The Dissertation Committee for Stacy Marie Drake Certifies that this is the approved version of the following dissertation:

Regional Perspective of Ancient Maya Burial Patterns in Northwest Belize, Central America

Committee:

Fred Valdez, Jr., Supervisor

Michelle Hamilton

Martha Menchaca

Allan Moore

Samuel Wilson

Regional Perspective of Ancient Maya Burial Patterns in Northwest Belize, Central America

by

Stacy Marie Drake, B.A.; M.A.

Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

December, 2016

Dedication

To Evelyn – thank you for being my inspiration to work hard, play and be silly, and love more than I knew I could. “Bis zum Mond und wieder zurück haben wir uns lieb.“

To Tom – thanks for always being by my side. I love you. Most.

Acknowledgements

This dissertation represents seven years of dedication, hard work, stress, travel, research, and the wonderful guidance, assistance, and support of numerous individuals. First and foremost, I extend endless gratitude to Dr. Fred Valdez, Jr. Thank you for believing in me and allowing me the wonderful opportunity to work alongside you over the years. I am grateful for everything you have provided me, including your patience and guidance, your humor, and your wonderful treatment of my family. I also would like to thank Dr. Palma Buttles for her support through kindness, warmth, great stories about Fred, and delicious cooking! My family has enjoyed our experiences with yours over the past years, and we hope to continue our relationship in the future!

The completion of this dissertation was also possible thanks to the guidance and advice of the wonderful members of my committee. I would like to thank Drs. Michelle Hamilton, Martha Menchaca, Allan Moore, and Sam Wilson for standing by me in this process. I am indebted to you all for your insights into bioarchaeology, cultural anthropology, public outreach and Maya archaeology, and data analysis and statistics. You each have inspired me through your teaching, your research and outreach projects, and your assistance. Thanks so much for putting up with my myriad questions, helping me sort through confusion to find nuggets of clarity (no matter how long it took), and for the kindness and genuineness you showed me over the past years. Thanks also for reading my whole dissertation – I imagine that, in and of itself, was quite the feat!

Thank you to the Institute of Archaeology (IA) in Belize and its staff, who entrust researchers at the Programme for Belize Archaeological Project (PfBAP) with the ability to conduct archaeological research at PfB (Programme for Belize) every year. In particular

I would like to thank Dr. Jaime Awe, George Thompson, Bryan Woodye, Sherilyne Jones, and Dr. John Morris for your dedication and hard work to protect and conserve the archaeological heritage of Belize. Thanks also to the people of Belize – your culture, history, people, food, and environment are absolutely delightful. I have sincerely enjoyed my eight years of visits and fully intend to continue enjoying Belize's wonders in the many years to come!

I am also thankful to the University of Texas at Austin (UT), the Graduate School, the College of Liberal Arts, and the Department of Anthropology for all of the support (financial, professional, and intellectual) I have received in the past eight years. My experiences from these institutions have allowed me to grow intellectually, personally, and emotionally and I am forever grateful for the various opportunities I was provided. I would like to extend a warm thank you to the chairs and associate chairs of the Department of Anthropology – Dr. Tony Di Fiore, Dr. Arlene Rosen, Dr. Liza Shapiro, Dr. Kathy Stewart, and Dr. Sam Wilson – and faculty graduate advisors – Dr. Maria Franklin, and Dr. Chris Kirk– for their support and guidance. I consider myself lucky to have learned from, collaborated with, and been influenced by so many individuals within the department, and I extend a particular "thank you" to Drs. Deborah Bolnick, Darrell Creel, James Denbow, John Hartigan, and Enrique Rodriguez-Alegria. Thank you also to the various staff of the Department of Anthropology for your patience, assistance, friendship, and phenomenal sense of humor: Adriana Dingman, Chris McNett, Billy O'Leary, Catherine Schreiner, Karla Steffen, and Courtney Sy, you all kept me sane throughout this weird experience known as graduate school. Finally, I extend great gratitude to Rolee Rios, graduate program coordinator extraordinaire – you put up with so many of my questions and helped me through so much that I will never be able to thank you enough. To Chaz Nailor, while I only got to know you as graduate program coordinator for the final few months of my

student experience, thank you for coming through and helping me to limp across the finish line!

In addition to the great scholars listed above from my committee and UT faculty, I would also like to thank the following individuals for assisting me with data, analysis, training, grant and article writing, advice, excavation opportunities, and motivation throughout my dissertation project. Thank you so much, Dr. Grant Aylesworth, Dr. Tim Beach, Dr. Linda Brown, Dr. Marisol Cortes-Rincon, Norrma Garcia, Liwy Grazioso, Dr. Jon Hageman, Sharon Hankins, Dr. Brett Houk, Dr. David Hyde, Dr. Sarah Jackson, Dr. Deanna Riddick, Dr. Lauren Sullivan, Bruce Templeton, Dr. Rissa Trachman, Dr. Stan Walling, and Dr. Greg Zaro.

A special thank you goes out to those amazing osteologists and bioarchaeologists who came before me and inspired me to pursue this research path. First, I thank Dr. Pamela Geller for her work at the PfBAP that served as the initial inspiration and source of some of the data in my own dissertation. Dr. Lauri McInnis Martin helped train me in bioarchaeological excavation and analysis techniques and allowed me the superb opportunity to assist her in the field and classroom for many years. Your tutelage, supervision, inspiration, and friendship have meant the world to me, and I will always credit you as the impetus that got me where I am today. Thanks for being such a great mentor and friend. This dissertation would not have been possible without the ground-breaking work of Dr. Frank Saul and Julie Saul. While my first year at the PfBAP was one of your last, I will always remember the awe I felt when meeting you - you have created quite the legacy in the fields of forensics and Maya archaeology! In particular, I am extremely grateful for the time and attention given to me over the past year by Julie. While inordinately busy with various aspects of her work and home life, Julie nonetheless devoted time to compiling and sending me various excavation and analysis notes from PfBAP

burials. I cannot thank you enough for your kindness, support, and selflessness you have shown me over the past few months. I wish you and Frank all the best, and hope to continue collaborations in the future!

Much of the research and analysis reported in this dissertation would not have been possible without the help of a great number of colleagues, friends, and students. I would like the thank the many student and volunteer excavators from Elon University, Humboldt State University, Texas Tech University, UT Austin, University of Cincinnati, University of Massachusetts Boston, and Western Colorado State University. Special thanks goes out to Chaunessy "Chaun" Clemmons, Krystle Kelley, Dorothy "Annie" Riegert, Krista Stasney, and Stevie Taylor for their integral involvement and assistance at the PfBAP. I am grateful for your help and your friendship, and am excited to see what wonders the future holds for you all.

Many thanks to the staff of the Programme for Belize (PfB) for granting us the opportunity to participate in a wonderful community and exciting research year after year. Thanks also to the various PfBAP staff who help the R.E.W. Adams camp, a summer home-away-from-home, run so smoothly. I would like to thank the Garcia family, Sonia Gomez, Jacoba Guzman, Angie Martinez, Teresa Pech, Cruz Rivas, and Sonia Rivas. Thank you all for keeping a dry roof above my head and allowing me a full and delighted stomach every day!

The staff and volunteers at the Texas Archeological Research Laboratory (TARL) have graciously supported me over the past few years with research space, analysis tools, guidance, employment, experience, and friendship. Thank you to Krista Barnum, Lauren Bussiere, Rosario Casarez, Elizabeth Coggeshall, Susan Dial, Emily Edwards, Jean Hughes, Jonathan Jarvis, Lauren Koutlias, Jessie LeViseur, Dr. Brian Roberts, Diane

Ruetz, May Schmidt, and Marybeth Tomka for all you do to preserve and protect Texas' past, and for all you do to help me love going to work every day.

I know for a fact that I would not have succeeded along this dissertation journey without the support, love, and friendship of so many wonderful people. Thanks to Luisa Aebersold, Amber Booth, Elizabeth DeMarigny, Dr. Robyn Dodge, Emily Dylla, Dr. Angeliki Kalamara Cavazos, Dr. Shannon Iverson, Dr. Carla Klehm, Angelina Locker, Dr. Amber O'Connor, Dr. Nadya Prociuk, Rick Smith, Dr. Debora Trein, and Dr. Carrie Veillieux – you are the best academic cohort family a girl could ask for. We have been through everything together – marriage, birth, death, travel, success, failure, graduation, moves, mourning, and celebration. Thanks for the inspiration, support, laughter, tears, delicious food, late nights and early mornings, road- and plane trips throughout the Americas, lessons, advice, and love. You all mean the world to me, and I will never be able to fully express just how much I love you.

Thanks also to my jungle-family, the amazing people I've met over the years through fieldwork and jungle-living at the PfBAP: Sarah Boudreaux, Dr. Mike Brennan, Nicole DeFrancisco, Erin Gill, Dr. Thomas Hart, CL Keiffer, Colene Knaub, and Anastasia Kotsoglou. I am so glad that the endless fun (and occasional suffering) of living in the Belizean jungles have brought me together with you all and I look forward to more fun in the future!

I want to thank the amazing members of my family, who have stuck with me throughout this process. To my parents, Craig and Carla Evans… words cannot express my gratitude. I have received support from you both in everything I do and in so many forms. I am and always will be appreciative and in awe of your undying support, your strong teamwork, and your ability to push me or slow me down when I need it. Thank you for instilling in me the strong morals and determination that have helped me get this far in life,

and for keeping things light by raising me on things like Monty Python and Mel Brooks. I only hope that I can raise Evelyn with as much love, caring, support, and fun as you provided me. To my sister, Hannah Evans – thank you for sticking with me. We've definitely been through the typical sister roles and experiences, but I am elated to have you not only as a sister, but also as a confidant, wonderful aunt to my daughter, fashion advisor, and friend. Thanks also to my mother- and father-in-law, Diane and David Drake. You welcomed me into your family from the beginning of my relationship with your son, and you continue to show me an overwhelming amount of love and support. From gifts that help me complete my dissertation, to re-teaching me to sew, to exposing me to the experience of being part of a large, connected family – I cannot thank you enough. My friends have also been a phenomenal support throughout this process, and I particularly wish to thank Anna Cowan, Emily Hogue, and Rachel Johnson. Your support and friendship over the past 17-27 years (yep, evidently it's really been that long!) has saved me many a time from losing my mind. I appreciate each and every opportunity you gave me to vent angrily, rant excitedly, cry tears of both joy and sadness, and for all of the hugs, memories, and phone calls. Wherever life takes us, we will always be just a phone call away.

My ultimate thank you is reserved for my new family: my husband of seven years, Tom, and my now three-year old daughter, Evelyn. Evy, you are probably too young to fully comprehend this dissertation process that has overwhelmed me for your entire life thus far, but I hope that you will someday be proud of me for completing it. You have been a trooper throughout this entire process, and I can't wait to read your own dissertation on "waffles" that you started writing this year. You always know how to put a smile on my face and give wonderful (though often rather wiggly) snuggles. I love you more than you can ever imagine. For Tom… I don't even know where to begin. You are the reason for

me winding up in Austin, Texas, which eventually led to my involvement with UT. You have held fast to the vows we made way back in 2009 and have been the best support system I could ask for. You are always there, always willing to talk, willing to listen, willing to help, and willing to comfort. Like Evy, you are so very good at making me laugh and I am always happier when you are around. Thank you for never once complaining when field work separated us for weeks/months at a time, and for even being willing to watch a rambunctious and clingy 18-month old for five days in the jungles of Belize so that I could simultaneously enjoy my family and field research. You are a rock star editor, husband, father, and friend. Thank you, for being the wonderful man who makes my heart jump with joy every time you walk through the door. I love you.

Regional Perspective of Ancient Maya Burial Patterns in Northwest Belize, Central America

Stacy Marie Drake, PhD

The University of Texas at Austin, 2016

Supervisor: Fred Valdez, Jr.

In this dissertation I address common trends in ancient Maya burials recovered through excavations of the Programme for Belize Archaeological Project (PfBAP) in northwest Belize. The scope of this research includes 123 individuals (of the approximately 150 individuals that have been recovered through PfBAP excavations) from 12 different archaeological sites and 1,200 years of prehistoric Maya society (spanning from 400 B.C. until A.D. 900). My examination combines osteological and contextual information from these human burials in a bioarchaeological analysis of Maya mortuary practices. Biological sex, age at death, grave type, body positioning, grave goods, and other characteristics are compared across three main categories represented in the data: Site Type, Time Period, and Geographic Region. Additional data comparisons included in this dissertation consider the various burial characteristics mentioned above by sex and age at death of the decedents. By collecting and compiling 25 years' worth of PfBAP burial data, this analysis successfully identified various trends in Maya burial practices in northwest Belize, many of which present opportunities for further research in the regard for life and death among these prehistoric peoples of Central America.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

This dissertation serves to organize, analyze, and synthesize burial data retrieved through excavations of the Programme for Belize Archaeological Project (PfBAP) between the years of 1992 and 2016. By including information on both the archaeological context of burial features and osteological analysis of interred individuals, this examination provides a social bioarchaeological perspective of 25 years' worth of burial data from 12 archaeological sites in northwest Belize.

INFLUENCES FOR THIS RESEARCH

During my first field experience in Belize a colleague suggested to me that the ancient Maya of the region did not adhere to any standard burial practices. I found this statement presumptive, and set about to pursue an investigation of Maya mortuary patterns to see if I could prove or disprove this statement. In fact, Ashmore and Geller (2005:87) generally agree, stating "there is no single orientation for Maya dead." Nonetheless, the authors go on to stress that more studies of Maya burial patterns are needed, in particular to address patterns on smaller regional scales, and to investigate mortuary practices within non-elite, commoner settings. The following research project is meant to serve as one of these smaller-scale, regional approaches to the question of patterns in ancient Maya mortuary practices.

BIOARCHAEOLOGY AND SOCIAL BIOARCHAEOLOGY

Archaeologists and biological anthropologists have long been aware of the wealth of information that can be gleaned from studying a human skeleton. Demographics, health, trauma, and physical activity can all be discussed in relation to human variation and

development by simply observing and measuring the remains of the deceased. In the 1970s, approaches to mortuary analysis from Saxe (1970) and Binford (1971) combined to address patterns in physical human remains through a cross-cultural analysis. This approach, known as the Saxe-Binford Program (Brown 1995), allows archaeologists to investigate the ways in which past cultures bury the dead, identify patterns that may emerge through burials, and compare these patterns cross-culturally. Studies from the Saxe-Binford Program would thus result in a broad understanding of social complexity, hierarchy, and social systems of past peoples (Brown 1995).

Hodder (1980, 1982) and others (Pader 1982; Parker Pearson 1982; Shanks and Tilley 1982) stress that such a systematic and representational perspective cannot serve as a reliable approach to studying past societies. These critics of the Saxe-Binford model argue that this static approach to the past does not allow for individual agency or factors like ideology and the malleability of social categories (Charles 1995:78). In the third edition of Reading the Past, Hodder and Hutson ask: "…if places, things and people mutually bring each other into being, how can we detach the individual from these places and things?" (Hodder and Hutson 2003:121). Perhaps referring directly to this question (originally published in 1986), Larsen (1997) notes that, until recently, archaeologists have not commonly recognized the full research potential of investigations into human burials. The blossoming field of "bioarchaeology" serves to address that gap. As Larsen states, bioarchaeology "focuses on the relevance of skeletal remains to the study of the human condition and human behavior generally; namely, how skeletal and dental tissues from archaeological settings reveal life history at both the individual and the population levels" (1997:3).

The concept of bioarchaeology was initially applied to archaeozoology, in which all biological remains (particularly non-human faunal materials) from archaeological

contexts were investigated (Larsen 1997). New concepts of bioarchaeology, as described by Larsen above, consider the inseparable significance of the osteological information provided from human remains and the archaeological context of those remains to inform us about the past from an individual- and broader societal level. While initially coined in the 1950s and 1960s with the onset of Processual Archaeology, bioarchaeology as defined above blossomed in the late 1990s (Zuckerman and Armelagos 2011). Some bioarchaeological studies created what Saul coined in 1961 as "osteobiographies" (Saul 1972; Saul and Saul 1989) – stories of individuals within the archaeological record (Stodder and Palkovich 2012) – while others utilized the combination of archaeological context and osteological data to conduct regional studies and approach the data from a population-perspective (Beck 1995).

Bioarchaeology is now a booming field of research and has produced studies investigating the following themes:

- disease, diet, and health (Barrett and Blakey 2011; Bos et al. 2016; Hard and Katzenberg 2011; Larsen 1997; Powell and Cook 2005; Prowse 2011; Rasmussen et al. 2015; Reid 1999; Roberts 2011; Roberts and Buikstra 2003; Schwarcz et al. 2014; White 1999; White et al. 1993; Wright 2006; Wright and White 1996);
- migration and contact between cultures (Mata-Miguez et al. 2012; Santana et al. 2016; Schroeder et al. 2015; White et al. 2004; Zakrzewski 2011);
- ritual and mortuary practices (Fitzsimmons and Shimada 2011; McAnany 1995; Rakita et al. 2005; Wrobel 2012);
- gender, age, status, and agency (Ardren and Hutson 2006; Arnold and Wicker 2001; Chapman 2000; Charles 1995; Geller 2009; Halcrow and Tayles 2011; Littleton 2011; Soafer 2011; Trinkaus 1995);

and various other research foci. These bioarchaeological studies represent an intersection of multiple anthropological interests by not limiting the study to the physical human skeletal remains or the archaeological context of the burial, but rather by combining these aspects to investigate the cultural implications behind individual and group concepts of life and death.

While providing further encouragement for archaeologists to consider human remains and burials as a means of understanding past societies, Agarwal and Glencross (2011) coined the term "social bioarchaeology." By their definition, "the goal of this new bioarchaeological practice is to transcend the skeletal body into the realm of lived experience and to make a significant contribution to our understanding of social processes and life in the past" (2011:3). Additionally, the authors stress that social bioarchaeologists must practice their research with the understanding and knowledge that their work is also situated in the present social world. Working with human remains is deeply and inseparably linked to ethics and morals: the deceased, the researcher, and various members of the public (be they descendant communities or otherwise interested parties) are all affected by and play important roles in bioarchaeological research.

Within the Maya world, investigations of mortuary events are often confined to osteological analyses, while separate archaeological reports carry information on the remaining mortuary features and materials. Many of these mortuary investigations focus solely on osteological analysis and the results, therefore, do not consider their cultural beliefs and practices that surround a burial event. Such division often occurs due to logistics of archaeological excavations and differing abilities of field archaeologists and specialists (including osteologists/bioarchaeologists, lithicists, ceramicists, etc.). Nonetheless, a growing number of contemporary bioarchaeological studies address the entire body of contextual, cultural, and skeletal data (Ashmore and Geller 2005; Chase and Chase 2011;

Drake 2013; Fitzsimmons and Shimada 2011; Geller 2004, 2009, 2012; Weiss-Krejci 2011a; Wrobel 2012). Using various data collected primarily from Geller (2004), along with burial reports and notes from Dr. Frank and Julie Saul, the present dissertation serves as an attempt to build on what Geller started to conduct a thorough regional analysis of mortuary patterns of the ancient Maya of northwest Belize. In the interest of following a true social bioarchaeological approach, future considerations for this work and its possible effect on contemporary groups will be explored in the final discussion.

TERMINOLOGY USED IN THIS DISSERTATION

Research in the broad field of archaeology involves a great deal of occupation-specific "jargon". I assume that readers of this dissertation have a general understanding of archaeological methods and terminology, but greater detail for some topics and terms specific to bioarchaeology are provided below. Because bioarchaeology involves a focus on human remains (often skeletonized) to investigate the social context of those remains within the archaeological record, the vocabulary utilized in this field involves a combination of terminology from archaeology, cultural anthropology, sociology, and medicine. Common terms like burial are easily thrown about as descriptors without a clear definition of whether the burial simply represents the physical structure or feature in which a deceased individual was placed, that same feature or structure WITH the deceased individual included, the deceased individual WITHOUT the feature or structure, or something entirely different. One may also question the difference between a burial, a burial site, a grave, and a cemetery. In the following pages, I focus on some of the terms that play a major role in this study and clarify the ways in which they will be used in this dissertation.

Generic Bioarchaeology Terms Defined

Within the area of northwest Belize in which all of the following data was retrieved, burials of the ancient Maya typically include single or few individuals. There are no real mentions of "cemeteries" in this area. Because burial features may contain the remains of a single, or multiple individuals, I first want to clarify the terminology I will use throughout the dissertation to discuss and identify these aspects of bioarchaeological research.

- Burial – My use of this term refers to the entire burial feature: the physical space and construction of the grave, the skeletal remains of the decedent, and any associated material goods, artifacts, or ecofacts.
- Grave – This refers to the specific, physical space and construction of a burial; the place in which an individual (or individuals) is/are interred.
- Individual – I use this term interchangeably with the term "decedent". Sometimes used to refer to a specific case or used generally, both "individual" and "decedent" refer to a single person identified within a burial feature.
- Primary Burial – This type of burial refers to the initial context in which a decedent was interred. Primary contexts of burials consist of burials that have remained undisturbed until encountered by recording archaeologists. Whether the remains are complete or fragmentary, they will likely be recovered in the position of a fully articulated skeleton (indicating that certain elements have not been previously removed from the burial).
- Secondary Burial – Remains from disturbed contexts are considered secondary burials. These burials are evidenced in a number of manners: isolated skeletal elements that clearly do not constitute an entire skeleton, disarticulated remains of one or more individuals (sometimes encountered in northwest Belize as "bundled" burials, defined below), the removal of skeletal elements that are

then interred in a separate context from the rest of the individual, or the visitation of an existing burial to remove skeletal elements from the decedent. Looted burials in which the remains have been scattered and disarticulated also fall under this "secondary" category.

- Multiple Burial – These burials contain the remains of more than one individual within the same burial context. While primary and secondary individuals within multiple burials are sometimes recorded among the PfBAP burial sample, all individuals interred with the remains of others are considered to be from "multiple" burial contexts.
- MNI –Minimum Number of Individuals; this term refers to the estimated amount of individuals recovered within a burial feature. If three right humerii are recovered from a burial unit, the MNI of that unit is three.[1]

Grave Types Defined

An evaluation of grave type allows researchers to consider the physical construction aspect of mortuary practices. Providing interpretations as to why certain grave types may be preferred or practiced by certain groups is beyond the scope of this dissertation; however, a number of different types of grave construction will be defined and used to categorize the burials in this project. In the past, researchers of Maya mortuary practices such as Geller (2004), Saul et al. (2007), and Welsh (1988) have presented and defined a number of grave-type categories. While the majority of these categories will be used in this dissertation, I argue that some of the previously defined grave types hold little significance

[1] As a note regarding the data presented in this dissertation (and provided as supplementary material) each line of entry represents a single individual. MNI records for each individual are therefore recorded as "1". Those individuals recovered from a multiple burial context are recorded with "A", "B", "C", and so on, following the overall burial number. The multiple context is expressed under the "Burial Type" entry, and additional burial type information, if available, is provided in the following "Burial Type Notes" entry.

for the purposes of my project. It is important to stress that not all interpretations of grave type may be consistent across different researchers and publications, and identification of these types are also not always agreed upon. Additionally, in my own experience through the collection and elucidation of the information provided in this dissertation, excavators do not always assign grave-type to the burials. The following grave type distinctions therefore maintain a sense of arbitration, and I will provide my own reasoning for each category below.

- Cache/Vessel – This grave type is not specified by Welsh (1988), but is introduced by Geller (2004:55) as a grave in which human remains are cached within a ceramic vessel. Saul et al. (2007) express that cache burials appear in any sort of container (ceramic vessel or otherwise perishable material) and usually indicate a secondary burial. Some burials from the PfBAP sample are described as "cache" or "vessel" burials, respectively, but will be considered equally under the cache burial category for the purposes of this dissertation.
- Chultun – Although Welsh (1988) identifies chultuns as artificial constructions, I subscribe more to Geller's (2004) interpretation that chultuns are found as both artificially carved chambers and those that occur naturally in soil or bedrock. In fact, these natural "caves" and chambers are frequently observed in northwest Belize, and archaeological determinations of artificial or natural chambers that are nonetheless utilized for cultural purposes are sometimes difficult to assign. For this reason, I define chultun burials in this research as those burials recovered from chambers (of natural or artificial origin) dug into soil or bedrock. Welsh also indicates that chultun burials are defined as those chambers that were meant for other non-mortuary purposes (1988:17). Instead, I argue that such features may have been created or utilized specifically for

mortuary purposes, and do not consider an interpretation of the overall use or intention of a chultun to be a defining factor of the feature.

- Cist/Crypt – Welsh (1988), Geller (2004), and Saul et al. (2007) separate cists and crypts into their own categories. By their definitions, cists are graves in which one or more walls or the floor of the grave are lined with stone (Welsh 1988:17; Saul et al. 2007:17). Cists may also be capped, but this is not a defining characteristic. Geller contributes to the cist category by further dividing cist graves into "informal" or "capped" categories (2004:58). Conversely, crypts refer to a grave that is entirely outlined with stone. Crypts may or may not exhibit plaster floors, but typically are covered by capstones (Welsh 1988:17). Saul et al. (2007:18) define a crypt as "…a particularly well-constructed cist, but not as large and complex as a tomb."

  There is great ambiguity in the separation between "capped cists" and "crypts". Additionally, burial notes often do not elucidate determinations of uncapped crypts or cists. Due to the ambiguity of these two grave types and the inconsistent use of these terms in previous publications, I will combine these fields into one for the purposes of this dissertation. All original notations on grave type will remain in the main data set.

- Simple – This grave type is defined by Welsh (1988:16) as "an unlined hole or pit in the ground or structural fill." The perimeters of such graves are indiscernible from the surrounding matrix (Geller 2004:56) and these graves are often associated with architectural construction like placing the body under a floor, bench, or wall. While Geller identifies pit graves as a separate category of grave-type, I choose to follow Welsh's inclusion of pit graves within the broader category of simple graves. I do this because Geller's (2004:56)

definition of a pit grave ("…an observable burial space that is not formally demarcated by construction materials…") does not clearly differentiate pit graves from simple graves, and these two types may not be easily discernible in the field. Therefore, all burials labeled as "pit" or "simple" grave types in the PfBAP data set will be considered under the category of "simple" graves.

- Tomb – This grave feature is represented by a large, clearly delineated burial space. Tombs extend spatially beyond the dimensions of the decedent and are often elaborate in their construction, space, and/or decoration/preparation (Saul et al. 2007:18). These graves are sealed (or were sealed at or around the time of deposition) and often (but not always) associated with "elite" contexts and/or monumental architecture (Geller 2004:60; Welsh 1988:18).

Body Positions Defined

Geller (2004) and Welsh (1988) both describe the various positions in which Maya decedents were interred. A breakdown of overall patterns of these positions within the PfBAP data will be discussed in Chapters 4 and 5, but these categories are first defined below.

- Bundled – The practice of "bundling" is recognized throughout ancient Maya contexts (Geller 2004; Fitzsimmons 2009; Reese-Taylor et al. 2006; Saul et al. 2007:21; Scherer 2015). For the purposes of the present study, use of the category "bundle burial" specifically refers to disarticulated remains that were tightly wrapped and placed into a secondary context at the time of interment. While it is widely noted (see previously listed sources) that the Maya wrapped the flexed bodies of corpses in textiles prior to the onset of rigor mortis, I will not consider those flexed burials under the category of "bundled" for the

purposes of this research. Instead, my use of the term "bundled" refers to those few cases noted in the PfBAP data set in which disarticulated long bones (occasionally also associated with cranial material) were stacked or wrapped and interred within a solitary burial feature (Figure 1).

Figure 1. Long-bone bundle recovered from Say Kah Group C in 2016. Image courtesy of PfBAP.

- Disarticulated – Those remains that do not represent an intact skeleton at the time of their recovery, and are not clearly placed in a bundled context, are considered disarticulated. These burials are always recorded as secondary burials due to the intentional or accidental disturbance of the remains through cultural activities (including construction in or around the original grave, or the re-entering of a grave and subsequent removal or disturbance of the remains). Whether an individual is represented by a single tooth or metacarpal, a cranium

that has been disassociated from the rest of the body, or a body from which the femora and cranium were removed during a secondary visit to the burial, these disarticulated bodies are defined by the absence of a complete body from the burial (Geller 2004:67).

- Extended – Bodies interred in extended positions are those that are stretched out to the full extent of the body (Figure 2). Arms may be stretched straight down the length of the torso or crossed in some capacity in front of or behind the torso, but the legs of the decedent always extend straight from the hips (Geller 2004; Welsh 1988).

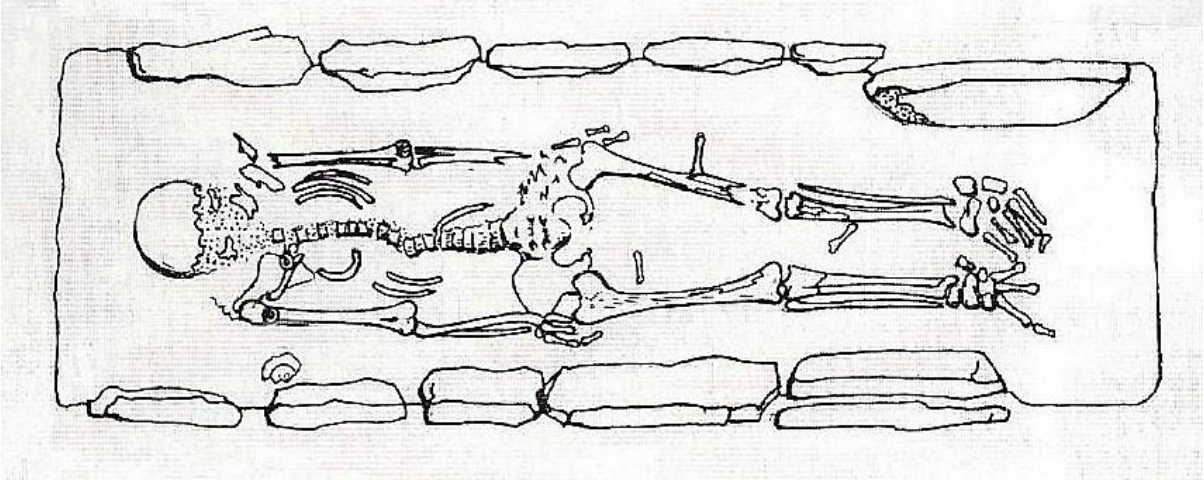

Figure 2. Example of extended body position. From Saul et al. 2007:17 (adapted from Agrinier 1964). Courtesy of PfBAP.

- Flexed – Flexed burials are those in which the decedent is placed in a folded, or "fetal" position (Figure 3). The arms may be extended, but are typically bent at the elbows in some manner. The legs of the decedent are also bent, but position of the feet in relation to the rest of the body may differ. Some burials within the PfBAP burial population are recorded with hands around the knees

or placed near the face, while the feet may be located in front of the torso or brought behind to rest near the buttocks.

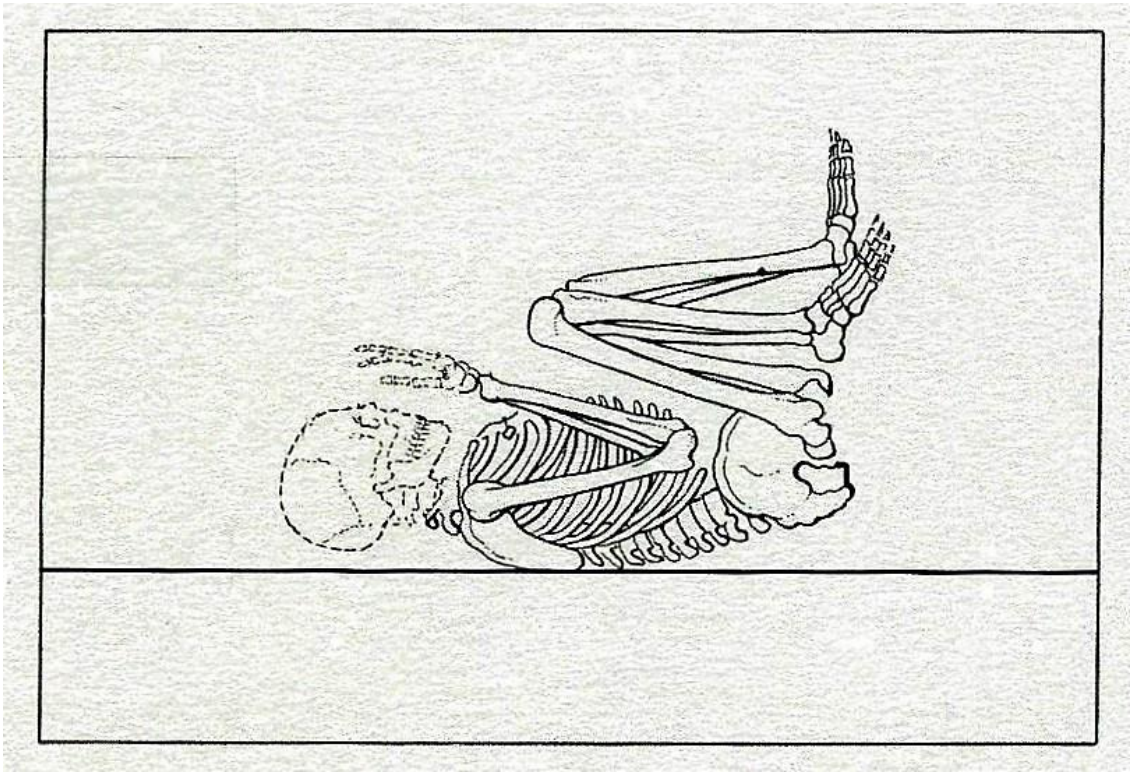

Figure 3. Example of flexed body position. From Saul et al. 2007:22 (adapted from Smith 1972). Courtesy of PfBAP.

- Prone – While not a specific category of body position, an individual lying "prone" refers to the placement of that individual on his or her stomach within the burial unit. Individuals interred in prone positions can be either flexed or extended, but will be recovered with the posterior body (back) facing the top of the burial unit.

- Supine – This subset of body position refers to decedents who are placed within the burial unit upon their back. When looking into the burial unit, the anterior portion (front) of the body faces up.

Other Burial Characteristics

A few other burial characteristics are isolated and compared in this research. These categories only require brief mention, but are defined below.

- Body orientation – Related to the body positions described above, the category of body orientation refers to the direction in which the decedent is oriented (north-south, east-west, northeast-southwest, etc.).
- Age-at-Death – This category is rather self-explanatory, referring to an estimation of age (in years, or, sometimes, months) of an individual at the time of death. Osteological determinations of age-at-death are always represented in ranges. While age ranges for younger decedents can be more precise (sometimes ranging from 6 months to one year of difference), ranges for fully developed adults are more difficult to define and often span 10 or more years. Because age ranges were not always determined for individuals within the PfBAP population, or could not be determined past an assessment of "adult" or "subadult", special categories were prescribed to better organize the population. Table 1 illustrates the breakdown of these categories (developed from Buikstra and Ubelaker 1994).

Table 1. Age ranges associated with age-at-death.

Broad Age Category	Age Category	Age Range
Subadult	Infant	<12 months
	Early Child	1-5 years
	Late Child	6-11 years
	Adolescent	12-20 years
Adult	Young Adult	20-35 years
	Middle Adult	35-50 years
	Old Adult	50+ years

- Sex – Following traditional bioarchaeological and osteological practices, my analysis only considers the biological conception of sex. Any inferences of cultural considerations of gender will be left to the reader or future research projects.

  By looking at features of the skull and pelvis and comparing robusticity and height of the general skeleton, bioarchaeologists gain pertinent information about the deceased individual. Studies by Trachman and Valdez (2006) and Storey (personal communication 2013) illustrate examples in which biologically sexed individuals were interred with cultural markers more commonly associated among the community with the opposite sex. Although these inferences are difficult to prove archaeologically, they suggest the recognition among the ancient Maya of a possible third gender, or at least flexibility in the binary separation between modern Western constructions of "male" and "female".

Many feminist archaeologists argue that sex and gender are both social constructs and that sex is not a fixed, biological given (Geller 2008; Gowland and Knüsel 2006; among others). Nonetheless, the practice of assigning sex to skeletonized human remains using particular osteological traits is common and well-established in bioarchaeological research. Rather than continue on this debate, I will simply state here that biological sex was determined in all possible cases (using methods presented in Buikstra and Ubelaker 1994) for the PfBAP burial population.

ORGANIZATION OF THIS DISSERTATION

In this chapter, I have outlined the origins of this research project and introduced various terminology that can be found throughout the following pages. I provided a brief history of the research fields of bioarchaeology and social bioarchaeology, and a discussion of additional theoretical stances that influenced my research will be provided in the chapters to follow. The ultimate goals of this research project were to:

- Compile a comprehensive and searchable database for all burials recorded through PfBAP excavations
- Compare burial data to identify potential cultural patterns of the Ancient Maya
    - Treatments of the living: do types and frequencies of purposeful body modification (cranial and dental) differ based on time period, geographic location, site type, or sex, age, or status of the decedent?
    - Treatments of the dead: are certain burial or grave features abundant in the PfBAP data to suggest preferred trends? Do trends exist or shift in relation to time period, geographic location, site type, or demographic characteristics of the decedent?

- Do the data suggest that the Ancient Maya practiced differential treatment of individuals (through body modification or mortuary trends) based on biological sex?

While the original goals for this project included other questions for the research to address, varying factors ultimately limited the scope of my final product. Issues including inconsistent or unavailable documentation records, environment-influenced poor preservation of the remains, and time and resource constraints affected my ability to address a number of my original questions. In short, this dissertation does NOT address topics of health or diet among the Ancient Maya, nor does it place much emphasis on material remains associated with the PfBAP burials. While broader comparisons of burial trends throughout the Maya world will provide great insight into the questions mentioned above, this dissertation was not considered the best venue for comparative discussions at this time.

The following chapters will provide the setting for this research project and work to address the questions listed above. These questions were approached in many differing ways – these methods and results of the analysis will be discussed in the final chapters mentioned below.

In Chapter 2, I present relevant information regarding the history of the Maya, the archaeology of Belize, and the specific archaeological project from which the data presented in this dissertation was retrieved – the PfBAP. This chapter illustrates the excavation and recording process for burials uncovered through the project and addresses source of and causes for the poor preservation often encountered in archaeological remains within northwest Belize. To help situate the data and interpretations discussed later on in the dissertation, Chapter 2 closes with a brief overview of the cultural history of the Maya.

Chapter 3, “Burial Sites at the PfBAP”, introduces the archaeological context for the PfBAP burial population. I provide a generic description of the sites and the context from which burials were uncovered. The discussion of these sites is organized according to Bullard’s (1960) three-tier categorical system: Household Communities, Minor Ceremonial Centers, and Major Centers. When available, maps of the sites are also provided. While not all of the approximately 150 burials recovered from the PfBAP over the past 25 years wind up in the final analysis portion of this research, I briefly discuss the context of all recorded burials to the best of my abilities. Some crucial information regarding locational or temporal designation, body position, or demographics are not available for all burials, leading to their exclusion from the final analysis.

Chapter 4, “Methods and Analysis”, is the meat of this research project. In this chapter, I introduce the data and break down distributions of burial elements by major characteristics (percent of the total population by time period, grave type, burial type, age-at-death, sex, etc.). The data is described, and represented visually through various graphs and charts. As intriguing patterns unfold through the data comparison, I apply a Pearson’s chi square test and mosaic plot analysis to determine statistical significance of the patterns. I would like to emphasize here that the statistics included in this dissertation are not meant to serve as explicit evidence for or against arguments of patterning among the data. Instead, chi square tests were applied to certain cases that could be successfully analyzed with the test (as an example, some data categories could not be reliably analyzed through Pearson’s chi square test due to low numbers of occurrence of the category). As a result, interesting patterns are observed throughout the data set, and, when applicable, chi square analyses are applied to those patterns to help bolster or weaken those arguments.

Chapter 5, “Discussion”, provides a more in-depth discussion of the data presented in Chapter 4. While I aim to limit any interpretations of observed cultural patterns between the various data characteristics, some presentation of possible explanations is inevitable.

Readers will note that I have not identified a specific Literature or Theoretical Review chapter within this dissertation. I have already outlined a brief history of the developments and major influences for bioarchaeology and social bioarchaeology; however, various other theoretical approaches and past studies have also influenced this project. To better integrate formative theory with my own findings and interpretations, I have substituted a chapter reviewing theoretical influences for an application of those prominent works to arguments posited in the Discussion chapter. While the PfBAP burial data was condensed and merely described in Chapter 4, Chapter 5 will highlight the major trends and interesting cases previously noted. As I analyze various observations, I integrate previous studies from various fields on archaeological insight, including:

- sex and gender (Arnold 2006; Geller 2008; Hollimon 2011; Joyce 2006);
- wealth and status (Trinkaus 1995);
- agency, biological and social death, identity, and ancestor veneration (Cannon 2005; Chase and Chase 2011; Dobres and Robb 2000; Fitzsimmons 2011; Gillespie 2000, 2002; Hodder and Hutson 2003; Hollimon 2011; Joyce 1999, 2000; McAnany 1995, 2011; O’Shea 1995; Parker Pearson 1993; Tolstoy 1989; Weiss-Krejci 2011a),
- age and the lived experience (Soafer 2011);
- and body modification (Geller 2006; Hyde and Shifrer 2007; Logan et al. 2003).

The final chapter (Chapter 6) summarizes the research presented in the previous sections, and elucidates broader impacts and future projects stemming from this research. While the process of comparing various burial data has yielded many patterns and

interesting occurrences for further discussion, many of these warranted investigations are beyond the scope of this dissertation. For such instances, I recognize the interest in further investigation, and provide suggestions for future projects to explore from the data presented.

Chapter Two: Project Background

THE PROGRAMME FOR BELIZE ARCHAEOLOGICAL PROJECT (PFBAP)

The Central American country of Belize is bordered to the north by the Yucatan Peninsula of Mexico, to the West and South by Guatemala, and to the East by the Caribbean Sea. It is a country well known for its diversity in both its people and environment and has seen and supported immigrations and movements of people for millennia. Belize is home to various archaeological sites, ranging from large urban centers to small hinterland and household communities. Twelve of these sites are currently open to the public as visitor attractions and parks (National Institute of Culture and History 2015).

The PfBAP is located within the lands owned and operated by the Programme for Belize (PfB) within the Rio Bravo Conservation and Management Area (RBCMA). The approximately 260,000 acres of land that makes up this area are located in northwest Belize in the Three Rivers Region (between the Rio Hondo, Rio Bravo, and Booth's River) (Figure 4). The PfB itself is wholly Belizean owned and operated, and its mission is "to conserve the biodiversity and promote the sustainable development of Belize through the proper management of the Rio Bravo Conservation and Management Area and other lands entrusted to it" (Programme for Belize 2014). Since 1992, the PfBAP has conducted an annual research program to investigate prehistoric and historic inhabitants of the region under the direction of Dr. Fred Valdez, Jr. at the University of Texas at Austin (Valdez 2014). Of great interest and concern of the PfBAP is to work to better understand and preserve the historic and cultural background of northwest Belize (Valdez 2008).

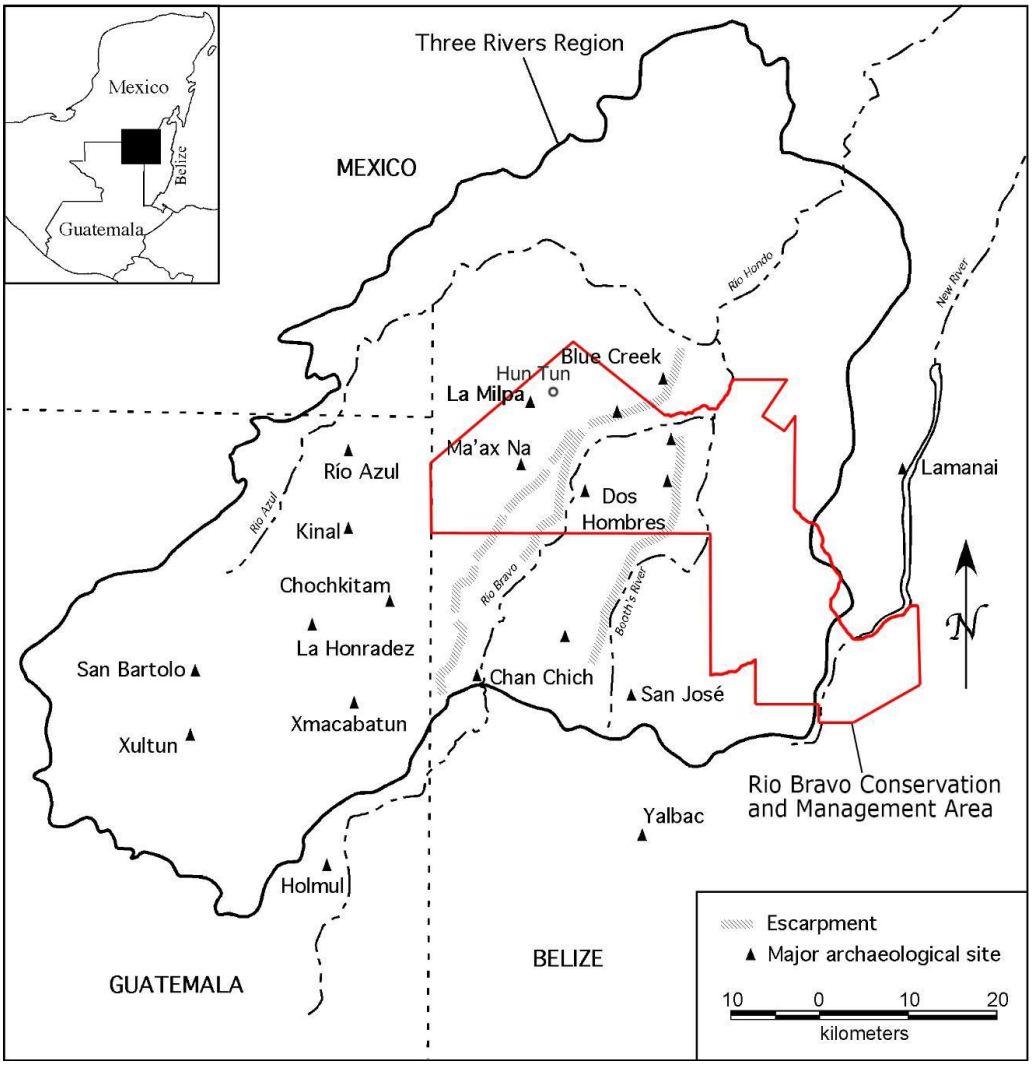

Figure 4. Map of the Three Rivers and RBCMA. From Trein 2016, courtesy of PfBAP.

The PfBAP has served as an umbrella research entity since 1995 and includes various research programs under its project permit each year (Valdez 2008). The permit is provided from the Government of Belize through the Institute of Archaeology (IoA), National Institute of Culture and History (NICH). Many of these research projects focus their investigations on the development of prehistoric Maya communities, but other interests include pre-Maya populations and historic communities also found within the

project area (ibid.). A majority of information provided in these research projects involves archaeological survey and excavation, and many of these excavations have yielded multiple burials per site. During these two decades of ongoing archaeological research, approximately 65 archaeological sites have been recorded (Valdez and Hyde 2010). While not all of the burials recovered from these sites are reported in this dissertation, my analysis has located approximately 150 burials that have been recorded through PfBAP excavations at 12 archaeological sites.

Excavations at the PfBAP

Excavations in the PfBAP follow a consistent recording process. Each isolated archaeological site is awarded a specific number tying it to the Rio Bravo research area, an "RB Number" (Table 2). RB Numbers are associated with site names, and excavations within the site are further broken down from there.

Table 2. List of PfBAP site names and their assigned RB numbers (only those sites pertinent to this dissertation are listed above).

Rio Bravo (RB) Designation	Site Name
2	Dos Hombres
4	Dos Barbaras
5	Las Abejas
11	El Intruso / Gateway
18	Guijarral
25	La Milpa & La Caldera
26	Say Kah
47	Chawak But'o'ob
62	Medicinal Trail
S2	Barba Group & Liwy Group

Operations (or Ops) refer to specific section of the site in which excavations occur and are typically assigned a letter designation (Op A, B, C, etc.). Individual Sub-Operations (SubOps) refer to individual excavation units, often one meter by one meter (1

x 1m) in size. Lots refer to specific "levels" or "zones" of soil removed in isolated portions from the SubOp. Delineations of Lots are determined based on natural stratigraphy (in which removing the top humus layer would consist of one lot and the following lot would begin at the next stratigraphic layer), or on arbitrary depths – typically ten centimeters (10cm) of soil across the SubOp per level; however, lots are also often defined by specific features. Within a SubOp, a Lot may involve the removal of a plaster floor. If the plaster floor does not continue across the entirety of the SubOp, then the specific lot for this floor is assigned to the excavation of the floor only. Removal of the soil on a similar elevation level not involving the floor would be assigned to a separate lot. Burials and other features are typically excavated within a single lot, and are also awarded specific Burial or Feature Numbers. As an example of this contextual notation system, the fourth burial recovered from the site of Medicinal Trail, within Lot 2 of SupOp C at Group A of the site would be documented (and subsequently, officially referred to) in the following formula: RB number, Op, SubOp, Lot, Feature (if applicable). Therefore, the hypothetical burial mentioned above would be documented as: RB62 7-C-2 Burial 4.

