	Snail	0.7078
Snail	0.70785	Snail	0.70785
Armadillo	0.70885	Agouti	0.70781
Agouti	0.70781		
Mean	0.70808	Mean	0.70782

The rest of the baseline samples were arranged from north to south to reflect the geology of the broader area (see table VII).

Table 7: Baseline data from the Ucanal region, from north to south

Place of sample	Sample number	value
La polvora	5-1	0,70818
La polvora	5-2	0,70803
La polvora	5-3	0,70820
San Antonio, La Polvora	4-1	0,70780
Ucanal	1-1	0,70780
Ucanal	17-1	0,70785
Ucanal	16-1	0,70885
Ucanal	1-2	0,70781
Bombillo	10-1	0,70820
Bombillo	10-2	0,70827
Bombillo	10-3	0,70809
Cruce a Dolores	12-1	0,70771
Cruce a Dolores	12-2	0,70798
Dolores	13-1	0,70776
Dolores	13-2	0,70775
Dolores	13-3	0,70788

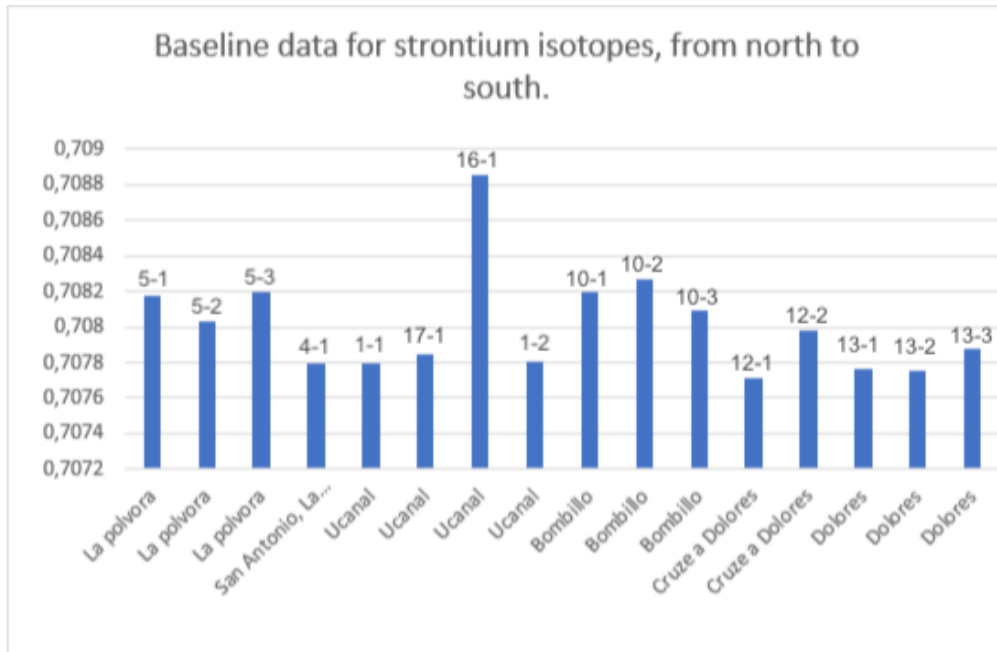


Figure 27 Baseline data for strontium isotopes, from north to south (sample number above each bar).

From the baseline data gathered here we can see that in the region surrounding the site of Ucanal, there is a general decrease of the $^{87}\text{Sr}/^{86}\text{Sr}$ values from north to south. The values from Ucanal being closer to the southern part of the baseline.

In figure 28, the strontium data from the site of Ucanal is placed in relationship with some of the values from other archaeological studies in the Maya area. We can identify four different groups from Ucanal, although they are not statistically separated. The strontium values show one clear outsider: the single tooth found from the fill in Burial 3-1. The tooth taken from the necklace worn by the child in Burial 8-1 (sample 2) has a strontium value of 0,70909, which might belong to someone born outside the region. The sample (Sample M5) from the fill above Burial 3-1 has the highest value of those analyzed. With an $^{87}\text{Sr}/^{86}\text{Sr}$ strontium value of 0,71289, this individual could be a migrant from the Maya mountains of Belize. The strontium values there were evaluated at around 0,71327 +/- 0,00167 by Hodell et al. (2004) (see table 8).

Table 8: Oxygen and Strontium isotopic values of individuals from the burials of Ucanal.

Sample	$\delta^{18}\text{O}$	Sr 87/86
M1 (Burial 8-1)	-5.19	0.70814
M2 (Burial 8-1 necklace)	-4.28	0.70909
M4 (Burial 3-1)	-6.29	0.70894
M5 (Fill on top of Burial 3-1)	-6.20	0.71289
M6 (Burial (4-1)	-6.18	0.70821
M7 (Burial 6-2)	-5.95	0.70829
M9 (Burial 6-3)	-6.88	0.70835
M10 (Burial 14-1)	-5.88	0.70874
M11 (Burial 11-1)	-6.29	0.70852
M13 (Burial 13-4)	-5.62	0.70884
M14 (Burial 13-1)	-6.87	0.70812
M15 (Burial 13-3)	-7.25	0.70882
Mean	-6.07	0.70892
One standard deviation	0.8003291	0.0012974
Two standard deviations	1.6006438	0.0025948