Each burial in this dissertation is referred by its archaeological provenience as described above; however, burials are also referred to sequentially at each archaeological site as they are uncovered. For instance, Burial 1 from Medicinal Trail's Group A was the first burial to be discovered at that site. Since the recovery of Burial 1 from Medicinal Trail, Burial numbers 2, 3, 4, and so on, were assigned. While not all contextual information is known for all burials discussed in this dissertation, as much information as possible regarding the burials and interred individuals was gathered and compiled into a database for my dissertation research.

Environmental Background

Overall, the countries that make up Central America possess a tropical climate, with environments ranging from arid jungle or "scrub brush" to traditional rain forest (Sharer and Traxler 2006). While true rain forests (with the expected wet, humid, and warm climates) persist in Honduras and southern Guatemala, the climate tends to dry out as one moves further north. The Yucatan peninsula is much drier, with more of a "scrub brush" forest. Belize and Guatemala, in between the southern and northern extents of the Maya region, understandably experience an intermediate environment.

The Maya region of Central America is divided into six (sometimes seven) different environmental regions (Figure 5) – each of which is briefly defined in Sharer and Traxler (2006:29-53). The Pacific Coastal Plain stretches along the southern-most extent of the Maya world, from Chiapas, Mexico to southern Guatemala and El Salvador. Directly north of the Plain are the Highlands, further defined into Southern and Northern portions (not pictured). The Highlands region represents a drastic topographical change from the Plains along its southern border, but is found in the same countries – Chiapas of Mexico, Guatemala, and El Salvador, and the Southern Highlands continue into Honduras. The Lowlands can be found north of the Highlands, involving Central and Northern Guatemala, Belize, and the Yucatan Peninsula of Mexico. This region is further divided into Southern, Central, and Northern subdivisions.

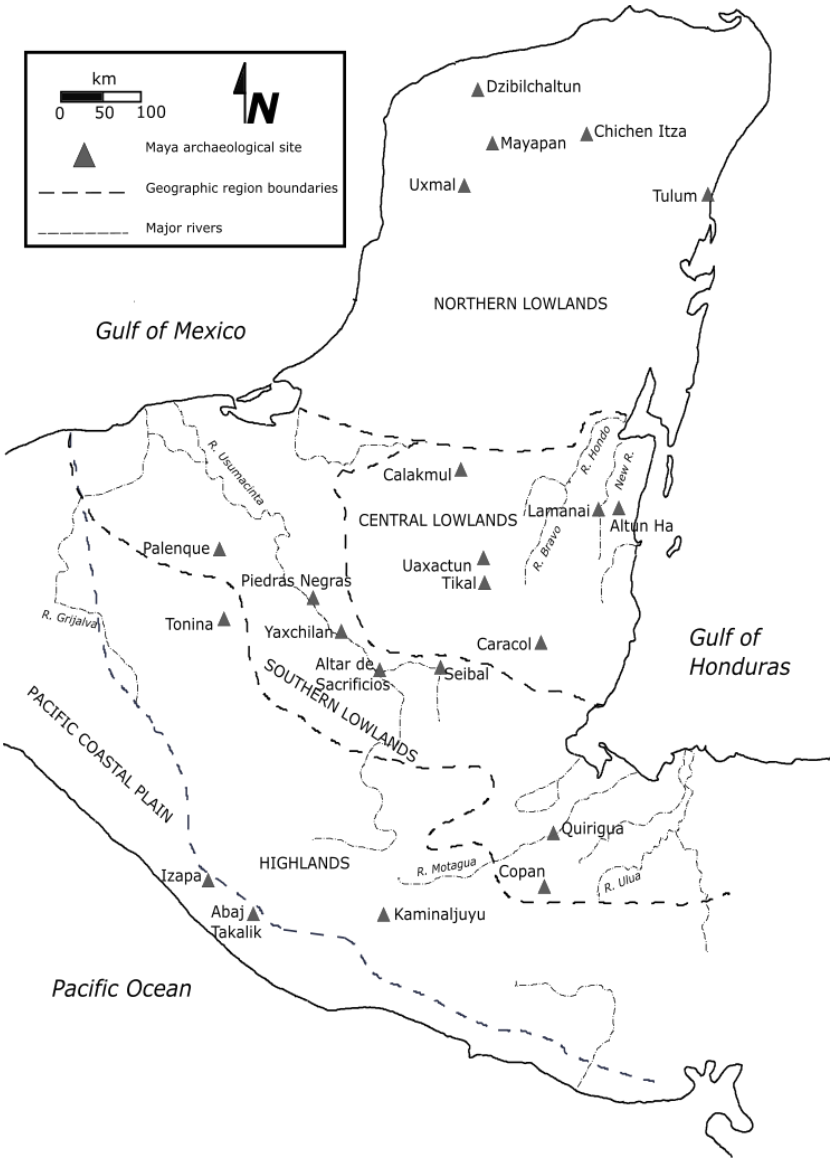

Figure 5. Map of the Maya area, showing environmental-cultural subdivisions, major archaeological sites, and major geographic features. Adapted from Sharer and Traxler 2006.

The Central Lowlands of Guatemala and Belize are the geographical location in which the research subjects of this dissertation are found. The environment here is warm and humid, and experiences both a "rainy" and "dry" season (roughly from June to December and February to May, respectively) (Houk 1996:81). The biodiversity of this

region is expansive, including hundreds of plant and tree species, two kinds of tree-dwelling primates, large cats like the mountain lion and jaguar, various birds (including the toucan, chachalaca, curassow, and the oscillated turkey, reptiles and amphibians including the iguana, crocodile, and various snakes, as well as a plethora of insects and fish (Sharer and Traxler 2006:43).

Preservation Conditions in the RBCMA

While significant to the flourishing of animal and plant diversity in the jungles of northwest Belize, the tropical environment and dense vegetation of this area is not as conducive for long-term preservation of archaeological materials. In particular, more fragile, organic materials like textiles, food, and bone are adversely affected, often to the point of total destruction of the material when exposed to the elements for extended periods of time. Those remains that do survive in the archaeological record, like human bone, often exhibit extensive taphonomic damage.

As the reader will see throughout this dissertation, preservation of human remains in the PfBAP project area is less than desirable. Upon recovery, human remains from archaeological sites in the area are often soft, powdery, and unstable. Extensive damage (typically in the form of pitting) to the outermost surface of the bone (cortical bone) is prevalent throughout the PfBAP burials, as is fragmentation of the remains (Figure 6). Even if bones appear well-preserved as they are exposed during excavation, the process of removing these remains for analysis and curation often confirms the fragility of the remains as they tend to crumble when extracted.

Figure 6. Taphonomic damage to ulna recovered from Medicinal Trail archaeological site. Courtesy of PfBAP.

Contrary to common belief, the soils of the northwest Belize region are not acidic, but range from slightly acidic to neutral and even moderately alkaline with a relative pH of 6.9-8.0 (Beach et al. 2006:174). This is due to combined factors at work in the region. While limestone and the soils that form in it tend to have higher pH, the constant process of decomposition of overlaying jungle matter leaches down into the soil. This process (affectionately termed "jungle rot" by many Mesoamerican researchers) creates acids that move through the soils. Over time, alkaline soils neutralize many acids but some acids work their way into buried organic remains. These acids damage any organic material in the way. The resulting soil, while relatively neutralized in pH, nonetheless works to degrade the integrity of bone (Weiner 2010).

Preservation of human remains is greatly affected by a variety of other natural processes occurring in the jungles of Belize. While no extensive studies on preservation conditions of Belize have yet been conducted, Dr. Timothy Beach (personal communication, 2016) identifies two major factors likely affecting both the chemical and

mechanical destruction of human remains from PfBAP excavations (also briefly discussed in Saul et al. 2007):

1. Although there is still very little research on this region, breakdown of human remains is attributed to the following environmental factors:
    a. Soils here have rich microbial diversity in the organic-rich A horizons and the rhizospheres, where roots meet the mineral soil. Both places are teeming with microbes that decompose organic matter, and the rhizosphere often contacts human remains directly. These conditions work to deteriorate those outer surfaces of bone.
    b. Acids from organic materials, plant respiration, and the percolating rain (natural rainwater has a pH of 5.6) may also contact and decay bone.
2. Mechanical breakdown occurs in the clay soils that are commonly found throughout the RBCMA. Because of bioturbation from root growth and burrowing organisms, and the mineral properties of the clay (often 2:1 clay) and the alternating temperatures and rainfall in the region, these soils are known to expand and contract with the wet and dry seasons, respectively. Any bone interred within this soil is then also susceptible to the movement of the clay, likely serving as a major catalyst for the fragmentation of many of the human remains found in the region.

Preservation conditions in the jungles of northwest Belize are compounded by common Maya burial practices involving cobble-fill burials and the use of marl within or surrounding the burial unit. The cobble-fill burial is generically identified by the presence of "fill" surrounding human remains in a burial (Saul et. al 2007). Broken pottery sherds, lithic flakes and broken or exhausted tools, pebbles, and cobbles can be found within the burial cavity and are assumed to have been included with the remains with the intention of

"filling" the space for enclosure or encapsulation (ibid.). The presence of these often large materials within the burial cavity creates a sort of hazard for the modern excavator - these objects are often not secure within the burial cavity and (as they likely did in the past as they were used to fill the burial cavity) are known to roll around or fall into and on top of the associated human bone. Of the various burials I have personally excavated, cobble-fill burials most often include extremely fragmentary and poorly preserved remains.

Previous Bioarchaeological Studies from the PfBAP

Despite the difficult preservation conditions, a few research projects focusing on human remains from the PfBAP have been successfully completed. The majority of osteological excavation and analysis for the PfBAP was conducted by Dr. Frank Saul and Julie Saul. When not serving as forensic anthropologists for modern cases, the Sauls worked on burial excavations throughout the Maya area, including Altar de Sacrificios and Cuello. During the early 2000s, the Sauls worked with Dr. Lauri Martin (then, Lauri McInnis Thompson) to create a field excavation manual to guide researchers in specific excavation and recording methods for the burials found at PfBAP sites (Saul et al. 2007). After the Sauls' retirement from the PfBAP, Dr. Martin served as Project Osteologist for the PfBAP. It is through Lauri's teachings and guidance that I learned and developed burial excavation, recording, and analysis techniques. In 2012, I was invited to serve as the Project Osteologist/Bioarchaeologist for the PfBAP and have maintained that position through the completion of this dissertation. While training under Lauri's supervision, I completed my Master's Thesis of a burial excavation from Medicinal Trail (Drake 2011).

Various theses and dissertations have included burial data and discussions of PfBAP burials (Hageman 2004; Houk 1996; Hyde 2011; Kunen 2001; Lohse 2001; Munoz 1997; Sullivan 1997), but only one other published work (aside from this current

document) has focused specifically on those burials. Geller's dissertation (2004) served to compile burial data from PfBAP excavations and provide a brief analysis of the data in regards to ideas of burial location, embodiment, and body modification. Geller's work has provided me with much of the burial data for this dissertation and provided great reference for tracking down other burial information from past publications, reports, and excavators. While I hope that my dissertation will similarly serve other future researchers as a resource for compiled PfBAP burial data, the following chapters will describe and define the regional analysis of ancient Maya burials that I have conducted using this data.

Historic Background

A generic timeline of the ancient Maya (and their precursors) is typically subdivided into 10 different periods (Table 3). Due to the vast geographical extent of Maya occupation and the roughly 3,500 years of evidence of what archaeologists identify as true "Maya" culture (Sharer and Traxler 2006), the assigned dates for these periods will of course vary by region. Cultural expressions also vary at the region- or site-specific level, but overall, the following breakdown of Maya culture is accepted throughout the archaeological community. I will introduce and describe each of these periods as they pertain to great changes in Maya cultural expression.

Table 3. Timeline of the ancient Maya. Adopted from Sharer and Traxler (2006).

Time Period		Years (BC / AD)
Paleoindian		12000 – 8000 BC
Archaic		8000 – 2000 BC
Preclassic	Early	2000 – 1000 BC
	Middle	1000 – 400 BC
	Late	400 BC – AD 250
Classic	Early	AD 250 – 600
	Late	AD 600 – 800
	Terminal	AD 800 – 900
Postclassic		AD 900 - 1502
Historic		AD 1502+

The Paleoindian, Archaic, and Early Preclassic Periods (12,000 – 1,000 BC)

While the initial date marking the earliest arrival of humans into the New World (and Central America) is hotly contested within the archaeological community, Paleoindian occupations in the Maya region are believed to begin around 14,000 years ago (Sharer and Traxler 2006). These first inhabitants were nomadic hunters and gatherers who travelled in small bands and may have occasionally been partially or seasonally sedentary (Sharer and Traxler 2006:154). A transition to territorial-based and specialized foraging marks the beginning of the Archaic Period. Groups were still small in number but inhabited settled villages (Sharer and Traxler 2006:157). To date, little information on Paleoindian or Archaic occupations of the Three Rivers Region is available (Valdez and Aylesworth 2005; Lohse et al. 2006), but Colha (in Northeast Belize) is believed to have been occupied at least by the Late Archaic (Iceland 1997; Lohse 1993; Sharer and Traxler 2006:159).

Population increases are visible among the Maya region as agricultural villages develop during the Early Preclassic (Sharer and Traxler 2006:160). Pottery is now visible in the archaeological record and Sharer and Traxler (ibid.) argue that the growing economic organization of this period combined with growing populations were major catalysts for the development of complex societies in this region. Inevitably, growing populations,

developing economies, and access to resources spurred conflict among the people of the Early Preclassic as well – another indication of the soon-to-be recognizable Maya.

The Middle Preclassic (1,000 – 400 BC)

By 1000 B.C., increasing sociopolitical complexity and trade are recognized as markers of true Maya civilization. Few indicators of social stratification (if any) have been noted in the Lowlands for the Middle Preclassic time period (Lohse 2001:60; Sharer and Traxler 2006:203), but symbolic motifs, early evidence of Maya writing, and carved stelae are all present throughout the Maya highlands and Pacific Coastal Plain at this time (Sharer and Traxler 2006:178). Archaeological evidence of the Middle Preclassic is scarce in the Three Rivers Region, but some aspects of this period have been recovered at the sites of La Milpa, Dos Hombres, Medicinal Trail, and outside of the PfBAP research area at Blue Creek and Chan Chich (Trein 2016:45). For further information on the Middle Preclassic and early time periods, please refer to the sources cited in these sections. Because material dating to these early time periods are uncommonly recorded throughout PfBAP excavations, these periods will not be explored or discussed further in this dissertation.

The Late Preclassic (400 BC – AD 250)

Continually increasing populations and sociopolitical complexity led to the emergence of what is commonly called "civilization" by 400 B.C. (Sharer and Traxler 2006:223). Sites like Tikal and El Mirador hosted the construction of monumental architecture during the Late Preclassic and intensive agriculture and craft specialization are recorded at Pulltrouser Swamp and Colha, respectively (Houk 1996:115). Within the Three Rivers Region, Late Preclassic occupation is well established and visible at La Milpa, Dos Hombres, Gran Cacao, Chan Chich, Las Abejas, and Medicinal Trail (Trein 2016: 46). Tiered relationships between sites is also evident. This is particularly visible in the position

of Medicinal Trail as a satellite site for the larger community of La Milpa at this time (ibid.). Overall, agricultural practices intensify, social stratification and centralized power within communities develop, and writing and monumental architecture proliferate (Sharer and Traxler 2006:223). A short "Protoclassic" (or Terminal Preclassic) period is identified by Sharer and Traxler (ibid.) as a transitional period between the Late Preclassic and Early Classic in the Maya Lowlands. This period lasted from AD 100 – 250 and saw the development and proliferation of polychrome pottery in the region.

The Early Classic (AD 250 – 600)

By the Early Classic period, Maya states were expanding and areas of political influence were enveloping more and more satellite sites (Sharer and Traxler 2006:287-288). Social stratification at highly-populated sites appears and is evidenced in the archaeological record through monumental architecture, carved stelae and other written records, and the presence of elite goods in tombs and caches (Trein 2016:48, Sharer and Traxler 2006:294). Tikal was at the apex of its political influence in the Maya Lowlands during the Early Classic, and is believed to have conquered Rio Azul (on the western edge of the Three Rivers Region in Guatemala) around AD 390 (Adams 1990). While little is known about the Early Classic occupation of La Milpa, Sullivan and Valdez (2006:75) and Adams (1990) suggest that La Milpa was likely subordinate to Rio Azul and therefore greatly influenced by Tikal.

Divine kings ruled over independent polities in the Early Classic (like Tikal and its surrounding urban centers, including Rio Azul and La Milpa). Communities within these states were socially and politically stratified, comprising of ruling elites and their royal families and courts, centralized government officials, craft specialists, and agriculturalists (Sharer and Traxler 2006:296). Conflict of course existed between polities, and

interregional trade became a defining characteristic of the Early Classic (Sharer and Traxler 2006, Trein 2016). Sullivan and Valdez (2006) also note that the Early Classic is a time in which the construction of public architecture begins at PfBAP sites like La Milpa East and Dos Hombres. Interestingly, little evidence of architectural construction during the Early Classic is visible at La Milpa, leading some scholars to posit that the site experienced a political hiatus during this time, marked by settlement shifts from cities and urban centers to the surrounding areas (Hammond and Tourtellot 1999; Robichaux 2007; Sullivan and Valdez 2004). The end of the Early Classic period (and transition into the Late Classic) was a time of political turmoil in the central lowlands. As the major polities of Tikal and Calakmul continually vied for power over the region, Tikal (at its social and political apex in the Early Classic) was finally defeated by Calakmul in A.D. 562 (Sharer and Traxler 2006:369).

The Late Classic (AD 600 – 800)

The effects of the political instability at the end of the Early Classic (described above) are visible throughout sites of the Three Rivers Region: Rio Azul experiences a great population decline for the early years of the Late Classic (Adams 1999), and La Milpa experiences a brief hiatus in architectural and stelae construction during this same period (Sagabiel 2006:333). Around A.D. 650-700, populations once again began to expand throughout the Maya lowlands. Conflicts over regional power between Calakmul and Tikal continued and shifted throughout the Late Classic (Sharer and Traxler 2006:495-496), but smaller sites in the surrounding region regained some stability and continued to develop and expand. Overall, the Late Classic period is characterized by population growth, expansion of agricultural activities and landscape modification, increasing amounts of

monumental architecture, and increasing densities of smaller urban centers surrounded by even smaller hinterland communities (Sullivan and Sagabiel 2003:33).

With an estimated population of over 40,000 during the second half of the Late Classic, La Milpa emerged as the dominant urban center in the RBCMA and larger Three Rivers Region (Hammond and Tourtellot 2004). Rio Azul was still occupied at this time, but its influence is limited, exhibited by the lack of construction or modification of Early Classic architecture by the Late Classic population (Adams 1999). Archaeological evidence indicates that this period was marked by extensive architectural projects at La Milpa, and smaller sites in the area (Hun Tun, Medicinal Trail, Las Abejas, and Dos Barbaras) emerged or expanded during this time (Trein 2016:52). The combined factors of population increase, intensification of agriculture and architectural construction, and continued power struggles between polities are what mark the end of the Late Classic period, and the beginning of the Terminal Classic.

Terminal Classic (AD 800 – 1100)

The transition from Late Classic to Terminal Classic is most drastic in the central and southern Maya lowlands. In these regions, increased competition between polities led to expansive and labor-intensive construction projects. These projects required great amounts of resources, both environmentally and physically. While natural resources were being severely altered by commissioned construction projects (Houk 1996; Sharer and Traxler 2006), they were also depleted and affected by expanding agriculture. Growing populations necessitated greater food production, and so agriculture also intensified. Competition and conflict over these precious, dwindling resources also increased. Simultaneously, the region experienced decreased rainfall, soil erosion, and drought (Sharer and Traxler 2006; Hammond and Tourtellot 2004). Many sites in the Three Rivers

Region are abandoned shortly after A.D. 800 (Trein 2016:54), and by A.D. 900, population throughout the central and southern lowlands had drastically declined (Sharer and Traxler 2006:499). While population severely declined, some sites in the RBCMA, like La Milpa, exhibit occupation of the site through the end of the Terminal Classic and briefly into the Postclassic, but these occupations were small-scale in population and construction efforts at the once-great urban center (Houk and Zaro 2012; Zaro and Houk 2012).

While the central and southern lowlands show signs of large-scale abandonment and population decline, sites in the northern lowlands begin to emerge as major polities and urban centers for the first time in Maya history. One theory among Mayanists posits that the "great Maya collapse" is better understood and defined as a large-scale population migration, in which people relocated to sites in southern Mexico and the Yucatan Peninsula. However, others have argued that social and political turbulence and environmental stressors (among other factors) created conditions in which many people simply could not (and did not) survive (Buttles and Valdez 2016; Hammond and Tourtellot 2004; Iannone 2007; Morris et al. 2007; Sullivan et al. 2007). The apogee of northern lowland Maya sites marks the transition into the Postclassic period.

Postclassic and Historic Periods (AD 1100 – 1502)

The Postclassic Period of Maya prehistory begins around A.D. 1100 and ends (at different times in each area) with the first contacts between Maya groups and Europeans at the beginning of the 16th Century (Sharer and Traxler 2006:590). During these periods, sites throughout the Three Rivers Region had been abandoned since the Terminal Classic, but evidence of occasional small-scale habitation and visitation is present in some sites (Trein 2016:56).

The Postclassic period saw great changes in Maya lifestyle: from shifting regions of habitation, to new political and social organizations and an overall more cosmopolitan experience (Sharer and Traxler 2006:590-591). Migrations of people from throughout Mexico and Central America into the Yucatan added multi-cultural influences and greatly expanded trade routes (ibid.). Political systems shifted during the Postclassic from divine rulers to a more collective system comprised of ruling councils (Sharer and Traxler 2006:627). By the time Spanish explorers arrived in the northern lowlands and the coast of the Yucatan, Maya populations in this region had rebounded and states were even redeveloping in the central lowlands and northern highlands – some of which were so powerful they were able to ward off Spanish conquest longer than many Maya states to the north (ibid.). Nonetheless, sites in the Three Rivers Region appear to have reached their peak by the Classic period and never rebounded in the following eras.

Chapter Three: Burial Sites at the PfBAP

Generically, ancient Maya sites within the Three Rivers Region of Belize can be separated into three major categories. This categorical system was developed by Bullard (1960) and separates sites into House Ruins (heretofore referred to as Household Communities), Minor Ceremonial Sites, and Major Ceremonial Sites. Bullard developed this system for sites of the northeastern Peten, a region within which sites of the PfBAP research area are arguably a part (Scarborough and Valdez 2003, Sharer and Traxler 2006). Crumley (1995) has argued that models like Bullard's imply an imbedded hierarchical structure to ancient Maya society, and instead suggests that a more heterarchical approach be applied to social organization. The heterarchy model suggests that ancient Maya sites were connected through complex relationships, not simply on a scale of hierarchy – meaning that varying communities of varying scales were interdependent (Crumley 1995, Kunen 2001, Scarborough and Valdez 2003). In this approach, differing sites within the surrounding areas of a major center or ceremonial site are understood as "resource-specialized communities" (Scarborough and Valdez 2003:4) and further categorized by the environmental region in which they can be found.

For the purposes of describing the sites pertinent to this dissertation study, I will categorize sites within Bullard's three-tier model, but will caution readers to not assume the direct hierarchical structure of ancient Maya society that may be suggested by this model. As with any other culture (prehistoric or otherwise), simple models cannot be applied across the board to understand political and social organization and communal relationships. The resource-specialization model and many other models of social and political organization are undeniably valuable for studies of ancient Maya settlements. These settlements and dispersed communities throughout the PfBAP research area were

undoubtedly organized based on both hierarchical and heterarchical relationships; however, in the interest of simplicity to briefly introduce those sites discussed in this dissertation, I will utilize Bullard's simplistic model.

As a basic introduction to archaeological site type and analysis of political and social organization within the Maya area, I provide the following simplified description of Bullard's site type categories. Generically, the division of sites between the three levels is based on increasing size, density, and architectural complexity. The smallest settlement unit are Household Communities. These sites vary in size, but involve anywhere from one to five structures located atop rectangular platforms (Ashmore 1981; Bullard 1960; Geller 2004:82; Tourtellot 1983:42, 43; Sutro and Downing 1988). The majority of sites within the PfBAP research area fall under the Household Community category. While small ceremonial structures ("pyramids") and other small monumental-type architecture is often noted at sites in this category, many Household Communities are associated with agricultural features like terraces and water management features (Ashmore 1981; Bullard 1960; Geller 2004).

Minor Ceremonial Centers are identified by the presence of one large structure, and one, or more, smaller ceremonial structures arranged among additional, lower buildings. The structures are then placed around single or multiple plazas or courtyards (Bullard 1960; Geller 2004). Minor centers involved a combination of residential and communal activities (which may have also occurred at Household Community sites, but on a smaller scale), and a fair amount of sites within the PfBAP research area involve this site type as well.

Finally, Major Ceremonial Centers are represented by the largest and least common site in the PfBAP research area. These sites exhibit elaborate and varied architecture organized around multiple adjacent plazas. The primary assumed function for these Major Centers involves communal ceremonies, but courtyards of residences (assumed to belong

to elite members of the community) can often be found adjacent to central plazas (Bulard 1960; Geller 2004).

Within the PfBAP research area, excavations at 12 archaeological sites have recorded human burials. The following section provides a brief description of these sites, broken down by the broader site-type categories listed above (see Table 4). I have also included a short description of each burial recorded from the sites for which information was available. Prior to 2012, the majority of burial excavation and analysis for the PfBAP was conducted and/or supervised by Frank and Julie Saul. Lauri McInnis Martin also conducted various burial excavations and analysis, and burials recovered from PfBAP sites since 2012 have been excavated and analyzed by myself or under my supervision. I extend my gratitude to Julie Saul for providing me with extensive notes from those burials excavated and analyzed prior to 2012. Much of the data described below was also compiled from Geller's dissertation (2004). Those burials that do not possess enough data regarding interment style and demographics of the decedent are mentioned in the descriptions below, but are excluded from any further analysis for the purposes of this dissertation.

Table 4. Breakdown of PfBAP archaeological sites by site category.

Household Community	**Minor Ceremonial Center**	**Major Ceremonial Center**
Barba Group Liwy Group Medicinal Trail	Chawak But'o'ob Dos Barbaras El Intruso / Gateway Guijarral La Caldera Las Abejas Say Kah	Dos Hombres La Milpa

HOUSEHOLD COMMUNITIES

Barba Group (RB S2)

Ceramic evidence from the Barba Group places the site's occupation in the latter portion of the Late Classic period. The site is located approximately 2.5km southeast of Dos Hombres atop an escarpment overlooking the Rio Bravo floodplain. The Barba Group consists mainly of agricultural terraces and small mounds – only one of which has been identified as a small western-facing pyramid or shrine on the east side of a courtyard (Hageman 2004:350) (Figure 7). Five individuals from four separate burials have been recovered at the Barba Group site.

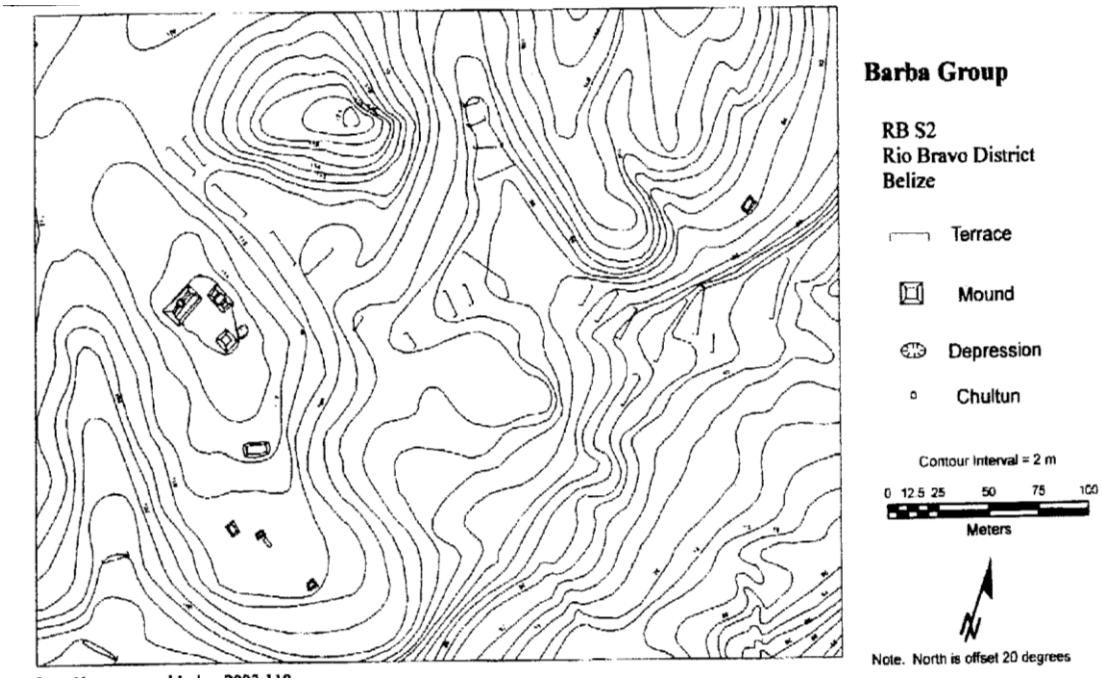

Figure 7. Map of Barba Group archaeological site. From Geller 2004:86 (adapted from Hageman and Lohse 2003:118). Courtesy of PfBAP.

Burial 1 (PfBAP ID: PfBAP-12)
MNI: 1 Sex: NA Age: Adult Position: Extended Orientation: N-S (head S)

Burial 1 (5-P-4) was recovered within the construction fill along the back side of the peak of the Barba Group shrine. While fragmentary, the individual is estimated to have been an adult of indeterminate sex, buried in an extended position with his or her head oriented to the south. A Tepeu 1 - 2 red-slipped bowl was interred along with the decedent (Hageman 2004:353, 371).

Burial 2 (PfBAP ID: 1998-02)
MNI: 1 Sex: M Age: O Adult Position: Flexed Orientation: N-S (head S)

A second burial was encountered below Burial 1 within the same SubOp (5-P-13). The interment was a small roofed chamber within the bedrock of the shrine structure. The roofed structure is described by Hageman (2004:371) as a "small cave" which opened to the east and lay directly below the peak of the shrine. The male individual (aged 50+ and representing the only old adult individual within the entire PfBAP burial population) was interred in a flexed position with the head oriented north. Five early Late Classic vessels - three of which were effigy bowls (Tzakol 3 to Tepeu 1), two shell beads, and one jade bead were associated with the burial. A fragment of bone from Barba Group Burial 2 yielded a calibrated AMS radiocarbon date of AD 284 +/- 157 (Hageman 2004:371-374).

Burial 3 (PfBAP ID: 1998-03)
MNI: 1 Sex: NA Age: M –O Adult Position: NA Orientation: NA

The third burial recovered from the Barba Group is associated with a secondary residential group called Grupo Bronco (11-J-25). Although located under a patch in a well-preserved plaster floor within a residential structure at Grupo Bronco, this burial was poorly preserved. Dental attrition suggested an age of 40+ years, but no other demographic or contextual information could be determined (Hageman 2004:374).

Burial 1 (PfBAP ID: PfBAP-12)
MNI: 2 Sex: M?; NA Age: Young Adult; NA Position: Flexed; NA
Orientation: N-S (head S); NA

While not technically part of the Barba Group, an additional unnamed platform plaza group was located near the Barba and Liwy Groups. According to Hageman (personal communication 2016), this group was located on the edge of a bajo west of Dos Hombres. A looter's trench was present in the eastern face of the western structure and was investigated as "Op 1" by the Sauls and Hageman in 1997. The remains of two individuals were recovered by excavations in Op 1, but much of the context of these remains was disturbed by the previous looter activity. The primary individual was a young adult, possible male. This individual was interred in a flexed position with head to the south (hips north), and one tooth exhibited Romero C3 dental modification (Julie Saul, personal communication 2016). The second individual was only represented by a single bone fragment and will therefore be excluded from further analysis in this dissertation.

Liwy Group (RB S2)

This small residential group is located between the two major regional centers of La Milpa and Dos Hombres. Geller (2004:87) notes that little information is available on this site, but describes it as pertaining of six structures organized around a small courtyard. No map of this site is currently available.

Burial 1 (PfBAP ID: 2000-05)
MNI: 1 Sex: F? Age: Adult Position: Flexed Orientation: NW-SE (head SE)

The single burial recovered from this site dates to the Late Classic and was located beneath two plaster floors within the eastern-facing structure (Geller 2004:87). This simple

burial consisted of a possible female adult whose body was interred in a loosely-flexed position on a northwest-southeast orientation with the head to the southeast (Julie Saul, personal communication).

Medicinal Trail (RB – 62)

The dispersed hinterland community of Medicinal Trail is located approximately 5km east of La Milpa. This community is a resource-specialized community consisting of three formal courtyard groups, numerous mound clusters, and various features like depressions, mounds, and terraces (Hyde 2011; Hyde and Valdez 2007) (Figure 8). The largest of the formal groups are Groups A and B, each consisting of a series of cardinally-aligned structures surrounding a central courtyard. Groups A and B are aligned on a north-south axis and each possesses a major eastern-facing structure. A total of nine burials have been recorded throughout this community.

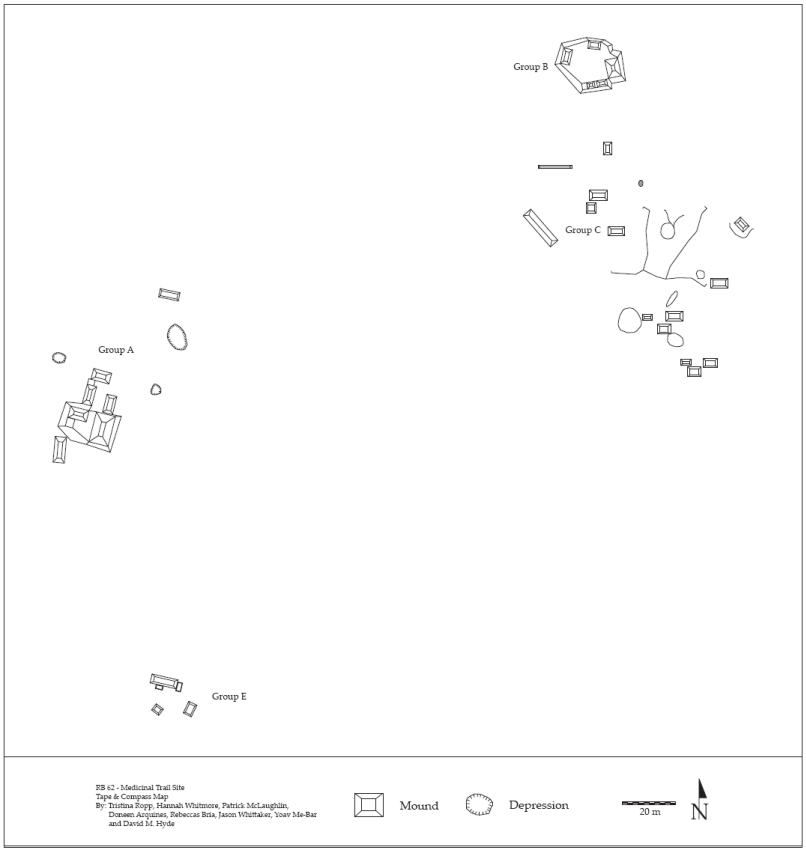

Figure 8. Map of Medicinal Trail archaeological site. From Hyde 2011:5. Courtesy of PfBAP.

Group A

Group A displays the highest social status of any other group within the larger Medicinal Trail community (Hyde 2011:182). This group dates from the Middle Preclassic through the Late Classic periods, and consists of six structures situated around three courtyards. To date, six individuals from six separate burial features have been recovered from this group.

Burial 1 (PfBAP ID: 2003-02)
MNI: 1 Sex: NA Age: Young Adult Position: Flexed Orientation: E-W (head E)

The primary burial of a single individual was recovered within a Preclassic round structure (A-Sub-1) at Group A (Op 7, SubOp B, Lot 9). This burial (Burial 1) was covered in sascab atop the bedrock platform with the individual interred on his or her left side in a loosely flexed position. The head of the individual was positioned to the east, and was covered by a small ceramic vessel. A second, larger ceramic vessel was located south of the body in a way that suggests the body was flexed around this vessel (Hyde 2011:234). Sex of the individual could not be determined, but age-at-death was estimated to be 20-30 years old (Hyde 2011:234).

Burial 2 (PfBAP ID: 2007-01)
MNI: 1 Sex: NA Age: L Child-Adolescent Position: Flexed Orientation: N-S (head S)

Burial 2 was recovered atop a Late Preclassic floor just east of structure A-Sub-2. The flexed body was oriented north-south with the head south and facing west (Hyde 2011; Wren and Kalamara Cavazos 2008). This primary interment was of a single individual, aged 10-14 years at the time of death (Hyde 2011:240). Sex could not be determined from the fragmentary remains. The cranium of this individual was placed between two Chicannel Sierra Red vessels, dating to the Late Preclassic. A thin layer of chert flakes was also recovered just below the lower ceramic vessel (Hyde 2011:233-234).

Burial 3 (PfBAP ID: 2007-02)
MNI: 1 Sex: F Age: Young Adult Position: Flexed Orientation: N-S (head N)

Burial 3, was encountered atop the same Late Preclassic plaster floor as Burial 2. A young adult female (aged 20-30 years at the time of death) was interred within a stone cist. Her body was prone, with her arms extended at her sides and her legs flexed behind and toward her buttocks (Kalamara Cavazos 2009: 97). The decedent was oriented north-

south, with her head to the north, facing east (Kalamara Cavazos 2009:99). Nine teeth from this individual exhibited dental modification (Figure 9) consistent with Romero types A1, B4, B5, and a probable B6 (Hyde 2011:244, Kalamara Cavazos 2009:99, Romero 1958) (Figure 10). A fragment of conch shell, two discoidal shell ornaments, and a spondylus shell tubular bead were located near the cranium of the decedent, as well as a possible bone pin near her neck (Hyde 2011:245-246, Kalamara Cavazos 2009:100-101).

Figure 9. Modified teeth from Medicinal Trail Burial 3. From Hyde 2011:244. Courtesy of PfBAP.

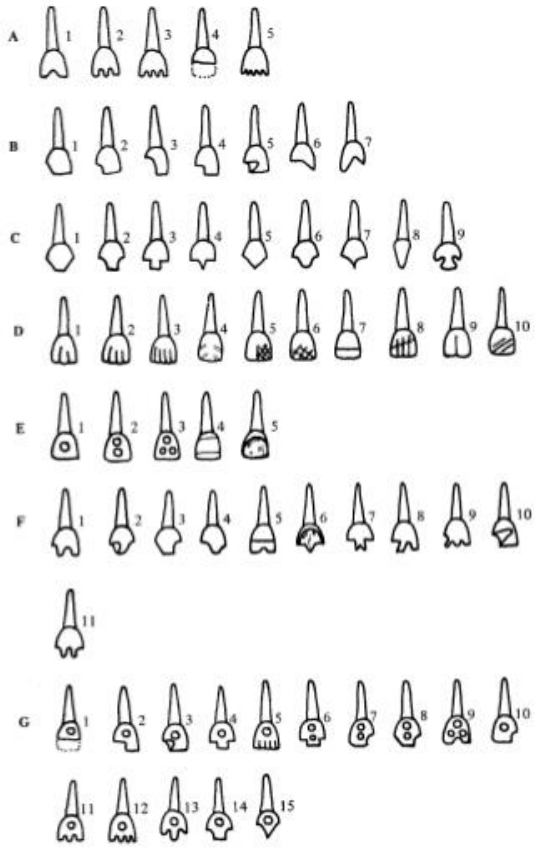

Figure 10. Dental modification types. From Romero 1970.

Burial 4 (PfBAP ID: 2009-03)
MNI: 1 Sex: F? Age: Young-Middle Adult Position: NA Orientation: NA

Burial 4 was recovered from within Structure A-4, the largest structure within this group. While not pyramidal in shape, the size and location of this structure atop an elevated courtyard suggest Structure A-4 may have been, at least in part, a ceremonial structure for Group A (Hyde 2011:263). Burial 4 was located within the southeastern corner of A-4, below the plaster floor of the superstructure platform (Hyde 2011:270). A large granite metate fragment was placed atop the decedent – a possible female individual estimated to be between the ages of 30 – 50 at the time of death (Hyde 2011:272). Hyde (ibid.) cites

Lauri McInnis Martin, who interpreted that the lateral mandibular incisors exhibit Romero type B6 dental modification (no images of these teeth are available).

Burial 5 (PfBAP ID: 2009-04)
MNI: 1 Sex: M Age: Adult Position: Flexed Orientation: N-S (head N)

Another burial (Burial 5) was recovered from the northern portion of Structure A-4. This burial was encountered in front of and below a ledge within a small room. The decedent is an adult probable male, who was interred on his left side in a flexed position, head to the north and facing east (Drake 2011:42). Burial 5 is interpreted as part of a termination ritual because it was sealed with a plaster floor and topped with a small cache of ceramic sherds – this is an act commonly associated with the ancient Maya as a way to seal off a room or structure before abandoning it (Hyde 2011:272). Of particular interest with this individual is the presence of cranial modification (Figure 11). The left bones of the cranium (including the temporal, parietal, and occipital) were preserved intact and exhibit a flattening of the occipital consistent with fronto-occipital modification (Figure 12). (Blom et al. 1998; Drake 2011:57, Romero 1970). While the act of purposeful cranial modification is often associated with members of the ancient Maya elite (Chase and Chase 1992, Dingwall 1931, Massey 1989, Welsh 1988), no artifacts were associated with these remains (Drake 2011).

Figure 11. Lateral view of posterior cranium (temporal, parietal, and occipital) from Burial 5 of Medicinal Trail Group A. From Drake 2011: 82, Courtesy of PfBAP.

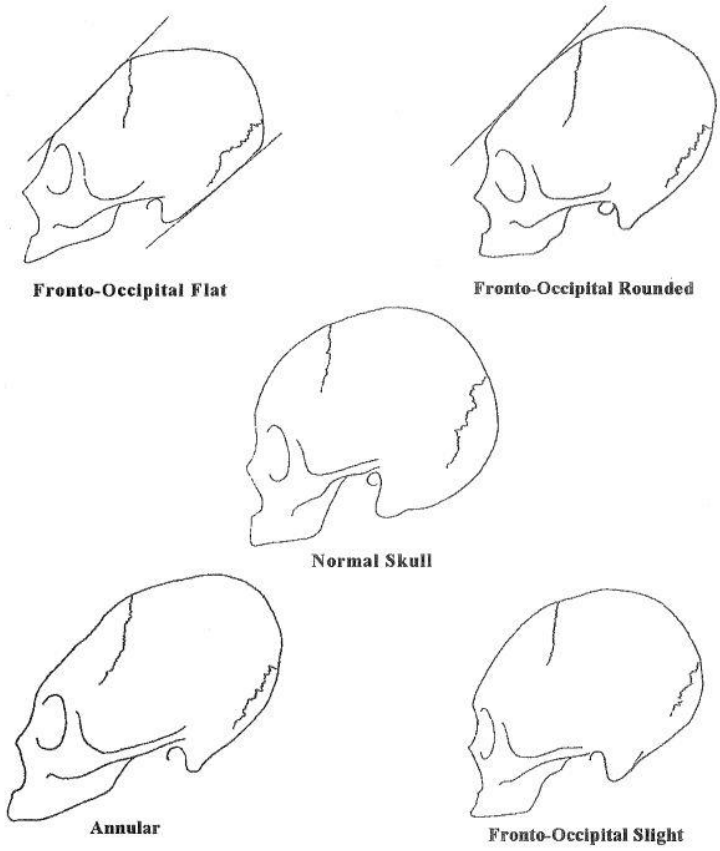

Figure 12. Varieties of purposeful cranial modification. From Blom et al. 1998:246.

Burial 6 (PfBAP ID: 2010-02)
MNI: 1 Sex: F? Age: Adult Position: Flexed Orientation: N-S (head S)

The final burial recovered from Structure A-4 (Burial 6) was encountered under the floor of the superstructure (Hyde 2011:267, 335; Hyde et al. 2015; Wren et al. 2015). While the osteological analysis has not yet been completed for this individual, Hyde (2011:267, 475) reports that the individual is a possible adult female, interred in a flexed position with her head to the south.

Group B

Group B is located 200m to the north-northeast of Group A and is the second largest group recorded at the site. Here, five structures are situated around a large courtyard. While the majority of structures at Group B assumedly served a residential function, the eastern-facing structure (B-1) is pyramidal in shape and likely served as a residential shrine (Hyde, personal communication 2016). Three individuals from three separate burial features have been recovered from this group.

Burial B-1 (PfBAP ID: 2009-02)
MNI: NA Sex: NA Age: NA Position: NA Orientation: NA

Burial B-1 was recovered from within the eastern-facing structure B-1. No additional information is available on this individual. To my knowledge, no burial B-2 has been recorded at Medicinal Trail.

Burial B-3 (PfBAP ID: 2014-01)
MNI: 1 Sex: NA Age: L Child – Adolescent Position: Flexed Orientation: N-S (head S)

Burial B-3 was recovered atop a platform behind Structure B-3 (Leach 2015). The remains of this individual were extremely fragmentary and eroded, but 28 teeth were recovered from the excavation process. The development of these teeth suggest the individual was a subadult at the time of death, approximately 11-12 years old (Buikstra and Ubelaker 1994, Leach 2015). The decedent is believed to have been interred in a flexed position on a north-south axis with the head to the south, but directionality could not be positively determined due to poor preservation conditions (Leach 2015).

Burial B-4 (PfBAP ID: 2016-01)
MNI: 1 Sex: NA Age: NA Position: Flexed Orientation: N-S (head N)

A third burial, burial B-4 was located during the 2014 excavation season, but excavation was not completed until 2016. A report on the excavation and analysis of this individual is forthcoming, but excavations were conducted by myself, Dorothy "Annie" Riegert, and Chaunessy Clemmons. This individual was recovered from a cobble-fill grave below a thick plaster floor to the west of Structure B-2. The decedent was interred in a tightly flexed position on the right side with head to the north. A single shell bead and two shell ear spools were recovered along with the remains. To date, no other burials have been recorded throughout other areas of the Medicinal Trail site.

MINOR CEREMONIAL CENTERS

Chawak But'o'ob (RB-47)

The Late Classic site of Chawak But'o'ob (Chawak) is located 2km south of Dos Hombres (Walling 2016, Walling et al. 2005). Chawak consists of eight architectural groups (Groups A-H), but only one courtyard (located within Group B) is present (Geller 2004:92, Walling 2015, 2016) (Figure 13). While Chawak lacks monumental public architecture, the presence of a ball court, high population densities (estimates suggest 1000 people or more inhabited the site at its peak), and high quality artifacts (including blue and white chert, gray-banded obsidian, marine shells, and intricate ceramic vessels), all recovered within a commoner setting, provide evidence that this archaeological site was quite unique (Hanna and Walling 2015). While the majority of structures from Chawak appear to be residential in function, the presence of the aforementioned ritual components and dense population classify this site as a minor ceremonial center (Hanna and Walling 2015; Walling 2016). A total of five burials have been recovered from this site.

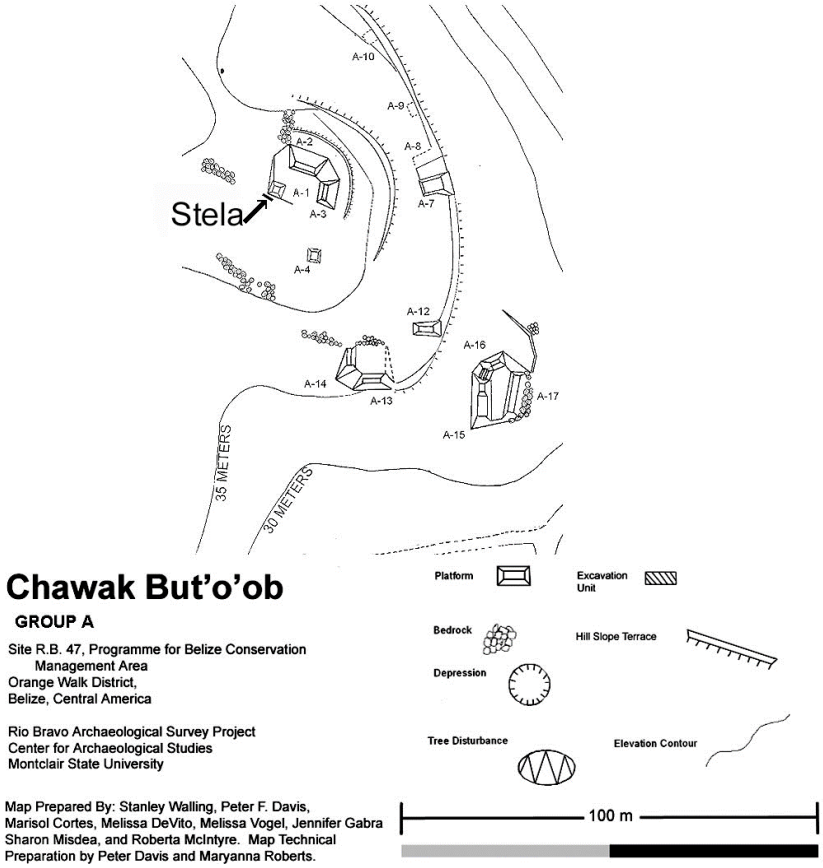

Figure 13. Map of Chawak But'o'ob archaeological site. From Aylesworth 2005:44. Courtesy of PfBAP.

Group A

Group A consists of approximately 30 small structures and is surrounded by semi-circular terraces (Geller 2004). Three individuals were recovered from this group beneath the southeastern section of a residential structure (Structure 7) (Geller 2004:92).

Burial 1 (PfBAP ID: 1994-01)
MNI: 1 Sex: M Age: Adult Position: Flexed Orientation: E-W (head W)

Burials 1 and 1A were recorded by Frank and Julie Saul. While little information regarding Burial 1A is available, Burial 1 contained the remains of an adult male buried on

his left side in a flexed position with head to the west (Julie Saul, personal communication, 2016).

Burial 2 (PfBAP ID: 1994-03)
MNI: 1 Sex: M Age: Adult Position: NA Orientation: NA

The body position of Burial 2, also from Group A's Structure 7 could not be determined, but the decedent was determined by the Sauls to be an adult male (ibid.). Little further information is available regarding thins individual.

Group D

While little information is available regarding the archaeological context of Group D, two burials were recovered from this area of Chawak (Geller 2004:92).

Burial 1 (PfBAP ID: 1995-01)
MNI: 1 Sex: NA Age: Y Adult Position: NA Orientation: NA

A secondary burial contained the remains of a young adult who was buried in an undetermined position (Julie Saul, personal communication, 2016).

Burial 2 (PfBAP ID: 1995-02)
MNI: 1 Sex: M Age: Adult Position: Flexed Orientation: E-W (head W)

The second individual from Group D was located within a subfloor grave. This decedent is a probable adult male who was interred on the left side in a flexed position with head to the west (ibid.).

A two-chambered chultun from Group E, located directly in front of the northernmost building of this group yielded a burial chamber with an unknown MNI (Geller 2004:92); however, no further information on this individual is available and the burial is not included in further analysis in this dissertation.

Dos Barbaras (RB-4)

Dos Barbaras is a small community located approximately 9km southeast of La Milpa (Lewis 1995) and serves as a minor center peripheral to both Dos Hombres and La Milpa (Geller 2004:93). While sparse occupations of Dos Barbaras occurred during the Late Preclassic and Early Classic periods, the settlement primarily dates to the Late and Terminal Classic (Thompson et al. 2004; Lewis, personal communication 2016). Eight courtyards make up this small community, with Courtyards A, B, and C making up the center of the site (Figure 14). The remaining five courtyards likely served as primarily residential functions, but terraces and a temple courtyard have been recorded at Groups E and F, respectively (Lewis, personal communication 2016). A total of 14 burials containing, at minimum, 17 individuals have been recovered from Dos Barbaras.

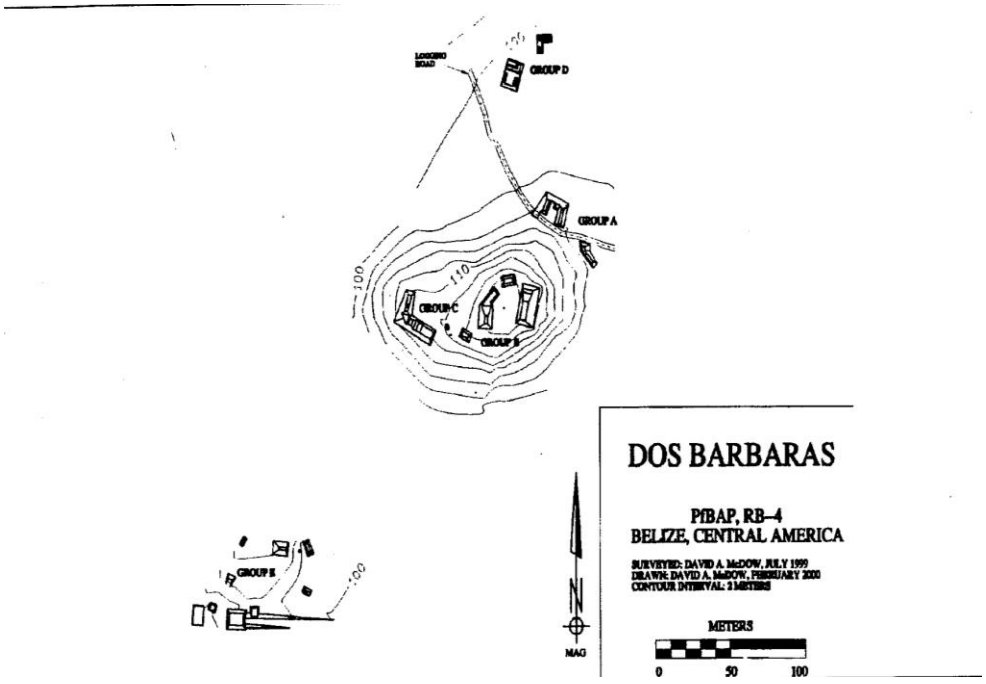

Figure 14. Map of the Dos Barbaras archaeological site. From Geller 2004:93. Courtesy of PfBAP.

Courtyard A

Courtyard A is located at the northern edge of an elevated hillock (Lewis, personal communication 2016). While the group is comprised of only four structures, (ibid.) uses artifactual evidence to conclude that Group A housed high-status residents of Dos Barbaras, who may have been close relatives of those residents of Courtyard B. Three burials, all within Structure 1, were recovered from this group (ibid.).

Burial ? (PfBAP ID: 2004-01)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head S)

The remains of a middle-adult male were recovered from a sub-floor crypt, tightly flexed on his left side with head to the south, facing west (ibid.).

Burial ? (PfBAP ID: 2004-05)
MNI: 1 Sex: F? Age: Adult Position: NA Orientation: NA

Little information is available on the second burial from Structure 1. Lewis (ibid.) notes that the remains were recovered within a bench in the structure. My own analysis of the remains suggest that the decedent was an adult female.

Burial ? (PfBAP ID: 2004-04)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: E-W (head W)

The third burial (3-CR-24) was located beneath a bench within Structure 1. The Young Adult female decedent was interred in a flexed position, oriented east-west with head to the west (ibid.).

Courtyard B

Courtyard B is the largest and most significant architectural group at the site and is composed of four residential structures and three ancillary structures (Lewis, personal

communication 2016). A single, plain stela is present within the center of the courtyard. Combined with the presence of a large, corbel-vaulted, eastern-facing structure and the various high-quality artifacts recovered from Courtyard B, Lewis (ibid.) identifies this courtyard as a residential group for the high-ranking members of Dos Barbaras. In total, 10 burials (containing at least 13 individuals) have been recovered from this area of the site. Five burials containing a minimum of seven individuals were recovered from Structure 6.

Burial 10 (PfBAP ID: 1994-04)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head N)

Burial 10 (3-YY-6) is a primary burial located within a sub-floor cyst of the structure. The decedent is a young adult male who was buried in a flexed position on his left side in a north-south orientation. His head was oriented north of his body, facing west, and exhibited tabular erect cranial modification (Julie Saul, personal communication 2016).

Burial ? (PfBAP ID: 1999-05a, b, and c)
MNI: 3 Sex: M, F?, NA Age: Y Adult, Adult, Adult Position: Flexed, NA, NA
Orientation: N-S (head S), NA, NA

A multiple burial (3-XX-6) containing the remains of three individuals was also recovered from Structure 6. This burial contained the remains of a primary young adult male who was buried flexed and supine with his head to the south. Little contextual information is available for the two other individuals interred within the same burial unit, but the second individual (6b) is believed to be an adult female and the third individual (also an adult) exhibits an unspecified form of tabular cranial modification (Julie Saul, personal communication 2016).

Burial ? (PfBAP ID: 2004-07)
MNI: 1 Sex: M? Age: NA Position: Disarticulated Orientation: NA

A large, Cayo Unslipped vessel recovered from Structure 6 contained the remains of a secondary burial (3-CV-2) (Lewis, personal communication 2016). The decedent is a possible adult male (ibid.), but no other contextual or osteological information is available for this burial.

Burial ? (PfBAP ID: 2004-09)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

The remains of a Young-Adult female were recovered from a cobble-fill burial at the northern extent of Structure 6 (ibid.). The decedent was lying between a floor and bedrock in a flexed position with her body oriented north-south and her palms resting at her face (ibid.).

Burial ? (PfBAP ID: 2004-10)
MNI: 1 Sex: F? Age: Y Adult Position: NA Orientation: NA

The final burial from Structure 6 was located beneath a floor along the eastern wall of the structure (ibid.). No information on body positioning is available, but Lewis (ibid.) suggests that the decedent may have been a young adult female.

Me-Bar and Lewis (2005) note that several more burials were recovered within Structure 6 of Courtyard B. Because records of these burials are sparse, the remainder of these individuals will be excluded from further discussion in this dissertation. Five additional burials (containing at least six individuals) were recovered from Structure 11, also within Group B.

Burial 7? (PfBAP ID: 1999-01)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: E-W (head E)

The first of these burials was located within a "punch" in a plaster floor along the western wall of the northwest corner (Geller 2004:494; Julie Saul, personal communication 2016). The decedent was a young adult female who was interred in a flexed position on the right side with her head to the east (facing north) and feet to the west (ibid.). Julie Saul (personal communication 2016) suggests that the fragmentary nature of the remains indicate a secondary interment in which the long bones and cranium were removed following the initial interment.

Burial 8a and b (PfBAP ID: 1999-02a, b)
MNI: 2 Sex: M, M? Age: Y Adult, Adult Position: Flexed, disarticulated
Orientation: N-S (head S), NA

A stone-lined and capped crypt containing the remains of at least two individuals was located beneath a thick plaster floor along the western wall of the structure (Geller 2004:495; Julie Saul, personal communication 2016). The primary internment (Burial 8a) is of a young adult male interred in a flexed position on his left side with head to the south, facing west (Julie Saul, personal communication 2016). The second individual within this burial unit (Burial 8b) is interpreted as a possible human offering (ibid.) and is represented by a single radius fragment. Julie Saul (ibid.) interprets this individual as an adult, possible male, and no other information on the decedent is available.

Burial 6 (PfBAP ID: 1999-03)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

The primary burial of a young adult female was recovered from a cut-stone lined and capped crypt under a plaster floor of Structure 11 (ibid.). The remains were disturbed,

but Julie Saul (ibid.) notes that the individual may have been interred in a flexed position on her back with her head to the south and hips north.

Burial 10 (PfBAP ID: 2001-01)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

Another young adult female was interred in a capped cist under a floor of Structure 11. This individual was buried in a flexed position on her left side with head to the south (facing west) and hips to the north (ibid.).

Burial 12 (PfBAP ID: 2001-02)
MNI: 1 Sex: NA Age: E Child Position: Flexed Orientation: E-W (head W)

Another cist burial located under a floor in Structure 11 yielded the remains of a young child (3-AI-18). The decedent was interred on his or her right side in an east-west orientation with the head to the west, facing south (Lewis, personal communication 2016; Saul, personal communication 2016).

Burial 13 (PfBAP ID: 2002-01)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: E-W (head W)

A final burial (3-BD-6) from Dos Barbaras included the remains of a middle adult male interred in a flexed position on his back (Julie Saul, personal communication 2016). His body was oriented east to west with head to the west (ibid.). No other information on this individual is available. While other burials have been recovered from Dos Barbaras (Geller 2004; Lewis, personal communication 2016), contextual information for these remains is lacking. Therefore, only the burials mentioned above are included in further analysis for this dissertation.

EL INTRUSO / GATEWAY (RB-11)

Located approximately 9km east of La Milpa, the Gateway site (also known as El Intruso) consists of six architectural groups (Geller 2004:96-97). Material evidence from the site date inhabitations to the Late Preclassic and Late Classic periods. A lack of evidence for Early Classic occupation suggests the site may not have been inhabited continuously (Geller 2004:97). While smaller in size, and possibly political influence within the PfBAP region, this site has produced one of the most significant burial populations from the region. A total of 15 burials have been recovered from excavations at Gateway, primarily from Group A of the site (Figure 15).

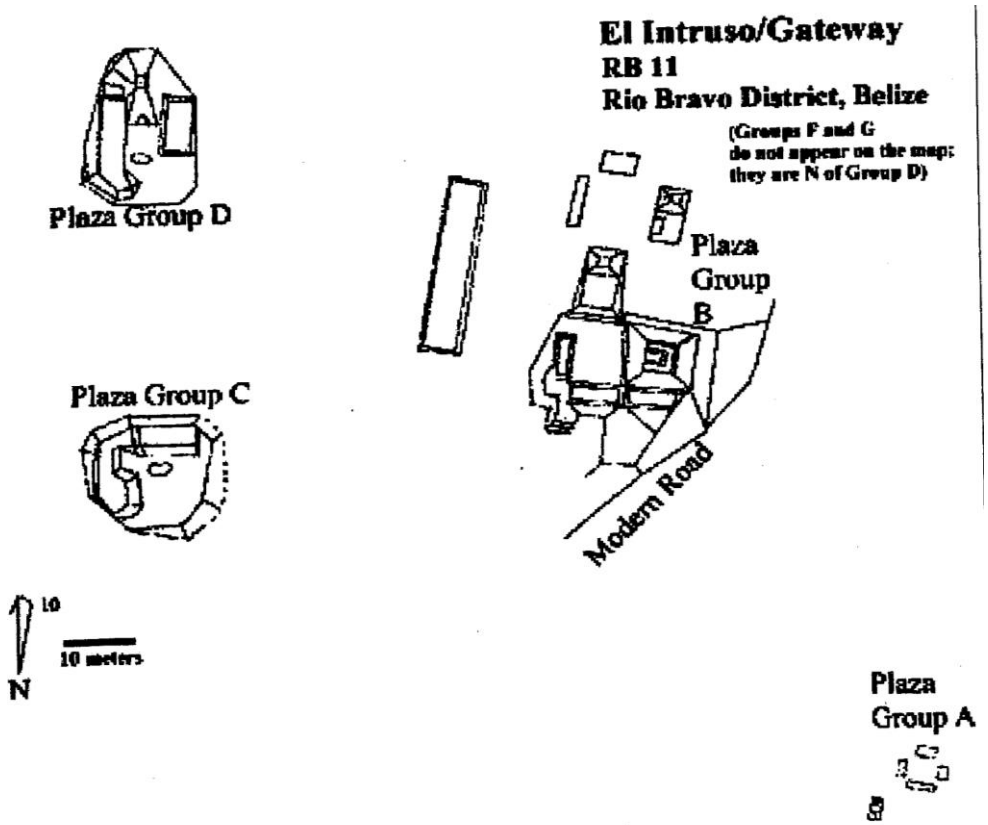

Figure 15. Map of the Gateway archaeological site. From Geller 2004:96. Courtesy of PfBAP.

Group A

Group A is composed of four structures surrounding a north-south oriented communal patio (Munoz 1997:25). Fourteen of the 15 total burials from Gateway were recovered from this group. Two separate burials were recovered from Structure 1.

Burial 1 (PfBAP ID: 1994-07)
MNI: 1 Sex: M Age: Y Adult Position: Disarticulated Orientation: NA

Burial 1 is a secondary burial of a young adult male. This individual was interred within a niche in Structure 1. While only represented by a skull and two long bones, these long bones were intriguingly placed in a crossed position atop the cranium.

Burial 9 (PfBAP ID: 1994-08)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head N)

Burial 9 is represented by a primary internment of a 20-30 year old male. The decedent was interred in a capped cist and placed in a flexed position on the right side with head north, oriented west (Munoz 1997:94-95, 102-103).

Structure 2 contained four burials - three simple, sub-floor burials and one unexcavated cyst. Because the remains recorded in the cyst (Burial 14) were left unexcavated, this burial will be excluded from further analysis in this dissertation.

Burial 2 (PfBAP ID: 1994-10)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head N)

Burial 2 is a primary interment of a male adult (34-54 years old). The decedent was placed in a flexed position on the left side, with head to the north (Munoz 1997:95, 97, 99).

Burial 5 (PfBAP ID: 1994-11)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head N)

Burial 5 is very similar to Burial 2 (mentioned above). This is a primary internment of a male adult (aged 30-40 years old at the time of death). The body was placed in a flexed position on the left side, with head to the north (ibid.).

Burial 13 (PfBAP ID: 1994-12)
MNI: 1 Sex: F? Age: Y Adult Position: Flexed Orientation: N-S (head S)

The third simple burial from Structure 2 (Burial 13) was that of a possible female (aged 20-34 years) who was also buried in a flexed position on the left side, but her head was to the south, facing west (Munoz 1997:106-107).

Six burials were recovered from Structure 3 at Group A. Four of the six burials were primary, simple, sub-floor internments. Burial 11 was left unexcavated and will not be included within the data for this dissertation.

Burial 3 (PfBAP ID: 1994-13)
MNI: 1 Sex: F Age: M Adult Position: Flexed Orientation: N-S (head S)

The remains of a single female individual were recovered from a simple interment within Structure 3. This individual was a middle adult (35-54 years old) at the time of death and was interred in a flexed position. The body was aligned north-south with head to the south, facing west (Munoz 1997:97-106).

Burial 6 (PfBAP ID: 1994-14)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

Burial 6 consisted of the remains of a young adult (aged 20-34 years at the time of death) female. The decedent was flexed and lying on her left side. Orientation was north-south with her head placed to the south, looking west (ibid.).

Burial 12 (PfBAP ID: 1994-18)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

Like burials 3 and 6 described above, Burial 12 contained the remains of a single individual interred within a simple grave. The remains of a young adult (aged 20-34 years at the time of death) male were placed in a flexed position on the left side, with head to the south, facing west (ibid.).

Burial 7 (PfBAP ID: 1994-15)
MNI: 1 Sex: NA Age: L Child – Adolescent Position: Flexed Orientation: N-S (head S)

The remains of an unsexed late child or adolescent (aged 10-14 years at the time of death) were recovered from an informal cist within Structure 3 (Munoz 1997:101-102). Due to the young age of this decedent, sex was not determined. The body was positioned along a north-south orientation with head to the south, facing west.

Burial 8 (a and b) (PfBAP ID: 1994-16a, 1994-16b)
MNI: 2 Sex: M, NA Age: M Adult, NA Position: Flexed, Disarticulated Orientation: N-S (head S), NA

A second informal cist within Structure 3 yielded a multiple burial consisting of two individuals. The primary individual, a middle adult male (aged 30-40 years at the time of death) was interred in a flexed position on the left side. The body was aligned north-south, with head south, facing west (ibid.) No further information is available regarding the secondary individual from this feature.

The final two burials from Group A were recovered within Structure 4. While the majority of other burials recovered from Group A date to the Late Classic period, both Burials 4 and10 from Structure 4 date to the Early Classic (Munoz 1997:98-99, 103). Burial 10 was left unexcavated and will not be discussed further in this dissertation.

Burial 4 (PfBAP ID: 1994-09)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

The primary internment of Burial 4 in a simple, sub-floor burial is consistent with the majority of other burials recovered from this group. Similarly, the 20-34 year old male decedent was interred on his left side in a flexed position, with his head to the south, facing west (Munoz 1997:98-99).

Group B

Plazuela Group B is larger than Group A, and was greatly damaged along its eastern border during modern road construction (Munoz 1997:25). Located approximately 100m northwest of Group A, Group B follows the same orientation, with a total of eight structures surrounding a common courtyard (Geller 2004:99; Munoz 1997:25).

Burial 15 (PfBAP ID: 2003-01)
MNI: 1 Sex: NA Age: NA Position: Flexed Orientation: N-S (head S)

The single burial (Burial 15) recovered from this group was a primary internment beneath two benches in the southern building (Geller 2004:99, 553). No demographics are reported, but the decedent was interred in a flexed position on the left side with the head to the south, facing west. A single vessel was placed near the skull, but excavation notes are unclear whether this was placed on top of or below the cranium (ibid).

The Gateway burials suggest a site-wide internment pattern. Of the 12 burials discussed from this site, 10 included individuals interred on their left side in a flexed position. One individual (Burial 9) was curiously interred on his right side and the individual represented in Burial 1 was a secondary burial of just cranial and leg bone fragments. Additionally, the burials exhibit a trend of western-facing crania. Eleven of the 12 burials discussed from this site were interred with their heads facing west. Bodies were

oriented on a north-south axis with head to the south, but Burial 9 once again serves as an outlier with the decedent's head oriented to the north. A more detailed analysis of these burial trends will be discussed in Chapters 4 and 5, but a trend in burial patterns is quite apparent in the data sample from the Gateway site.

Guijarral (RB-18)

The site of Guijarral is a dispersed community of combined agricultural features, and residential and ceremonial structures dating from the Late Preclassic to the Late Classic (Geller 2004:99; Hughbanks 2006). It is located approximately 8km to the east of La Milpa and consists of two main architectural groups composed of 131 mounds (Hageman 2004; Hughbanks 2006) (Figure 16). To the western edge of the site is a complex of structures known as Group A. This platform group consists of 10 structures organized around two courtyards. Two of these structures, Structures A-1 and A-8 are described by Hageman (2004:312) as "pyramids" and are assumed to have served ceremonial purposes for the Guijarral community. All three burials (representing five individuals) recorded at Guijarral were recovered from this main group. Five individuals have been recorded from four burials within this site.

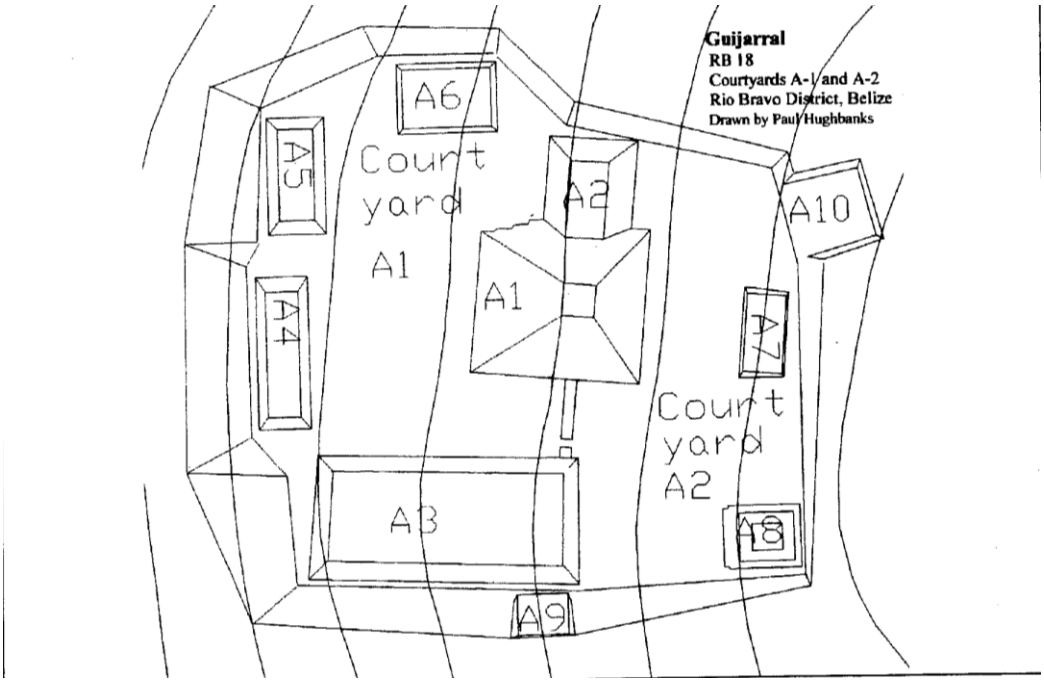

Figure 16. Map of Guijarral archaeological site. From Geller 2004:100. Courtesy of PfBAP.

Burial 2 (PfBAP ID: 2000-06)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head S)

Burial 2 was located within a pit underneath a patched plaster floor in the pyramidal structure of A-8 (Hageman 2004:315). This individual was a young-middle adult male, aged 20-35 years old at the time of death (Hageman 2004:335). He was buried prone, in a flexed position with his head to the south (Julie Saul, personal communication 2016).

Burial 1A (PfBAP ID: 1995-04a)
MNI: 1 Sex: NA Age: Y Adult Position: Flexed Orientation: N-S (head S)

Two individuals from separate burials were also recorded from structure A-5 (assumed to be a residential structure). Burial 1A (45-F-9A) intrudes upon Burial 1B (45-F-9B) and was thus interred into the structure after the interment of Burial 1B (though both are noted by Geller (2004:100) as dating to the Late Classic). The individual from Burial 1A was interred in a flexed position with the head to the south. Sex could not be determined

for this individual, but age-at-death was estimated to be 20-35 years old (Hageman 2004:335).

Burial 1B (PfBAP ID: 1995-04b)
MNI: 1 Sex: NA Age: Y Adult Position: Flexed Orientation: NW-SE (head NW)

Burial 1B included a single individual also in a flexed position. This individual was oriented with the head to the northwest. As with the individual from Burial 1A, the sex of the Burial 1B individual could not be determined, but the Sauls determined an age-at-death of 20-35 years old (Hageman 2004:335).

Burial ? (PfBAP IDs: 1995-03a, 1995-03b)
MNI: 2 Sex: NA Age: Adult, E Child Position: NA Orientation: NA

Finally, a multiple burial containing the remains of one adult and one child (aged 2-4 years old) was recovered within a grave-cut in a floor of Structure 9 (Julie Saul, personal communication 2016). No further information on this burial is available.

La Caldera (RB-25)

La Caldera is a minor center located approximately 3km northwest from La Milpa (Geller 2004:101; Kunen 2001). The site is composed of a total of 73 structures organized into 32 groupings (Kunen 2001). The core of the site appears to be focused around six major architectural groups, Groups A, B, C, E, F, and K (Kunen 2001) (Figure 17). A total of six burials containing eight individuals were recovered from excavations at this site, but only within Groups A, B, and F. A brief discussion of only these three groups is provided below.

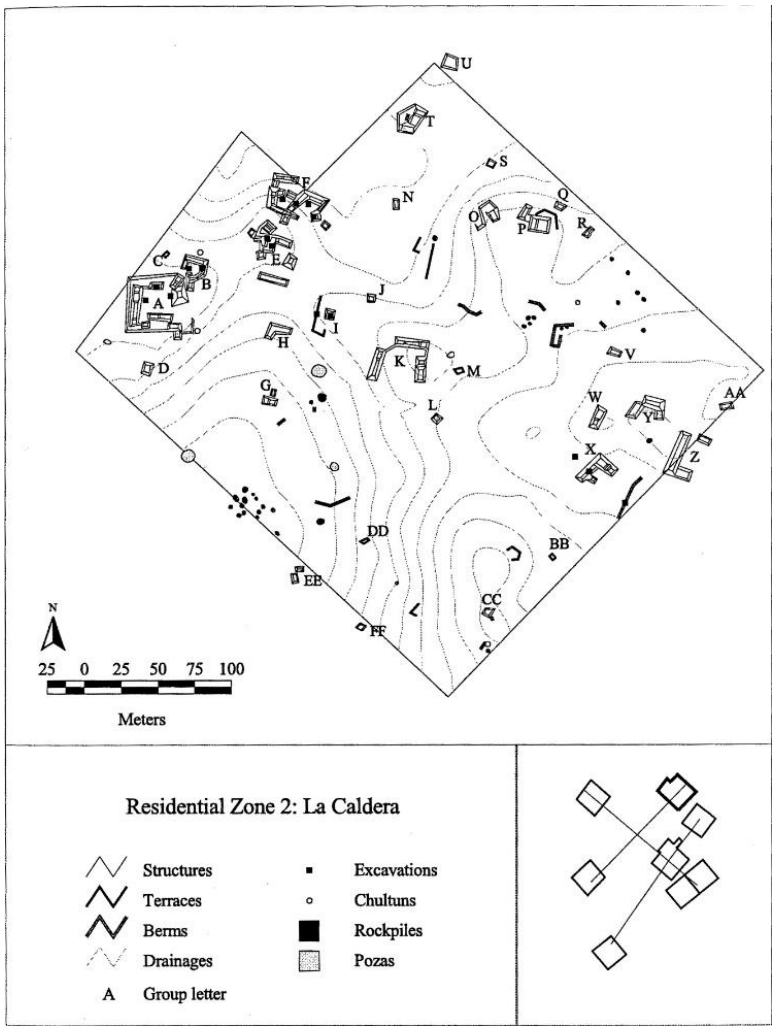

Figure 17. Map of La Caldera archaeological site. From Kunen 2001:125. Courtesy of PfBAP.

Group A

Composed of a formal plaza surrounded by eight structures, Group A is the principle group of La Caldera (Kunun 2001:126). This group (identified by Kunen 2001 as "Op V62") was badly looted at the time of Kunen's excavations, but produced two separate burials.

Burial 4 (PfBAP ID: 1999-06)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head S)

The first of these (Burial 4) was located as a capped cist below the platform and patio surfaces of Group A (Kunen 2001:134). The decedent was a middle-aged adult male who was interred in a flexed position on his left side with head to the south (Kunen 2001:134).

Burial ? (PfBAP ID: 1999-07a, 1999-07b)
MNI: 2 Sex: F, NA Age: Y Adult, Adult Position: NA Orientation: NA

The second burial from this group was salvaged from a looter's trench within the large pyramidal structure (C-1). Two femoral shafts, fragments of other human bone, and obsidian and greenstone artifacts were recovered inside a large, lidded vessel (Vessel 1). Julie Saul (personal communication 2016) notes that at least two individuals are present in this burial. The first individual (Individual A) is a probable female, aged 20-30 years at the time of death. While the remains of the second individual within this context appear to belong to an adult individual, no other determinations could be made.

A cache of human remains is also noted at this Group (Saul, personal communication 2016, but no information could be gathered from these fragments and this burial will be excluded from any further analysis in this dissertation.

Group B

Group B (Op V63) is a restricted-access patio group located at the northeastern border of Group A (Kunen 2001:126). This group is comprised of seven structures surrounding the patio, and a chultun behind the northern structure (Kunen 2001:126-127).

Burial 3 (PfBAP ID: 1999-10)
MNI: 1 Sex: NA Age: E Child Position: Flexed Orientation: N-S (head S)

A single burial of a juvenile was encountered below a midden at the southern edge of the patio. This burial (Burial 3) contained the remains of an early child (3-5 years old), interred in a prone, flexed position, with head to the south, facing west (Kunen 2001:138).

Group F

Group F (Op V66), located approximately 125m to the northeast of Group A, consists of fourteen structures that surround two separate patios (Kunen 2001:128). Access to both patios is restricted, and no pyramidal structures were identified (ibid.). Three burials representing four individuals were recovered from this group.

Burial 5 (a and b) (PfBAP ID: 1999-08a, 1999-08b)
MNI: 2 Sex: M, NA Age: Y Adult, NA Position: Flexed, Disarticulated
Orientation: N-S (head S), NA

Burial 5 included a young adult male interred in a flexed position on the left side with his head to the south. A second individual is represented by a single decorated canine tooth, considered by Kunen (2001:142) to be an offering to the primary individual. No further information on this individual is available.

Burial 6 (PfBAP ID: 1999-08c)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

Burial 6 intruded upon Burial 5 and also includes the remains of a young adult male buried in a flexed, supine position, with head to the south (Kunen 2001:142-143).

Burial 7 (PfBAP ID: 1999-08d)
MNI: 1 Sex: NA Age: Y-M Adult Position: Flexed Orientation: N-S (head N)

Burial 7 was also located beneath a floor and included the remains of a young to middle adult of indeterminate sex. The body was also interred in a supine, flexed position, but the head of this individual was oriented north within the burial chamber (ibid.).

Las Abejas (RB-5)

The small ceremonial center of Las Abejas is comprised of four plaza groups (Geller 2004:102). This site is located approximately 7km southeast of La Milpa on the eastern edge of the La Lucha Escarpment (Sullivan 1997). Evidence of ceremonial, residential, and other specialized-activity structures suggest that Las Abejas was a multifunctional center with some degree of social and political hierarchy (Sullivan 1997:187-188) (Figure 18). Three burials containing four individuals are reported from this site, all from Plaza A.

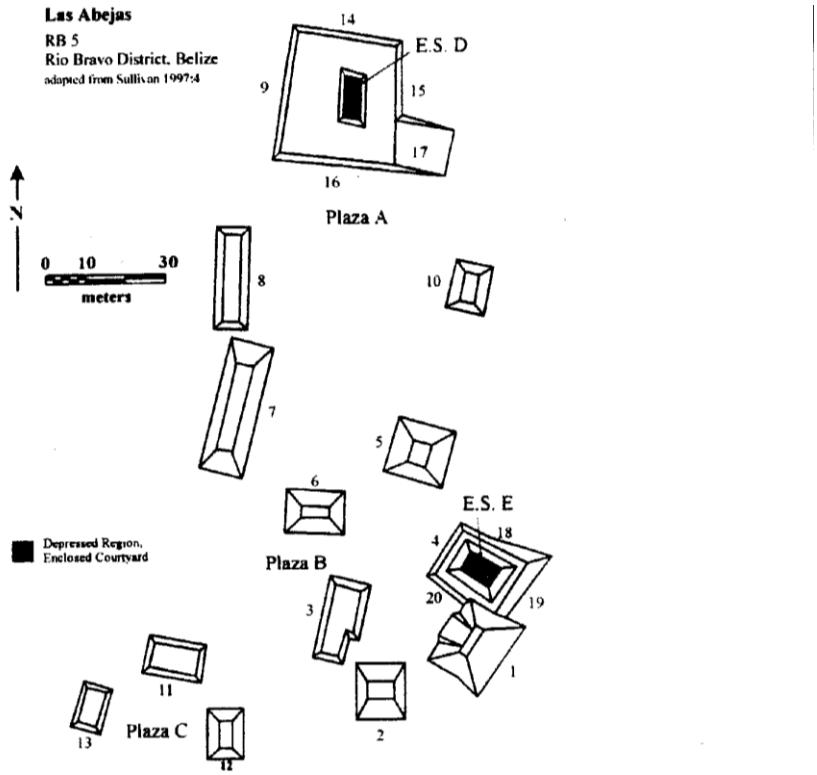

Figure 18. Map of Las Abejas archaeological site. From Geller 2004:103, adapted from Sullivan 1997:4. Courtesy of PfBAP.

Plaza A is the largest plaza at Las Abejas and consists of an open courtyard surrounded by five structures (Sullivan 1997:88). Sullivan (1997) proposes that this plaza served as a residential and administrative center for lower-level elites of the site.

Burial 1 (PfBAP ID: 1993-03)
MNI: 1 Sex: NA Age: Adult Position: Disarticulated Orientation: NA

Burial 1 was recovered as a secondary burial within an Early Classic ceramic vessel from Structure 5. This individual is an adult of indeterminate sex. (Sullivan 1997:93-94). The only remains recovered from this feature were cranial remains. No further information on this individual is available.

Burial 2 (PfBAP ID: 1993-02)
MNI: 2 Sex: NA Age: Y Adult, NA Position: NA Orientation: NA

Burial 2 was recovered along the western border of Plaza A as a secondary burial within a bench in Structure 7 (Sullivan 1997:104-106). At least two individuals were present in this Late Classic burial, one of whom also exhibited cranial modification (ibid.). One individual was identified as a young adult, but no other information could be determined from these fragmentary remains.

A third burial is reported by Geller (2004:104). This Early Classic burial was reportedly recovered from atop the central staircase of Structure 6, but not other information is available and this burial will be excluded from further analysis.

Say Kah (RB-26)

The smaller center of Say Kah (originally named Say Ka by Guderjan et al. 1991) is located approximately 4km southeast of the regional center of La Milpa. It is believed to have served as a major outlier to La Milpa to provide the greater community with water and agriculture (Guderjan et al. 1991:73; Houk et al. 2007:128-129). This site also consists of multiple groups of structures, including formal courtyard groups like those found at La Milpa and Medicinal Trail (Houk et al. 2007, Hyde and Valdez 2007) (Figure 19). In total, four burials have been recovered from Say Kah, all of which are from Groups B and C.

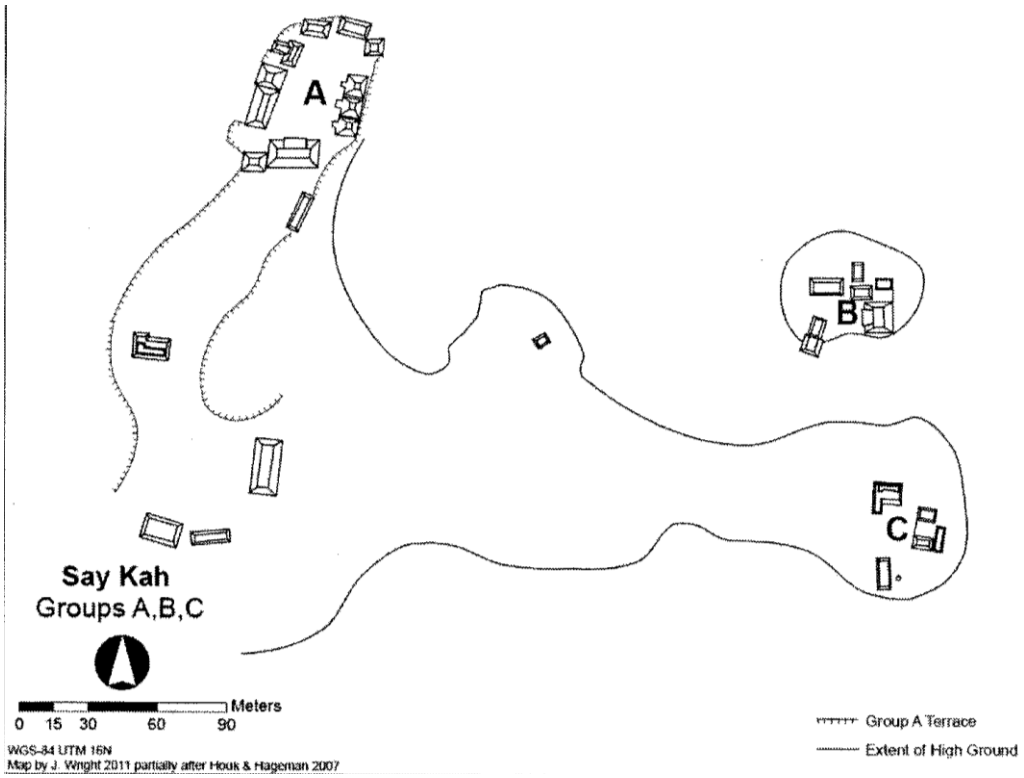

Figure 19. Map of Say Kah archaeological site. From Jackson and Brown 2012:70. Courtesy of PfBAP.

Group B

Group B is located approximately 350m to the east of the main ceremonial space of Group A and consists of seven structures that likely represent a residential plaza group (Jackson et al. 2010:63, Jackson and Brown 2012:70, Houk et al. 2007:131). Group B is smaller than Group A, but artifacts suggest that its residents enjoyed a higher social status (Jackson et al. 2010:78-79). Two burials were recovered from this Late Classic group.

Burial ? (PfBAP ID: 2009-05)
MNI: 1 Sex: NA Age: NA Position: Disarticulated Orientation: NA

One burial (2-L-?) was recovered from a looter's trench penetrating structure B1, the largest structure in Group B. The remains of a single individual were interred within a

large ceramic vessel and charring on the bones and inside of the vessel suggest this was a possible cremation burial. Various artifacts were interred with the individual, including two shells and two jade ear flares (Jackson et al. 2010:77-78). No other information is available from the fragmentary remains (Jackson, personal communication 2016).

Burial ? (PfBAP ID: 2011-02)
MNI: 1 Sex: NA Age: NA Position: Bundled Orientation: NA

A second burial (2-X-7) was recovered beneath a bench and plaster floor in Structure B3 (Jackson and Brown 2012:78). The presence of only long bones in this burial indicate that this was an intrusive (secondary) burial in which the long bones were tightly bundled together and placed inside the existing plaster floor. An extension of the overlying bench was added, presumably to cover the patch in the floor after the burial was interred (Jackson and Brown 2012:78). Age and sex could not be determined from the few remains present.

Group C

Group C is located approximately 60m south of Group B (Jackson and Brown 2012:71). This group also dates to the Late Classic and is residential in nature (Jackson and Brown 2012). Group C consists of five structures and a possible chultun aligned on the same north-south axis as Groups A and B (Jackson and Brown 2012:71). To date, two burials have been recovered from structure C2.

Burial 1 (PfBAP ID: 2015-01)
MNI: 1 Sex: NA Age: Y Adult Position: Bundled Orientation: NA

Burial 1 (3-LL-4) was recovered within this eastern-facing structure between a plaster floor and overlying bench. The decedent was represented only by long bones and a

few cranial fragments and is a secondary bundle burial, much like Burial 2-X-7 from Group B. Sex of the individual could not be determined, and age-at-death was estimated broadly as a young adult based on the presence in the bundle of a premolar with little enamel attrition (Drake and Riegert, unpublished burial report 2015).

Burial 2 (PfBAP ID: 2015-02)
MNI: 1 Sex: NA Age: NA Position: Extended Orientation: NE-SW (head NE)

Burial 2 (3-F-10) was recovered within the same structure as Burial 1, but at a lower elevation. This burial was recovered below both the bench and plaster floor and was identified as a simple burial by the author in 2015. Due to time constraints, excavation of this burial was not completed, but the decedent was determined to have been interred in a northeast-southwest orientation with feet to the southwest. The body was extended and supine within the burial unit, but neither age-at-death nor sex could not be determined before the end of the excavation season (ibid.).

MAJOR CEREMONIAL CENTERS

Dos Hombres (RB-2)

While smaller in overall size than La Milpa, Dos Hombres is nonetheless recognized as another major ceremonial center within the Three Rivers Region. The site lies just below the Rio Bravo Escarpment, east of the Rio Bravo, approximately 12km southeast of La Milpa (Trachman 2007:6, Geller 2004:108). This site consists of four major courtyard groups with varying structural types and sizes surrounding the courtyards. The overall layout of this site is quite similar to that of La Milpa – two main site components arranged on a north–south alignment (Houk 1996, Robichaux 1995). Unlike La Milpa, the two main components of Dos Hombres are connected by a sacbe (Figure 20). Two Late

Preclassic structures are present in the main plaza at Group A (Houk 1996:128), but the majority of material recovered from Dos Hombres suggests that occupation at the site primarily occurred in the Late and Terminal Classic periods (Robichaux 1995:65). In total, 35 (possibly 36) individuals have been recovered from 21 burials throughout the extents of this site.

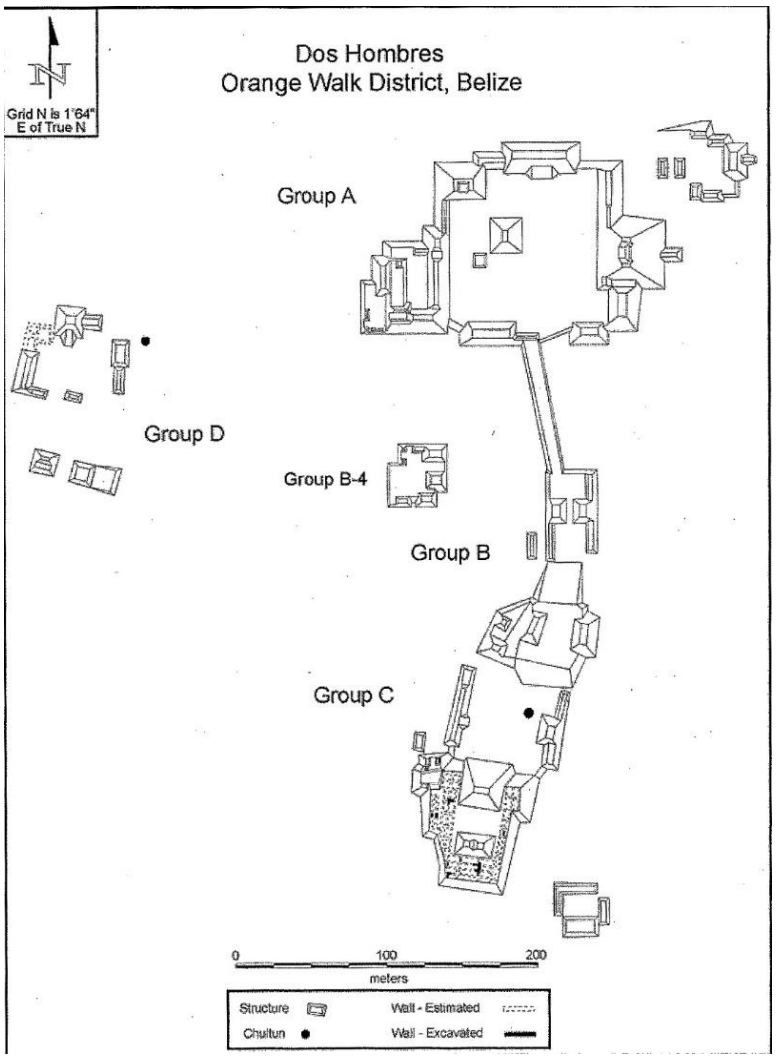

Figure 20. Map of Dos Hombres archaeological site (from Trachman 2007:30; after Houk 1996; Lohse 1999). Courtesy of PfBAP.

Group A

Located on the northern half of the site, the plaza at Group A is the largest at Dos Hombres. The northern edge of this plaza is dominated by a large range structure and a tall pyramid in the northwest corner (Figure 21). A "palace" type structure constitutes the eastern portion of the plaza, and a small courtyard surrounded by six smaller structures is located in the southwest corner of Plaza A (Robichaux 1995:63). A 100m long sacbe connects this group with the smaller architectural group (Group B) to the south (Houk 1996:128). A total of two burials were recovered within Group A.

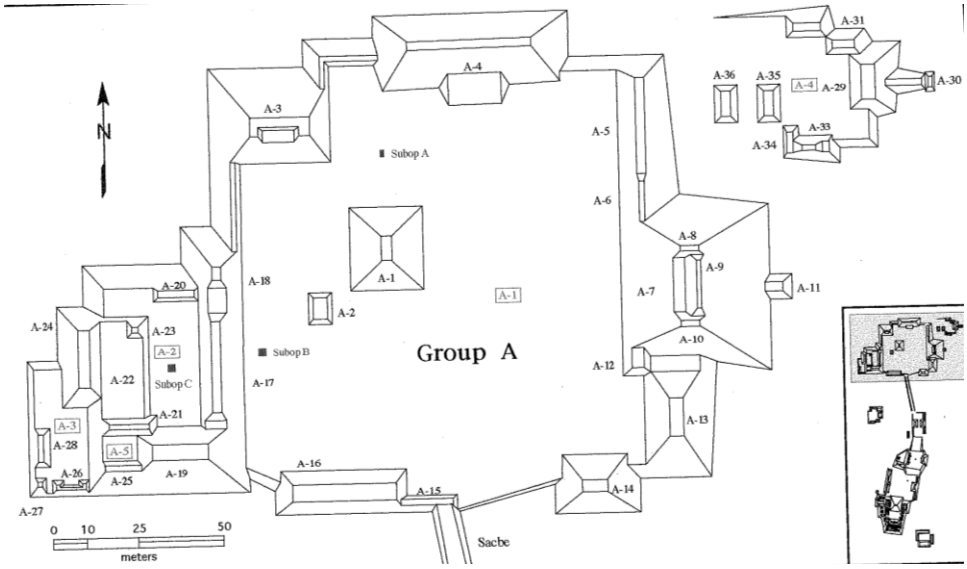

Figure 21. Map of Group A of Dos Hombres. From Houk 1996:129. Courtesy of PfBAP.