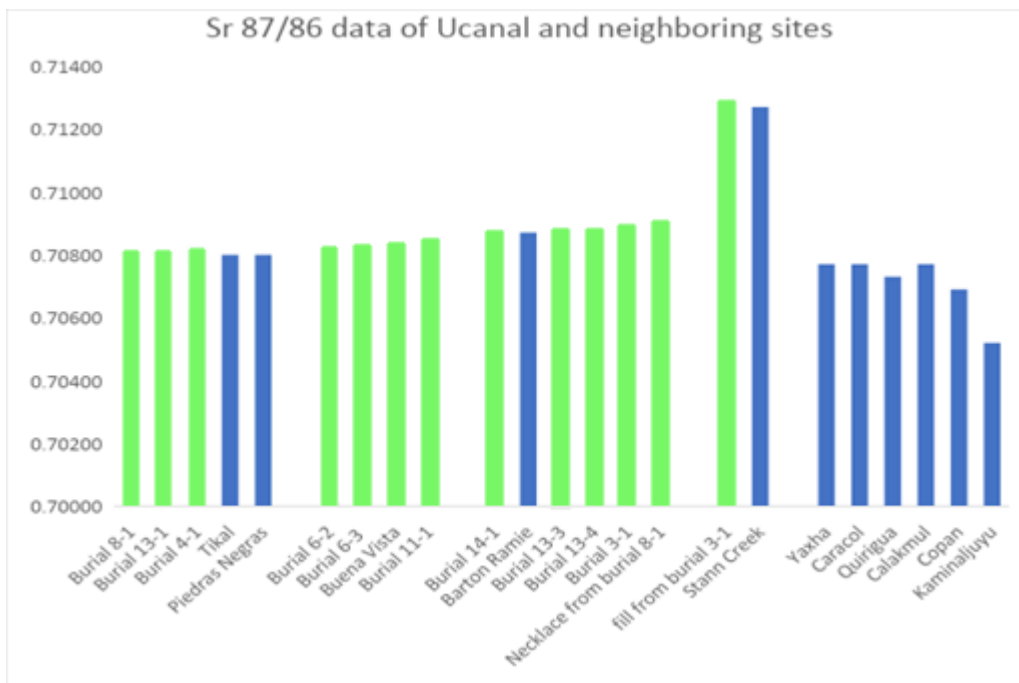


Figure 28 Strontium data from Ucanal (green) and neighboring sites (blue). Data from Price et al. (2010, fig 10)

It is thus by combining the data that we can see a little more clearly the patterns in migration. When put together in figure 29, the strontium and oxygen data form one distinct group with three outliers.

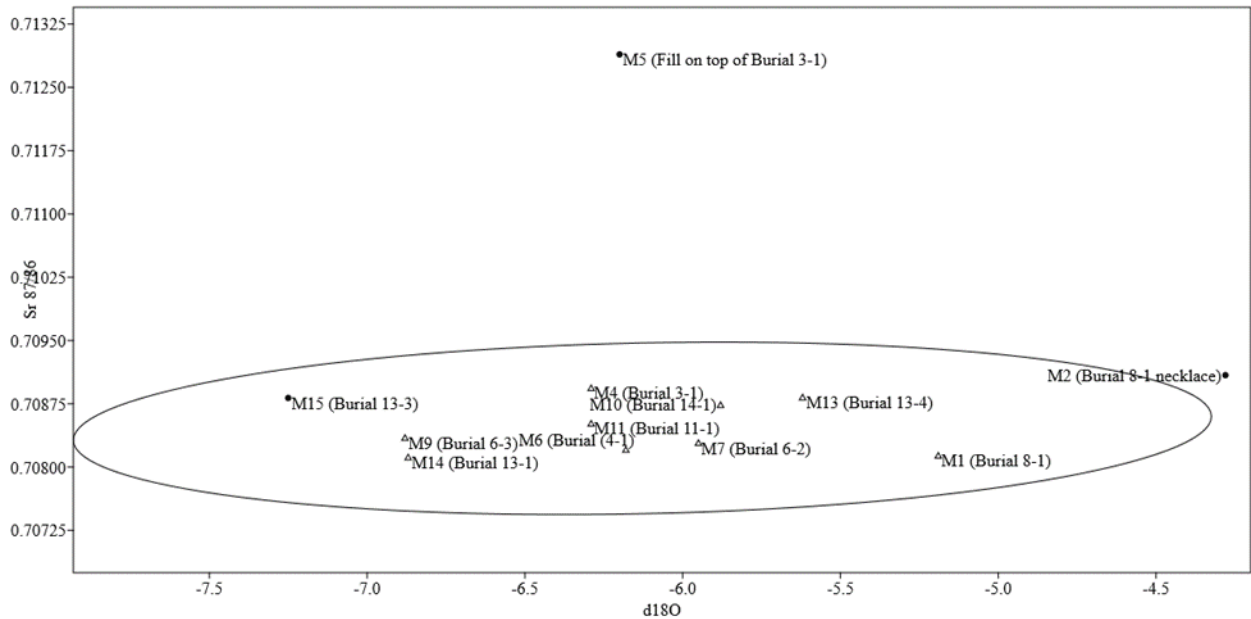


Figure 29 Joint $^{87}\text{Sr}/^{86}\text{Sr}$ and $\delta^{18}\text{O}$ data from the burials from the site of Ucanal, 95% confidence ellipse.

From this figure (29), we can see that the tooth from the fill associated with Burial 3-1 is a clear outlier from the rest of the study population with strontium data closer to the ones found in the Maya mountains of Belize. The tooth worn as a necklace by the child buried in 8-1 also sits apart from the study population, although the strontium data here mimics the one from Ucanal, the oxygen values are fairly high. This could mean that this individual immigrated from a site sitting on a similar geology, but closer to the coast perhaps the Macal River region. Although these are the two likely non-locally born individual in the sample based on the strontium values, the severed head from Burial 13-3 also falls outside 2SD (95% confidence interval = 1 SD; 90% confidence interval = 2 SD) in oxygen values, bringing forth the possibility of a foreigner having been sacrificed. These issues will be discussed further in the next chapter.