Burial 1 (PfBAP ID: 1994-04)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: E-W (head W)

Burial 1 was placed underneath a plaster floor within the western room of Structure A-17. The decedent was interred in a flexed position, resting on his back and oriented east-west with head to the west (Houk 1996:150-151; Saul and Saul 1995 as cited in Houk

1996:427). This individual was reported as a young adult male (Saul and Saul 1995 as reported in Houk 1996:154).

Burial 3 (PfBAP ID: 1994-05)
MNI: 1 Sex: NA Age: Y Adult Position: Disarticulated Orientation: NA

Burial 3 was recovered from a stone-lined chamber adjacent to Burial 1. The fragmentary remains were interred within a large vessel (Cache 4). Sex of the individual could not be determined, but the age-at-death was estimated between 20-35 years old (Saul and Saul 1995, as reported in Houk 1996:158). Both Burials 1 and 3 date to the Late Classic (Houk 1996:158, 160).

Group B

Directly south of Group A at Dos Hombres is the smaller, four-courtyard Group B (Geller 2004:110). The only excavations at Group B that yielded burials occurred in Courtyard B-4, which Geller (ibid.) notes likely served as an elite residential group (Figure 22). A total of seven burials were recovered from Courtyard B-4, but contextual information is only available for four of these features and only these burials will be further considered in this dissertation.

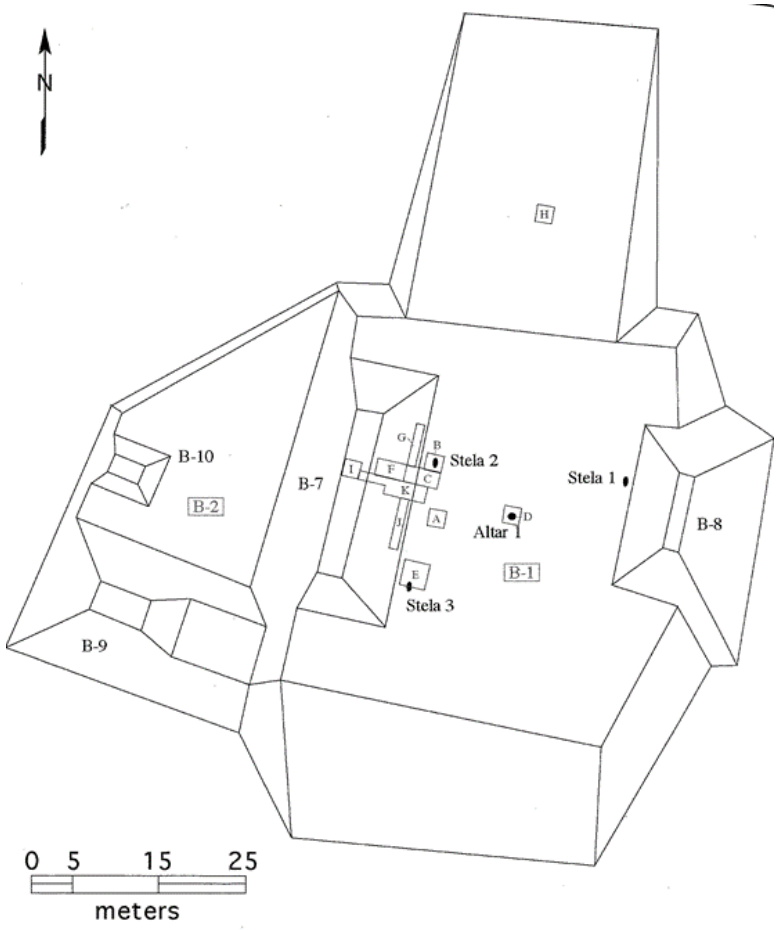

Figure 22. Map of Group B of Dos Hombres. From Houk 1996:180. Courtesy of PfBAP.

Burial 6 (PfBAP ID: 1998-06)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head N)

Burial 6 was located within a grave cut beneath two floors in Structure B-16. A single, young adult male was interred in a flexed position on his left side. His body was oriented north-south, with his head to the north, facing west (Julie Saul, personal communication 2016).

Burial 3, 2, and ? (PfBAP IDs: 1997-06a, 1997-06b, 1997-06c)
MNI: 4 Sex: male, NA, NA Age: M Adult, NA, Y Adult, E Child Position: Flexed, Disarticulated, Flexed, NA Orientation: E-W (head W), NA, N-S (head S), NA

A multiple burial of four individuals was also located within the same structure, between Floors 1 and 2 (Geller 2004:534). The first individual (Individual A) from this burial unit is a middle adult, possible male. The body was interred in a flexed position on the right side with head to the west, facing south (Julie Saul, personal communication 2016). A single tooth representing a second individual was also recovered with these remains, but was not assigned its own burial number and no further information could be gleaned from the tooth (ibid.). The third individual (Individual B) in this burial was also a primary internment. The decedent was buried west of Individual A in a flexed position on the left side, with head to the south (ibid.). Sex of Individual B could not be determined, but age was estimated as a young adult (ibid.). The fourth individual within this multiple burial (Individual C) is a subadult, but preservation of the remains was so poor that excavators could not determine whether this internment was primary or secondary in nature (ibid.). Dental development suggests Individual C was two to four years old at the time of death, but no other information is available for this individual (ibid.).

Burial 8 (PfBAP ID: 1998-07)
MNI: 1 Sex: NA Age: E Child Position: Flexed Orientation: E-W (head W)

The burial of a subadult was located atop a floor in the Eastern portion of Structure B-12 (Geller 2004:537; Julie Saul, personal communication 2016). The decedent (aged 2-3 years at the time of death) was interred in a flexed position oriented east-west with head to the west (Julie Saul, personal communication 2016). No further information is available for this burial.

Burial 5 (a and b) (PfBAP ID: 1997-05a, 1997-05b)
MNI: 2 Sex: M, M Age: Y Adult, Y Adult Position: Extended, Disarticulated
Orientation: E-W (head E), facing E

The final burial recorded at Group B is a multiple burial recovered from a tomb within the eastern structure, B-17 (Geller 2004:532; Julie Saul, personal communication 2016). Two individuals were recovered from this tomb. The primary individual was a young adult, probable male. He was interred extended on his back, with his head to the east and feet to the west. A number of grave goods were located around the primary individual (including the cranium of a second individual) and all were coated in red pigment (Julie Saul, personal communication 2016). The secondary individual is represented only by cranial and dental remains. The skull was placed to the south of the left foot, while the mandible was located to the north of the right foot (bracketing the legs) of the primary decedent (both portions of the cranium were facing east) (ibid.). Characteristics of the cranium and dentition suggest this secondary individual was a young adult, probable male (ibid.).

Group C

Group C is located south of Groups A and B and consists of a small plaza surrounded by three pyramids and several small courtyards (Figure 23). This group is suggested by Robichaux (1995:64) to have served at least in part as housing for the elites of Dos Hombres. A single burial was recovered during excavations of this group.

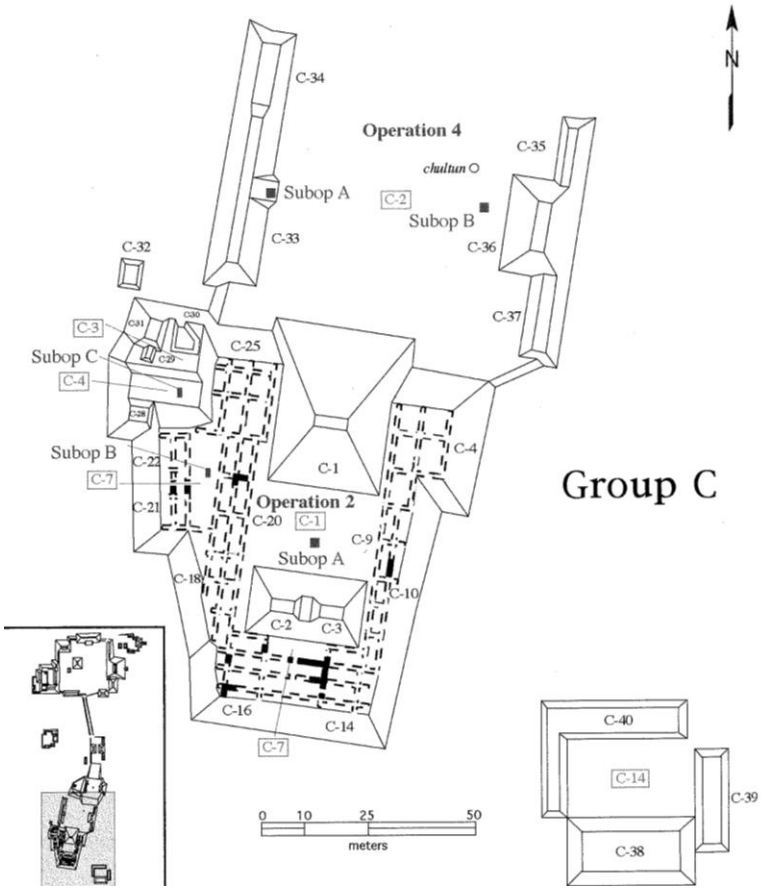

Figure 23. Map of Group C of Dos Hombres. From Houk 1996:192. Courtesy of PfBAP.

Burial 2 (PfBAP ID: 1993-01)
MNI: 1 Sex: NA Age: Adult Position: NA Orientation: NA

Burial 2 was located under a series of marl floors beneath the staircase in the northwest edge of the Group C plaza (Saul and Saul 1995 as cited by Houk 1996). The individual within this secondary burial was interpreted as a small adult of indeterminate sex (Houk 1996:200, Saul and Saul 1995 as cited by Houk 1996:430). Due to the fragmentary nature of the remains, no other information is available on this burial.

Group D

This residential group is located 200m west of the Dos Hombres site center and consists of two separate architecture groups (Aylesworth 2005:58) (Figure 24). The main group, Group D-1, features nine structures surrounding a patio (Aylesworth 2005:62). Structure D-3, located along the eastern border of this group is interpreted as a ceremonial shrine (Aylesworth 2005:70) and has yielded three burials in total (Lohse 1999, Aylesworth 2005). The first burials recovered from Structure D-3 were recovered as part of a salvage mission at Group D in the 1990s (Aylesworth 2005). These excavations located human remains from the backdirt of two looted tombs.

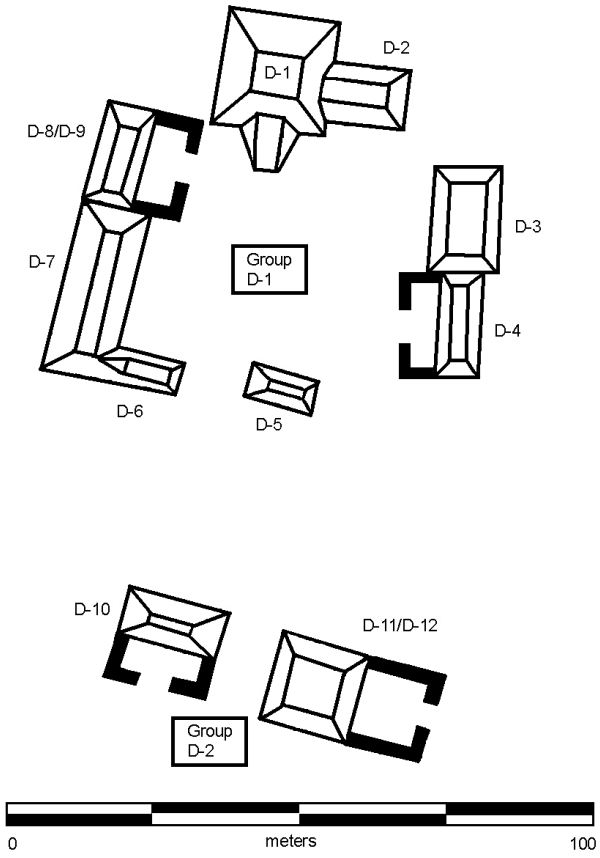

Figure 24. Map of Group D of Dos Hombres. From Aylesworth 2005:62 (adapted from Lohse 1999). Courtesy of PfBAP.

Burial ? (PfBAP ID: 1998-13a)
MNI: 1 Sex: male? Age: Y Adult Position: NA Orientation: NA

Tomb 1 contained the fragmentary remains of a possible male, aged 20-35 at the time of death (Julie Saul, personal communication 2016). Body positioning could not be determined due to the fragmentary nature of the remains.

Burial ? (PfBAP ID: 1998-13b)
MNI: 1 Sex: NA Age: Adolescent – Y Adult Position: NA Orientation: NA

A single human tooth was recovered from looted backdirt outside of Tomb 2. The Sauls determined that the tooth belonged to an adolescent or young adult individual, but no further determinations regarding sex or body positioning could be determined (ibid.).

Burial ? (PfBAP ID: 2003-04)
MNI: 1 Sex: NA Age: Y Adult Position: Flexed Orientation: N-S (head S)

A third burial was located atop Floor 1 of Structure D-3 (Aylesworth 2005:76). This individual was interred in a flexed position on the left side with head to the south (facing west) and feet to the north (Aylesworth 2005:58). Poor preservation of the remains prevented any determinations of sex, but the decedent is estimated as a young adult who exhibited Romero E-1 dental modification of the maxillary left lateral incisor and left canine (Julie Saul, personal communication 2016).

Surrounding Household Groups

Several household groups surround the site center at Dos Hombres. Various researchers at PfBAP have conducted surveys of the areas around Dos Hombres, particularly Lohse (2001) and Trachman (2007; Trachman and Valdez 2006). Numerous burials have been recovered from these household contexts, many of which are interpreted

by the excavators in their publications as household or ancestral shrines. A total of 18 burials have been reported from these surrounding groups within Dos Hombres.

Burial 1 (PfBAP ID: 1998-04)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

A single burial dating to the Late Classic was recovered from a small crypt below Structure 1 at the household group A-II-2 (Op. 19) (Lohse 2001). This group is located west of the site core and consists of two mounds (Lohse 2001:229) (Figure 25).

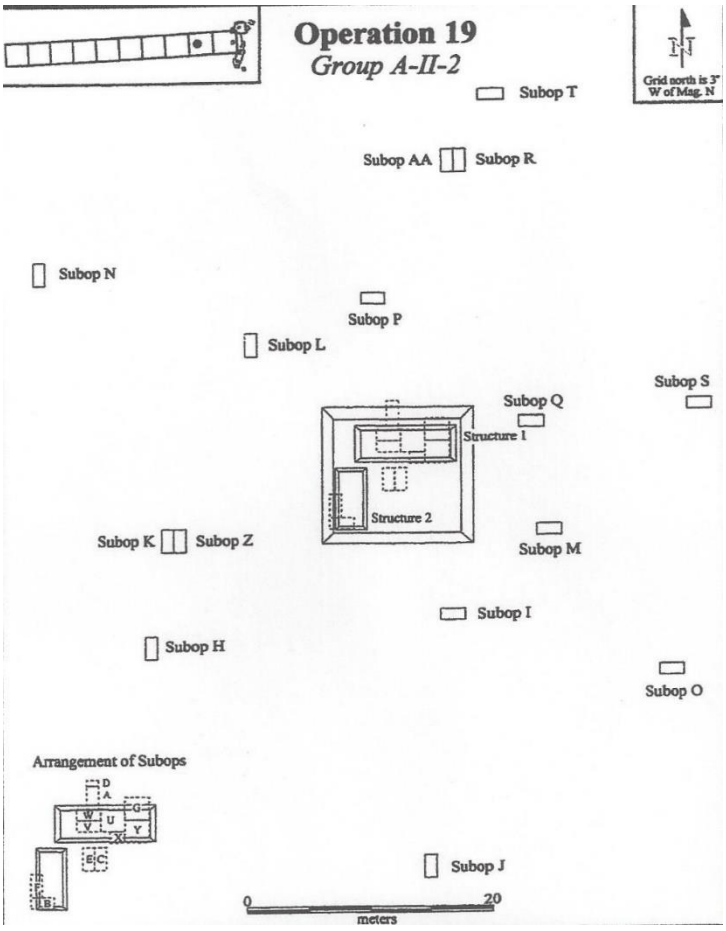

Figure 25. Map of Operation 19 of Dos Hombres. From Lohse 2001:230. Courtesy of PfBAP.

The remains of a single, young adult male were placed in a flexed position on the left side. His body was oriented north-south with the head south, facing west. A black slipped (Achote Black) bowl and green stone bead were recovered among the human remains (Lohse interpreted the bead as having been placed in the mouth of the decedent at the time of burial due to its in situ location near the mandible) (Lohse 2001:252).

Burial 2 (PfBAP ID: 1998-05)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

A similar burial scenario was encountered at a different house group within the Dos Hombres site area. Group A-VII-1 (Op. 24) represents a two-mound patio group east of the Dos Hombres site center (Figure 26). A fragmented burial was recovered from within what Lohse (2001:307) referred to as an ancestral shrine. This argument is supported by the fact that the architectural sequence and stratigraphy surrounding the burial suggest that it was placed intentionally below the structure (Structure 2) during the original construction (ibid.). A young adult male was buried in a flexed position on his left side in a north-south orientation (head to the south, facing west) (Saul, personal communication 2016).

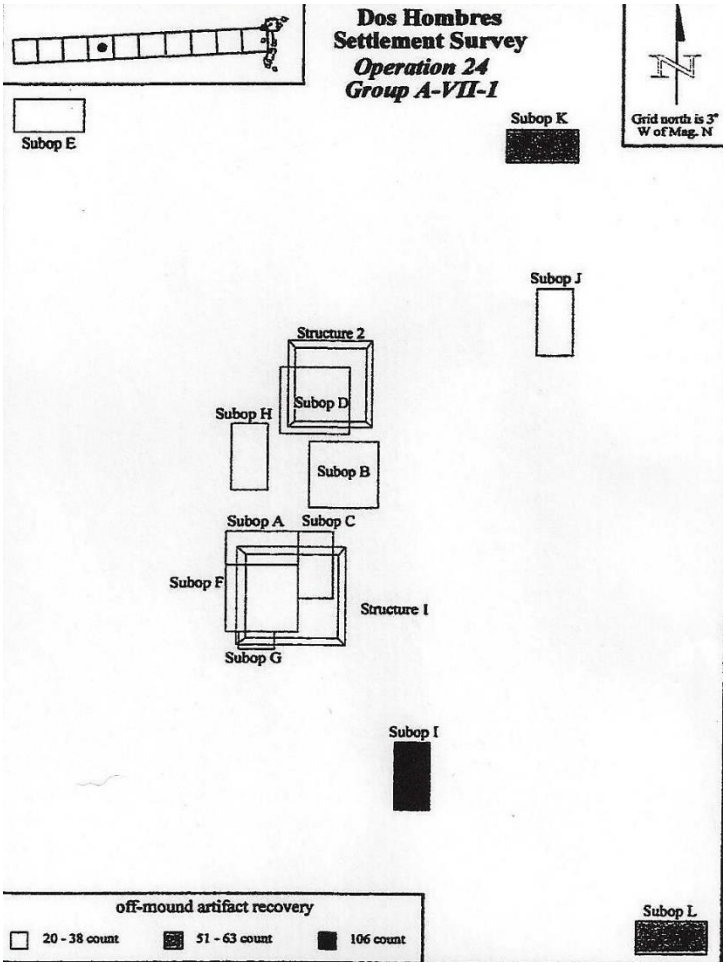

Figure 26. Map of Operation 24 of Dos Hombres. From Lohse 2001:291. Courtesy of PfBAP.

The Dancer Group (Op. 28) is a small two-structure platform group that has yielded 16 (perhaps 17) individuals within six burial units (Figure 27). This Group (also designated Group A-VII-4) is located approximately 1.55km west of the Dos Hombres site core (Trachman 2007:131). A series of burials was recovered from within the platform between the two structures of the group and appear to represent at least three separate burial "episodes" (Trachman 2007:186). Burial Episodes 2 and 3 of the Dancer Group date to the

Late Preclassic period (400 BC – AD 250) and Burial Episode 1 dates to the Late Classic from around AD 700-900 (Trachman 2007:188).

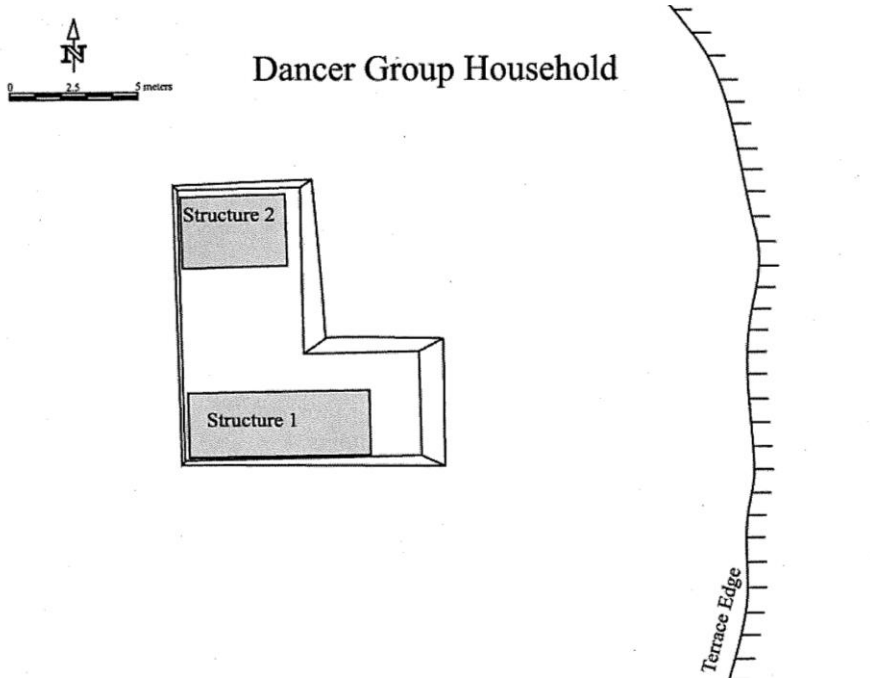

Figure 27. Map of Dancer Group of Dos Hombres. From Trachman 2007:134. Courtesy of PfBAP.

Episode 1 was the shallowest of all three episodes and was surrounded on the north and south sides by stone alignments running east-west. At least four, possibly five individuals were recovered from this burial episode and were associated with various grave goods.

Burial 1, Individuals 4 and 5 (PfBAP IDs: PfBAP-02, PfBAP-03)
MNI: 1 Sex: NA Age: Y Adult Position: Disarticulated Orientation: NA

An adult of unknown sex was recovered inside (or possibly underneath) a large vessel (Vessel 1) and also associated with a secondary vessel (Vessel 2). The remains of a young adult were associated with Vessel 2, and it is unclear if the remains from both vessels

represent one or two individuals (Trachman 2007:193). Both vessel burials were interpreted as secondary burials, so body positioning of the decedents is unknown (Julie Saul, personal communication 2016).

Burial 1, Individual 1 (PfBAP 2000-02a)
MNI: 1 Sex: NA Age: L Child Position: Disarticulated Orientation: NA

The remains of a late child (aged 9-14 years at the time of death) were recovered between the individual/s associated with Vessels 1 and 2 (Trachman 2007:194). This burial is also a secondary burial, so body positioning could not be determined.

Burial 1, Individuals 2 and 3 (PfBAP IDs: 2000-02b, 2000-02c)
MNI: 2 Sex: F, NA Age: Adolescent – Y Adult, Y Adult Position: Flexed Orientation: E-W (head W)

Two additional burials were recovered within this episode, both interred in a flexed position and oriented east-west (ibid.). One individual (believed to be the primary individual for this burial episode) was an adolescent or young adult (aged 16-25 years at the time of death) and was estimated to be female (Julie Saul, personal communication 2016). Her head was positioned to the west (Saul and Saul 2003, as recorded in Trachman 2007). The last individual within Burial Episode 1 is another flexed decedent (also in an east-west orientation with head west), representing a possible female who died around the same age as the previously mentioned individual (16-25 years). Saul and Saul 2003 (as reported in Trachman 2007:194) suggest that this burial was a secondary interment associated with the other young female burial.

Burial 2, Individuals 1, 2, and 3 (PfBAP IDs: 2000-03a, 2000-03b, 2000-03c)
MNI: 3 Sex: F?, M, M Age: Y Adult, Y Adult, M Adult Position: Flexed, Disarticulated, Disarticulated Orientation: E-W (head W), NA, NA

The second Burial Episode yielded three individuals dating to the Late Preclassic period. A young adult possible female (20-34 years old at the time of death) was interred in a flexed position with her head to the west and hips to the east. Two vessels were interred with this individual, one near her head and another near her chest (Trachman 2007:198). The other two individuals from Burial Episode 2 were represented only by dental remains and were estimated by Saul and Saul 2003 (as reported by Trachman 2007) to represent a young adult male (20-34 years at the time of death) and a middle adult male individual (30-40 at the time of death). These two individuals may represent human grave offerings for the young female (Saul and Saul 2003, as reported by Trachman 2007:199).

Burial 3, Individual 1 (PfBAP ID: 2000-04a)
MNI: 1 Sex: NA Age: E Child Position: Extended Orientation: E-W (head W)

The third Burial Episode consisted of at least six individuals, all dating to the Late Preclassic period. The first burial recorded in Episode 3 was an early child (aged 2-4 years at the time of death) interred in an extended position with head to the west (Trachman 2007:204).

Burial 3, Individuals 2, 5, and 6 (PfBAP IDs: 2000-04b, 2000-04e, 2000-04f)
MNI: 3 Sex: NA Age: Y Adult, E Child, L Child Position: Flexed, Disarticulated, Disarticulated Orientation: E-W (head E), NA, NA

A second individual from Episode 3 was recovered in a flexed position, with head to the east (Saul and Saul 2003, as recorded in Trachman 2007:454). This individual is a young adult (20-30 years old at the time of death) of indeterminate sex. A large vessel (Vessel 8) was inverted over the individual's face and the dental remains of two additional

children (aged 3-5 years and 5-7 years, respectively) were recovered within this vessel (Trachman 2007:205).

The 2-4 year old child and young adult individual were interpreted as primary burials for Episode 3, with the other four decedents representing human "grave goods" (Julie Saul, personal communication 2016).

Burial 3, Individual 3 (PfBAP ID: 2000-04c)
MNI: 1 Sex: NA Age: E Child Position: Disarticulated Orientation: NA

Another child (aged 3-5 years at the time of death) was represented by dental remains located in a vessel (Vessel 7) that was associated with the younger child of the first burial (Trachman 2007:204-205).

Burial 3, Individual 4 (PfBAP ID: 2000-04d)
MNI: 1 Sex: NA Age: Y Adult Position: Disarticulated Orientation: NA

The teeth of a young adult (aged 20-34 years at the time of death) were also recovered within Vessel 7 (Trachman 2007:205).

Trachman (2007:210) notes a gap in occupation (or at least mortuary activity) at the Dancer Group between the Late Preclassic and Late Classic periods. Any explanations of this are beyond the scope of this dissertation, but this discrepancy should be noted.

Grupo Agua Lluvia (A-VII-11, Op. 29) is located approximately 1.7km west of the Dos Hombres site center (Trachman 2007:213). This group consists of an open plaza outlined by a terrace and five structures (Trachman 2007:214) and has yielded three burials (Figure 28). Burials 1 and 2 were located under the floor of Structure 4, and Burial 3 was recovered under the floor of Structure 3 (Trachman 2007:286).

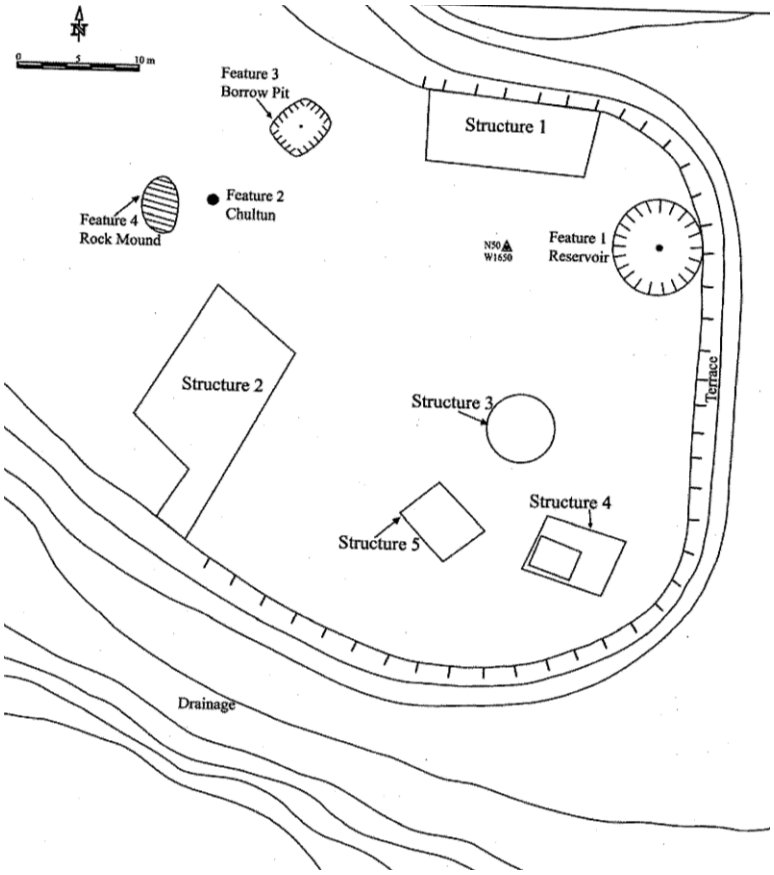

Figure 28. Map of Grupo Agua Lluvia of Dos Hombres. From Trachman 2007:215. Courtesy of PfBAP.

Burial 1 (PfBAP ID: 2001-04)
MNI: 1 Sex: NA Age: M Adult Position: Flexed Orientation: N-S (head S)

Burial 1 is a cist burial atop unmodified bedrock. The individual was interred in a flexed position with head to the south. Sex could not be determined, but age-at-death was estimated to be 35-50 years old (ibid.). Trachman was unable to determine the time period in which Burial 1 was interred, but this individual possibly dates to the Late to Terminal Classic (Trachman 2007:287-289).

Burial 2 (PfBAP ID: 2001-05)
MNI: 1 Sex: F? Age: Adult Position: Flexed Orientation: E-W (head W)

Burial 2 was located to the east of the first burial, but also underneath the Structure 4 floor. This individual was interred in a flexed position on the back, with head to the west. Saul and Saul (2003, as reported in Trachman 2007:289) determined the individual to be a possible adult female, but poor preservation provided no further data.

Burial 3 (PfBAP ID: 2001-06)
MNI: 1 Sex: F Age: M Adult Position: Flexed Orientation: N-S (head S)

The third burial from the Agua Lluvia group was recovered within a cist beneath the floor of Structure 3 and dates to the Late Classic period. An adult female (aged 35-50 years at the time of death) was interred on her left side in a flexed position with head to the south, facing west (Trachman 2007:293).

La Milpa (RB-25)

The archaeological site of La Milpa represents the largest urban center in the PfBAP research area, and the third largest Maya site in all of Belize (Geller 2004:112). Archaeological evidence suggests that La Milpa held great influence over the local region for approximately 1500 years, with occupation ranging from the Late Preclassic through the Early Postclassic (Robichaux 1995:58). La Milpa's regional influence may have been in part due to a possible linkage between it and the even larger and more influential sites of Tikal and Rio Azul from the Peten region of Guatemala (Adams 1990). In fact, Culbert (1991:132) suggests that La Milpa is associated with the Peten complex due to its location along the eastern edge of the Peten and its shared ceramic, architectural, and iconographic styles (Robichaux 1995; Adams 1990).

La Milpa sits atop a limestone ridge, approximately 26km east of Rio Azul and consists of two major plazas at its northern and southern extents (Robichaux 1995:49, 55). Similar to the site layout of Dos Hombres, the northern and southern plaza groups at La Milpa are separated by a north-south running sacbe (Houk 2010:3). These courtyards are also separated by two large depression areas, which are posited by Robichaux (1995:55) to have served as water reservoirs or quarries for the ancient community (Figure 29). A total of 28 burials containing 32 individuals have been recovered from the site of La Milpa – some were located within the site core, while others have been recovered from residential courtyard groups within the broader expanses of the site. Contextual information on some of these burials is lacking, so only 19 of these burials (representing at least 22 individuals) will be discussed further in this dissertation.

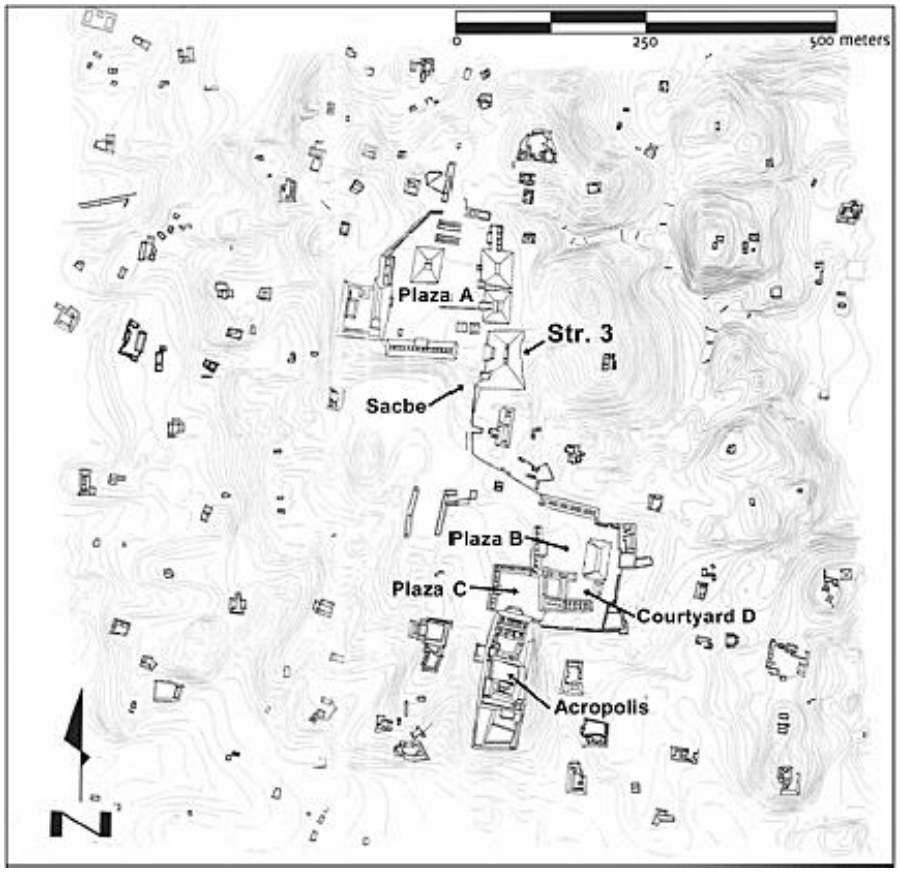

Figure 29. Map of La Milpa archaeological site. From Trein 2016:12 (adapted from Hammond and Tourtellot 1993:72). Courtesy of PfBAP.

Plaza A

Plaza A, the largest of the two main groups at La Milpa, is located at the northern portion of the site (Trein 2016). The plaza possesses three large pyramid structures to the east, a ball court and fourth pyramid to the north, and multiple range structures lining its western and southern borders. In all, Plaza A is estimated to extend 165m x 120m in area (Robichaux 1995:55) and consists of 15 structures. Construction at Plaza A dates from the Late Preclassic, Late – Terminal Classic, and Postclassic periods. Occupation at La Milpa was continuous through the Early Classic period while additional construction occurred in

the Late and Terminal Classic periods, (Trein 2016), suggesting that Plaza A at La Milpa held great regional importance for a long period of time.

A total of six burials containing eight individuals have been recovered from Plaza A, including two tomb burials (Geller 2004:114); however, sufficient contextual information is only available for three of these burials (containing four individuals) and only these will be considered in the analysis of this dissertation. The first tomb (Burial 1) was located within Structure 1 but was severely looted and little information on this individual is available. Burial 1 will not be further considered in this dissertation.

Burial 2 (PfBAP ID: 1996-01)
MNI: 1 Sex: M Age: M Adult Position: Extended Orientation: E-W (head E)

The second tomb (Burial 2) was located underneath a plaza floor directly in front of Structure 1 (as recorded in Geller 2004:578). This burial dates to the Early Classic and contained the remains of an adult male (aged 35-50) who was interred in an extended position on his back with head to the east and feet to the west (Saul, personal communication). A number of material goods were also included within the burial chamber, and traces of red cinnabar were found on the cranium (Geller 2004:578).

An additional burial was located in front of Structure 1, near Stela 1. This burial contained the remains of at least two individuals and dates to the Early Classic (Geller 2004:576-577). Little information is available on this burial, but the primary individual was a child (aged 6-9 years) and the secondary individual is an adult (Saul, personal communication 2016). This burial will also be excluded from further analysis in this dissertation.

Burial ? (PfBAP ID: 1998-09)
MNI: 1 Sex: M Age: Y Adult Position: Disarticulated Orientation: NA

The burial of a single individual was recovered beneath the patio floor of an elite residential group at the northwest portion of Plaza A (at the edge of Structure 183 and between Structures 184 and 185) (Geller 2004:573). The individual is represented by a single, fragmentary mandible estimated to belong to a young adult male (Julie Saul, personal communication 2016). Ceramic evidence places this possible secondary burial during the Late – Terminal Classic periods, but no other information on this burial is available (Geller 2004:573.).

Burial ? (PfBAP IDs: 1993-02, 1993-03)
MNI: 2 Sex: NA Age: Adult, E Child Position: Flexed, Disarticulated
Orientation: N-S (head N), NA

A subfloor primary burial with secondary cache burial were recovered from the northwest corner of Structure 3 at Plaza A (Geller 2004:574-575). The primary individual is an adult of undetermined sex who was interred on his or her back in a loosely flexed position, head to the north (Julie Saul, personal communication 2016). The secondary cache burial was encountered within two lip-to-lip vessels lying atop the primary individual. A single human tooth belonging to an early child aged 1-2 years old was recovered within these vessels. (Geller 2004:574-575). The primary individual was left unexcavated, but both burials appear to date to the Late Preclassic (ibid., Julie Saul, personal communication 2016).

The final burial recovered from Plaza A was located behind a stela in the center of Structure 9, on the lower stair (as reported in Geller 2004:579). This burial was also fragmentary (consisting of only two teeth), and may represent another secondary burial

(ibid.). No information on body position, age at death, or sex is available for this burial, so it will be excluded from further discussion in this dissertation.

Los Pisos Courtyard / Western Acropolis

On the western end of Plaza A is a royal acropolis identified by Martinez (2013) as the Los Pisos Courtyard. This courtyard (also identified as the Western Acropolis by Hammond and Tourtellot (1993)) is elevated above the regular plaza surface and consists of four structures that restrict access to the group (Figure 30). This courtyard is interpreted as a royal residential compound that was continuously occupied from the Late Preclassic through the Late – Terminal Classic periods (Martinez 2013:113, 147; Hammond and Tourtellot 1993). While three burials have been recovered in the Los Pisos Courtyard, only one of these features (Burial 1) provides sufficient data to be useful for the purposes of this dissertation.

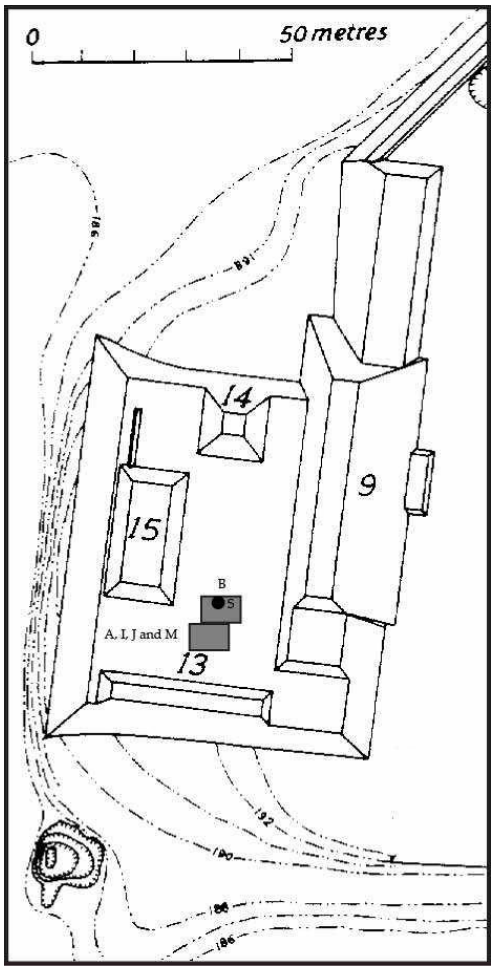

Figure 30. Map of Los Pisos Courtyard, La Milpa. From Martinez 2013:153 (adapted from Tourtellot et al. 1994). Courtesy of PfBAP.

Burial 1 (PfBAP ID: 2008-01)
MNI: 1 Sex: M Age: Adolescent – Y Adult Position: Seated Orientation: NA

Burial 1 consists of the primary internment of a young male individual within a Late Preclassic chultun (Martinez 2013:179). The decedent was placed into the burial chamber in a seated position with hands around the stomach, and the close articulation of the remains suggests he may have also been bundled (Martinez 2013:181-182). Of particular interest is that the burial appears to have been visited at some point in antiquity – a time in which the femora and cranium of this individual were removed from the burial

chamber (ibid.). Remains from a possible burning event were situated atop the human remains in what Martinez (ibid) hypothesizes may represent a ritual sealing of the burial chamber following its re-visitation.

A second burial (Burial 2) was recovered at the southern façade of Structure 14 and was left unexcavated (Martinez 2013:221-222). Also dating to the Late Preclassic, this burial exhibited evidence of an associated burning event similar to that observed with Burial 1, but the burial was left in situ due to its location beyond the scope of the excavated SubOp (ibid.). No further information on this individual is available, and it will not be discussed further in this dissertation.

Burial 3 is the final burial recorded at the Los Pisos courtyard. Human remains were found eroding out of the wall of a looter's trench in the northern portion of Structure 14 – within the construction fill of the underlying platform (Martinez 2013:231, 283). Fragments of bone that had fallen to the floor of the looter's trench were collected and radiocarbon dated to the Late – Terminal Classic period (Martinez 2013:232). Some teeth were also collected and provided an age-at-death estimation of 40-60 years old (Martinez 2013:233). No further information is available for this individual and it will be excluded from further discussion in this dissertation.

Plaza B

Located at the southern end of La Milpa are Plazas B and C (Houk 2010:3). Plaza B is significantly smaller than Plaza A, but is the second-largest plaza at La Milpa (ibid.). It is surrounded on the northern, western, and southern borders by range structures, and a large pyramid (Structure 21, the fifth largest structure at La Milpa) encloses the southeastern corner (ibid.) (Figure 31). Access to this plaza is somewhat limited and an altar and stela were noted in the middle of the group and in front of the pyramid structure,

respectively (Houk 2010:3-4). Plaza B was constructed during the Late – Terminal Classic periods, and previous researchers (including Hammond and Tourtellot 2004) have suggested that construction at this southern portion of the site was never completed prior to abandonment of La Milpa in the Terminal Classic (Houk 2010:4). However, more recent excavations at Plaza B have confirmed that construction was actually completed and utilized during the Late Classic (Houk et. al 2010:54).

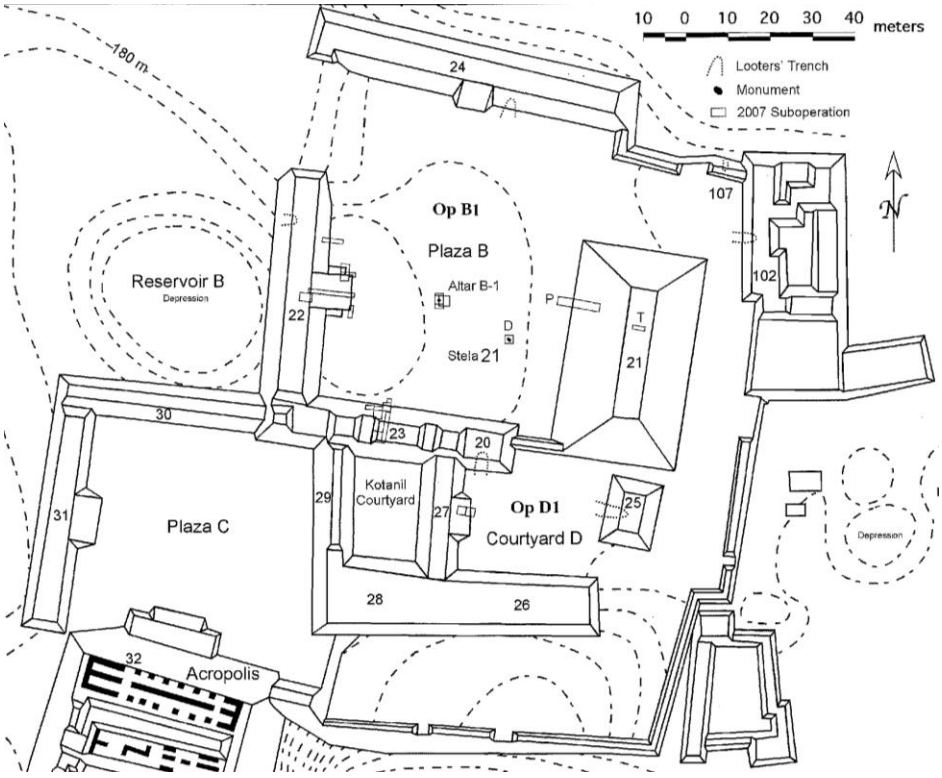

Figure 31. Map of Plaza B at La Milpa. From Houk 2010:2, courtesy of Dr. Norman Hammond, LaMAP, and PfBAP.

Courtyard 100 is located along the eastern edge of Plaza B (behind Structure 21). This courtyard sits atop a raised platform and consists of only a few small structures (Mann 2010:123). Mann (ibid.) hypothesizes that Courtyard 100 functioned as a craft production

area or as a household for occupational specialists. One (B-1) has been recovered from this courtyard.

Burial B-1 (PfBAP ID: 2011-01)
MNI: 1 Sex: NA Age: Infant Position: Flexed Orientation: N-S (head S)

The well-preserved remains of an infant were recovered underneath a plaster floor in the eastern range structure (Moats 2012). The burial was positioned on a passageway from the wall of this structure to the exterior of the courtyard (Moats 2012:41). The infant was aged approximately 3-6 months old at the time of death and was interred in a flexed position on its right side, head to the south, facing east (personal observation). Very few ceramic materials and a single, small, obsidian blade were recovered with the remains, but it is unclear if these artifacts were simply part of the surrounding fill or directly associated with the decedent (personal observation).

Plaza C

Plaza C is connected to the southwest corner of Plaza B and accessed through Courtyard D (discussed below). A possible sacbe connects the courtyard to this plaza (Houk 2010:4). Plaza C is the third largest plaza at La Milpa and is composed of range structures to the north, east, and west. The entrance to La Milpa's acropolis marks the southern side of Plaza C (ibid.).

To date, a total of three burials have been recovered from Plaza C, all from the South Acropolis (Geller 2004:115). Two of the burials were located atop the raised platform of this residential courtyard (associated with Structure 70).

Burial ? (PfBAP ID: 1996-06)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head N)

The remains of an individual (C08-05) were recovered in a flexed position (on the right side) in a simple grave cut into the plaster surface of a bench (Saul, personal communication 2016). This young adult male possessed eight modified teeth (ibid.).

Burial ? (PfBAP ID: 1996-05)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: NA

A second young adult male was recovered from construction fill in Structure 70 (ibid.). The decedent was placed in a flexed position, but looting of the burial prevented any further interpretations (ibid.).

The third burial from Plaza C was recovered within a drain off of the South Acropolis plaza (Geller 2004:580). Geller (ibid.) reports that the individual was a subadult and likely represented a secondary burial, but no further information is available. This third burial will be excluded from any further analysis in this dissertation.

Sak Ch'en Patio Group

The patio (or plazuela) group named by Riddick (2014) as Sak Ch'en (Op LM4) is located on the northern border of the La Milpa site core and Plaza A (Figure 32). The group consists of seven structures and a possible double-chambered chultun (ibid.). Riddick (ibid.) hypothesizes that Sak Ch'en served as a residential and administrative group for resource specialists of La Milpa elites. Three burials were recovered from this site, all excavated and analyzed under my own supervision.

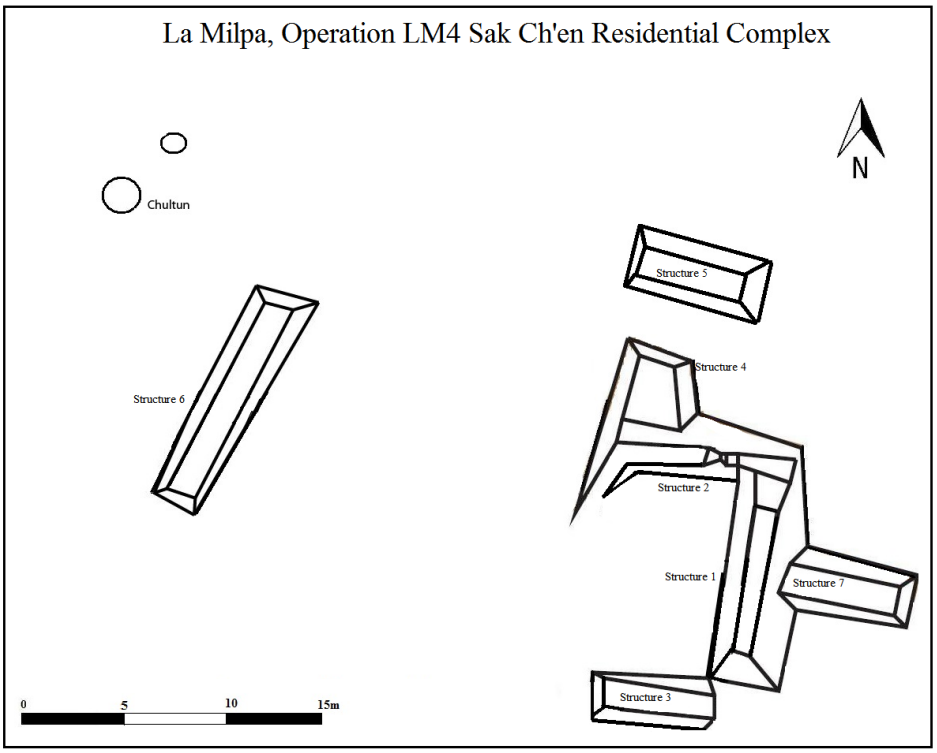

Figure 32. Map of Sak Ch'en patio group of La Milpa. From Riddick 2014:39. Courtesy of PfBAP.

Burial 1 (PfBAP ID: 2010-01)
MNI: 1 Sex: NA Age: Adolescent Position: Flexed Orientation: E-W?

Burial 1 was discovered beneath a plaster floor of the group's chultun. The decedent was badly damaged by a collapse of the chultun that occurred at some point in antiquity and little information could be drawn from the remains. Initial investigation of the burial suggested that the individual was interred in a flexed position on his or her left side, but may have also been originally interred in a seated position (Drake 2012). Artifactual evidence within the chultun suggest the individual (an adolescent who died around the age of 19) was interred during the Early Classic period (Drake 2013), but little other information is available due to the fragmentary nature of the remains.

Two burials were recovered from an internal room at Structure 2. These burials (Burials 4 and 5) are assumed to have been interred within the same burial chamber; however, the placement of the individuals within the burial is not explicitly clear whether they were directly associated with the same burial event.

Burial 4 (PfBAP ID: 2012-01)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

Burial 4 was located within the cobble fill between two plaster floors in Structure 2, just east of the wall dividing the western room and the internal room. The decedent in Burial 4 was a young adult female, interred in a flexed position on her left side, her head to the south.

Burial 5 (PfBAP ID: 2012-02)
MNI: 1 Sex: NA Age: E Child Position: Flexed Orientation: N-S (head S)

While expanding the excavation unit for Burial 4, the remains of a child were uncovered. This burial (Burial 5) was located adjacent to (and possibly partially within) the western wall of the room, directly west of the cranium of Burial 4. The child (estimated to have been between the ages of three and five at the time of death), was separated from the individual of Burial 4 by approximately 10cm and the possibility that the remains were interred within the wall prevents confirmation that these two individuals were intentionally associated with each other at the time of burial. The child of Burial 5 was interred in the common flexed position on his or her right side, head to the south (unpublished burial report, Drake 2013).

Unnamed Elite Residences within the La Milpa Community

While contextual information is lacking regarding the burial discussed below, other elite residential groups have been recorded and excavated from around the greater La Milpa community. Group 701 is an elite residence that is peripheral to the center of La Milpa (Geller 2004:592). Within this group, Structure 702 is interpreted as a possible temple structure (ibid.), from which a capped cist burial was recovered.

Burial 1 (PfBAP ID: 1994-21)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: E-W (head E)

A young adult male was interred in a flexed position on the left side (or possibly supine) with head to the east, facing south (Julie Saul, personal communication 2016). Julie Saul (ibid.) also notes that this individual exhibited Tabular Erect cranial modification.

Bajo and Other Household Communities of La Milpa

Geller (2004:115) reports that an additional 13 burials containing the remains of at least 15 individuals were recovered from household communities within La Milpa's site boundaries. Excavations for the Bajo Community Project were conducted by Kunen (2001) and others (Everson 2003; Rose 2000) and recovered a number of burials in differing states of preservation. Two individuals came from a looted burial and an additional individual was represented only by teeth (Geller 2004:566-567, 572). Because little contextual information is available on these three individuals, they will be excluded from further analysis in this dissertation.

An additional four burials from the Bajo Community Project were recovered from residential contexts and each date to the Late or Terminal Classic periods (Geller 2004).

Two burials were recorded in association with a bench at the northeastern room of a residential structure within Op V42.

Burial 1 (PfBAP ID: 1998-08)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: E-W (head W)

The remains of a young adult female were recovered from a cut in the bench mentioned above. The individual perished between the ages of 20-35 years old, and was interred in a tightly flexed position on her back. Her body was oriented east – west, with head to the west (Julie Saul, personal communication 2016).

Burial 2 (PfBAP ID: 1999-09)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

A primary interment of a male individual was recorded directly below the bench mentioned above. Like the female in Burial 2 (PfBAP ID 1998-08), this male died as a young adult, between the ages of 20-35. He was interred in a tightly flexed position on his left side and oriented north – south with head to the south (Geller 2004:568-569, Julie Saul personal communication 2016).

Burial 3 (PfBAP 1999-12)
MNI: 1 Sex: NA Age: E Child Position: Flexed Orientation: N-S (head S)

A third burial was found at the edge of a house group platform (Op V63). This individual was also interred in a flexed position, but the body was supine with head to the south, facing west. The decedent was a 3-5 year old child whose cranium exhibited tabular cranial modification (Julie Saul, personal communication 2016). A single obsidian blade was placed atop the body (Geller 2004:570).

Burial 8 (PfBAP ID: 1999-11a)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: N-S (head S)

The fourth internment was recovered below two plaster floors within a commoner residence (Op V68) (Geller 2004:571). This burial contained the remains of a single decedent who was interred in the same body position as many others from this data set – tightly flexed on the left side with head to the south (facing west) (Geller 2004:570-571; Julie Saul, personal communication 2016). This individual is a young adult male (aged 25-35) (ibid.)

Burial 1 (PfBAP ID: 1996-02)
MNI: 1 Sex: M Age: M Adult Position: Flexed Orientation: N-S (head S)

House Group 1295, located 1km from the center of La Milpa yielded the remains of a middle adult male from a subfloor grave (Geller 2004:583; Julie Saul, personal communication 2016). The individual was interred in a flexed position on his right side with his head to the south, facing east (ibid.). Julie Saul (personal communication 2016) notes that the mandibular central incisor of this individual exhibits modification.

Burials A and B (PfBAP IDs: 1998-11a, 1998-11b)
MNI: 2 Sex: M, NA Age: Y Adult, NA Position: Flexed, Disarticulated
Orientation: N-S (head S), NA

A Preclassic burial with two individuals was recovered from the center of a plaza structure in House Group 1107 (Julie Saul, personal communication 2016; Geller 2004:590). The primary decedent was a young adult male who was buried prone, in a flexed position. His head was oriented south, facing west and the remains of a second individual (represented by two mandibular incisors from an older individual) were possibly included among the grave goods as a human offering (Julie Saul, personal communication 2016).

Burial 2 (a and b) (PfBAP ID: 1996-03a, 1996-03b)
MNI: 2 Sex: M, NA Age: Y Adult, E Child Position: Flexed, Disarticulated Orientation: N-S (head S), NA

Structure 1272 of an unidentified house group yielded the remains of two individuals within a single burial (Geller 2004:584; Julie Saul, personal communication 2016). The primary individual in this burial is a young adult male (Julie Saul, personal communication 2016). He was interred in a flexed position on his left side with his head to the south, facing south-southwest (Geller 2004:584). This individual also possessed six modified teeth and a variety of grave goods (Julie Saul, personal communication 2016). Included with those grave goods was a tooth-cache from a subadult individual, aged two to four years at the time of death (ibid.). No further information is available on this secondary individual.

Burial 6 (PfBAP ID: 1998-10)
MNI: 1 Sex: M Age: Y Adult Position: Flexed Orientation: E-W (head W)

Structure 127 of another unidentified house group in the greater site area of La Milpa also yielded a burial. The flexed decedent was located in a grave cut beneath the floor of the southwestern corner of the southwestern room of this structure (Geller 2004:589). A young adult male was interred on his right side with head to the west, facing south (ibid.; Julie Saul, personal communication 2016).

Burial 4 (PfBAP ID: 1996-04)
MNI: 1 Sex: F Age: Y Adult Position: Flexed Orientation: N-S (head S)

A single burial of a young adult female was uncovered within the center of a small double patio group (Op G20) (Everson 2003:250). This Late to Terminal Classic group is located approximately 500m east of the site core of La Milpa (ibid.). While the burial was not fully excavated, the remains of the decedent were interred atop bedrock in a flexed

position on the left side, with head south, facing east (Everson 2003:254; Julie Saul, personal communication 2016).

Burial 5 (PfBAP ID: 1998-08)
MNI: 1 Sex: M Age: Adolescent Position: Flexed Orientation: N-S (head S)

A small household located approximately 3-km from La Milpa produced a human burial beneath a plaster floor within this group (Op G26) (Everson 2003:279-282). Op G26 dates to the Late to Terminal Classic period (ibid.), and the interred adolescent male was positioned on his back in a flexed position, head south and facing west (Julie Saul, personal communication 2016). This individual exhibited both tabular erect cranial and dental modification (three maxillary teeth) (ibid.).

SUMMARY

During the past 25 years of excavation at the PfBAP, many burials have been recovered at a variety of archaeological sites. Of those varied burials, 123 of them have been recorded with sufficient contextual and osteological data to yield useful and interesting for the purpose of this dissertation research. While a more detailed discussion of the burial data will occur in Chapters 4 and 5, a quick overview of the burials discussed in the current chapter suggest an overarching pattern of body placement among ancient Maya burials. Namely, there is a trend in bodies placed in flexed positions on the left side with head to the south in Maya burials. This trend seems to occur regardless of site type or time period, and will be analyzed and discussed in greater detail in the following chapters. Preservation across the sites discussed in this chapter varies, and so it is understandable that data available for some burials is not provided for others discussed in this chapter. I have pulled together as much information from the discussed burials as possible and have

even conducted my own osteological analysis on some of the individuals, so the information provided in the following chapters is as extensive as I have been able to make it. In the following chapters, I will discuss this issue with preservation and will look more closely at these apparent trends in ancient Maya burial practices to analyze whether or not such trends (or others) actually existed.

Chapter Four: Methods and Data Analysis

In this chapter, I introduce the various methods with which I collected data for this research project, and summarize the main aspects of that data. I then highlight certain aspects to set the stage for pattern recognition between burial characteristics. The grave, burial, and demographic data recovered through my research will be compared through three main categories: time period, geographic location within the RBCMA, and site category. Analysis and interpretation of the observed patterns within these categories is provided in the following Discussion chapter (Chapter Five).

DATA COLLECTION

The burial data explored in this chapter were collected through literary research and personal retrieval. Over 25 years of PfBAP excavations have yielded various Master's theses, Doctoral dissertations, journal publications, and published field and site reports. Geller's 2004 dissertation served the main starting point for my data collection. This resource provides a list of PfBAP burials recorded between 1992 and 2002. Information was collected from publications, Geller's personal involvement with excavations, and personal communication with excavators. While Geller's data set (comprised of 132 individuals) served as the initial starting block for my project, inevitably some information was lacking. First, with 14 years difference between the publications of Geller's and my research, a number of new burials excavated in those interim years needed to be added to my database. I was also able to track down and include certain bits of information that had been missing from Geller's data set. In her project, Geller also included burial data from the site of Chan Chich. Because this site is no longer excavated under jurisdiction of the PfBAP, and is too distant from PfBAP sites, burial data from Chan Chich are excluded

from my research. In all, my final data set included 154 individuals. Nonetheless, only 123 of these individuals are considered in the final analysis presented in this chapter (see Breakdown of Collected Burial Data section below for further discussion).

I began with a database similar to that compiled by Geller (2004). Initial characteristics recorded for each burial (and individual) included contextual information (site name, RB number, op, subop, and lot, and burial number), archaeological information (time period, grave type, burial type, interred materials, body position, body orientation, and direction), and demographic information on the decedent/s (MNI, age at death, sex, pathology, and body modification). In order to tease out some of the details from these categories, I created additional brackets of data, including: notes on how certain characteristics were determined (time period, age, sex), specifics of broader categories (grave type, burial type, body position), and additional brackets to help define the location, type, and specifics of observed pathologies and body modifications. As my research goals became more defined, I then added data categories to track the regional location and type of each site. PfBAP ID numbers were assigned to each burial as a means of tracking each individual that made up the data set. These IDs are composed of a date (the year the burial was excavated or analyzed) and an arbitrarily assigned sequential number. Burials with unknown dates are simply labeled "PfBAP" with a sequential number. This ID system was assigned only for the purposes of this dissertation, and is not a system utilized to track burials within the PfBAP.

To fill in information missing from Geller's project and that were necessary for my analysis, I turned to reports and publications from original excavators. As state above, many of the burials included in this research were uncovered during research projects that subsequently produced Master's theses and Doctoral dissertations. Other burial information was recovered from research and site reports, and some researchers were able

to provide me with original field notes to help complete missing areas of information. Dr. Frank Saul and Julie Saul served as Project Osteologists for the PfBAP from the project's beginning in 1992 until 2008. Because they were directly involved with most burial excavations and analyses that occurred during this time, notes and burial reports from these projects were extremely useful to help me solve even more of the information previously missing from my data set. Julie Saul kindly sent me copies of the documents she and her husband had retained, which proved integral in incorporating a significantly higher amount of information into my data set than had been previously recorded.

Finally, some of the information regarding osteological characteristics of the decedents was missing from a large portion of my data set. Over seven years of research, I was able to conduct my own osteological analyses of many of these remains, both in the R.E.W. Adams Archaeological Facility in Belize and at the Center for Archaeological and Tropical Studies (CATS) laboratory (formerly MARL – the Mesoamerican Archaeological Research Laboratory) in Austin, Texas. My analysis included full skeletal inventories with all possible assessments of sex, age at death, and any notable pathologies, trauma, taphonomic damage, or body modification that were observed in the process.

Since my involvement with the PfBAP in 2008 and having personally served as Project Osteologist since 2012, a number of burials included in this dissertation research were excavated and analyzed under my own supervision. This direct involvement with at least 11 of the individuals discussed in this dissertation allowed me the convenience of familiarity with the information I recorded. Nonetheless, I strive to make this information as clear, concise, and available as possible so it may prove useful to future research projects.

A full copy of the data table I used to organize all of this information is provided as Supplementary Material. The following sections of this chapter provide focused views

of aspects of the data and the distribution of the PfBAP burials through specific categories. Detailed comparisons of these categories of data are provided at the end of the chapter.

DATA ANALYSIS

To help tease out possible trends in the data, a chi-squared significance test was applied to data characteristics. Those particular trends that were flagged by the chi squared analyses as statistically significant will be further explored in this chapter. Nonetheless, I want to stress that chi squared test results should not be credited as an absolute indicator of cultural significance. It can be argued that each aspect of the burials discussed in this dissertation held real and specific meaning and significance for the Maya involved in the burial process. Conversely, perhaps some aspects of death and burial that are observed and recorded by archaeologists held no specific significance, or other important features of the burial process were intangible, did not preserve, or simply were overlooked by archaeologists (myself included) during the recording and analysis processes. Regardless, the use of frequency analysis through chi squared tests allows for analysts to see which associations between data sets occur commonly or randomly, and which associations likely hold a significant influence to their existence.

In general, chi squared analysis involves contingency tables of data to compare frequencies of variables within a data set (Van Pool and Leonard 2011). Observed and expected frequencies are compared and then analyzed through the chi squared test:

$$\chi^2 = \Sigma \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

The specific chi square analysis used for the data provided below is the Pearson's chi square test. Outcomes are expressed as chi square values and probability values. A probability (p) value of 0.05 or less indicates that the trends analyzed in the chi square analysis have a five percent likelihood (or less) of occurring randomly and are thus deemed statistically significant. Mosaic plots are provided as visual aid for the chi square analysis results. These plots are used to visualize relationships between variables – statistical significance is indicated when the differently colored areas within the plot appear in vastly different proportions (see Figure 56 as an example).

BREAKDOWN OF COLLECTED DATA

General Breakdown of PfBAP Burials by Data Descriptor

Prior to comparing varying aspects of the burials discussed in this chapter, I want to illustrate the ways in which the burials comprise this data set. Of the approximately 154 burials recovered from the PfBAP since 1992, only 123 individuals possessed some or all of the qualifying information needed to be able to compare them in the analysis portion of the research. Therefore, the "data set" of PfBAP burials referred to in this chapter and the subsequent discussion section only refers to those 123 individuals. The following sections describe how those individuals are distributed through the main categories of Site Type, Time Period, Geographic Location, Burial Type, Grave Type, Body Position, Body Orientation, Sex, Age at Death, Body Modification, and Grave Goods.

Site Type

In Chapter Three (Burial Sites at the PfBAP), I introduced the 12 PfBAP archaeological sites that have produced human burials as they pertain to three major site

categories. These categories, developed by Bullard (1960), consist of Household Communities, Minor Ceremonial Centers, and Major Ceremonial Centers. Table 5 provides a listing of sites discussed in this dissertation, as organized into this three-level model.

Table 5. Breakdown of sites by Site Type.

Household Communities	**Minor Centers**	**Major Centers**
Barba Group	Chawak But'o'ob	Dos Hombres
Liwy Group	Dos Barbaras	La Milpa
Medicinal Trail	El Intruso	
	Las Abejas	
	Guijarral	
	La Caldera	
	Say Kah	

The breakdown of the data by site-type is as follows: 11% (N=13) of the burials were recorded from Household Communities, 43% (N=53) were from Minor Ceremonial Centers, and 46% (N = 57) of the 123 recorded burials were recovered from Major Ceremonial Centers (Figure 33).

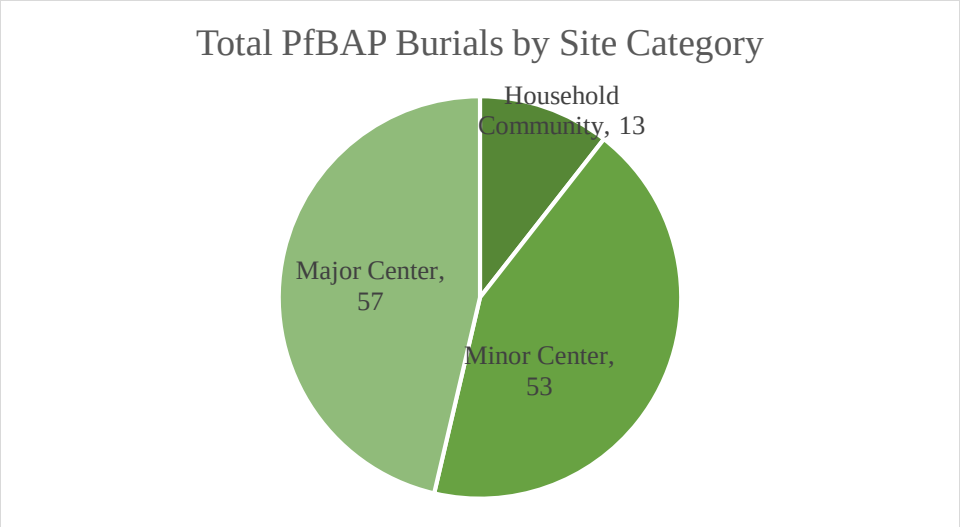

Figure 33. Distribution of PfBAP burials by site type.

Time Period

As I discussed in Chapter 2 (Project Background), sites within the PfBAP research area exhibit evidence of occupation from the Middle or Late Preclassic periods through the Terminal Classic. To date, no burials clearly dating to the Middle Preclassic have been identified, so all burials identified as "Preclassic" are considered here within the "Late Preclassic" category. Additionally, some burials are associated with a transitional time period between the Late and Terminal Classic periods. This overlapping period will remain its own separate temporal category. Therefore, the data will be compared between the following time periods: Late Preclassic, Early Classic, Late Classic, Late-Terminal Classic, and Terminal Classic.

Late Preclassic burials comprise 16% (N=19) of the sample, and 10% (N=12) of the total sample date to the Early Classic period. The vast majority of burials from the PfBAP are associated with the Late Classic period (N=58; 48% of the population). Twenty percent (N=25) are assigned to the non-specific Late-Terminal Classic temporal category,

and only 2% (N=3) of the population were determined to belong to the Terminal Classic period (Figure 34).

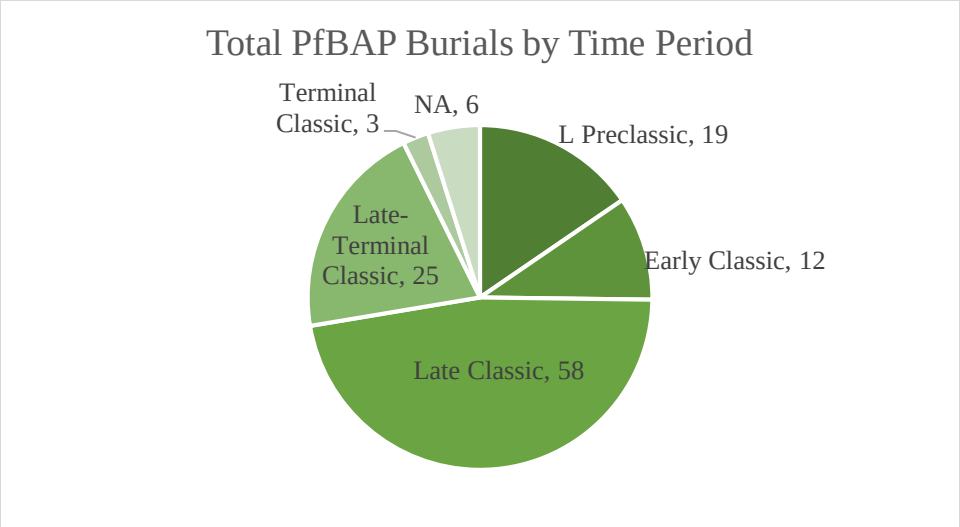

Figure 34. Distribution of PfBAP burials by Time Period.

Geographic Location

Investigated sites within the RBCMA can be divided by their location upon or below the La Lucha and Rio Bravo Escarpments. The La Lucha Escarpment runs from the Rio Hondo at the northern border of Belize southwest through the RBCMA. The Rio Bravo Escarpment is located just east of the La Lucha Escarpment, approximately 5km south of the Rio Hondo, and also extends to the southwest. Because the two escarpments are approximately 6-7km apart at their widest extent of the RBCMA, they will be considered for the purposes of this dissertation as the same geographic boundary. This essentially divides the RBCMA into two sections: sites on the western portion of the region sit atop the La Lucha and Rio Bravo Escarpments, and sites in the eastern portion are considered "off" of, or below, the escarpments. Table 6 illustrates the various archaeological sites present within each of the geographic regions.

Table 6. Sites within the RBCMA, broken down by geographic region.

Sites "On" the Escarpment		Sites "Off" of the Escarpment
La Milpa	Dos Barbaras	Dos Hombres
Medicinal Trail	Las Abejas	Barba Group
Say Kah	Chawak But'o'ob	
Guijarral	La Caldera	
El Intruso		

Only two sites, Dos Hombres and the Barba Group are located east of the escarpments. With 36 burials recorded at these two sites, 29% of the burial population are located "off" of the escarpment. The location of the Liwy Group in regards to geographic region is currently unknown (making up less than one percent of the population with its single recorded burial). The remaining 70% of individuals from this data set are recorded from sites considered "on", or west of the escarpment (Figure 35).

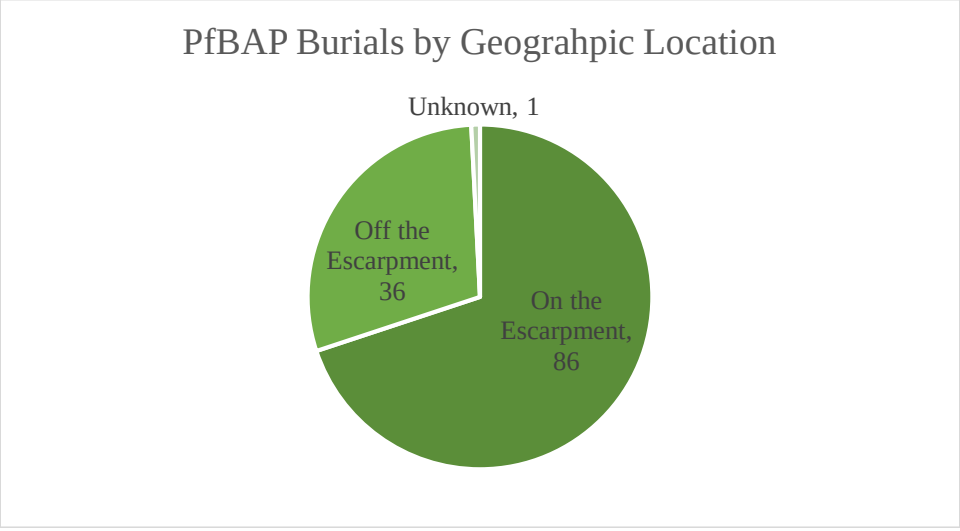

Figure 35. Distribution of PfBAP burials by geographic location

Burial Type

The majority of burial types (defined in Chapter 1) throughout the PfBAP sample were recovered from primary contexts (53%, N = 65). Secondary burials comprised 13% (N = 16) of the sample, and 29% (N = 35) of the burials contained multiple individuals. It is important to note that some primary and secondary individuals were interred in multiple burial contexts, with secondary burials recorded as offerings to the primary individual. In these cases, both primary and secondary burials are considered within the "multiple burial" category, and the nature of the burial type as primary or secondary is noted in the data table (see Supplemental Material). The remaining six burials (5% of the total sample) were not assigned burial types at the time of excavation. (Figure 36).

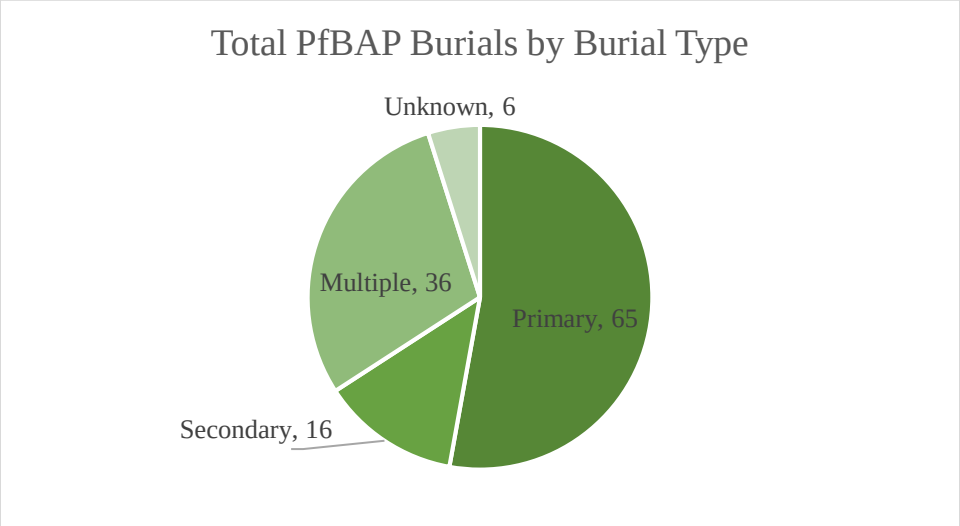

Figure 36. Distribution of PfBAP burials by burial type.

Grave Type

The different grave types identified in this dissertation are: Cache/Vessel, Chultun, Cist/Crypt, Simple, and Tomb (descriptions of these types are provided in Chapter 1). The majority of graves recorded in this sample were simple graves (N=73, 59%). The combined

category of cist/crypt comprised 19% (N=23) of the sample, while caches represented 7% (N=8) of the burial population. Tombs made up an additional 5% (N=6) of the total burial sample, and chultuns (N=2, 2%) were infrequently recorded among the 123 burials recorded. Nine percent of the sample (N=11) were recorded with unknown grave designations (Figure 37).

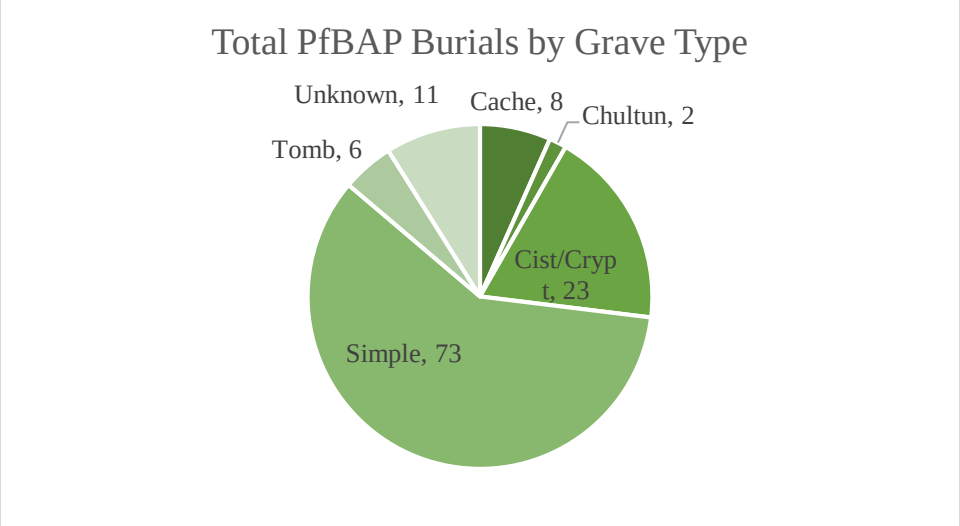

Figure 37. Distribution of PfBAP burials by grave type.

Body Position

When beginning this research project, I was intrigued by the high volume of flexed burials I encountered in my own excavations at the PfBAP, but was aware that extended and bundled burials had been recovered in previous excavations. While Geller (2004) notes the common trend of flexed burials among her burial data, I sought to confirm this pattern and continue on with observations regarding body orientation and head positioning of the decedents. Within the 123 individuals that are included in this research, decedents were recovered in any of four body positions: bundled, disarticulated, extended, or flexed (defined in Chapter 1).

In total, 61% (N=75) of the individuals analyzed in this project were interred in a flexed position. While 20% (N=24) of the burials lacked information on body positioning, 13% (N=16) of the individuals were disarticulated. To my surprise, only 4% (N=5) of the PfBAP individuals were interred in extended body positions. The final 2% (N=3) of the burial population was recovered from disarticulated, bundled contexts (Figure 38).

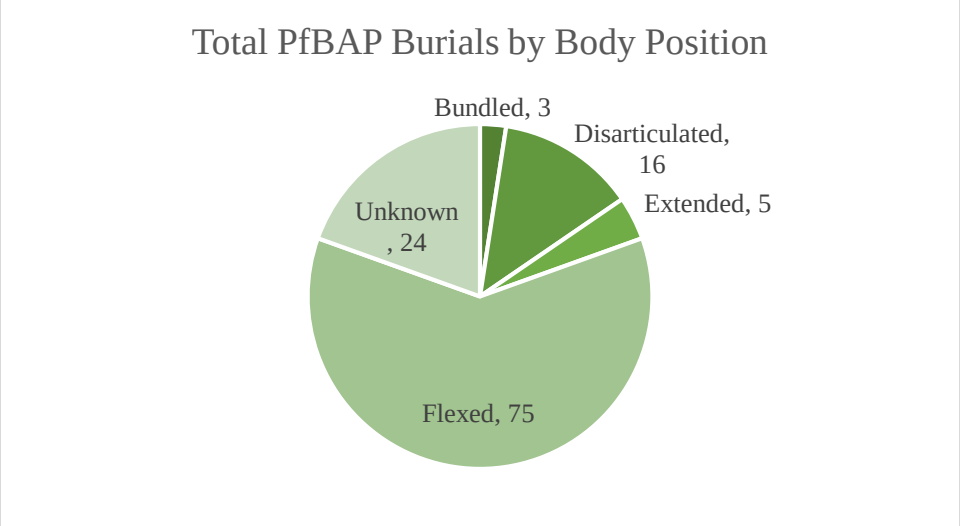

Figure 38. Distribution of PfBAP burials by body position.

Of the flexed burials, 45% (N=32) of decedents were placed on their left side. Interestingly, supine burials were the next most commonly identified body position, with 16% (N=12) of the flexed individuals recovered lying on their back. Fifteen percent (N=11) of flexed individuals were placed on their right side, and 7% (N=5) were flexed in a prone position, face-down. Only one flexed individual was recovered in a (possible) seated position, and the specific position of the final 32% (N=24) of flexed individuals was not recorded (Figure 39).

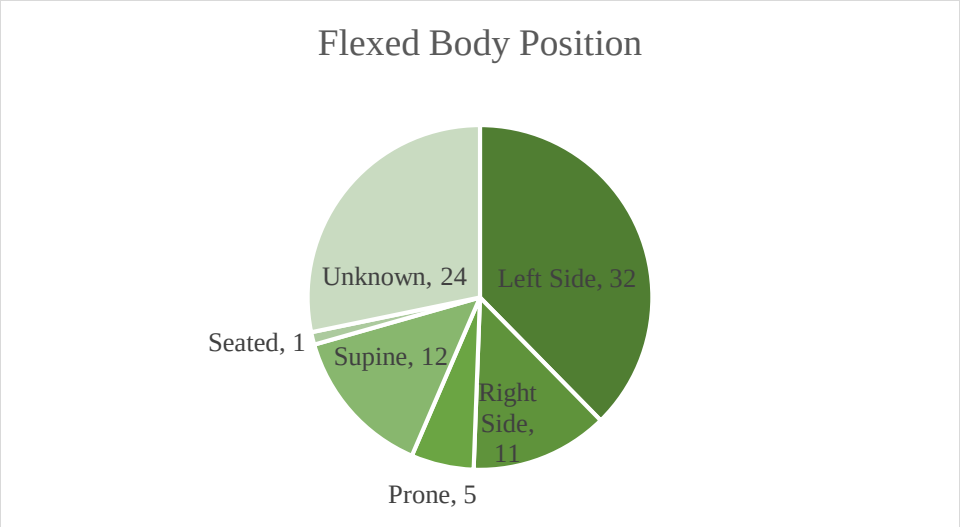

Figure 39. Distribution of PfBAP decedents by specific flexed body position.

Body Orientation

While positioning of the head of the decedent was not always noted among the 123 individuals included in this study, the overall data does seem to suggest a trend among the ancient Maya of northwest Belize to bury their dead with the head positioned toward certain cardinal directions. A total of 54 individuals, totaling 44% of the sample, were interred in a north-south orientation. Decedents interred in an east-west fashion totaled 17% (N=21) of the burial population. Very few burials were interred in northeast-southwest (N=2, 2%) or northwest-southeast (N=3, 2%) orientations. The final 35% of the sample had no recorded body orientation (Figure 40).

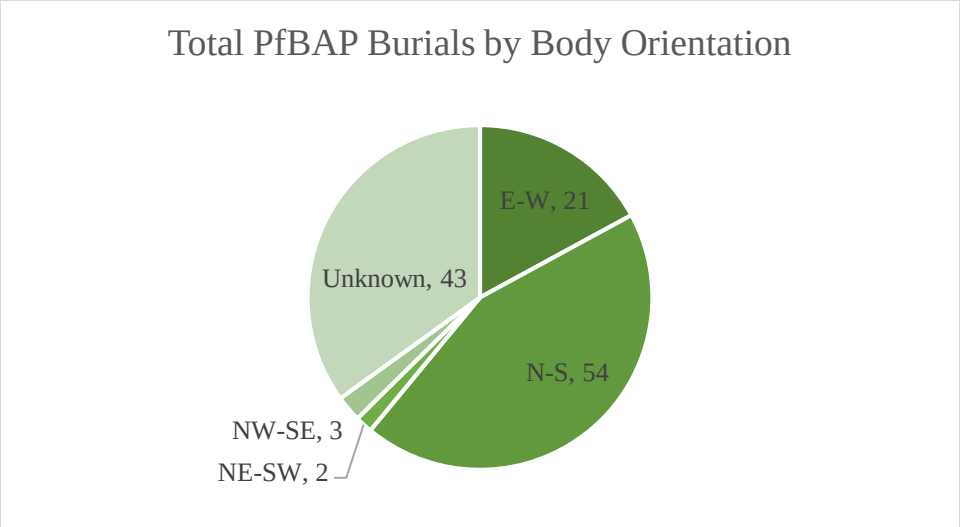

Figure 40. Distribution of PfBAP burials by body orientation.

Within the seemingly-preferred orientation of burials along a north-south axis, the burials also exhibited a clear tendency to place the head to the south within the grave. In total, 78% (N=42) of the 54 north-south oriented individuals were placed with the head to the south. Only 19% of north-south aligned decedents were oriented with head to the north, and 4% (N=2) of the individuals did not have specific notes as to the orientation of the head (Figure 41).

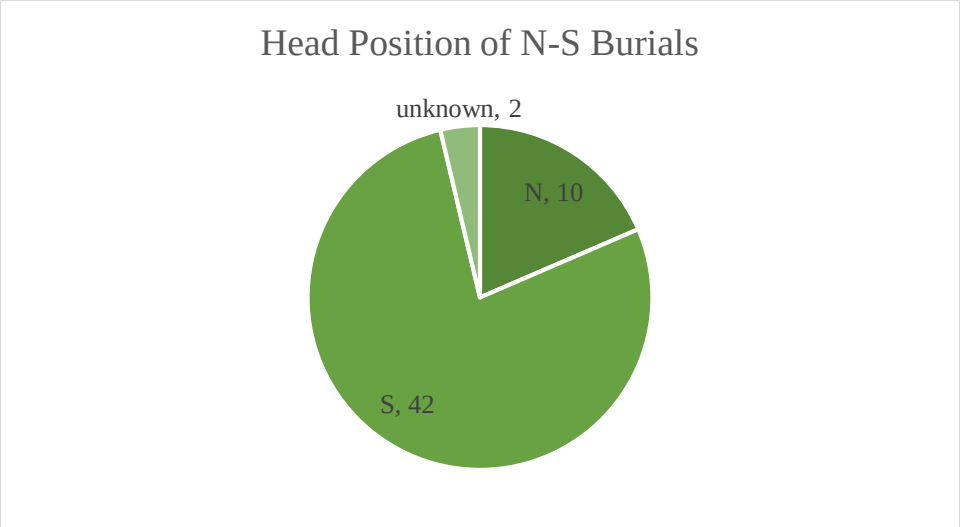

Figure 41. Head-placement of north to south oriented PfBAP burials.

Within the less-frequently observed east-west orientation of decedents, placement of head to the west is predominant, occurring in 67% (N=14) of the sample east-west oriented individuals. Five individuals (24%) were interred with the head to the east, and head location was not recorded for the remaining 9% (N=2) of the population (Figure 42).

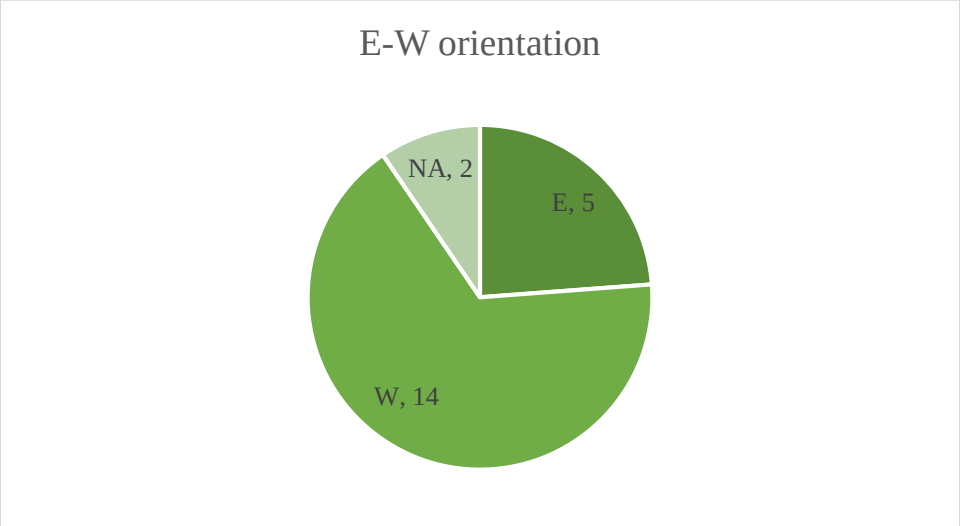

Figure 42. Distribution of head orientation for east-west aligned burials.

Age at Death

In order to better organize and identify individuals by their age at death, age categories were applied to the PfBAP burial sample. These categories (presented in Table 1) were determined using Buikstra and Ubelaker (1994) but age-at-death categories of subadults were attributed somewhat arbitrarily.

Age at death was approximated for 115 of the 123 individuals in this study. The majority of these individuals (76%, N=94) were adults at the time of death, while 17% (N=21) were determined to be subadults. The age of 7% (N=8) of the sample could not be determined. The largest percentage of the PfBAP burial population (51%, N = 63) were young adults at the time of death. A slightly smaller percentage of the population perished as middle adults (12%, N = 15) and early children (11%, N = 13), respectively. Adolescents comprised just 3% (N = 4) of the population, while late children comprised 2% (N = 2). Only 1% (N = 1) of the population was identified as an old adult at the time of death. Additionally, non-specified adults comprised 12% (N = 15) of the population, and only two unspecified children (2%) were identified (Figure 43).

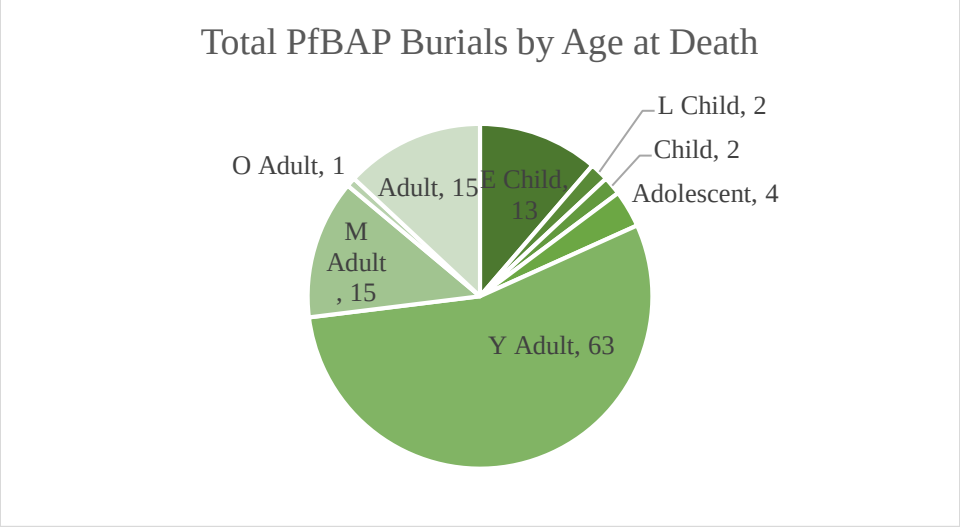

Figure 43. Distribution of total PfBAP burials by age at death.

Sex

Osteological determinations of biological sex were conducted for the 94 adult individuals identified in this sample. Of those adults, sex could not be determined for 41% (N=50) of the sample. Females comprised 20% (N=25) and males comprised 39% (48) of adults (Figure 44).

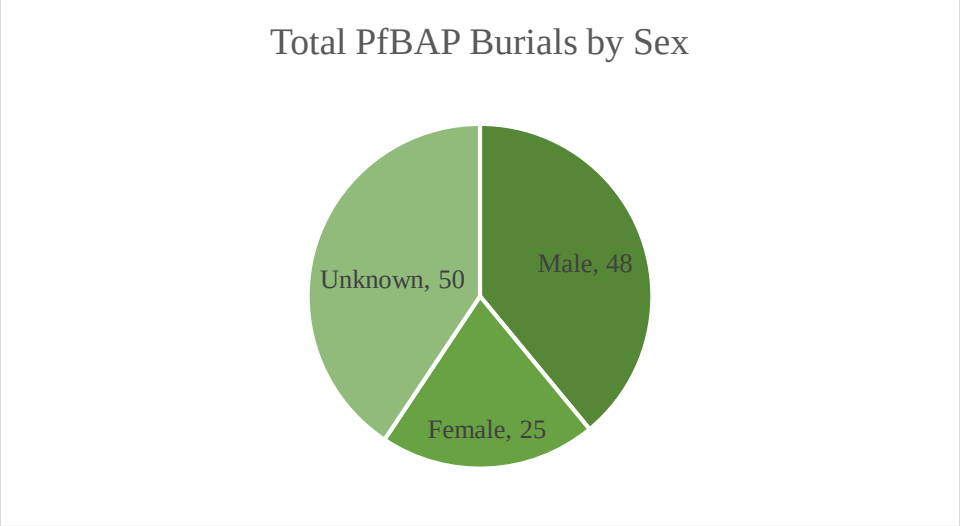

Figure 44. Distribution of PfBAP burials by biological sex.

Body Modification

Physical alterations of the cranium, dentition, or both were recorded for 37 (=30%) individuals within the PfBAP burial sample. Of those observed cases of modification, 57% (N=21) were recorded as dental modification, 33% (N=13) exhibited cranial modification, and the final 8% (N=3) consisted of individuals exhibiting both cranial and dental modifications. Seventy percent (N=86) of the total PfBAP burial population exhibited no noted forms of body modification (Figure 45).

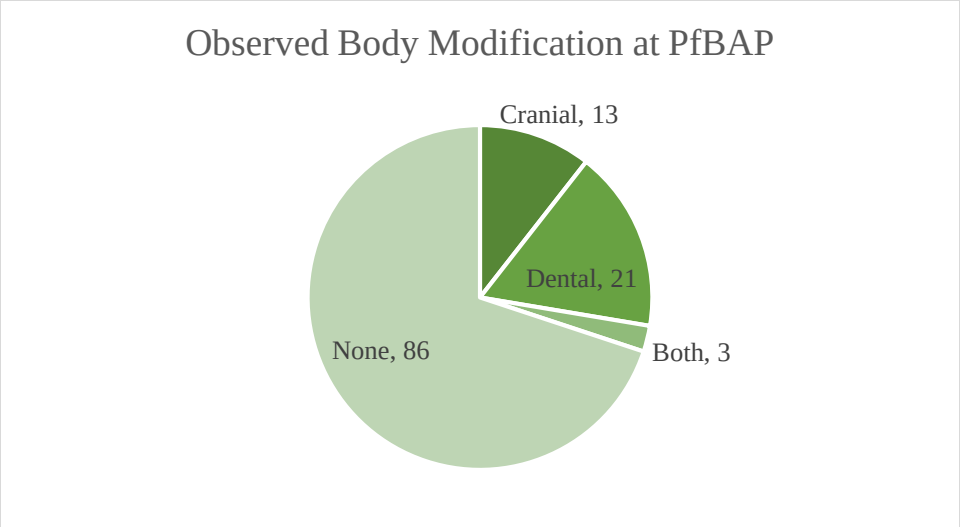

Figure 45. Distribution of body modification among PfBAP individuals.