Because of the small sample size, the quantitative data is hard to interpret. From a purely statistical standpoint, all but two of the individuals from the assemblage of the archaeological site of Ucanal are all considered locals. However, it is argued that the individual on the margins of the ellipse (13-3) is nonlocal and have one of the isotopic set of data, that is outside the baseline range of Ucanal.

Chapter 7: Discussion

This chapter explores the concept of social identity as it may have been experienced by the individuals in the collection. It presents the isotope data in relationship to more detailed osteological analyses of the deceased individuals and their archaeological contexts (for a review of the burials and their context, see (table IX). All analysis for sex, age and pathologies were conducted by Dr. Katherine Miller Wolf, with the assistance of Yasmine Flynn-Arajdal, in the laboratory of the Proyecto Arqueologico Ucanal in Flores, Guatemala (Miller Wolf 2019). Although the sample size is not large enough to quantitatively compare different types of identities, qualitative analyses are provided for child burials, abnormal adult burial treatments, adult male burials, and adult female burials. As all burials have already been presented, they will be referred to as their burial numbers henceforth.

Child Burials: Burials 6-2, 8-1 and 11-1

The following burials were all children below the age of puberty. Although the sex of these buried individuals was impossible to determine due to their young age, their pathologies, body modifications, and treatment at death help reveal certain aspects of their social identities. Childhood is a peculiar phase in the life cycle of an individual in the sense that it is the only identity that every adult in the community has shared. Furthermore, children occupy a particular place in ancient Mayan cosmology since they are thought to hold a close relationship with the otherworld, a relationship that fades with age (Ardren 2015, 94).

Burial 6-2 and 8-1, children with offerings

Burial 6-2 dates to the Terminal Classic period (phase Tepeu 2) and is of a has a local isotopic signature (strontium: 0,70829 oxygen: -5,95). Although the child was not buried with any durable grave goods, they were placed in the grave wearing a necklace made of jade and marine shell beads (Miller Wolf 2019:206). In some regions of the Maya area, marine shells are commonly found in child burials dating to the Classic period (Ardren 2015, 93). Iconographic and epigraphic analyses underscore the symbolism of

Table 9: Burials from the archaeological site of Ucanal and their context.

Burial numbers	6-3	11-1	13-1	13-4	14-1	4-1A	6-2	8-1	13-3	3-1
Date	Late Preclassic	Late Classic	Late to Terminal Classic	Late to Terminal Classic	Late to Terminal Classic	Terminal Classic	Terminal Classic	Terminal Classic	Terminal Classic	Terminal Classic
		Tepeu 1					Tepeu 2			
Group	139	130	119	119	150	141	139	133	119	E
Location of grave	Within patio floor fill	In the fill from structure 1304	Patio fill, east of buried Late Preclassic platform	Patio fill, east of buried Late Preclassic platform	Parallel to front steps at the west of a building	Eastern edge of a central altar	Within fill of the foundation of residential building	Within the fill of the foundation of a residential building	Eastern edge of altar	East side of small altar
Burial and grave type	Primary cist	Primary pit	Primary cist	Primary cist	Primary pit covered with rocks	Primary cist	Primary small oval pit	Primary small pit	Primary burial of the head.	Prone position, pit burial
Associated material	Ceramic vessels, one black, one red, jade necklace.	Large monochrome ceramic sherds.	Limestone spindle whorl.	No grave goods, but found in association with Burials 13-1, 13-2 and 13-3	Sculpted limestone spindle whorl	Bowl covering the body, Garbutt Creek Red type. Burial 4-1B directly under.	Beaded necklace of jade, worked bone and marine shells	Necklace with shells and adult teeth, terminal classic bowl, mini jar, possible unbaked bowl.	No material but in association with Burials 13-1, 13-2 and 13-4	No grave goods directly associated, but west of a jade and ceramic offering.
					Large broken ceramic sherds		Ceramic sherds			
							lithics fragments			
Preservation and completeness	Poor preservation, unknown state of post cranial	Poor preservation	Poor preservation	Full skeleton	Complete skeleton	Complete skeleton, good preservation, but head	Incomplete skeleton	Complete skeleton poor preservation	Only the severed head	Poor preservation and incomplete skeleton
		Mostly complete skeleton		Poor preservation	Good preservation				Good condition	
Age at death	35-45 years old	7-8 +/- 2 years old	Late 20's early 30's	30-40 years old	35-40 years old	30-35 years old	5-6 +/- 1.5 years old	5-6 +/- 1.5 years old	30-40 years old	Late 20's
Sex	male	unknown	unknown	unknown	female	Male	unknown	unknown	Male	Probably male
Conditions observed	Dental modification	Visible cranial modification, type unknown, hypoplasia	Unknown because of poor condition of the remains	Dental modification, Osteoarthritis, Antemortem dental loss	Heavy dental modification, Healed foot fracture, Antemortem tooth loss	Many pathologies, Extra numeral finger, flaying, dismemberment, tabular oblique cranial modification	Possible periostitis or normal growth	Hypo-plasia	Tabular oblique cranial modification, Beheading	Periostitis, rodents, termite and beetle damage.
Specialized analysis	Strontium: 0.70835	Strontium: 0.70853	Strontium: 0.70812	Strontium: 0.70884	Strontium: 0.70874	Strontium: 0.70821	Strontium: 0.70829	Strontium: 0.70814	Strontium: 0.70823	Strontium: 0.70894
	Oxygen: -6.88	Oxygen: -6.29	Oxygen: -6.87	Oxygen: -5.62	Oxygen: -5.88	Oxygen: -6.18	Oxygen: -5.95	Oxygen: -5.19		Oxygen: -6.29
Excavated	June 30 th 2016	June 27 th 2017	June 21 st 2017	June 27 th 2017	July 5 th 2017	June 30 th July 3 rd 2016	June 25 th 2016	June 30 th 2016	June 24 th 2017	July 2 nd 2016

marine shells as embodying the sea and as such as mythic place of origin. The sea has also been equated as a resting place for the souls after death (Ardren 2015, 94). Children were thought to have a greater connection with the other world where they originated especially when wearing shells (see theoretical background chapter).