Grave Goods

Associated grave goods were reported with 53% (N=65) of PfBAP individuals. In order to observe possible patterns within the burial sample in relation to interred materials, I created an arbitrary categorization system: burials with only two grave goods or less are recorded as having "few" goods, burials with three or more associated materials are recorded as having "many" grave goods, and secondary burials that are reported as grave offerings to a primary individual within the same multiple grave are classified as "human offering"[2]. This final offering category constitutes only 7% (N=9) of the total burial sample (Figure 46).

[2] I must state that these categories have no implications for the significance, importance, or "value" of the cultural material interred with the human remains. I created this categorization system to help separate those well-decorated burials with multiple (often "rare") material goods from those listed in the data set with a single good. I do not want to infer function, intentionality, or value in association with any of these materials - Geller (2004) has already addressed some element of the social and political implications behind grave goods. It is also important to acknowledge that some associated grave goods like textiles, food, and pigments may have degraded due to preservation conditions and, while once present, are no longer observable in the archaeological record.

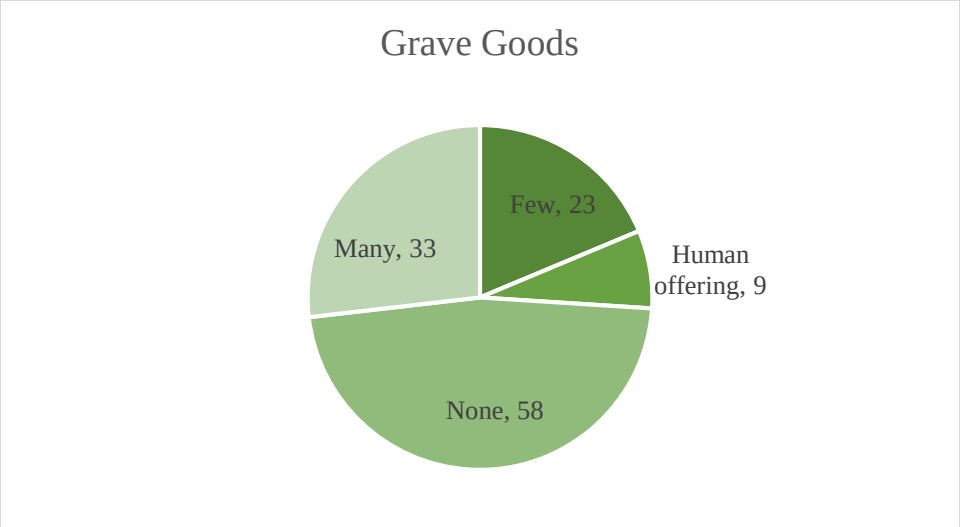

Figure 46. Distribution of grave goods throughout PfBAP burials.

Breakdown of Data by Time Period

In this section I will filter the data presented above through the varying time periods previously identified. Any in-depth determinations or interpretations of the data presented below will be provided in Chapter Five (Discussion).

Burial Type

Overall trends in the burial data suggest primary burials are the most common burial type in the PfBAP sample. This trend is especially clear during the Late Classic, where 57% of individuals (N=33) are interred in primary burials. Multiple burials are the next most commonly observed burial type, and the number of multiple burials remain relatively consistent throughout time periods, but are not present at all in the small Terminal Classic sample. Secondary burials are least commonly observed, but this may be due in part to the fact that those burials containing multiple individuals often contain secondary interments (N=16) - while there are more secondary burials technically represented in the data set (total N=42), they appear here under the "multiple burial" category (Figure 47).

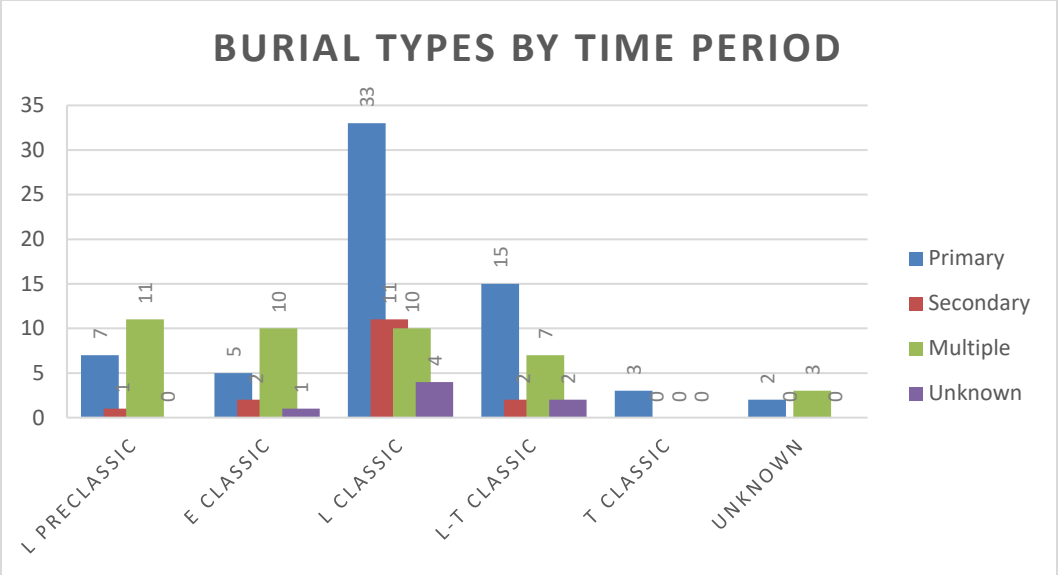

Figure 47. Distribution of burial types by time period.

Grave Type

The predominant grave type throughout the PfBAP burials is the simple grave. Because the Late Classic holds the highest amount of overall burials in this sample, the distribution of the different grave types is intriguing: simple graves far outnumber the other grave types, but 26% (N=15) of Late Classic burials were recorded in cist or crypt graves. The proportion of simple graves to other grave types in most of the time periods represented is heavily weighted to simple graves, but the distribution in the Early Classic period is relatively even, and burials in three grave types of the Late Classic are also well distributed (Figure 48).

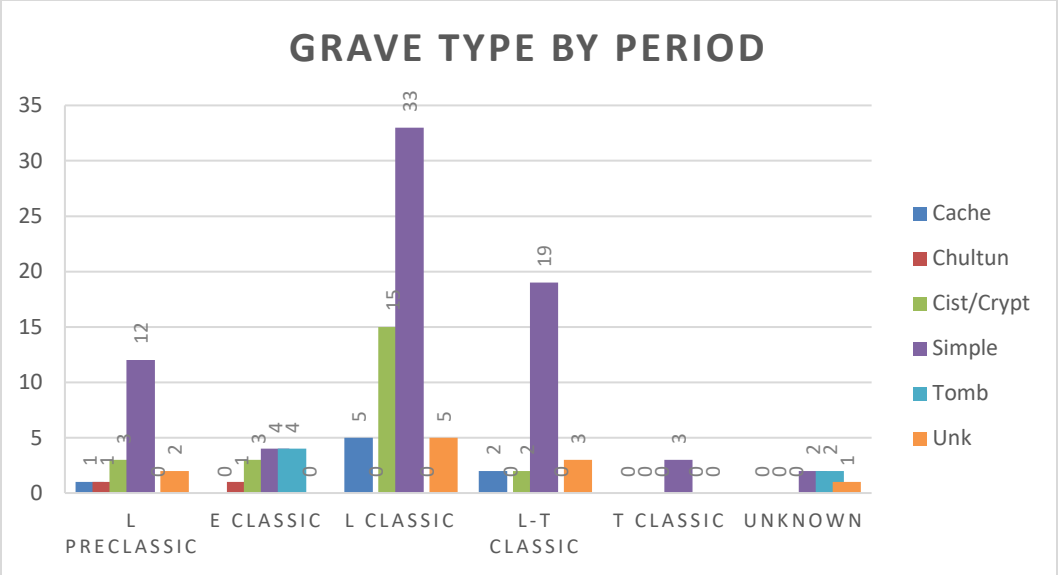

Figure 48. Distribution of PfBAP grave types by time period.

Due to the clear patterning of the data shown above and the small frequency amounts for some of the variables (cache, chultun, and tomb graves), a chi square test was determined unnecessary for this scenario.

Body Positioning and Orientation

For each time period represented, at least 50% of the burial population were interred in a flexed body position. Disarticulated burials are the next most frequent body position recorded in the PfBAP sample. When looking at the distribution of disarticulated burials between the earlier time periods of the Late Preclassic and Early Classic in comparison to the Late and Late-Terminal Classic periods, it stands out that those earlier periods held a more even distribution of disarticulated and flexed burials than the later periods. In Chapter Five ("Discussion"), I will address any possible statistical significance of this apparent pattern (Table 7; Figure 49).

Table 7. PfBAP burials divided by time period, showing percentages of type of body position for each time period.

	LPC	EC	LC	L-TC	TC	Unknown
Bundled	0%	0%	5%	0%	0%	0%
Disarticulated	32%	25%	7%	12%	0%	0%
Extended	5%	17%	3%	0%	0%	0%
Flexed	53%	50%	64%	62%	100%	60%
Unknown	11%	8%	21%	27%	0%	40%

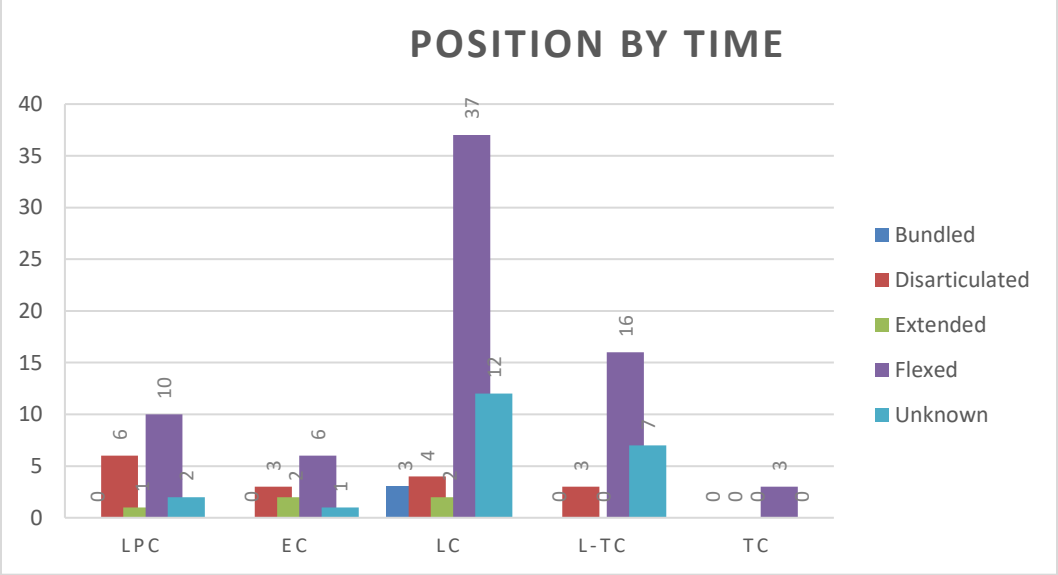

Figure 49. Distribution of body position of PfBAP burials by time period.

The most common body orientation among the PfBAP burial sample is along a north-south alignment. This preference is observed throughout time in the PfBAP burial sample. Similar to body positions mentioned above, body orientation appears to be more evenly distributed in the earlier time periods, while Late and Late-Terminal Classic burials

feature disproportionately more north-south oriented burials. Additionally, east-west oriented burials are noted in a much higher frequency during the Late Classic than any other time period. The only burials with decedents oriented along inter-cardinal directions (northeast-southwest (N=3) and northwest to southeast (N=3)) were all recovered from Late Classic contexts as well (Figure 50).

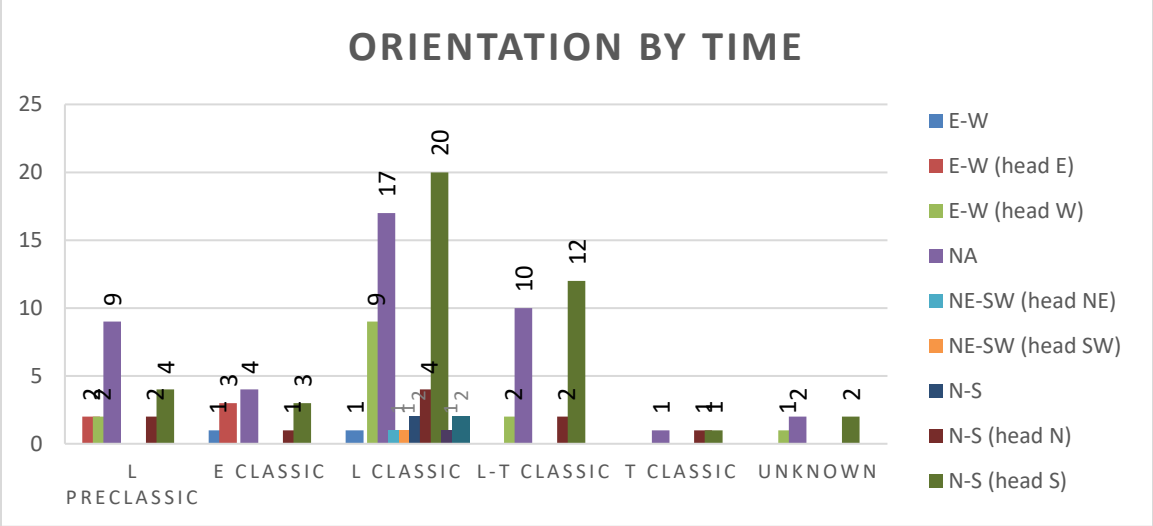

Figure 50. Distribution of body orientation among PfBAP burial sample through time.

Age

Throughout all time periods represented, young adults make up the majority of the burial sample. Early children and middle adults are the next most commonly represented demographic, but the higher tendency of burials to contain young adults throughout the sample is quite clear (Figure 51).

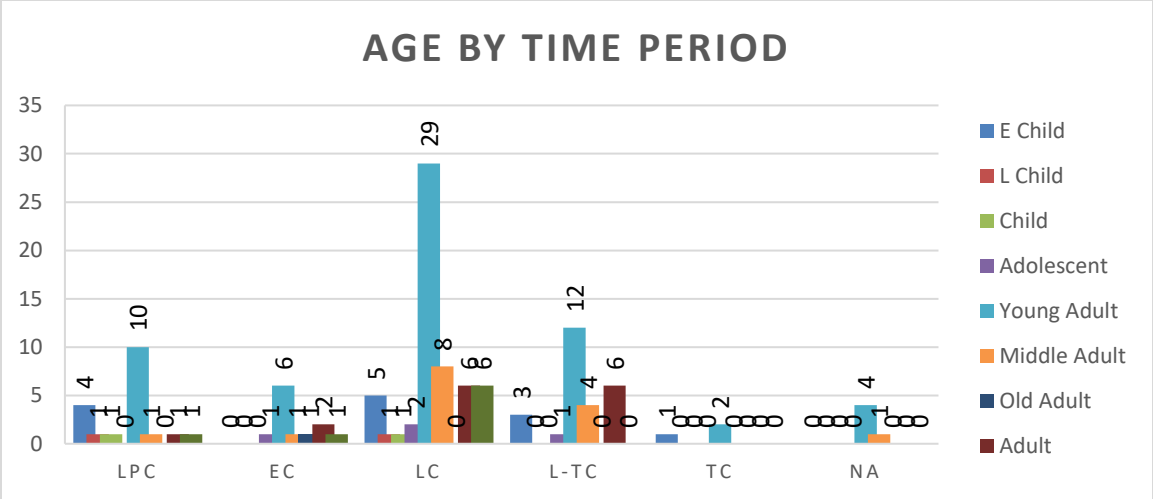

Figure 51. Distribution of age of PfBAP burials by time period.

It is unclear whether this distribution of age ranges among the burial sample is simply due to random chance. The significantly higher number of young adults composing the population of deceased individuals throughout the RBCMA may be suggestive of mortality and reproductive rates within the communities; however, many other possible factors will be discussed in Chapter Five ("Discussion").

A contingency table analysis was created to compare the distribution of subadults and adults present in each time period. The proportions of these individuals were relatively consistent for each period, and the chi square test results suggest that these same distributions could occur randomly 30% of the time ((χ2 3, N=108) = 0.33, p = 0.30). Therefore, it appears from both the distribution depicted above, and results of the contingency table and chi square analyses, that the proportions of age groups (at least in regard to subadult and adult populations) through time at the PfBAP sites likely occurred through random chance.

Sex

Of the 94 individuals for which sex was determinable, males are most commonly represented (51%) (Figure52). This pattern of distribution is consistent throughout time, but no females are represented in the burial sample of the Terminal Classic period (N=3).

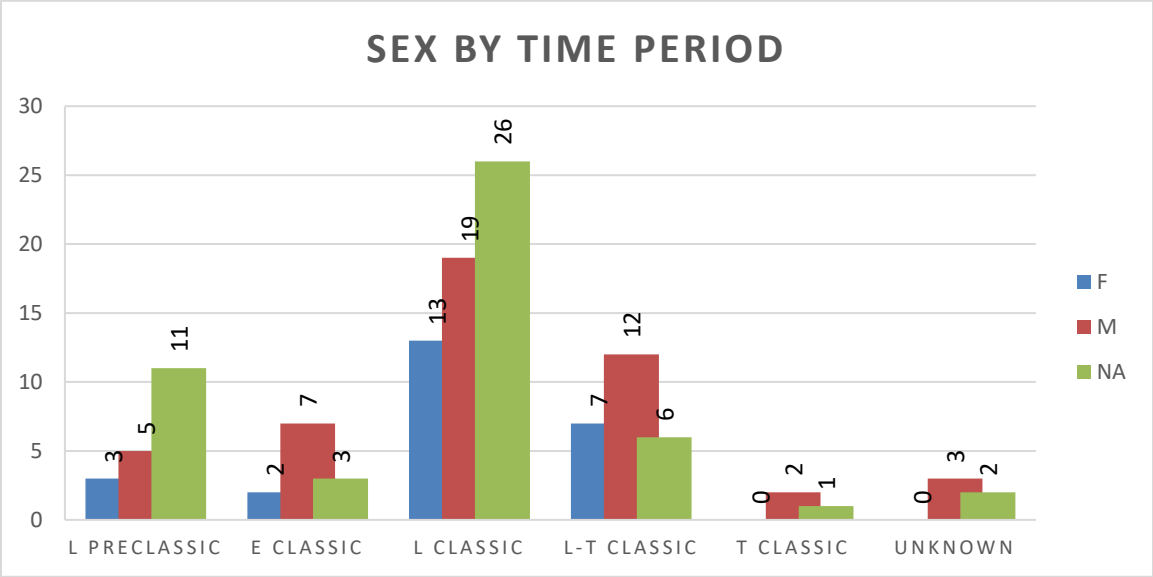

Figure 52. Distribution of sex of PfBAP individuals by time period.

Modification

As noted above, cranial shaping and dental modification was recorded for 30% (N=37) of the total PfBAP burial population. Dental modification appears more frequently than cranial shaping throughout the sample, and only three total individuals exhibit both types of modification – two from the Late-Terminal Classic period, and the third from the Terminal Classic period. Overall, both cranial and dental modification are observed most frequently during the Late Classic period (Figure 53).

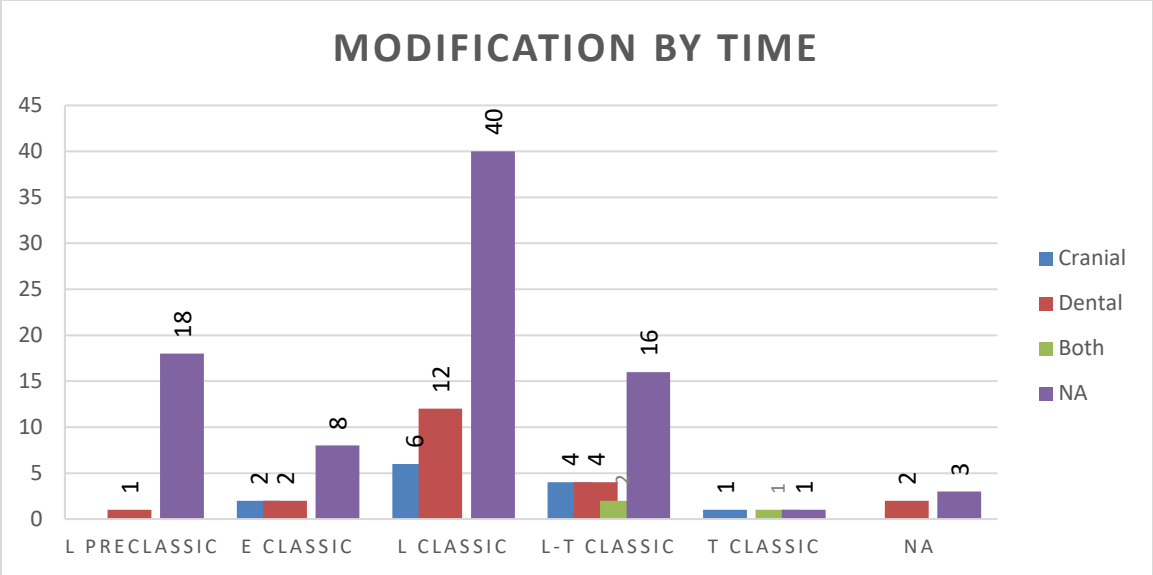

Figure 53. Distribution of observed body modifications among PfBAP individuals through time.

Both forms of body modification are most frequently observed during the Late and Late-Terminal Classic periods. Only one instance of modification (in the form of dental modification) is noted throughout the entire PfBAP burial population of the Late Preclassic. Early Classic observations are also rarely noted, but percentages of modification within the population jump significantly starting in the Late Classic period. Terminal Classic occurrences of cranial shaping and dental modification are also noted, but only two instances of modification appear during the Terminal Classic (one of these cases is an individual who exhibits both cranial shaping and dental modification) (Figure 54).

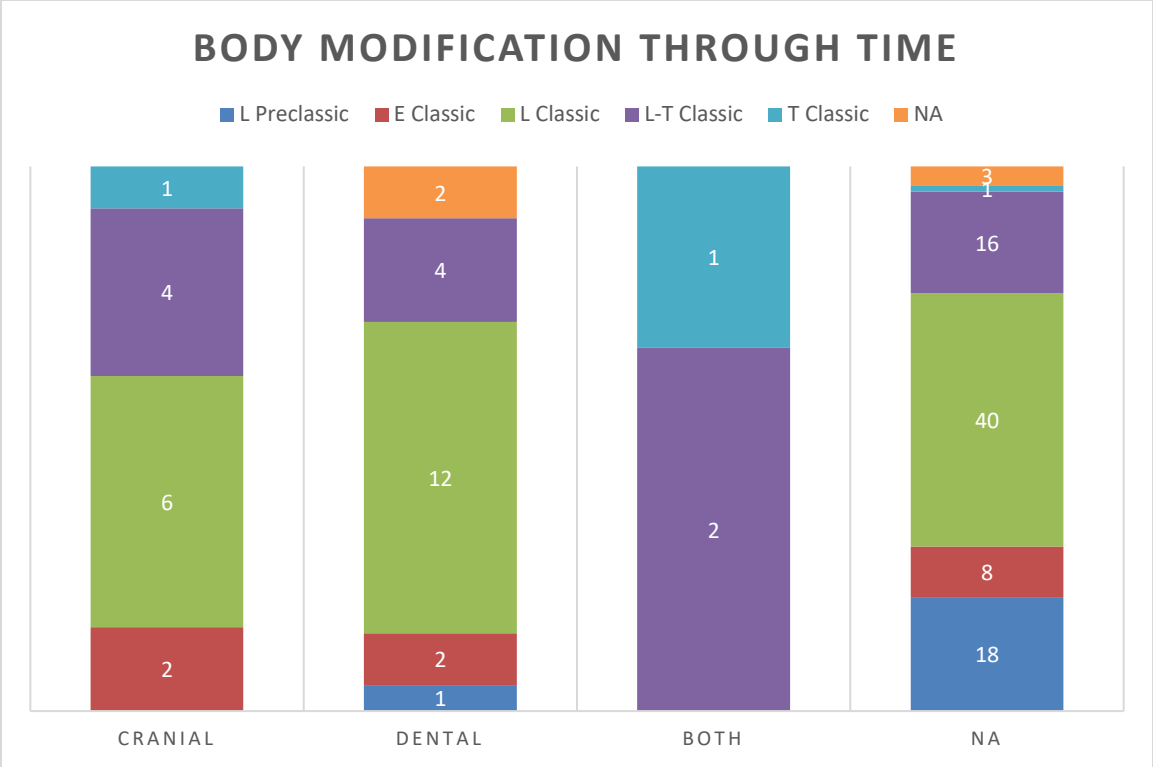

Figure 54. Temporal distribution of observed body modification within PfBAP burial population.

Breakdown of Data by Geographic Location

As discussed above, the various sites included in this study can be divided into two separate geographic regions. The majority of sites are located "on" or west of the La Lucha and Rio Bravo escarpments, with approximately 70% of sites located on or west of the escarpment, and the remaining 30% of burials recovered from the two sites east of this border. Of the 36 burials recorded from these sites "off" or east of the escarpment, 32 of the individuals were recovered from the major center site of Dos Hombres. In this section, I will further explore the breakdown of burial data through the filter of geographic location.

Burial Type

Within the burial sample from sites "on" the escarpment, the distribution of burial types heavily favors primary burials (63%, N=53). Multiple burials are more common than secondary burials (as stated above), with 20% (N=17) and 14% (N=12) of the population falling into these categories, respectively. Interestingly, 56% (N=20) of the burial population at the eastern sites were recorded in multiple burials, while only 31% (N=11) of the total burials recorded were considered primary burials (Figure 55).

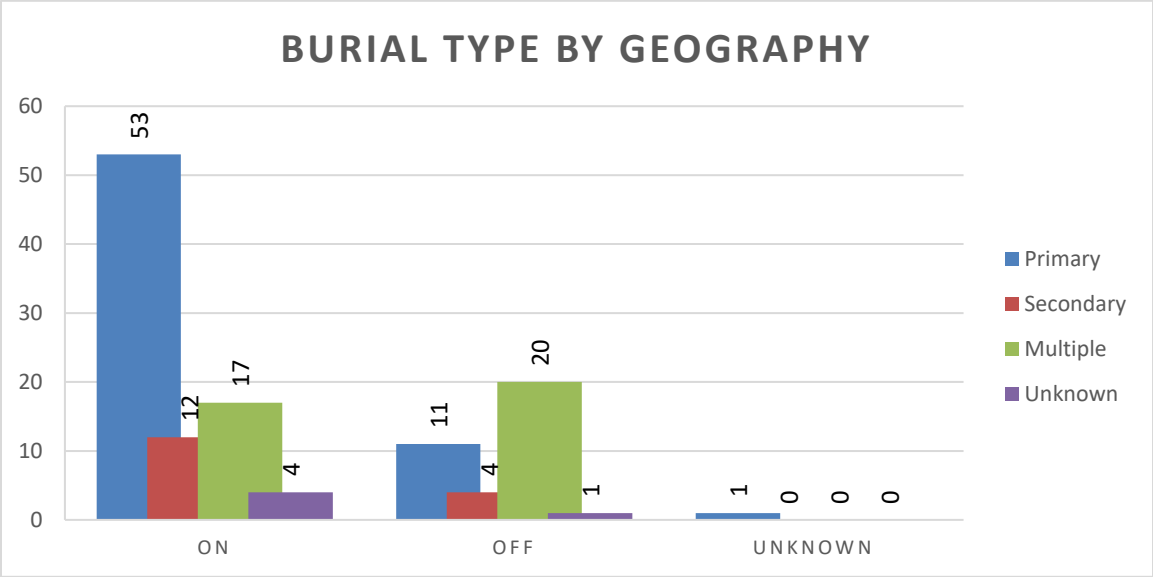

Figure 55. Distribution of burial types present per geographic location.

A contingency table chi square analysis was conducted to better analyze the distribution of these burial types (Figure 56). While the small amount of secondary burials from sites east of the escarpment would have thrown off chi square readings, the Pearson probability comparing primary and multiple burials between the site types suggests that this distribution could not happen by chance ((χ2 1, N=101) = 14.98, p = 0.0001).

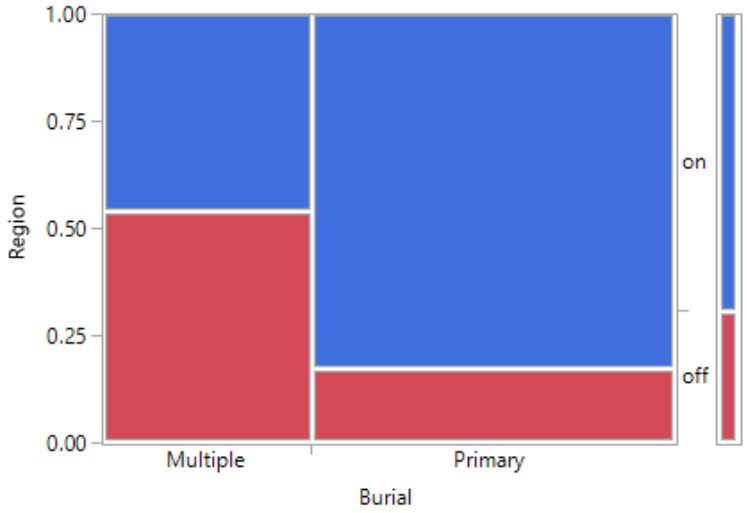

Figure 56. Mosaic plot showing distribution of burial types by geographic location.

Grave Type

Simple graves are the most common grave type encountered in the PfBAP burial sample (detailed above). Distributions of grave type between the regions appear to be quite similar. Simple graves are the most predominant, and cist/crypt graves are also noted in relatively significant proportions. Tomb burials are more frequently observed at those sites east of the escarpment (14%, N=5) than those to the west (1%, N=1). The small sample size may play a significant factor in this distribution (Figure 57).

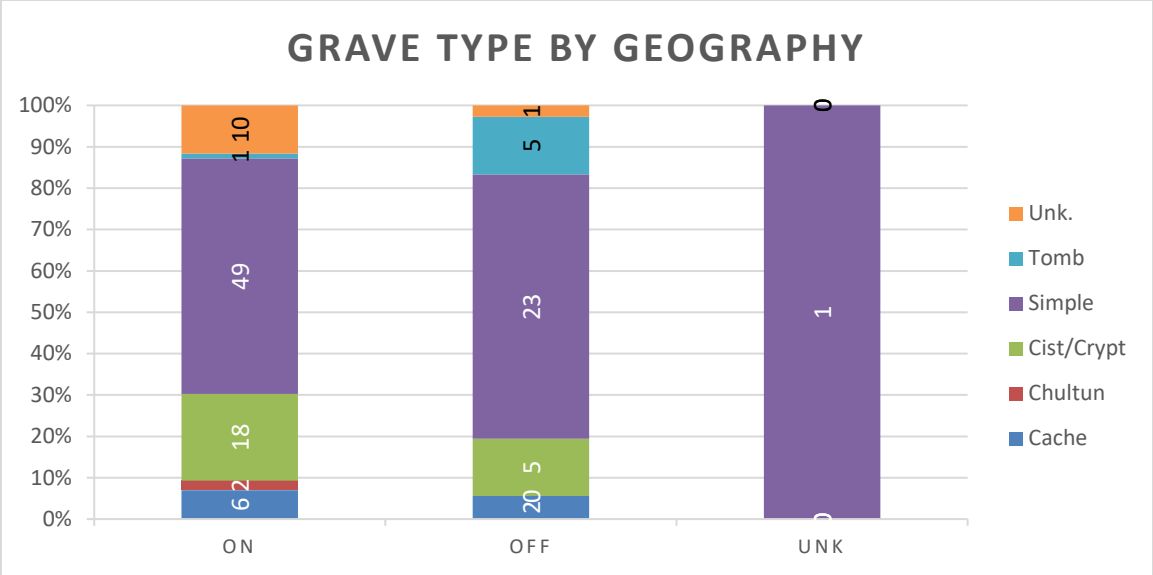

Figure 57. Distribution of grave types present per geographic location.

A chi square test to determine statistical significance of grave types between geographic locations confirmed what is evident in the graph above – the observed distribution of simple graves and cist/crypt graves (tombs, chultuns, and caches were not represented well enough to be considered in this test) is not statistically significant ((χ2 1, N=95) = 0.873, p = 0.001) (Figure 58).

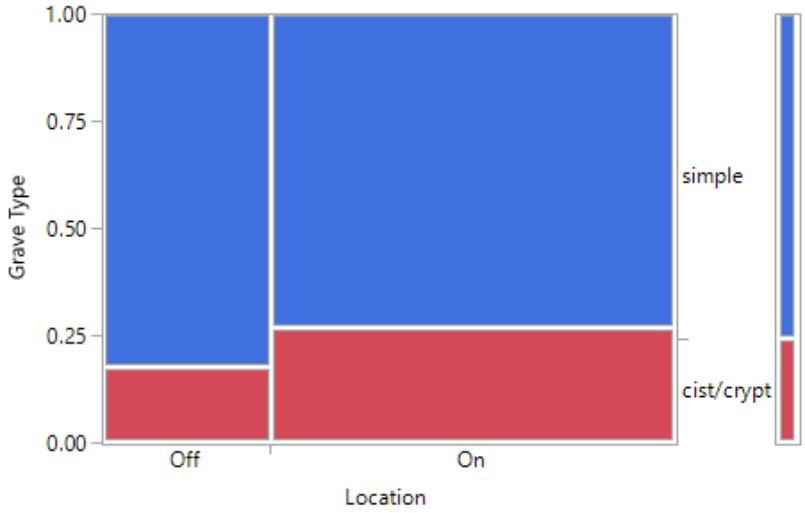

Figure 58. Mosaic plot showing distribution of grave types by geographic location.

Body Positioning and Orientation

Despite the location of ancient Maya sites east or west of the escarpments, body positioning appears to follow a relatively constant trend. Most burials from both sides of the escarpment favored an interment in which the decedent was placed within the grave in a flexed position (west: 66%, N=57; east: 47%, N=17). Disarticulated burials were the second most common body positon, but significantly less common than flexed burials (west: 12%, N=10; east: 17%, N=6). Once again, small sample size may play a role in the observation that the overall percentage of disarticulated burials is not very different between the two sites (Figure 59).

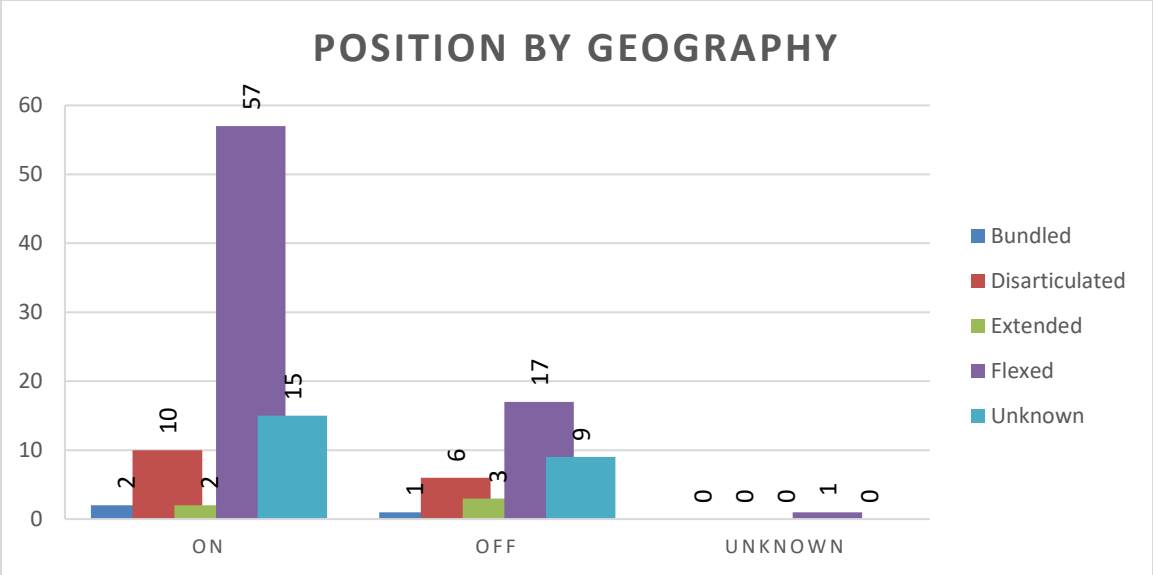

Figure 59. Distribution of body positioning in PfBAP burials by geographic location of sites.

Within the flexed burials, placement of these individuals also appear to be consistent. The distribution of flexed individuals from both sides of the escarpment are consistent as well – individuals lying flexed on the left side make up 40-45% of both categories, and flexed, supine individuals comprise 16-18% of the populations of the two geographic locations (Figure 60).

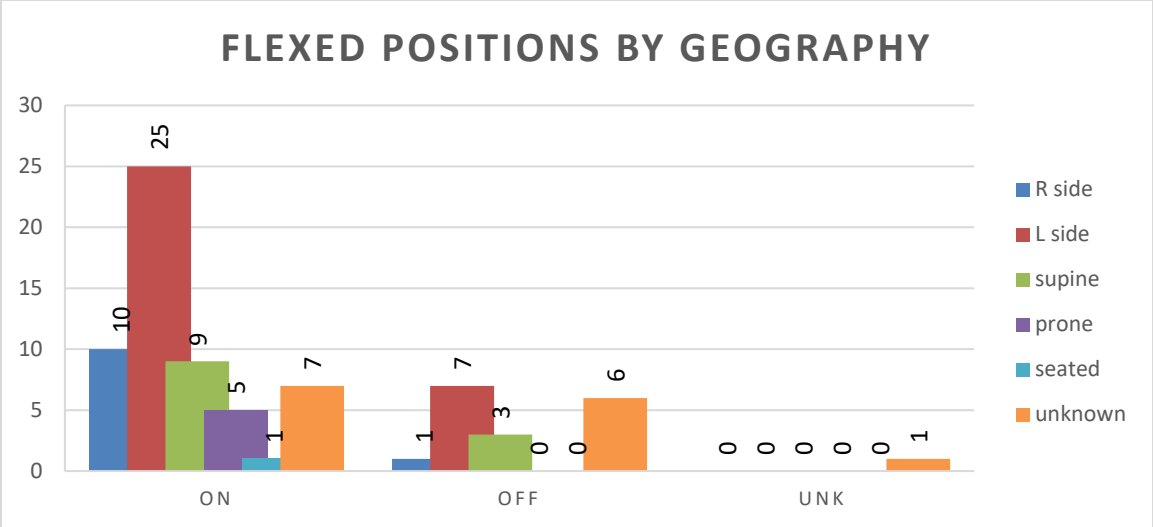

Figure 60. Distribution of specific body position flexed PfBAP individuals by geographic location.

Of those individuals who were interred in a flexed position, north to south placement with head to the south was the most commonly observed orientation; however, distribution of orientations is more varied at sites off of the escarpment (Figure 61).

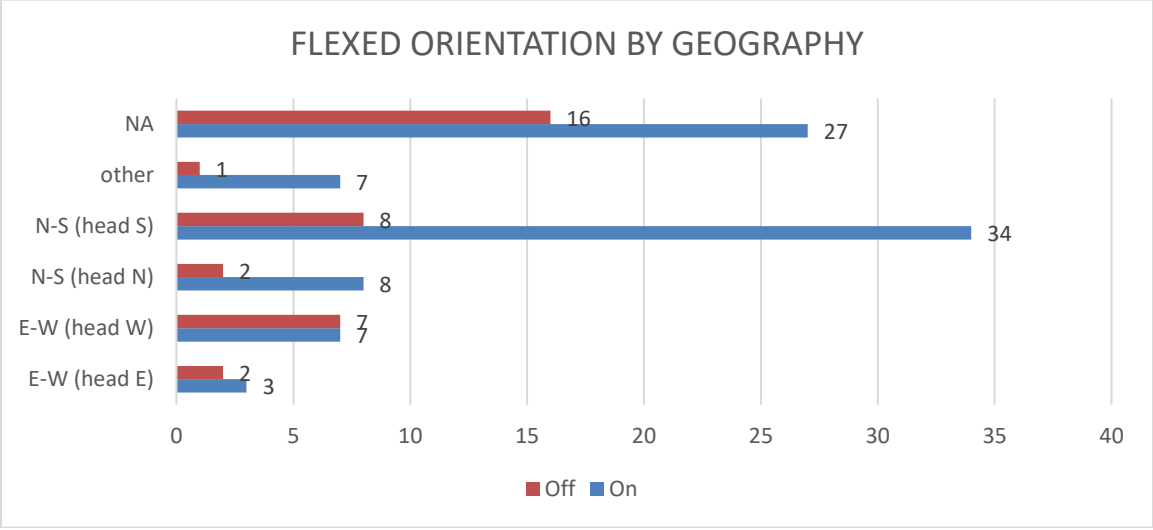

Figure 61. Orientation of flexed PfBAP individuals by geographic location.

Age

Overall, distribution of PfBAP individuals by age category is relatively similar between both geographic areas. Young adults comprise the bulk of all individuals recovered from the PfBAP burial sample, regardless of site location (western sites: 51%, N=44; eastern sites: 53%, N=19). Early children are perhaps a surprisingly present demographic among the decedents (western sites: 9%, N=8; eastern sites: 14%, N=5), but only one old adult (from Barba Group, east of the escarpment) was recorded among the 123 individuals discussed in this study. In total, 12% (N=14) of the population from sites west of the escarpment were subadults while 77% (N=66) were adults; 25% (N=9) of the population east of the boundary were subadults and 75% (N=27) were recorded as adults (Figure 62).

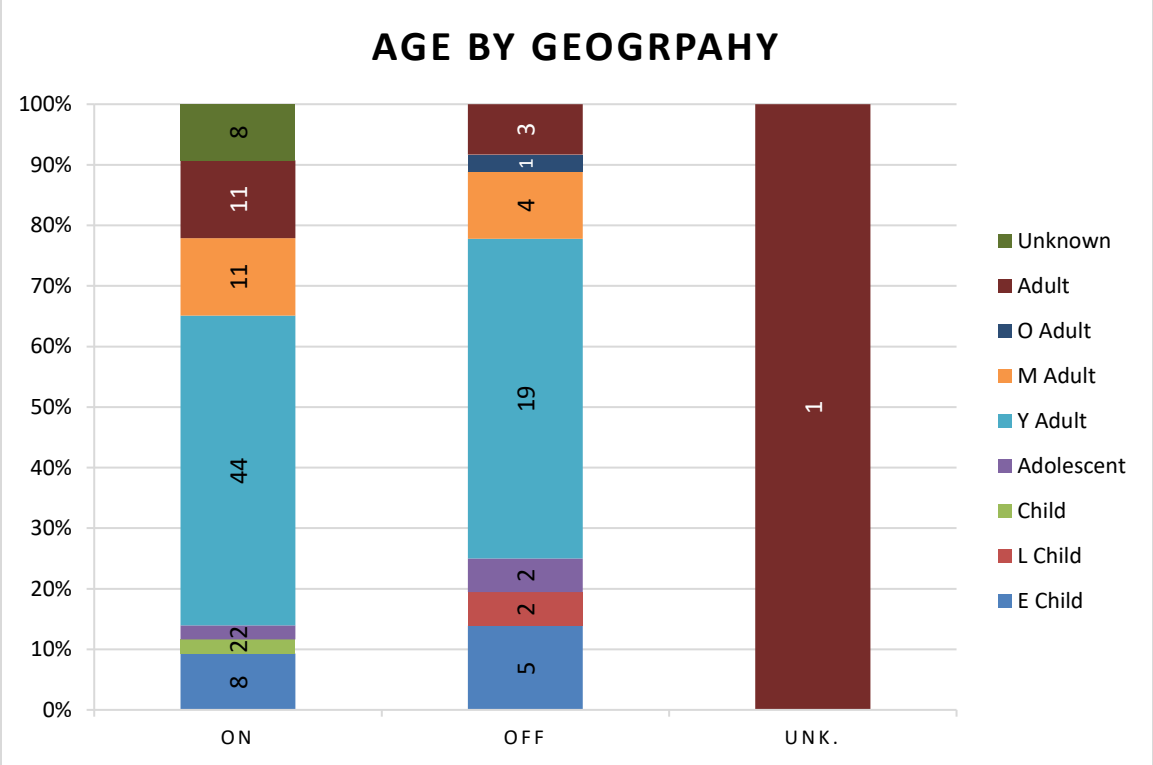

Figure 62. Distribution of age at death of PfBAP individuals by geographic location.

Sex

The distribution of sexed adults among the PfBAP burial sample is relatively consistent for those sites west of and east of the escarpment boundary. While sex was not determined for a large portion of the data set, biological sex of the burial population does not appear to be affected by geographic location of the sites. Males are most predominant among sexed individuals, comprising 65% (N=36) of sexed individuals from sites west of the escarpment, and 71% (N=12) of sexed individuals from sites east of the boundary. Conversely, females were recorded among 35% (N=19) of the western population, and 29% (N=5) of the eastern population of sexed individuals (Figure 63).

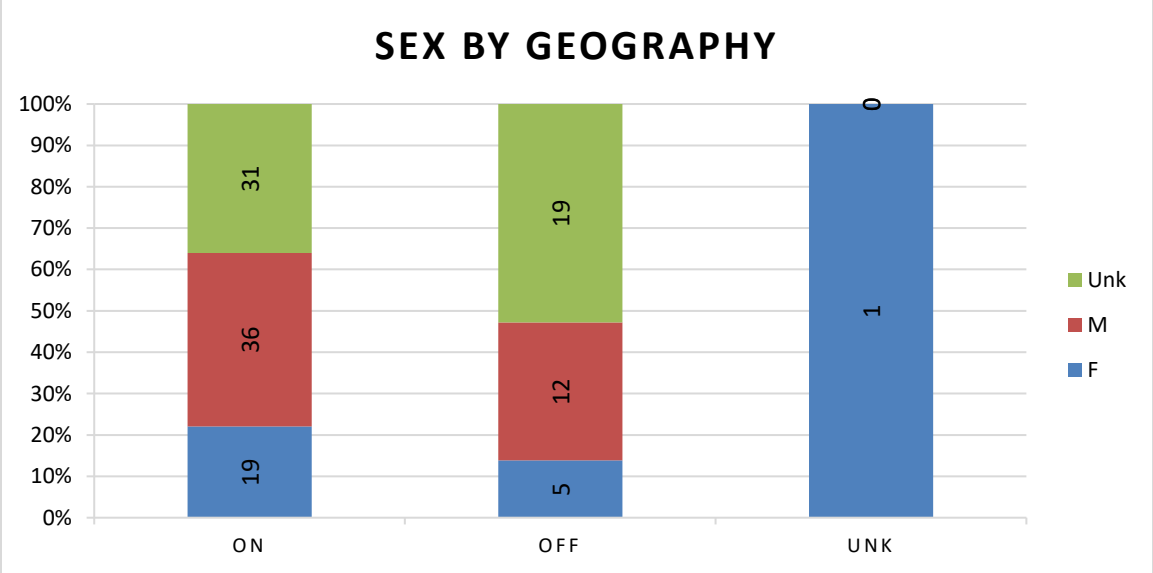

Figure 63. Distribution of sexed adults by geographic location.

Body Modification

Body modification was noted for only 19% (N=7) of the 36 individuals recovered from sites off of the escarpment. Comparatively, 35% (N=30) of the 86 individuals from the western sites displayed one or both types of modification. In fact, all three individuals

who exhibited both dental and cranial modification were recovered from sites west of the escarpment – none of the eastern individuals possessed multiple forms of modification. Preference seems to have been given to forms of dental modification among the sample: those individuals with modification from sites on the escarpment exhibited dental modification 60% of the time (N=18, including the three individuals with both cranial and dental modification), while 86% (N=6) of the seven individuals with modification at sites east of the escarpment exhibited some form of dental modification (Figure 64).

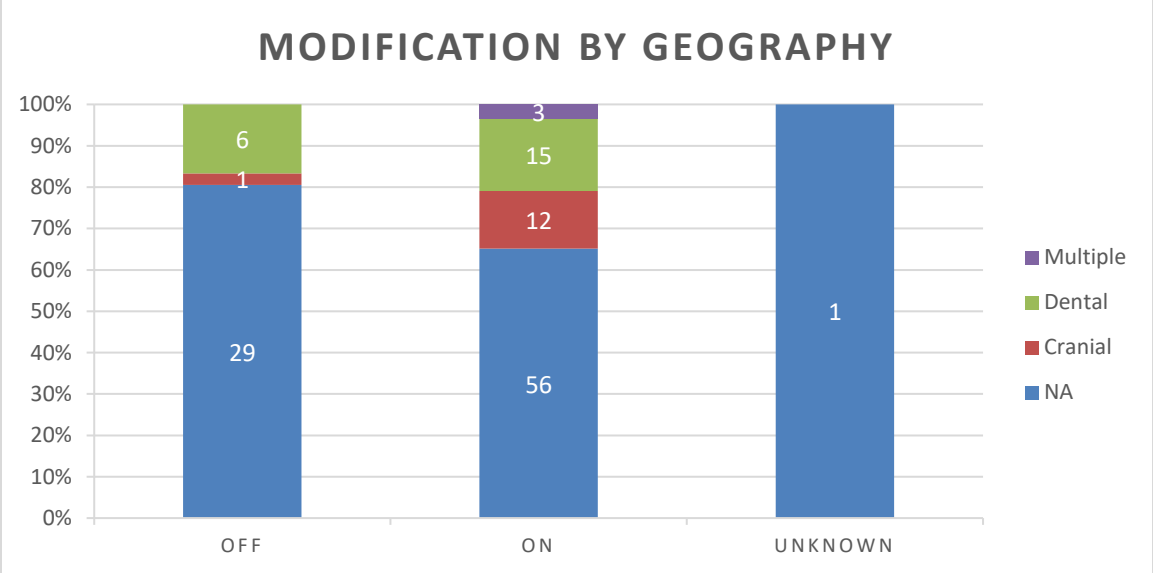

Figure 64. Distribution of PfBAP individuals with body modification by geographic location.

Grave Goods

The distribution of grave goods between sites to the west and east of the escarpment is quite similar. Burials containing many grave goods make up approximately 25% of the burial sample, regardless of location on (N=22) or off of (N=11) the escarpment. Those sites located to the west of the escarpment do exhibit a higher percentage (24%, N=21) of

burials with very few grave goods than those reported at sites to the east (in which only 6% of the population, or 2 individuals included few grave goods). A difference is also noted in the amount of secondary offerings of human remains recorded at sites between the two regions. At western sites, only two individuals (2% of the western population) are recorded as human offerings to a primary interment. Conversely, seven individuals (corresponding to 19% of the eastern burial sample) were recorded as secondary offerings at sites off of the escarpment (Figure 65).

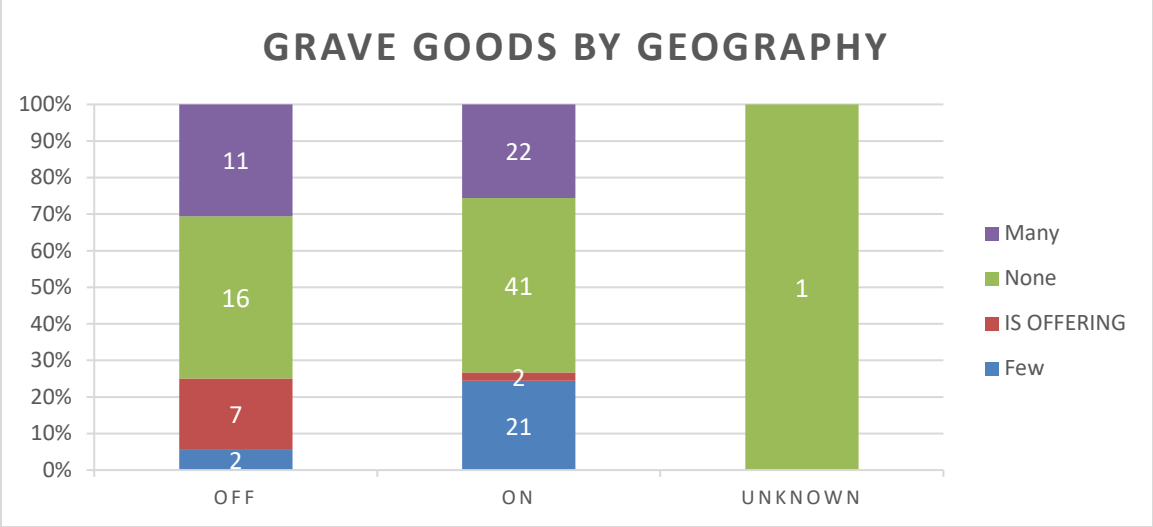

Figure 65. Distribution of grave goods within PfBAP burials by geographic location

The mosaic plot provided below (Figure 66) shows proportions of grave goods recovered from sites on and off of the escarpment. While proportions of burials with no, few, and many grave goods are relatively consistent, this figure clearly shows that a higher proportion of secondary human offerings to other individuals are present at sites east of the escarpment (off) than those human offerings present at sites on the escarpment. Chi square results agree with this assessment, providing the following results: ($\chi 2$ 3, N = 122) = 15.16, p =.001).

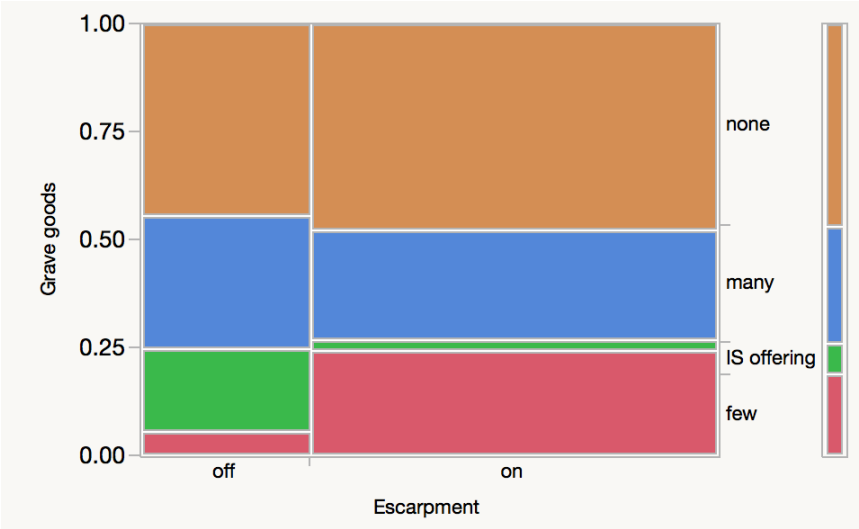

Figure 66. Mosaic plot for distribution of grave offerings by geographic location.

Breakdown of Data by Site Type

Burial Type

Burials within household communities at the PfBAP were clearly predominated by primary contexts; however, the distribution of primary, secondary, and multiple burials is less drastic at major and minor center sites. Within the category of minor center sites, 48% (N = 27) of burials were recovered from primary contexts, but an additional 41% (N = 23) of the burials contained multiple individuals. The final 11% (N = 6) of burials at minor center sites were secondary in nature. Among the major center site burial types are again more evenly distributed: 53% (N = 28) of the burials were from primary contexts, but secondary contexts and comingled contexts comprised 19% (N = 10) and 21% (N = 11) of the burial population, respectively (Figure 67).

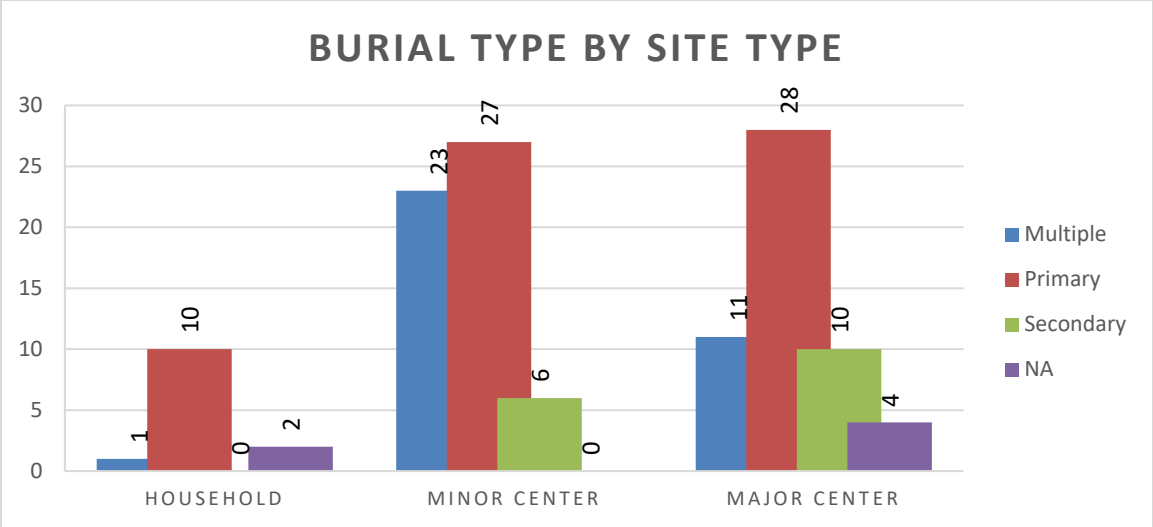

Figure 67. Distribution of PfBAP burial types by site type categories.

The mosaic plot provided below (Figure 68) depicts distributions of burial type by site type. While the proportions suggest some influence into the different burial types recovered from the different sites, the chi square results suggest a random influence to these patterns: ($\chi 2$ 2, N = 105) = 4.81, p =.09). This value is not statistically significant at the 0.05 level, but is only slightly higher. The relationship between site type and burial type should nonetheless be further investigated to identify possible cultural influences behind this occurrence.

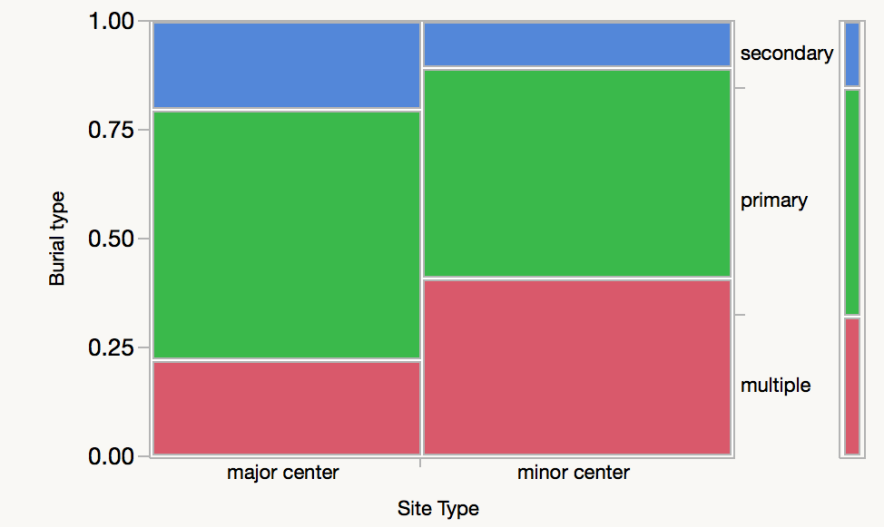

Figure 68. Mosaic plot showing proportions of burial type by site type.

Grave Type

Simple graves are the predominant grave type throughout the PfBAP burial sample. Cist/crypt graves are also prominent throughout household communities and minor center sites, but have less of an impact on the distribution of graves at major centers. Instead, major center sites exhibit the most individuals recovered from tombs than any other site type represented. Because tombs are commonly associated with elite sites and monumental architecture, this distribution is not very surprising; however, it is significant that one single tomb was recorded from a household community site (Figure 69).

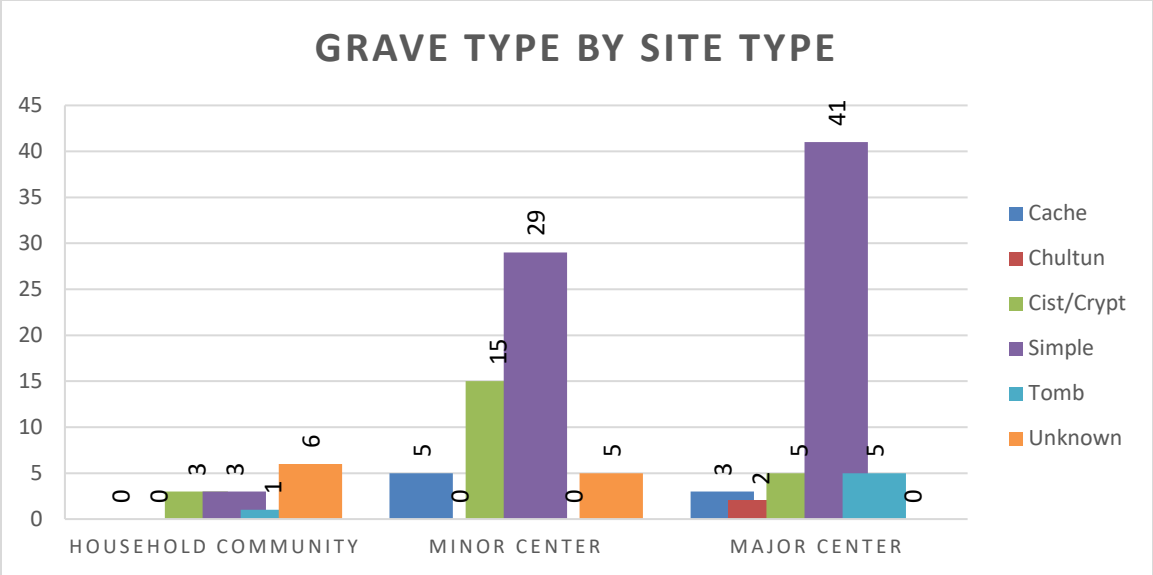

Figure 69. Distribution of PfBAP grave types by site type category.

Household communities could not be considered in a distribution analysis of grave type by site type due to the small sample amount; however, a chi square analysis of distributions between simple and cist/crypt graves between major and minor ceremonial centers indicates a significant difference ((χ2 1, N=90) = 7.016, p = 0.0081).

These results suggest that the distribution of fewer cist/crypt graves at major ceremonial sites (in comparison to those recovered at minor center sites) may have been influenced by cultural beliefs or rules (Figure 70).

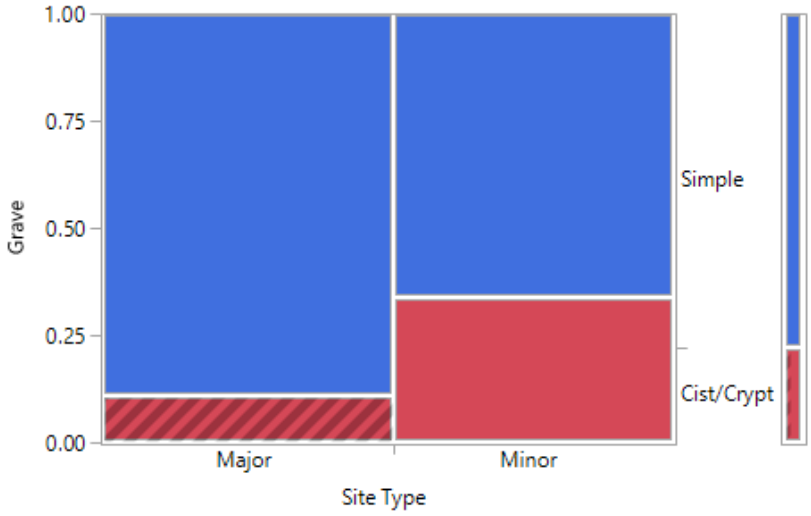

Figure 70. Mosaic plot showing distribution of simple and cist/crypt burials by major and minor ceremonial center sites.

Body Position and Orientation

Overall, body position of decedents in the PfBAP sample are relatively consistent regardless of site type. Flexed body positions are the most commonly observed (Household = 69%, Minor Center = 60%, Major Center = 61%), but disarticulated burials are also observed in higher frequencies at minor and major center sites (15% and 14% of the total populations, respectively) (Figure 71).

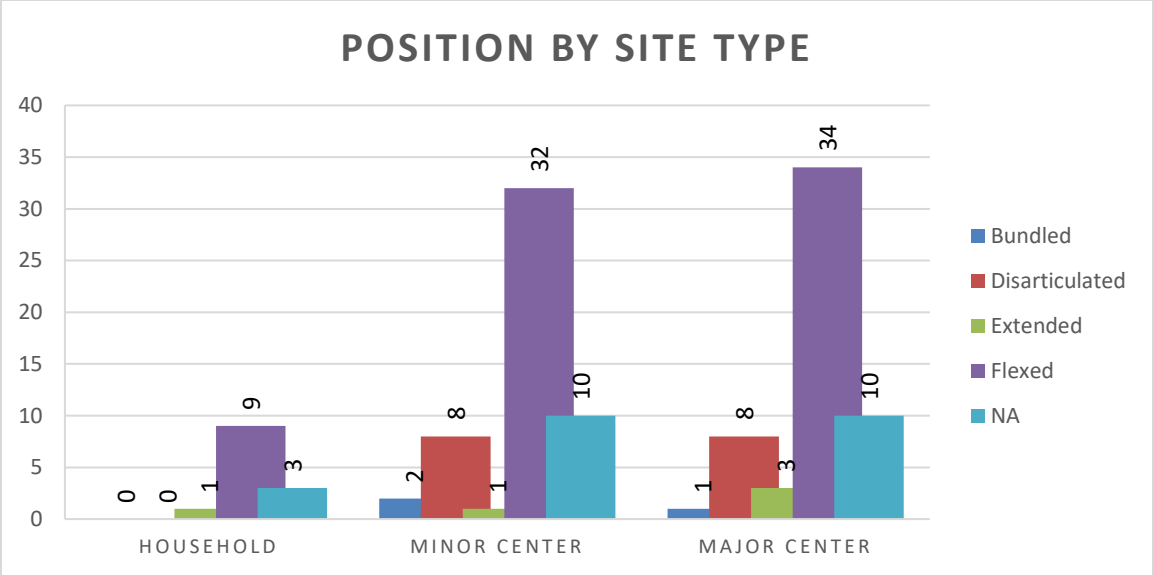

Figure 71. Distribution of general body position by site type.

Of those flexed internments, the majority of decedents were placed on the left side (Household = 22%, Minor Center = 50%, Major Center = 41%) (Figure 72).

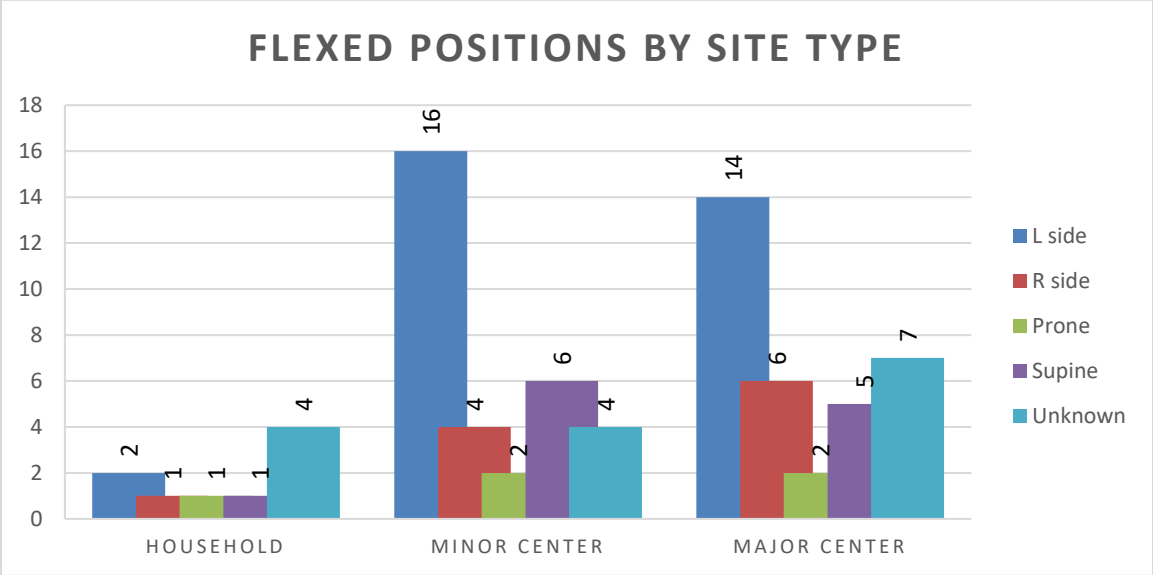

Figure 72. Distribution of flexed body positions by site type.

When considering only flexed and extended burials (for which body orientation could be determined), the interments predominately utilize a north-south body orientation (Household = 80%, N=8; Minor Center = 73%, N=24; Major Center = 54%, N=35). Of the burials oriented north-south, placement of head to the south is clearly preferred at Minor Center (N=22, 92%) and Major Center (N=15, 79%) sites, but not at Household Community sites (N=4, 50%). Burials with individuals oriented E-W were also relatively common within the data set (Household = 10%, N=1; Minor Center = 18%, N=6; Major Center = 34%, N=12). Among the E-W oriented burials, a preference for heads oriented to the West is apparent at Minor Center (N=5, 83%) and Major Center (N=9, 75%) sites (Figure 73).

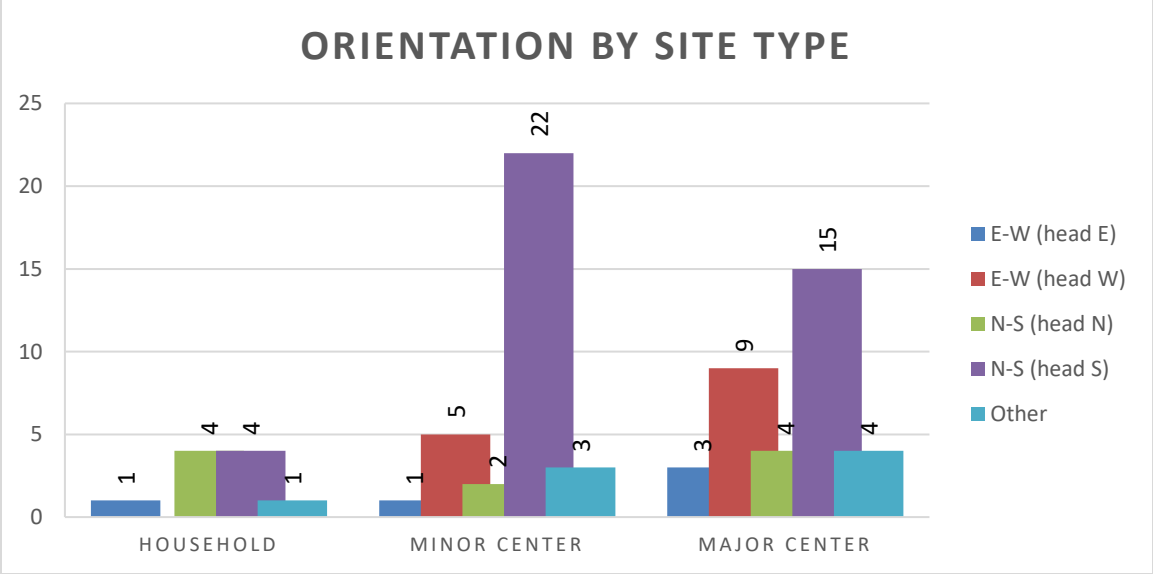

Figure 73. Distribution of body orientation of PfBAP individuals by site type (including only flexed and extended individuals).

A chi square analysis suggested that the distribution of head position between site types was not significant ((χ2 3, N=61) = 4.119, p = 0.2489).

Age

Overall, individuals who perished as young adults made up the majority of the burial sample for minor and major center sites. A relatively even distribution of age groups is observed among household communities, with young and middle adults representing 44% (N=7) of the household burial population. The proportion of young adult burials to other age groups within minor and major centers is visibly different, with young adults representing 52% (N=28) and 55% (N=31) of the populations, respectively (Figure 74).

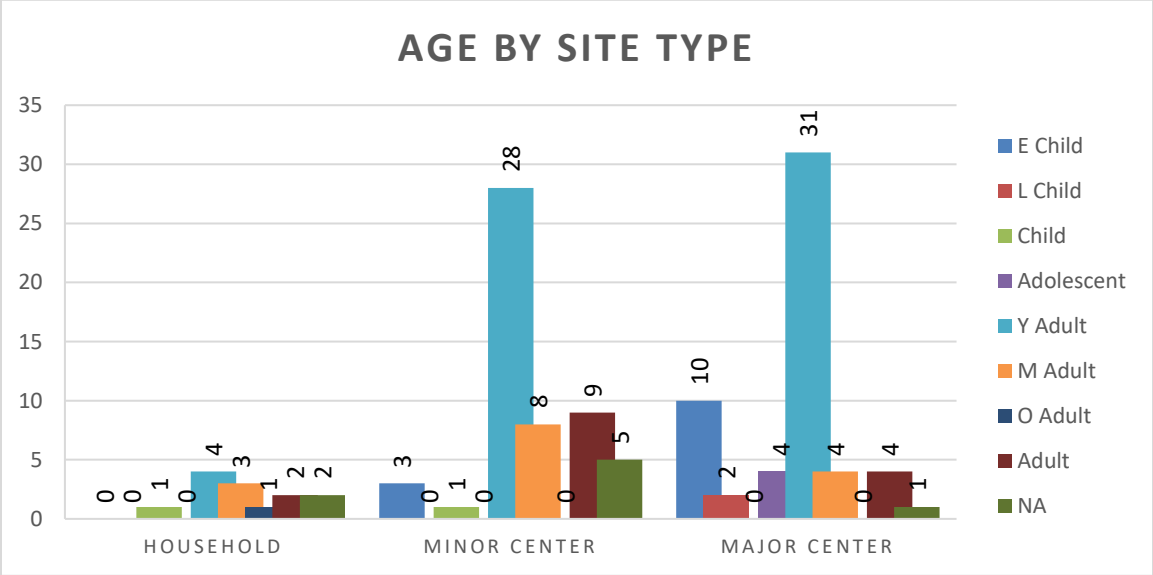

Figure 74. Distribution of age-at-death of PfBAP individuals compared by site type.

The higher rate of children, especially early children, at major center sites is of interest. While subadults (early children, late children, unspecified children, and adolescents) make up only 8% of the populations at household (N=1) and minor center (N=4) sites, 28% (N=16) of the major center population consists of these young age demographics (Figure 75).

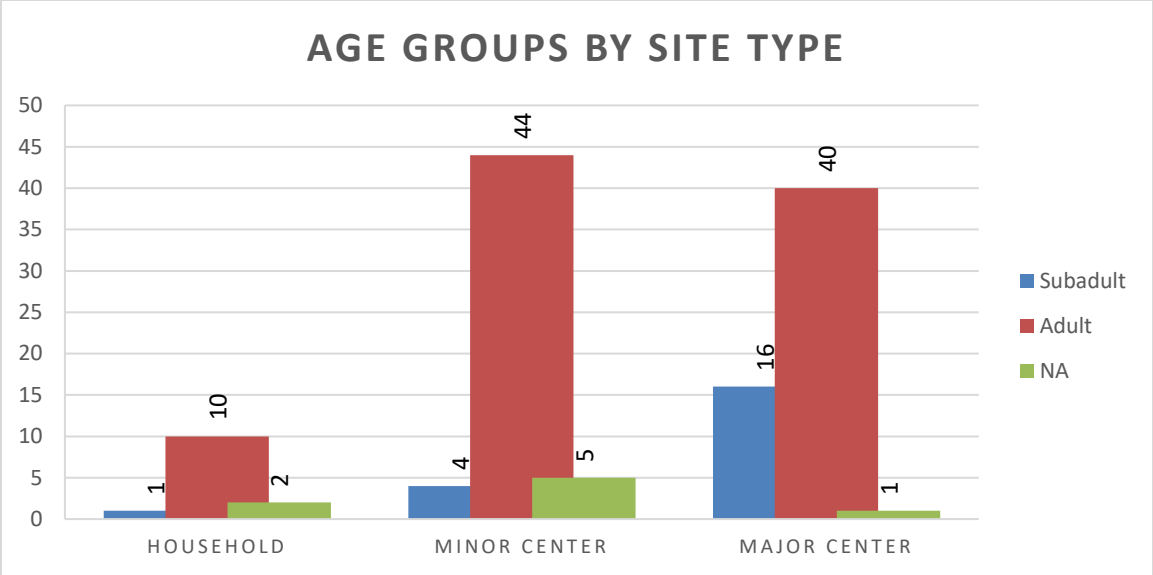

Figure 75. Distribution of broad age demographics between site types.

When assessed through both a mosaic plot and Pearson's chi square analysis, distributions of age ranges between site types at the PfBAP appear to have more influence than just random chance. Figure 76 illustrates that subadults appear less in burials of household and minor ceremonial center sites than at major ceremonial center sites. While subadult burials comprised 28% of the burial sample at major centers, they represented less than 10% of the burial population at smaller sites. A contingency table analysis found this difference to be statistically significant: ((χ2 2, N = 115) = 7.78, p =.02).

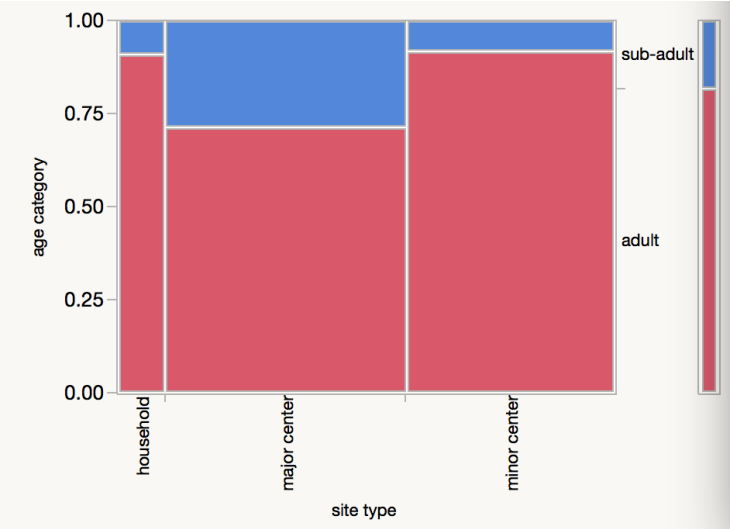

Figure 76. Mosaic plot showing differing proportions of subadult and adult burials at household and minor ceremonial center sites as compared to major ceremonial centers.

Sex

Site-type breakdowns of sex distribution were more informative at the minor and major center sites, because sexed individuals within household sites only comprised 10% (N=13) of the total burial population. As is observed in Figure 77, males are more frequently observed within the total of sexed individuals (39%, N=48). A higher distribution of males to females is observed at the minor center (males = 41%, N = 22; females = 24%, N = 13) and major center (males = 41%, N = 23; females = 14%, N = 8) sites respectively, but the household communities produced one more female (31%, N = 4) individual than male (23%, N = 3).

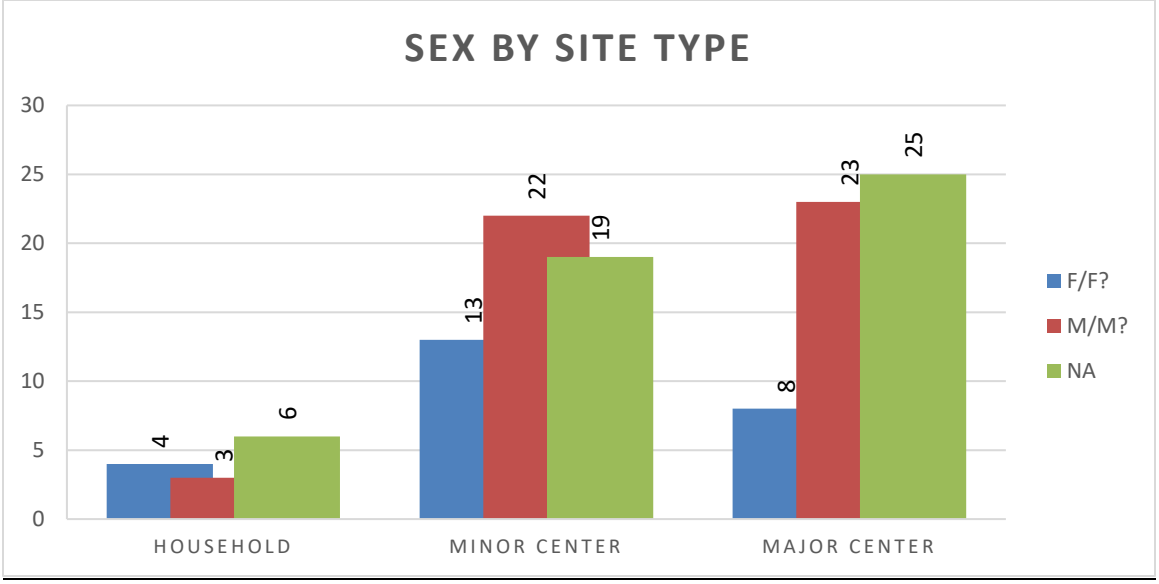

Figure 77. Distribution of PfBAP sex by site type categories.

As is suggested from the graphs provided above, there does not seem to be a significant difference in the overall distribution of males and females between major and minor ceremonial center site types. Household burials were excluded from the following analysis because the sample size was deemed too small to use. While a matrix plot (Figure 78) does reflect the differences in proportion, a chi-squared test found that the relationship was not significant (($\square$2 (2, N = 58) = 1.32, p =.25). This level of difference between the sex distributions at the two sites could be expected to occur at random about 25% of the time.

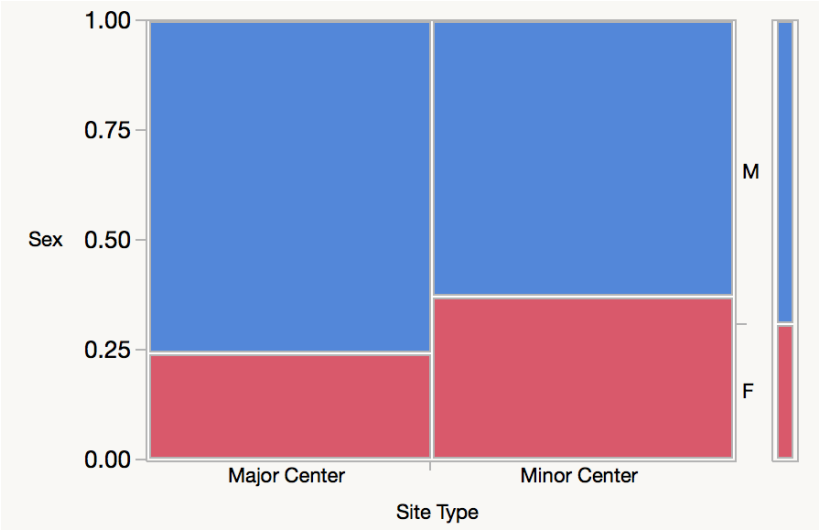

Figure 78. Mosaic plot showing distribution of males and females in burials throughout major and minor site types.

Body Modification

Comparing the rates in which body modification appear in individuals between the three site categories provides an interesting situation. Perhaps unsurprisingly, household communities produced the fewest number of individuals with body modification. While one might expect to see the highest rates of modification among elite centers, this characteristic actually appears within minor ceremonial centers. In fact, 51% (N=19) of the total population exhibiting modification were recovered from minor center contexts, whereas 41% (N=15) were recovered from major centers. Modified teeth were more commonly observed than modified crania at all sites (Figure 79).

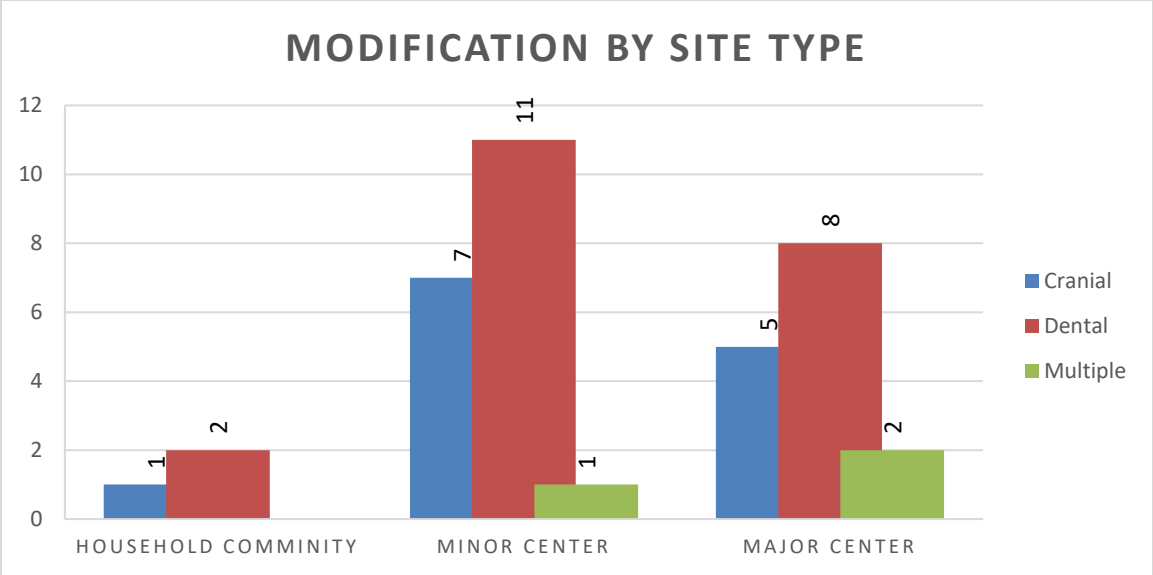

Figure 79. Distribution of individuals with body modification by site type.

Grave Goods

While household burials possess the highest percentage of grave goods between site types (46%, N=9), major and minor ceremonial centers maintain the highest overall percentage of total burials with grave goods. Of the 53 burials recorded with material remains interred with decedents (NOT including those burials in which a secondary burial is included as an offering), minor ceremonial centers comprise 41% (N=23) of those burials, and major ceremonial centers comprise 43% (N=24) of the total. Nine of the individuals reported in the PfBAP burial population are secondary interments in which the decedent is noted as serving as an actual offering to a primary individual. All of these cases were reported from major ceremonial center sites (Figure 80).

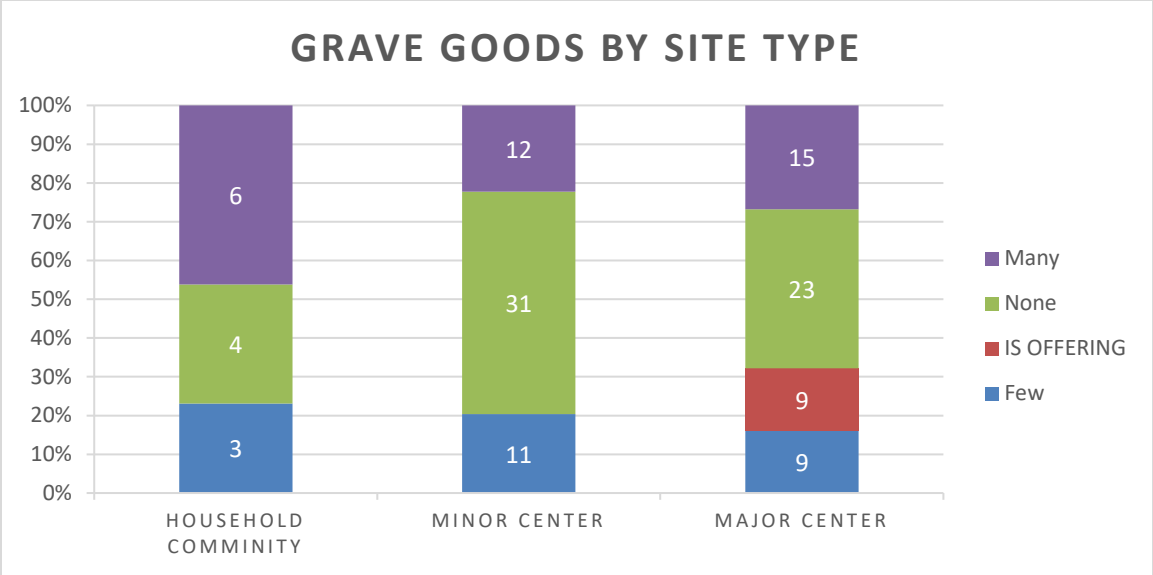

Figure 80. Distribution of intentional grave goods recovered from PfBAP burials by site type.

Interesting Cases

Grave Type and Burial Type

Breaking down the burial data by comparing grave and burial types allows for an analysis of possible preferred placements of individuals within certain graves. No cache burials were recovered from primary burial contexts: 75% (N=6) are secondary burials, and 25% (N=2) of the graves contained multiple individuals. The two chultun burials recovered from PfBAP excavations were recorded as primary burials. Cist/crypt graves and simple graves exhibited a more varied distribution, with primary graves constituting 65% (N=15) and 53% (N=39) of the samples, respectively. Secondary burials made up 9% (N=2) and 7% (N=5) of cist/crypt and simple graves, respectively. Multiple burials were recorded within 17% (N=4) of cist/crypt graves, and 33% (N=24) of simple graves. The six tombs recorded through PfBAP excavations consisted of four multiple burials (67%) and two primary burials (33%) (Figure 81).

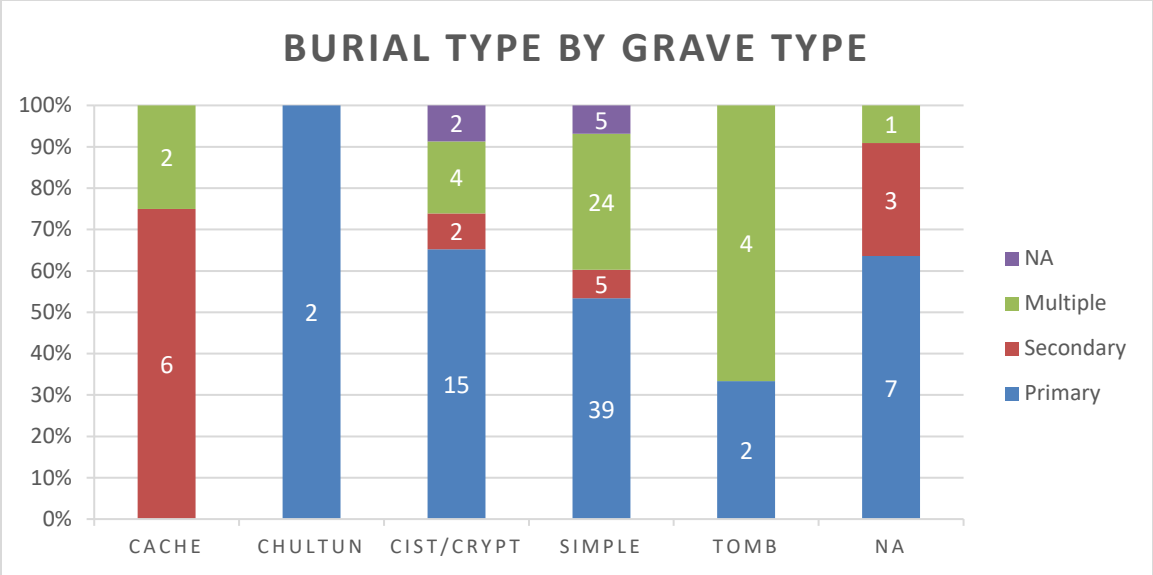

Figure 81. Distribution of burial types compared by grave type.

Body Position by Body Orientation

I noted earlier that the predominant body position of decedents in the PfBAP sample is flexed, on the left side, with the body oriented north-south (head to the south). While north-south orientation is also noted among bundled and extended individuals, the few extended burials from the PfBAP sample show a different emphasis in directionality. Three of the five extended individuals were recovered in an east-west orientation, constituting 60% of the extended burial sample. Of those east-west oriented individuals, two were interred with head to the west (40% of the extended sample). East-west oriented individuals with head to the west were also noted among flexed individuals, constituting 17% (N=18) of flexed individuals (Figure 82).

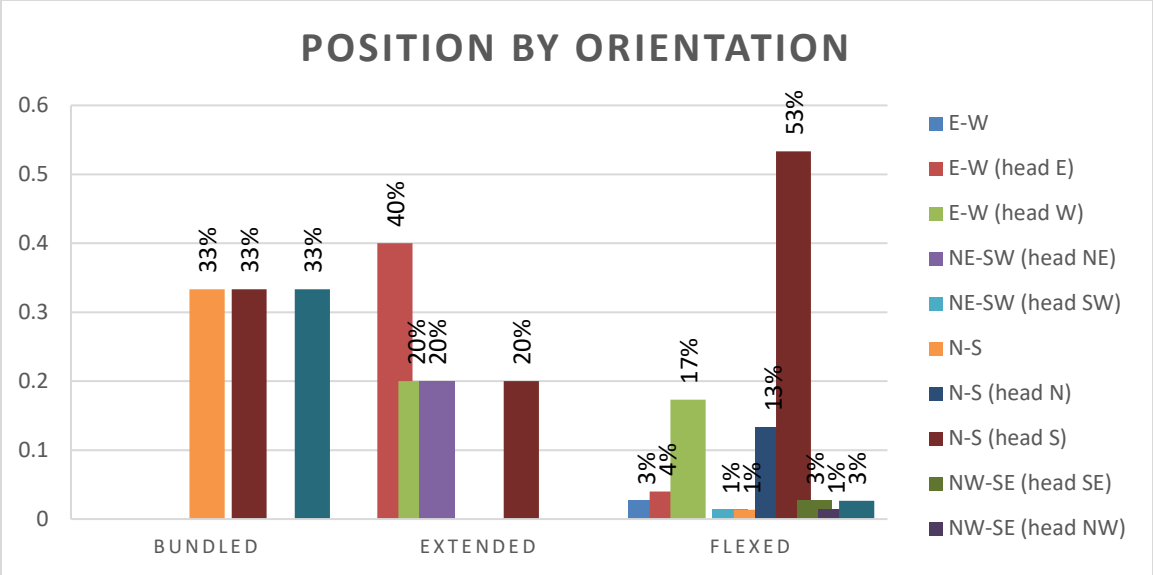

Figure 82. Distribution of body position and orientation of PfBAP individuals.

Due to the clear preferences for heads to the south in flexed burials and to the east in extended burials, along with the low sample numbers for extended and bundled individuals, a chi square analysis was not deemed necessary to conduct for this comparison.

PfBAP burials reconsidered through sex - grave type by sex

When considering the distribution of sex throughout the PfBAP sample, I wanted to see if the Maya of northwest Belize showed any preference to bury males and females in different types of graves. While only six individuals were recovered from tombs, all but one of the individuals were sexed as male (sex could not be determined for the sixth individual). The distribution of males and females in cist/crypt and simple burials is fairly consistent, with females making up only 26% (N=9) and 22% (N=28) of the samples, respectively (Figure 83).

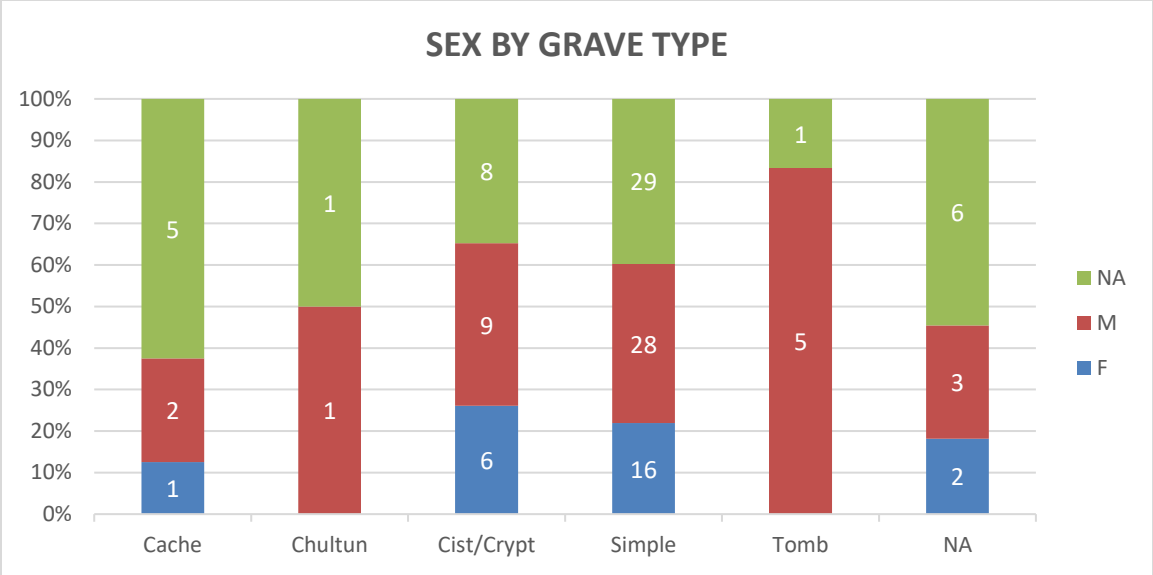

Figure 83. Distribution of sexed individuals by grave type.