Another child (Burial 8-1) from this sample was also buried with shells. The individual in this burial has a local isotopic signature (strontium: 0,70814, oxygen: -3.91). The burial was placed in a small pit within the foundation of a Terminal Classic residential building foundation of Group 133, located in Sector G-10 (Halperin, Le Moine, and Flynn-Arajdal 2017). The architectural group was small compared to others in the same neighborhood and is classified as a Rank 3 (commoner) residential group (Halperin and Le Moine 2019). Nonetheless, this burial was relatively rich compared to the child from Burial 6-2. Many grave goods were found in association with the human remains, such as three complete miniature vases of the Mount Maloney Negro, Mount Maloney Variety type (Belize origin), and a small dish with an orange slip (Azote Naranjo), which was located directly over the head of the child. The child was likely placed in his or her grave in a seated position within an unfired Tinaja Rojo bowl (Halperin, personal communication, 2019). Furthermore, the child was placed in the grave with a necklace made of ceramic, jade, and shell (marine and freshwater) beads and two perforated human teeth (Miller Wolf 2019, 207).

Adding clay beads to a jade and marine shell necklace puts this material on an equal position of valued items, at least for this particular group of people, putting the emphasis on a shared identity within the group (Halperin 2019). One tooth from this necklace was analysed in the isotope lab and yielded a non-local origin (strontium: 0,70910, oxygen: -4,28). The number of objects of value found with this child is surprising considering the modest size of the residential group. Interestingly the age of this child is very similar to the one in Burial 6-2, and they both have necklaces. The tooth might reflect the presence of a cult of the ancestors, or at least a reminder of the place of origin of one member of the family. This find may underscore what some scholars refer to as partibility. Drawing from the work of Marilyn Strathern, Pamela Geller (2012)) uses the concept of ‘dividuals’ to

conceptualise partibility. This concept shows that an individual can be seen as a sum of his parts and stresses a person's relationship to a greater collectivity over the individual person. As such, the wholeness of the body is not necessary to convene the ancestor's potency (Geller 2012). Taking a part of the decedent's body after his or her death and wearing it or burying it in a secondary burial would mean that this individual still had a connection with other members of his or her family or community, whether living or deceased. Geller (2012) and Arden (2015) suggest that parts of the skeleton are regarded as a substance that flowed between dead individuals and his or her living kin. Although the teeth might not have been chosen because of the nonlocal aspect of its isotopic signature, the fact that they were deposited in a child's burial as an offering may reflect the loss of a child for a family.

Another important aspect of the identity of the child was its membership as part of a family of ceramic artisans. Excavations just a few meters west of the burial recovered a large primary midden with figurine molds, unfired ceramics, ceramic burnishers and polishers, and raw pigments (Halperin 2019). The fact that the child had a necklace with a ceramic bead (beads were rarely made of clay) and was placed in an unfired clay bowl may also reinforce the child's identity as part of a pottery-producing family.

In general, the two child burials show great signs of similarity. They both wore necklaces that appear to be rich in symbolism. As is the case with every burial, the objects and rituals pertaining to the dead usually reflects the living. Gillespie reminds us that child burials that seem to echo a high status have not universally been proven to belong to high status children (Gillespie 2001). Sometimes, the status represented by one burial, does not reflect the status of the decedent, but the one of the surviving kin. These children could have been born in wealthier families. In contrast to the two children found with necklaces made from exotic materials is Burial 11-1.

Burial 11-1, child without offerings

Burial 11-1 exhibited a local signature (strontium: 0.70853, oxygen: -6.29). No grave goods or bodily ornamentation were found in association with this child with the exception of large monochrome ceramic sherds placed around the body.

The burial was found in a Late Classic (Tepeu 1) construction phase of a Rank 3 (commoner) residential group located in Sector G-10 of the site (Halperin and Le Moine 2019, Cano 2018). Similar to the architecture of other Rank 3 residential groups in the neighborhood, residents of this architectural group re-built their home many times over the course of the Late Classic and Terminal Classic periods putting this child at the center of a long line of inhabitants. This occurrence of a relatively poorly decorated grave shows that all children in Ucanal did not benefit from the same burial treatments. One aspect that could explain this discrepancy is the fact that the child without offerings died at an earlier period (Late Classic) compared to the Terminal Classic children 6-2 and 8-1.

Abnormal Adult Burial Treatments: Burials 4-1A, 13-3 and 3-1.

At least three adult burials in the sample were treated, at the time of death, in ways that may be considered atypical or abnormal. One burial was dismembered post-mortem (Burial 4-1A), one was decapitated (Burial 13-3), and one was placed in a prone position (Burial 3-1). The latter is only considered abnormal in terms of typical burial patterns, a point discussed further below.

Burial 4-1A

This individual exhibited a local signature (strontium: 0.70821, oxygen: -6.18). One of the characteristics of this individual is the possible supernumerary right finger. Polydactyly is often associated to the supernatural in Pre-Colombian societies and conferred a special status to the affected individual (Wrobel et al. 2012). This deformity along with the post-mortem treatment of the body possibly indicate that this individual also had a special status for this residential group. As discussed earlier, the flaying and dismemberment close to the time of death is an unusual treatment of the dead and might indicate that the individual in Burial 4-1A was placed there as an offering for the female in buried in 4-1B. Above the burial was an inverted bowl of the type Garbutt Creek Red (Cotom Nimatuj and Miller Wolf 2017, 86). The placement of this large bowl is consistent with the practice of ceramics as offerings for the dead and reinforces the theory that this individual was himself seen as one.

The additional burial (4-1B) was that of a female adult. It was placed directly below the dismembered burial (Miller Wolf 2019, 198). She was not part of the isotope sampling reported here because she was excavated in 2018, after the teeth for this study was exported and analyzed. Unlike Burial 4-1A, she was not dismembered and is considered to be the main burial of the pair.

Burial 13-3

This individual had a foreign isotopic signature (strontium: 0.078823, oxygen: -7.25). While the strontium fits the data from Ucanal, the oxygen is outside the range identified by other local individuals sampled from the site. This could mean that this man came from a similar geological region, where precipitations or altitude differ.

Similar to Burial 4-1A, the burial was located on the eastern edge of a small, low altar located at the center of a residential patio group, Group 119 (Cruz Gomez 2018). Group 119 is a Rank 1 architectural group located at the intersection of Sectors G-10 and H-10. The altar was constructed during the Terminal Classic period. Burial 13-3 was found in a small pit directly below Burial 13-2, which was a poorly preserved secondary burial. Two other burials were also located nearby, Burials 13-3 and 13-4, which will be discussed below.

Burial 13-3 was likely part of some sort of human sacrifice. Skeletal mutilation, such as decapitation, is one of the most visible forms of human sacrifice in Maya iconography (Vail and Hernández 2007). Such practices have been described in Friar Diego de Landa's writings (Tozzer 1941), on murals, and codices such as the Dresden Codex and the Madrid Codex (Vail and Hernández 2007). Decapitation is also described in the Popol Vuh when two characters are sacrificed in a ball game. It also visible on the ballcourt panels from Chichén Itza. However, ball games were not the only time the Maya may have engaged in human sacrifice. It is also linked to the end of certain periods, like the half of a *k'atun*, a 20 years period of significance for the royal rituals (Vail and Hernández 2007). If the dismemberment of Burial 4-1A seemed to have taken place immediately after time of death, the osteological evidence available for Burial 13-3 are consistent with a beheading of a live individual. Making this the first account of human sacrifice in Ucanal so far. Although it is the case here, human sacrifice was not always performed on nonlocal

individuals, at least two of the sacrificial skulls found within the Motmot Tomb at Copan exhibited local signatures (Price et al. 2010, 14, Buikstra et al. 2004). The individual in Burial 13-3 may not have been sacrificed because he was nonlocal.

Burial 3-1

The particularity of Burial 3-1 is the prone position in which it was found and the significant size of the jade offering present at its side. The individual buried there could thus be one of two things: an elite individual buried in his residence, as is common throughout the Maya world, or a sacrificial victim buried as an offering. Tiesler and Cucina (2007) note that most of Maya scholars attribute ventral positioning in burials to an ignoble treatment of the body and in some cases with victims of sacrifice. The same burial pattern is visible at the archaeological site of Minanha, Belize. Burial 53-B/2 from the site contains the remains of an adult found in an extended, prone position (Snetsinger 2013:116). The position of the body, prone with the arms on the back, led the archaeologists to think that the individual had his/her arms bound in the back to conclude that the burial might be a sacrifice offering (Snetsinger 2013:116).

The identification of sacrificial victims based solely on a prone position, however, is problematic. Estella Weiss-Krejci (2006) associates extended prone burials to a wealthy social group present in the Belize River Valley. She bases her theory of a wealthy ethnic group of burials found at several sites including Baking Pot and Barton Ramie. Of the 117 individuals she recorded at Barton Ramie, 74 (63%) were buried in a prone position. At Baking Pot 59% (16 of 27) were recovered in this position compared to 7% in the overall Maya area (Weiss-Krejci 2006). Unfortunately, the premise used by the author that the replication of cultural practice equals ethnicity is problematic. The concept of ethnic barrios within the Maya area does not seem to coincide with the high level of interaction seen between sites (Miller 2019).

Welsh (1988:37-39) had also identified prone positioning of the body earlier at the same sites. Additionally, no further signs of violence were found on the body from burial 3-1. A note should be made that this could be the result of the poor conservation of this set of remains.

Weiss-Krejci and Welsh are not the only scholars to report the prevalence of prone burials in Belize. Schwake (2008) also mentions the presence of prone burials at the site of Minanha. This site, situated in the Vaca Plateau in west central Belize, is characterized by the number of multiple internments in which many individuals were buried in an extended, prone position. Although this pattern differs from the Belize River Valley, where single internments are the norm, the sites situated along the Belize River and the Mopan River (which flows through Ucanal) are also known for their prevalence of prone burials which comprise as much of 48 percent of identified burials (Schwake 2008:266). Prone burials are found at lower frequencies at other sites such as: Xunantunich where they represent 15,4 % of the assemblage (Lessard 2016) and at San Lorenzo (Freiwald 2011), Tikal (Welsh 1988), Chaa Creek (Connell 2000, Connell 2003) as sited in (Freiwald 2011), Buenavista del Cayo and Cahal Pech (Mitchell 2006) as sited in (Freiwald 2011) to name a few. Thus, while prone burials may be considered as abnormal in some part of the Maya world, its prevalence at sites near Ucanal may indicate that such a burial treatment was an extension of common Belize-centered practice. Another item found in association with this burial also points to the possibility of a connection to Belize sites: a tooth as described below.

Tooth from the fill of Burial 3-1

This tooth was found in floor fill just above the previously analysed burial, Burial 3-1. The strontium data for this tooth was particularly high (0,71289). This value is outside of the range identified as local for Ucanal and indicates that the individual was born outside the region. Within the Maya area, such high strontium values are found only in the Maya Mountains of Belize (Freiwald 2011; Hodell, et al. 2004). This tooth, although not found as part of a formal burial, may indicate that at least one of the inhabitants of this residential group was from the Maya Mountains area of Belize. It is thus possible that the individual in Burial 3-1 had ties to another site in Belize. It is important however to be considered that it might not have been known that the tooth belonged to a nonlocal individual and may just have been considered a bead or may have been placed there later without pertaining to the individual in the burial.

Adult female burial

It is known that males are overrepresented in Maya funerary assemblages, at least in Belize (Freiwald 2011:49). Ucanal is no exception. Of the twelve burials available at the time of this study, only one (Burial 14-1) is confirmed, based on the morphology of the bones, to be female (Miller Wolf 2019). As noted below, another individual, Burial 13-2, may be gendered female, based on a single grave good found with the body despite the fact that morphological indicators for sex were inconclusive (ibid).

Burial 14-1

Burial 14-1 contained the body of a female estimated to be 35-40 years old (Miller Wolf 2019:212). This individual possessed a local isotopic signature (strontium: 0.70874, oxygen: -5.88). Her feet were covered by a large broken ceramic sherd. The left fourth metatarsal showed a healed fracture and her mandible showed ante-mortem teeth loss, especially canines and premolars (Miller Wolf 2019:213). However, the most interesting thing, and perhaps the most diagnostic part of a differential social identity, is the dental modification that this woman had during life. The central incisors have a F8 type modification (see figure 31) with a pyrite inclusion. Pyrite was also included on the left maxillary canine on top of a E1 type modification, and the right second maxillary incisor has a E1 type modification with a jade inlay (Miller Wolf 2019:213).

Dental modification has been noted to be a part of Maya corporal practices since the point of Spanish Contact (Tozzer 1941), fascinating the first observers of the Maya civilisation such as Friar Diego de Landa. Then they were described in a processual fashion in the 50-60's, but very little attention was brought to the social implication of such a body treatment. Geller looked at the issue with the perspective of embodiment, saying that permanent body modifications are a connection between the constitution of identity and embodied experience. According to her, transforming the body in a permanent fashion during life could be the signal of a change in identity or at least, a shift in identity (Geller 2006). This shift needed to be recognised in the community and pain was a substantial part of the ritual.

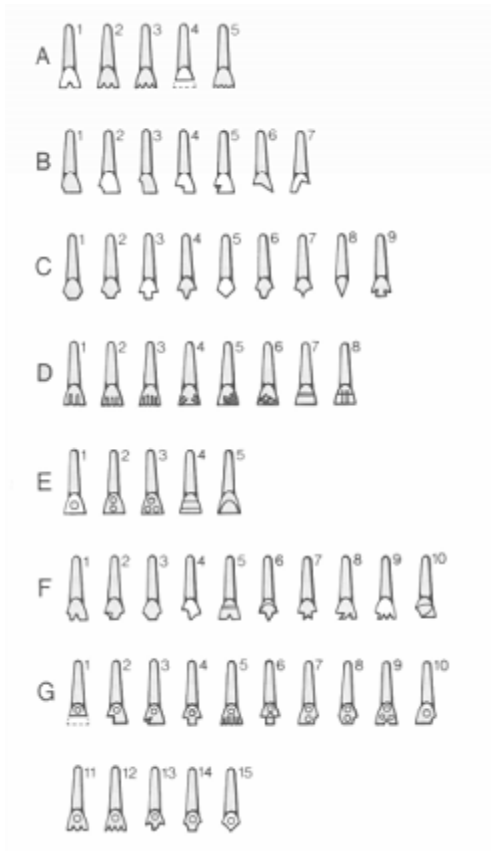


Figure 30 Romero Molina's classification of dental modification (adapted from Molina 1970) in Geller, 2006.

Pain is viewed as a form of auto-sacrifice that the individual needs to make to enter the society or a different stratum of it. A sacrifice of self, to move toward the collective will, is considered as a loss of personal freedom, but as a gain that could lead toward collective cohesion (Morinis 1985). Thus, this individual must have gained a social status on par with the dental modification exhibited. Since not all individuals from the Ucanal assemblage, nor of Maya assemblages in general, displayed dental modification, it suggests that this individual was distinguished from the others. This distinction between individuals may not be for socioeconomic reasons, as many studies have indicated that both commoner and elite individuals could possess dental modifications (Massey and Steele 1997, Saul and Saul 1991, Saul and Saul 1997). Furthermore, this group is part of the second rank of volumetric analysis and is not considered an elite group (Halperin and Le Moine 2019). Williams and White (2006)) rather associate modification of the cranium and teeth to the

identification of a lineage, a political affiliation or leader, or of a specific region or ethnicity.

Adult male burial

Burial 6-3

This male is of local isotopic signature with the values of oxygen at -6.88 and a strontium value of 0.70835. Although only part of the burial was excavated, exposure of the top part of it reveal that the individual had been wearing a necklace of 18 jade beads of different size and forms. Two complete Late Preclassic ceramic vessels were deposited by the skull, although they were crushed and broken from the weight of the patio fill as well. Fragments of figurines are also part of burial fill. The central location of the burial at the center of the patio, its exotic necklace, and other grave goods may indicate that this individual may have held a special status in the lineage of this household.

Adult burials of unknown sex

Burial 13-1

This burial was a primary interment intrusively excavated in the center of the patio floor or elite residential Group 119. This individual was badly preserved, and sex was impossible to determine. It was, however, possible to determine that this individual was an adult. Isotopic analysis indicates that the individual was born locally (strontium: 0.70812, oxygen: -6.87).

Only a single, limestone spindle whorl accompanied the burial (Cruz Gomez 2018: Fig. 7.18). It was found between the individual's legs. Although the attribution of a gender to a skeleton can be problematic (Geller 2005; Voss 2000), spindle whorls are usually linked to women since spinning and other textile production tasks are highly female-gendered (Chase et al. 2008). As Welsh (1988) identified such tools in the burials of men in Tikal and Altun Ha, Brumfiel (2006) mentions that weaving was predominantly a high status experience for the ancient Maya women (and sometimes men), whereas it was a deeply engendered activity for the Aztecs. In Mesoamerica, textiles played a critical role

in signifying an individual's status and ethnicity as well as serving as one of the principal items used in trade and tribute. As mentioned earlier, a single limestone spindle whorl was buried with the woman in Ucanal Burial 14-1. At other sites, limestone spindle whorls have often been found in burials of high-status women (Chase, et al. 2008). Thus, even though the bones were too poorly preserved and ambiguous to be assigned a sex, it is possible that the individual was gendered female.

Burial 13-4

The last burial associated with Group 119 (Burial 13-4) was placed immediately under Burial 13-1. This individual's sex could not be determined since the typical sex markers were ambiguous and contradictory (Miller Wolf 2019, 211). This individual was buried in the Late Classic or Terminal Classic period and was also intrusively placed in the group's patio floor fill dating to the Late Preclassic period (Miller Wolf 2019, Cruz Gomez 2018). It was located adjacent to Burial 13-1 and may have been buried at the same time of this burial since they were found parallel to one another. The isotopic analysis for this individual gave a local signature (strontium: 0.70884, oxygen: -5.62).

Burial 13-4 dates to the Late or Terminal Classic period, as mentioned earlier. The body was placed in a north south orientation, with the head at the south end of the burial and was covered by a sizable rock protecting part of the body (Cruz Gomez 2018, 130).

Ucanal in the Maya world

Many of the burials recovered for this study are from the Late to Terminal Classic, a period when Ucanal was under the grip of Caracol. Indeed, Altar 23 found in Plaza B of Caracol shows the ruler of Ucanal bound as a captive (Martin, Grube, and Wilkinson 2000, 97). Dated at 800 A.D. this depiction of the ruler of Ucanal represent the power that Caracol had over the site in the Late Classic. Such an influence might reflect itself in the funeral rituals at Ucanal. One of the characteristics presents at both sites is the large number of dental modifications and inlays associated with the burials. Chase found that dental fillings, were present in more than 26% of the excavated burials (as of 1994) at the site (Chase 1994, 131). Although dental modification was widely practiced at sites across the Maya area (Tiesler 1999, Geller 2006, Miller 2015, Williams and White 2006, Scherer 2018),

this kind of body modification was so prevalent at Caracol that Chase named it as a defining feature of the local inhabitants identity and associated this behavior with the success of a warfare period (Chase 1994, 132) that led the site to dominate Ucanal in the Late Classic, meaning that the inhabitants of Caracol would use dental modification as a sign of military success.

But if we look further at the funeral data of Caracol, we also find a lot of discrepancies. The site situated in Belize is known for multiple internments which are so far not apparent at Ucanal. Welsh (1988:216) suggested that primary single internments was the norm in the Maya area. If this is compliant with the majority of the burials found at Ucanal, it is not the case for Caracol. The latter site is renowned for its chambers containing numerous individuals and multiple burial events (Chase 1994, Chase and Chase 1996, Chase 1997). For example, Structure A34 from this site yielded two separate tombs which exhibited multiple individuals and multiple re-entries (Chase and Chase 1996). The Upper Tomb contained only one fragment of a human femur at the time of excavation, but showed signs of having been emptied in the Classic period (Chase and Chase 1996, 67) meaning that at least one re-entry took place. The Lower Tombs contained the articulated remains of at least four individuals of which the first two had been moved prior to placing the last two set of remains in the chamber (Chase and Chase 1996, 69). The presence of glyphic texts suggested that this tomb was occupied by royal individuals (Chase and Chase 1996, 68). Multi-entry burials and burials with multiple individuals were found elsewhere in the Maya area such as Caledonia, Cayo District in Belize, where Healy and colleagues also encountered a tomb used for the burials of nine individuals over the course of approximately two centuries (Healy, Awe, and Helmuth 1998, 269). Unlike Caracol, Caledonia was a minor center and suggests that multiple internments were not only reserved to ruling elite of major sites (Healy, Awe, and Helmuth 1998, 261). Although Welsh (1988) mentioned the normality of single individual internments in the Maya area, he identified multi internments at numerous sites such as: Barton Ramie, Mount Crow, Altun Ha, Piedras Negras, Xunantunich, San Jose, Colha and Nohmul (Welsh 1988, appendix III, table 33). Such burials are also found in Copán (Miller 2015, 28) and the Belize River Valley (Novotny 2015). Surprisingly, this phenomenon is unheard of in Ucanal and very rare in Tikal (Chase 1997, 21). Some of the burials were found in pairs,

such as the adult from Burial 6-3 and the infant in 6-1, the two adults in 4-1A and B as well as 13-1 and 13-4, but none of these burials qualify as multiple internments. In the case of the vase containing the remains of the subadult, the burial was estimated to date to the Terminal Preclassic, and the adult placed directly under was estimated to have been buried in the Late Preclassic period (Miller Wolf 2019). Burials 13-1 and 13-4 are from the same period but both have their own set of stones surrounding them, creating two distinct cists (Cruz Gomez 2018, 132). As for the two individuals from Burials 4-1A and B, excavations yielded no signs of re-entry. It is important to note however, that the techniques used to discover the multiple internments in Caracol, such as tunneling of the larger temples, were not employed at the site of Ucanal and such funeral chambers might simply not have been excavated to date.

Foreign objects

At the beginning of this study, it was stated that foreign objects were found at Ucanal. It was also stipulated that these objects came from afar with non-local individuals or in exchange networks of multiple peoples. Interestingly, the opposite scenario is at play here. Foreign objects were indeed encountered at the site, but with local individuals. Marine shells were buried with local children, and ceramics typical of Belize were found in association with local adults. The same can be said about the site of Copán in Honduras. Miller found no evidence of foreign goods being buried with non-local individuals (Miller 2015). As such, foreign objects found in archaeological contexts may have been obtained by trade or exchange (Miller 2015, 132).

Conclusion

Migration, as identified from isotopic analyses, was indeed visible at the site of Ucanal. The local population exhibited a mean isotopic signature of: $^{87}\text{Sr}/^{86}\text{Sr}$ 0.70892 +/- 0.00259 and of $\delta^{18}\text{O}$ of -6.07 ‰. (at one sigma). Individual outside of that range for one or two of these analyses were considered nonlocal.

The status of being nonlocal influenced both positively and negatively one's social identity. The place of origin, however, is not the only factor in a person's character. Identity is a complex construct influenced by age, sex, status, origin and body performances that are revisited many times in one's life. The people of Ucanal were distinct from one another while sometimes belonging to several groups that linked them together. Three individuals exhibited or were in association with isotopic values that placed them as probable nonlocals to the site of Ucanal. Individual 13-3 had a nonlocal signature himself, and individual 3-1 and 8-1 were both buried in association with nonlocal teeth.

As for the funeral treatment of the individuals, the data show that the inhabitants of Ucanal participated in a broad array of rituals characteristic of the Maya area. They place themselves at the center of shared practices with Belize, such as prone positioning of the body, cranial and dental modifications. But they also refrained from burying, at least in the burials investigated by the Proyecto Arqueologico Ucanal, more than one or two individuals in the same tomb, a characteristic of burials from Caracol, Belize. The site of Ucanal was occupied by nonlocal individuals and traded goods with them, but inhabitants may also had taken some hostage and performed human sacrifice.

One set of data alone does not make a differential social status or identity. The burial context (partibility of the single tooth, decapitation), biology (sex, age, pathologies) and relationship to architecture and grave goods helped draw a clearer picture of the possible life of the inhabitants of Ucanal. Thus, in order to study identity, interdisciplinarity is paramount. Understanding the human experience of migration benefits from isotopic analyses, but individuals are more than numbers, more than a place of birth and stripping them of their agency by forgetting the multiple aspects of identity pushes the archaeologist toward better

understanding past human complexity. Feminist theories on the life of children and women need to coexist with geochemical analyses and archaeological practices.

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List of exported teeth excavated by the PAU

(The samples that were not analysed are highlighted in red)

Sample	Site	Group	Sector	Op.	Sub-Op.	Unit	level	Lot	Location	Context	Tooth	Date of excavation
1	UCA	133	A	8	A	3	3	360	On top of structure 4	Burial 8-1	Xrm2	01-07-2016
2	UCA	133	A	8	A	3	3	360	On top of structure 4	Burial 8-1	URP2	01-07-2016
3	UCA	133	A	8	A	3	3	360	On top of structure 4	Burial 8-1	LLP3	01-07-2016
4	UCA	E	A	3	B	6	5	182	East of central altar	Burial 3-1	XLC	03-07-2016
5	UCA	E	A	3	B	6	2	128	On top of Burial 3-1	Fill on top of Burial 3-1	XLM2	11-06-2016
6	UCA	141	A	4	A	7	3	484	Est of structure 8, under the bowl from offering 4-1	Burial 4-1	XLM1	02-07-2016
7	UCA	139	A	6	A	3	10	335	Under the Wall of unit 3	Burial 6-2	Nrm2	28-06-2016
8	UCA	139	A	6	A	3	10	335	Under the Wall of unit 3	Burial 6-2	LLR1	28-06-2016
9	UCA	139	A	6	A	1	9	346	In front of sub-operation, A	Burial 6-3	XLI2	01-07-2016
10	UCA	150	A	14	B	1	4	1118	At the western base of the structure foundation (structure 150-2)	Burial 14-1	NLM1	05-07-2017
11	UCA	130	C	11	D	2	8	848	On top of structure 4, group 130, in front substructure 3.	Burial 11-1	NRM1	28-06-2017
12	UCA	130	C	11	D	2	8	848	On top of structure 4, group 130, in front substructure 3.	Burial 11-1	LRM2	28-06-2017
13	UCA	119	A	13	B	8	5	1055	In front of altar 2	Burial 13-4	XLM1	27-06-2017
14	UCA	119	A	13	B	9	5	1048	In front of altar 2	Burial 13-1	XLI1	21-06-2017
15	UCA	119	A	13	B	11	3	1054	East of altar 1	Burial 13-3	XLI2	24-06-2017