While the total number of individuals recovered from tombs is small, I was curious to know if there was any statistical significance behind the fact that no females were recovered from these burial contexts. The distribution of women within the cist/crypt and simple graves (in which females never constituted more than 30% of the total sample) is also intriguing. The mosaic plot (Figure 84) of burial type vs. sex shows a majority of females and males were buried in either simple graves or cist/crypts. Five males and no females were buried in tombs, and that is undoubtedly of cultural significance; however, given the relatively large numbers and even proportions of the other 59 burials, the contingency table analysis did not find a statistically significant difference in the way females and males were buried (($\chi 2$ (2, N = 64) = 2.9, p =.23).

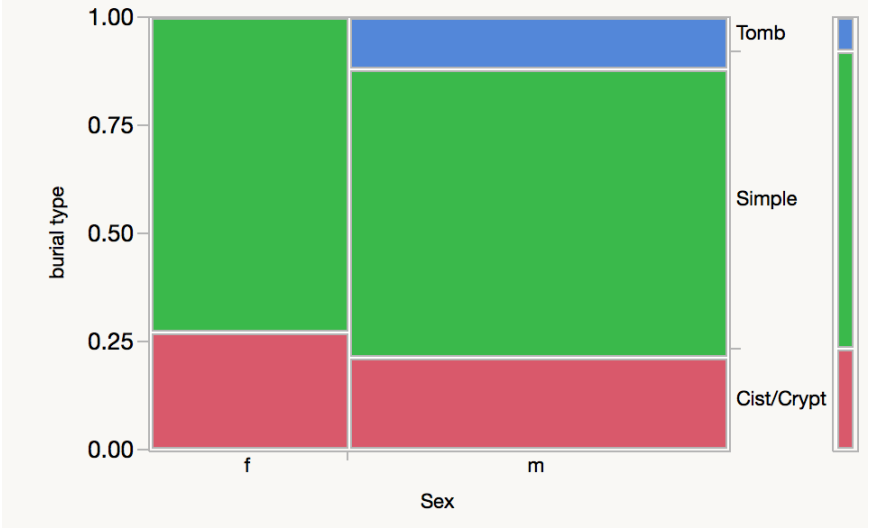

Figure 84. Mosaic plot of male and female distribution by grave type (excluding cache and chultun graves).

PfBAP burials reconsidered by sex – burial type by sex

Distribution of sexed individuals between burial types appears to be rather consistent: approximately 65% (64%, N= 16 for females; 65%, N=31 for males) of male and female individuals recorded in PfBAP excavations were recovered from primary burial contexts. Less than 10% of the burials (4%, N= 1 for females; 6%, N=3 for males) were recovered from secondary contexts. Twenty percent of females (N=5) and 29% of males (N=14) were recorded in multiple burials. The rather even distribution of the sexes within similar burial types suggests that the ancient Maya did not reserve any particular type of burial for a particular group of individuals based on biological sex (Figure 85).

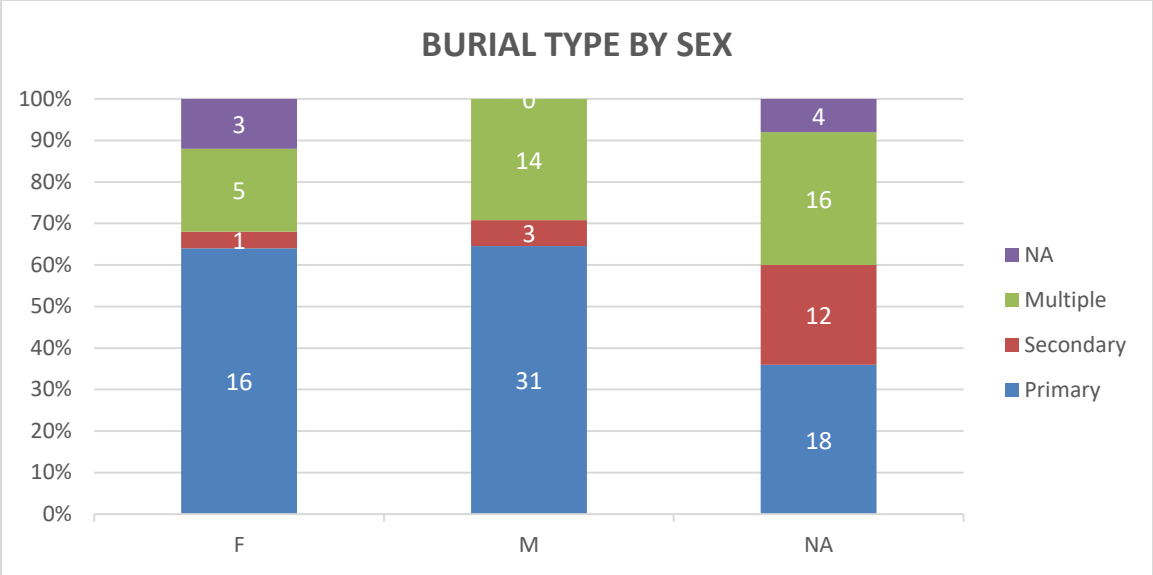

Figure 85. Distribution of PfBAP burial types by sex.

When viewing the same data to compare the distribution of those sexed individuals from overall burial types, the numbers again seem to suggest that there is no real preference on burial type according to sex. Males are the most commonly recorded demographic for primary and multiple burials, but sex could not be determined for the majority of secondary burials. This comes as no surprise, as secondary burials are often fragmentary or incomplete and sex determination is not always possible on impartial remains. One interesting aspect of this data is that no males were reported within the "unknown burial type" category. The total number of individuals from unknown burial types is small (N=7), but 43% (N=3) of these burials are recorded as female (Figure 86).

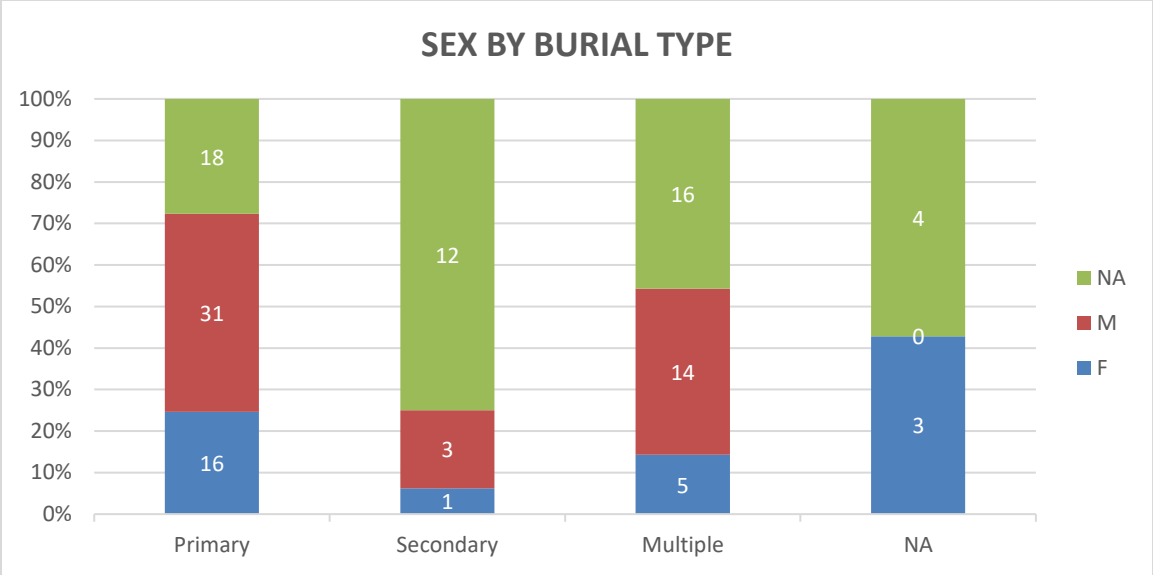

Figure 86. Distribution of sexed individuals by PfBAP burial types.

PfBAP burials reconsidered by sex – body position and orientation

Determining biological sex of disarticulated (and bundled) burials is difficult, if not impossible for the majority of those remains. Body orientation is often unreported for these secondary forms of interment as well. Figure 87 demonstrates the overall preference among PfBAP burials to be interred in a flexed body position, regardless of biological sex of the decedents. While the total number of extended burials is quite small (N=5), it is interesting to note that none of the individuals interred in an extended body position could be positively sexed as a female.

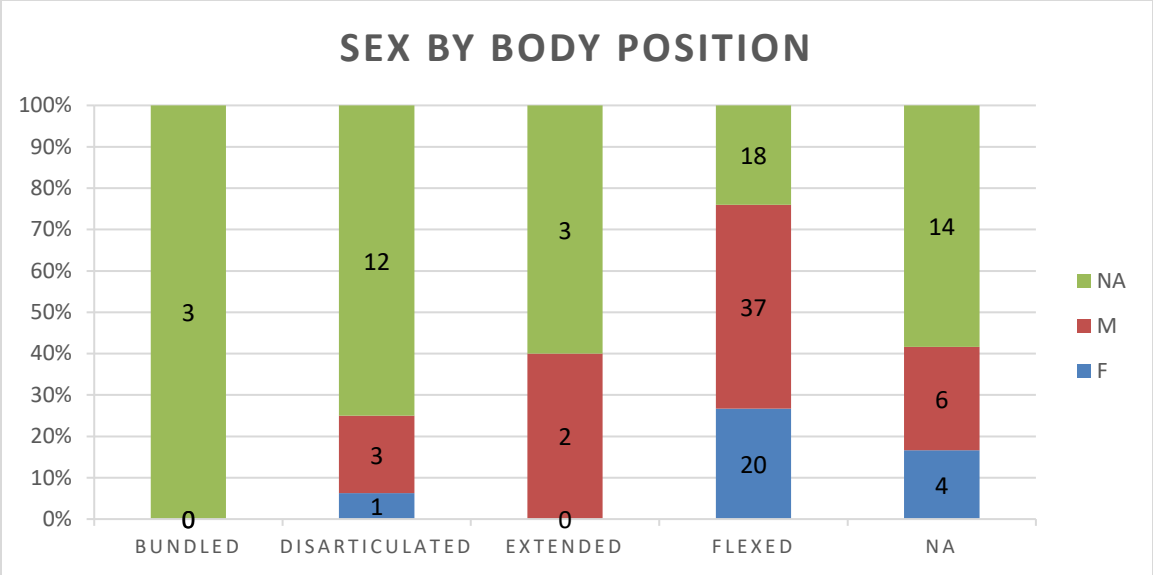

Figure 87. Distribution of sexed individuals recorded by body position.

Figure 88 illustrates the lack of extended female burials and the overall preference for flexed body positions for this sex. Male individuals show a wider diversity of body position, but still indicate an overall preference for flexed burials.

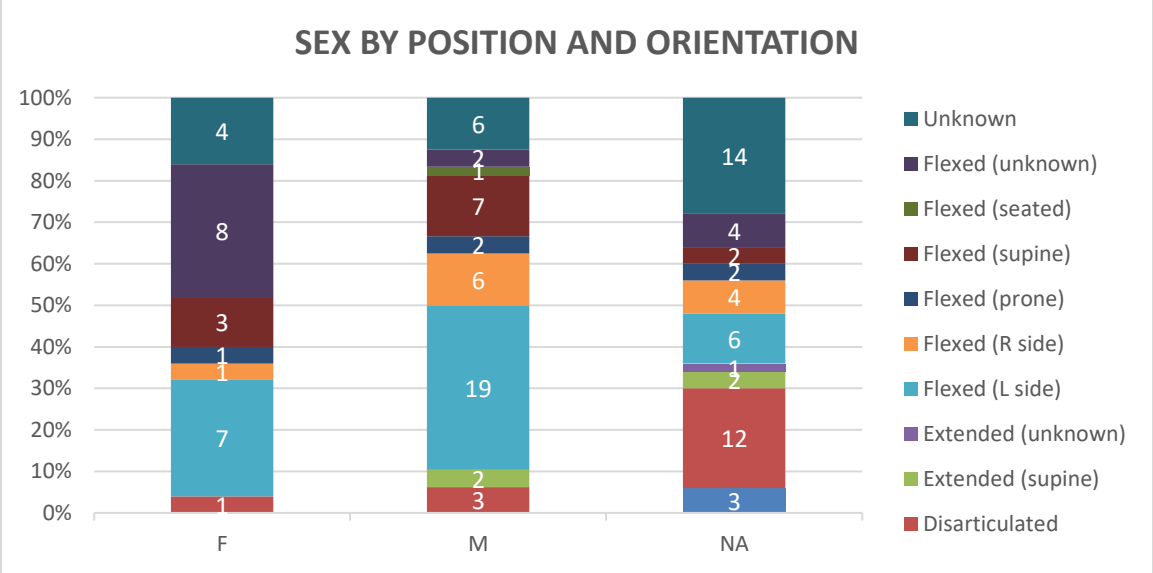

Figure 88. Distribution of sexed individuals by body position and orientation.

Orientation of individuals within the PfBAP sample also remains consistent between the sexes. Figure 89 shows the consistent distribution of body orientation of male and female decedents. While more males than females are interred in a north-south orientation, this is due to the fact that more males are identified within the burial population than females.

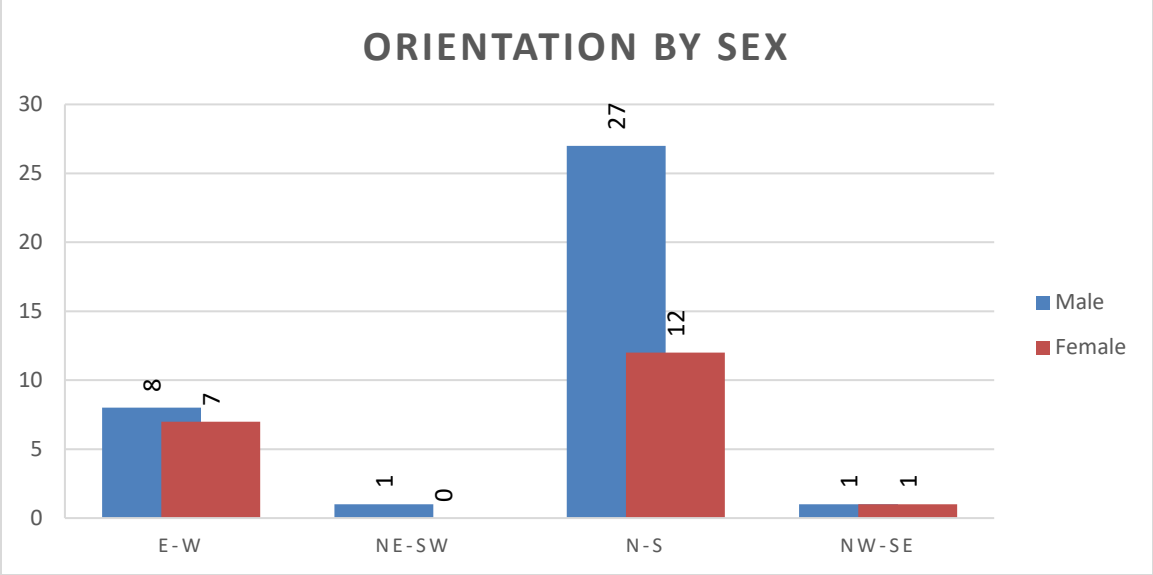

Figure 89. Body orientation of PfBAP individuals by identified sex.

The figure below (Figure 90) illustrates body position with head orientation of those sexed individuals from the PfBAP sample. Northwest-southeast and southwest-northeast aligned burials are not depicted here due to their small representation in the overall sample. The red (female) and blue (male) bars indicate the number of individuals interred with the head to the direction indicated on the "map". Again, distribution of these various body orientations is rather consistent, regardless of sex. A chi square and contingency table analysis was deemed unnecessary for this patterning due to the clearly consistent distributions charted above and below.

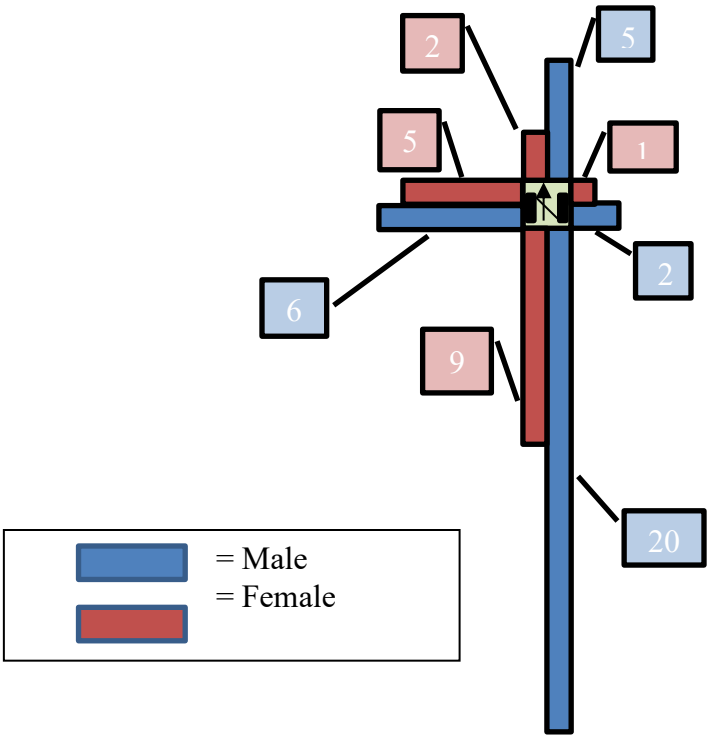

Figure 90. Orientation of burials with male and female head position (number of individuals indicated) noted (only those sexed burials with noted cardinal directions are shown).

PfBAP burials reconsidered by sex – body modification

When body modifications are considered by sex of the decedents, an interesting pattern emerges. Of all of the male individuals represented in the PfBAP burial sample, 42% (N=20) exhibit some form of body modification. While females represent a smaller portion of the population, only 28% (N=7) exhibit modification, and this modification is exclusively dental. No biologically sexed females exhibited cranial modification. Ten individuals with undetermined sex exhibited cranial and dental modification, so it is possible that some or all of these individuals may have been biologically female. Finally, only three individuals exhibited both cranial shaping and dental modification – all three of these individuals are male (Figure 91).

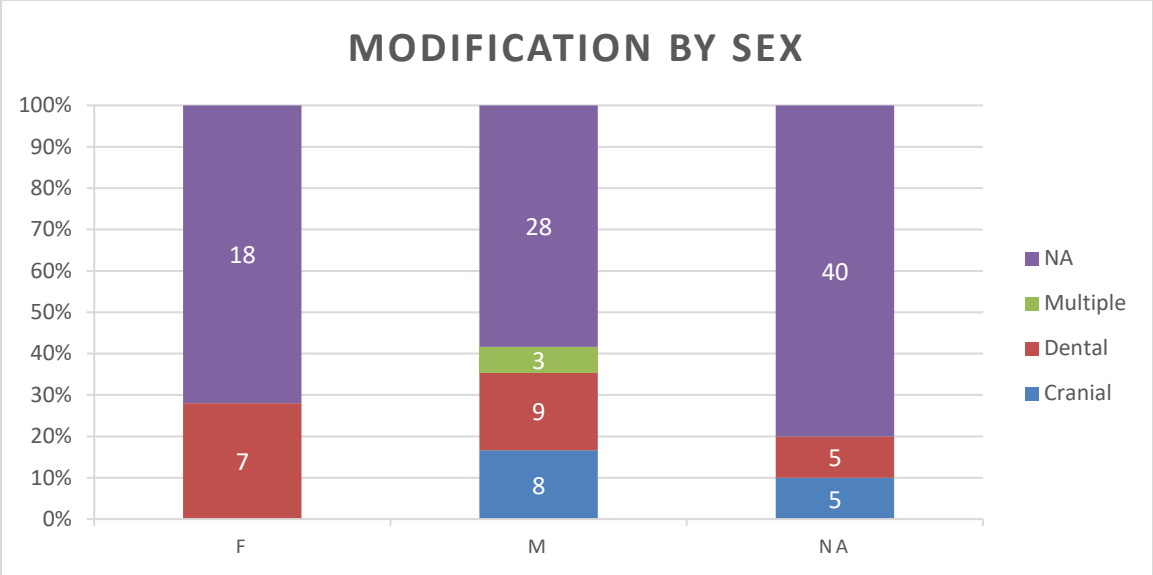

Figure 91. Distribution of body modification among PfBAP individuals by sex.

Overall, the proportion of females with body modification is quite similar to that of males with body modification (28% and 42%, respectively). Yet, no females are recorded as having cranial modification. Figure 92 illustrates an apparent importance of modification (including cranial modification) among males. A likelihood ratio chi-square test found that the relationship was significant, ($\chi 2$ (3, N = 70) = 7.73, p =.02), suggesting that this level of difference between the sex distribution of modification could only be expected to occur at random about 2% of the time.

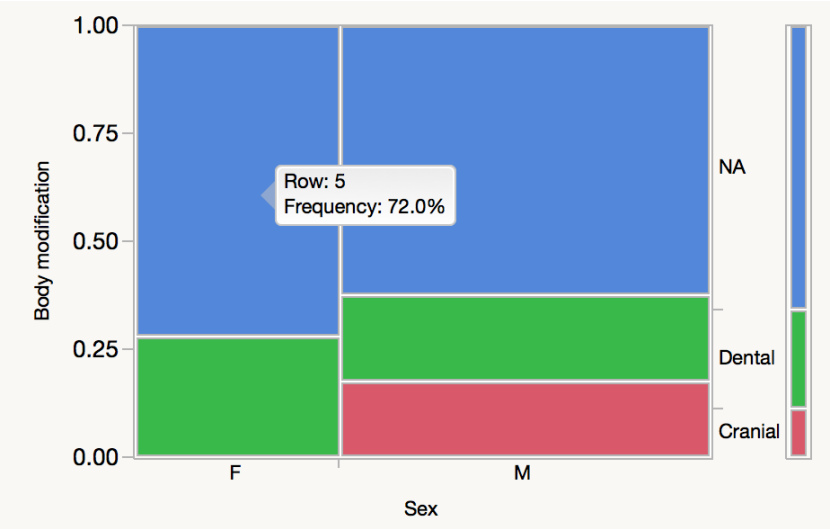

Figure 92. Mosaic plot of cranial and dental modification by sex at PfBAP sites.

PfBAP burials reconsidered by sex – grave goods

Overall, distribution of grave goods is relatively consistent despite sex of the decedent. Figure 93 illustrates that similar amounts of grave goods were recovered from the burials of males and females alike. No females from the PfBAP sample were identified within the group of secondary interments that were recorded as offerings to a separate individual, but the overall treatment of males and females among the dead once again appears relatively equal.

Figure 93. Distribution of grave goods among sexed individuals.

While 48% of females and 30% of males were interred without any grave goods, a contingency table analysis did not show a significant statistical difference for this distribution (($\chi 2$ (3, N = 62) = 3.8, p =.27). However, the distribution of those individuals included as secondary human offerings is more notable. No females were noted among the sample of human offerings, but 6% of males made up the entire sample (Figure 94).

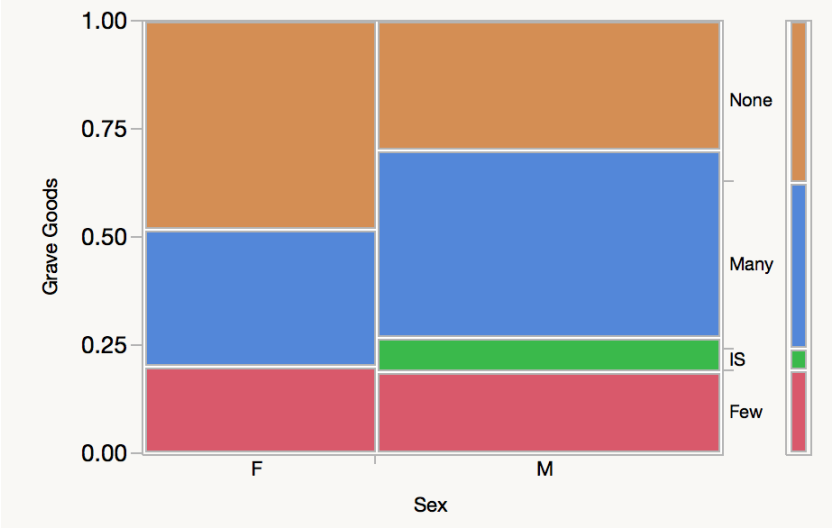

Figure 94. Mosaic plot of proportions of grave goods for male and female burials.

PfBAP burials reconsidered by age - grave type

Young adults make up the majority of the PfBAP burial sample, but I wanted to see if certain grave types were used for specific age ranges. Within the sample, very few subadults are interred in cist/crypt graves (N=1, 4% of the total PfBAP population). No subadults were recorded from tomb graves (Figure 95).

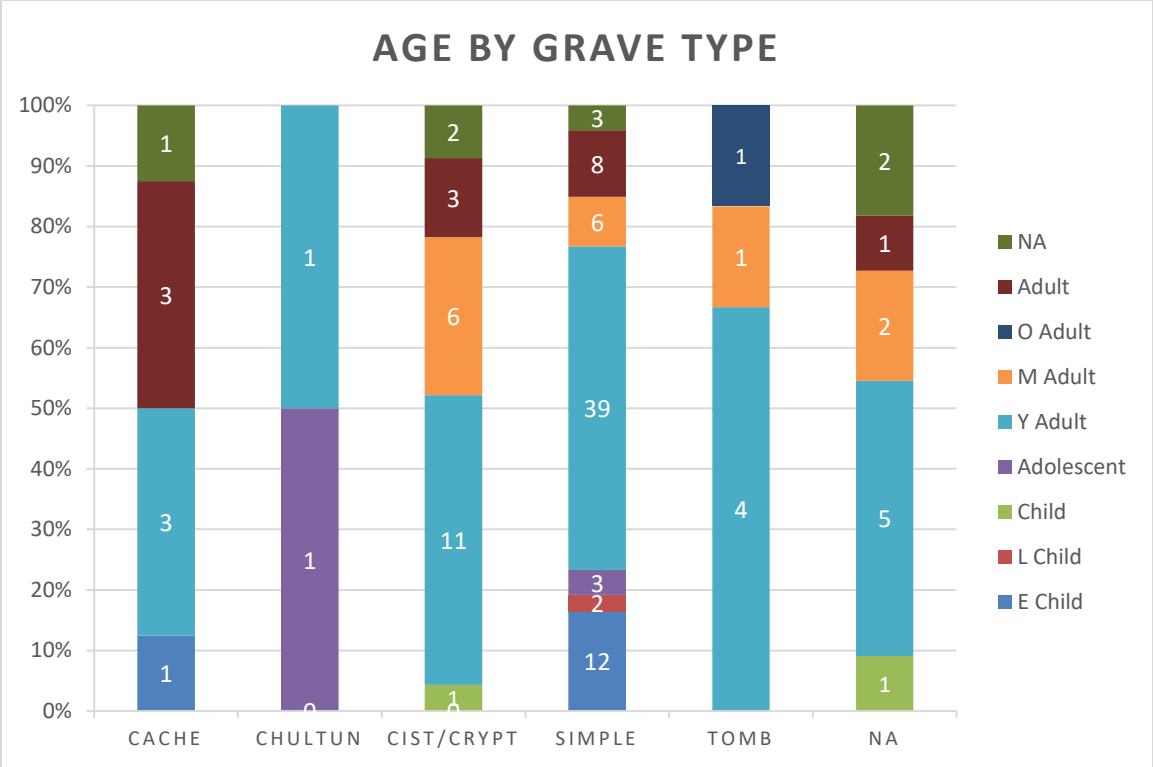

Figure 95. Distribution of age ranges (represented in colors with number of individuals labeled) by grave type.

Overall, young adults are well dispersed between the different grave types recognized in the PfBAP sample: 5% (N=3) of young adults were interred in caches, 2% (N=1) in chultuns, 17% (N=11) in cists/crypts, 62% (N=39) in simple graves, 6% (N=4) in tombs, and the final 8% (N=5) had no specified grave type (Figure 96).

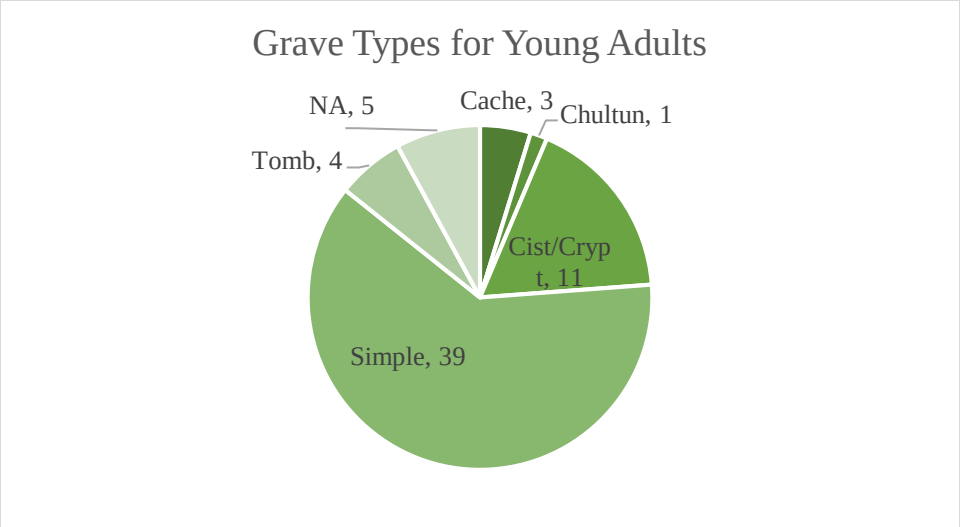

Figure 96. Distribution of recorded grave types for young adults at PfBAP.

No subadults were recovered from tomb graves, which instead consisted of four young adults (=67%), one middle adult (=16.5%), and the single old adult recorded in the PfBAP sample (=16.5%). It is interesting that the only old adult recorded in this sample was recovered from a tomb grave from the minor center Barba Group (Figure 97). Due to small sample sizes, chi square analysis of these distributions was not warranted.

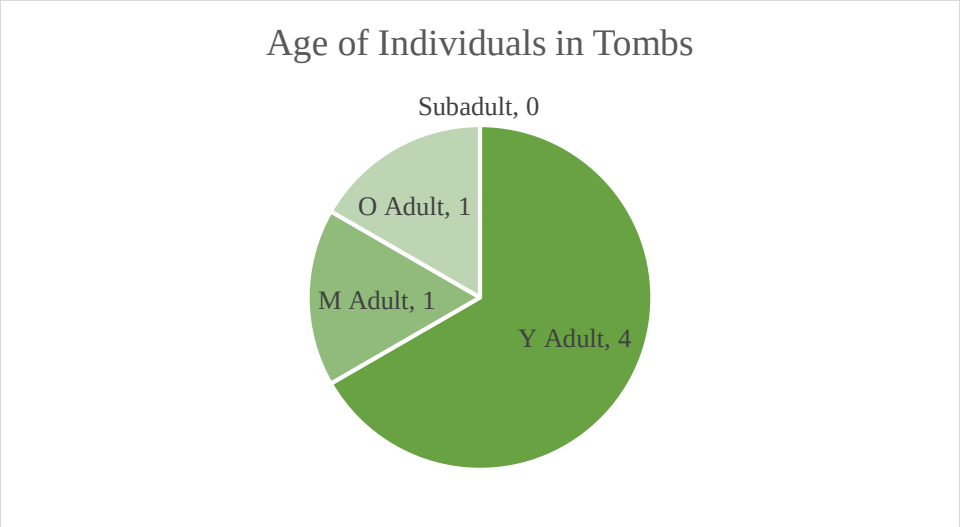

Figure 97. Distribution of age ranges recovered from PfBAP tombs.

PfBAP burials reconsidered by age – burial type

While primary burials are the most commonly observed burial type among the PfBAP sample, the prevalence of subadults in multiple burials is interesting to note. Among all categories of subadults, 38% (N=8) of this population were recovered from multiple graves. Only 26% (N=24) of adult individuals were interred in contexts with multiple individuals (Figure 98).

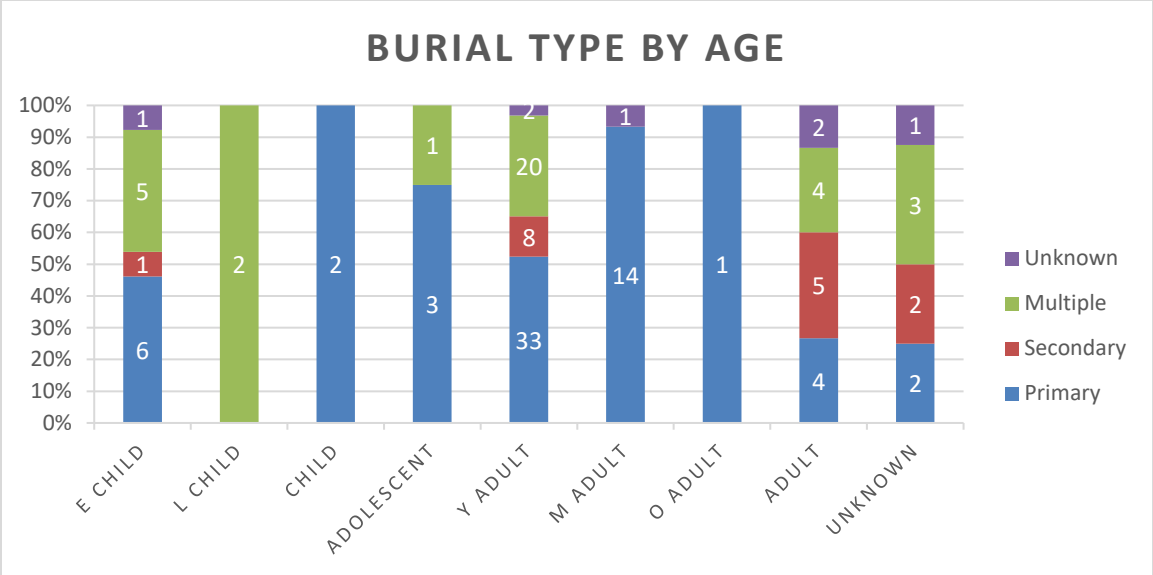

Figure 98. Distribution of burial types by age group.

To conduct a chi square analysis of age distribution by burial type, the various age groups identified above were simplified into adult and subadult (including adolescents) categories. Of the many young adults, about half of the entire burial population, there are primary, secondary, and multiple burials. The largest number of these adult burials (81%) are either primary or secondary. To look for obviously significant patterns regarding burial and age, a contingency table analysis was carried out (see mosaic plot below, Figure 99). These were compared across primary and multiple burials. The differences between sub-adult and adult internments were not found to be significant for these categories ($\chi 2$ (1, N = 95) = .75, p =.38).

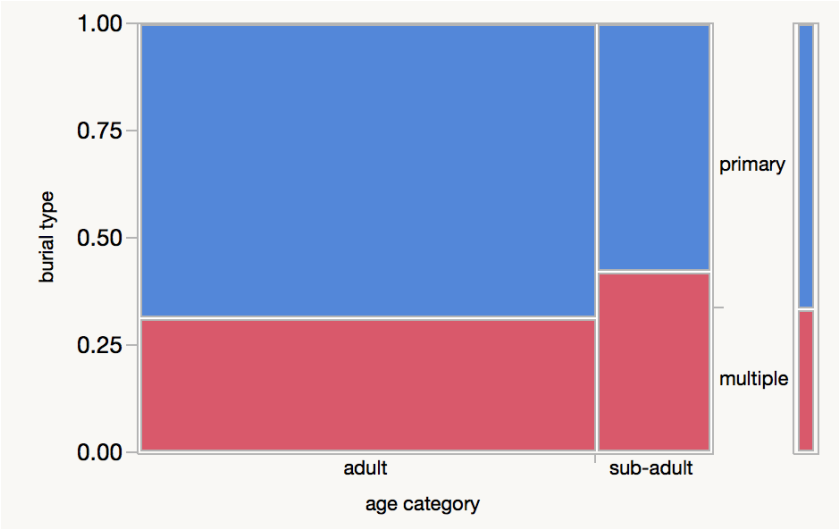

Figure 99. Mosaic plot showing relatively consistent distribution of adult and subadult burials by primary and multiple types.

Burials reconsidered by age – grave goods

Distribution of grave goods among the various age groups represented in the PfBAP burial sample indicate that subadults were most often included as secondary offerings to adult individuals. While four adults are noted as secondary offerings (4% of the total adult population), four subadults (constituting 19% of the subadult population) were interred as secondary offerings. Distributions of grave goods between age groups is otherwise appears relatively consistent (Figure 100).

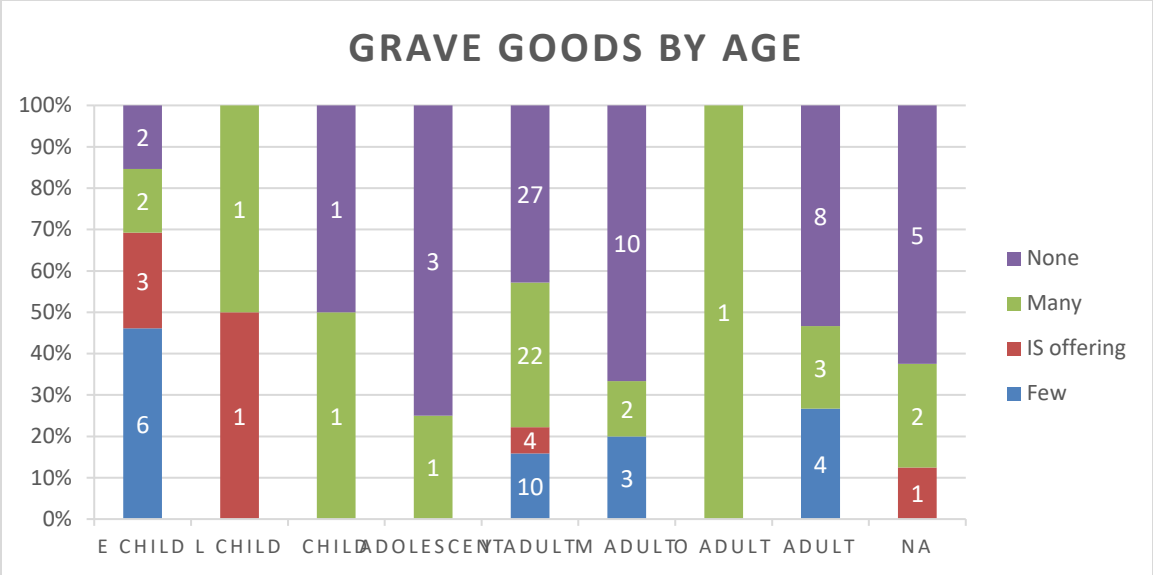

Figure 100. Distribution of grave goods by age-at-death categories.

When combined into the broad categories of subadult and adult, the distribution of grave goods between the two groups is similar enough as to not register as statistically significant. Chi square analysis of this distribution provided the following results: ((χ2 2, N=64) = 4.498, p = 0.1055).

SUMMARY

In this chapter, I have presented various aspects of the data collected for this project in as many aspects as possible. I briefly introduced the ways in which the data were collected, and then provided breakdown of the data through three main lenses: comparisons by temporal designations, comparisons by geographic location within the RBCMA, and comparisons by site type categories. So as to not exclude any aspects of the data that might also provide further insight into ancient Maya mortuary practice, I also compared the data by other interesting factors, including contextual burial features (burial type, grave type, body position, and body orientation) by sex and age-at- death, body modification and grave

goods by sex and age-at-death, and the various attributes of body position and orientation of decedents within the sample. I have provided visual aids for the data to help illustrate descriptions of the data and highlight any patterns that emerged through this process. To address possible patterns in the data that were observed, I conducted a simple statistical significance test in the form of chi-squared analysis. In the following chapter, I will discuss the results of these analyses and bring further attention to the mortuary patterns observed among the Maya of the RBCMA.

Chapter Five: Discussion

In the previous chapter, I introduced the PfBAP burial sample which includes 123 individuals from the approximately 150 burials recovered through PfBAP excavations over the past 25 years. This sample of 123 individuals was chosen because each line-item described in the data set includes specific notations on certain aspects of the burial that I determined were significant for my study, mainly: body position, body orientation, sex, age-at-death, and time period.

Aspects of collected information were compared with the goal of identifying trends in the burial data. Some trends are clearly visible through graphic representations of the data distribution, while others were investigated further through statistical analysis. Those comparative aspects of the data that were not further analyzed through statistical means were excluded due to clear, observable patterns (or lack thereof) within the data or small sample sizes. As an example, the common trend to bury individuals in flexed body positions was deemed unnecessary to explore further because this position was recorded in a majority of the burials (61%). Other aspects of the data that were not as clear were explored through statistical tools like mosaic plots, contingency tables, and Pearson's chi square test. While results of these statistical analyses should not be taken as absolute confirmation or denial of cultural significance, these tests did help to illuminate possible trends in the data that might not have been observed otherwise and provided support for acknowledgement of observed patterns.

General Trends

The research presented here confirmed the presence of a number of burial trends apparent throughout the PfBAP burial population. Overall, a large portion of burials were

primary interments of single individuals within simple graves. Decedents were often interred in a flexed body position, typically on the left side, with the head oriented to the south and feet to the north. Many individuals were also placed with head to the north, but the overall significance of north-south oriented decedents is quite clear throughout the PfBAP burial sample.

Only 11 of the 123 total individuals within the PfBAP burial sample express all of the previously listed attributes, but two or more of these characteristics have been identified in burials throughout the data set, regardless of site type, region, or time period. In fact, when these trends are broken down to site-level analysis, the commonality of certain burial practices is even more apparent. For the El Intruso site in particular, nine of the 12 total individual burials recovered there were interred in flexed positions, lying in a north-south orientation on the left side with heads to the south.

Overall PfBAP trends compared to other noted Maya burial trends

In Welsh's 1988 analysis of Late Classic Maya burials he identifies simple burials as the primary burial type at Seibal (located in northern Yucatan, Mexico), Altun Ha (in eastern Belize), Tikal (in northern Guatemala), Barton Raime (in western Belize), Copan (located in western Honduras), and others (1988:22). While the popularity of flexed burials throughout the PfB appears to transcend time, Welsh also found that Late Classic trends at Barton Raime, Altun Ha, Piedras Negras, Palenque, and others favored extended body positions (1988:42). Flexed positions seem to have been preferred in the Late Classic for decedents of Uaxactun, Altar de Sacrificios, and Copan (ibid.) While head to the south prevails at sites like Barton Raime, Holmul, and Baking Pot, head to the north was commonly expressed at Piedras Negras, Palenque, Uaxactun, and Tikal (Welsh 1988:55).

It appears that the Maya practiced certain cultural norms of burial throughout space and time, but (at least in terms of those remains confined to the Late Classic in Welsh's study and to the PfB region of northwest Belize in my study) these trends do not seem to be finitely determined by spatial or temporal boundaries. Nonetheless, the Classic period burials studied by Welsh were recovered from what are considered elite contexts within the various sites.

In her analysis of burial trends from the site of Kaminaljuyu, Obledo (2004) notes that 67% of the sample were oriented in a north-south position with heads to the south (2004:288). An additional 15% of the individuals were oriented with heads to the north (2004:289). In contrast to burials from the PfB, individuals at Kaminaljuyu were typically interred in extended, supine positions (37%) or seated with the legs crossed (27%) (ibid.). Similarly, Thompson's (2005) analysis of Late Preclassic burials from Chiapa de Corzo, Kaminaljuyu, Tikal, and Colha indicate a prevalence for extended, supine burials throughout the sample. Cranial orientation among these individuals were predominately to the west (28%) and south (24%) (2005:665).

The comparison of results from these studies serve to confirm Ashmore and Geller's 2005 assertion that the ancient Maya did not observe one singular, common burial trend. For reasons beyond the scope of this dissertation, the Maya were practicing mortuary trends that varied through time, between regions, and even within sites and communities. While my research project originally set out to identify some of the driving forces behind these patterns, that task is now beyond the reach of this dissertation. As of yet, I have no answers, but I will posit some additional studies in Chapter 6 to hopefully help other future researchers approach this interesting situation.

PfBAP Burials Considered through Theoretical Influences

This section highlights observed and interesting burial trends noted in the previous chapter. These observations will be discussed in greater detail, and presented through categories of major theoretical influences from past research. The following themes will be used to explore the observed trends: age and the lived experience, sex and gender, wealth and status, body modification and concepts of beauty, biological and social death, and social outliers.

Age and the lived experience

Theoretical Considerations

Soafer (2011) describes three meanings of age in bioarchaeological research: physiological age (the age ranges I previously provided to organize individuals into subgroups of subadults and adults), chronological age (the estimated age in years or months of deceased individuals), and social age (the age of an individual as defined by the broader community of which the decedent was once a part). The categories I have assigned are problematic because they do not address social age considerations – important events or associations met at certain times in an individual's life (rites of passage, expected behaviors determined by age categories, the times at which individuals gain social presence, etc.). And yet, these social categories are difficult (if not impossible) to identify from archaeological contexts.

The assignation of age categories to individuals of the PfBAP burial sample are not meant to reflect social or cultural concepts of age among the ancient Maya. While convenient to use as an organizational tool for the purposes of this dissertation, notions of age among the ancient Maya are not well understood by modern researchers and likely did not correspond to the Western-influenced categories I have presented.

Additionally, determining age-at-death and defining age categories of the skeletonized remains of past peoples are not straightforward concepts. Human variation plays a very significant role in complicating osteological age-at-death determinations (Bass 1971:12). While certain developmental processes occur at relatively dependable stages in the human skeleton (Steele and Bramblett 1988), there are no set and determined ages at which key developmental stages occur. Once an individual reaches full skeletal development, determinations of age become even less reliable. General health of individuals plays a significant factor in the development and aging processes of individuals. Because health is greatly affected by the physical and social environment, skeletal characteristics for age-at-death determination will be equally affected, and similar standards of age determination cannot be set for individuals from different geographic regions, time periods, climates, or lifestyles (Steele and Bramblett 1988:6).

Until relatively recently, archaeological investigations often overlooked the experience of children in past societies, especially those (at least in Mesoamerica) from non-elite communities (Ardren 2006, 2015). Baker (1997) argues that this is partially due to a close association between women and children. She suggests that children and women have been relegated by archaeologists to the domestic sphere of "non-male" (and thus, traditionally invisible) individuals. Burman (1994) similarly suggests that children are often overlooked in archaeology due to a consideration of children as incomplete humans, passively involved in historical processes and thus less interesting or important to study. Nonetheless, Ardren asserts that among the ancient Maya "children were not only visible and valued members of society, but held key roles in social networks that cemented and affirmed kin relations" (2015:84).

Lifecycles and behavior of the Maya were governed by the 260-day calendar and various ceremonies (Sharer and Traxler 2006). Naming ceremonies occurred shortly after

an infant's birth and results of this ceremony were determined by the birth date. Between the ages of three and four months, Maya babies were the center of another ceremony (noted by de Landa) to mark the first time they are carried "astride the hip" (Gates 1978:33; Sharer and Traxler 2006:672). At four or five years of age, male children were dressed in particular ways and trained by the father to perform traditional male activities. Likewise, female children were also dressed with gendered items (Gates 1978: 43; Sharer and Traxler 2006: 672). Puberty rites were practiced yearly for those children eligible to be married. de Landa notes that this age fluctuated in time between 12-20 years of age (Gates 1978:41). The final stage of aging (aside from death) noted by de Landa (Gates 1978) and also described in Sharer and Traxler (2006) is marriage, in which men and women are once again allowed certain rites, marking the final step through marriage from childhood into adulthood.

Age and the Maya of Northwest Belize

Investigations of age distributions within the PfBAP burial sample show that the overall proportions of defined age groups throughout the sample was relatively even and distributions were likely due to random chance. Young adults represented the largest portion of the population, and proportions of young adults to other age categories was consistent through time. However, distribution of age categories varied in a significant way between site types. More children were interred at major ceremonial sites (28% of the site-type population) than at minor centers and household communities (10% for these site-types). Contingency table and chi square analysis of the distribution of adults and subadults between household communities, minor ceremonial sites, and major ceremonial sites observed within this sample could occur by random chance only 2% of the time.

There are many possible explanations for the heightened presence of children among the burial population at major ceremonial sites, and a thorough examination into

these theories would require an entirely separate dissertation. Nonetheless, I want to highlight a few possible options here that may be explored in later projects.

The first scenario posits that more children are present in the mortuary population of major center sites due to some health-related factor. Perhaps these children were dying of natural causes due to poor diets, intermarriage practices of elites that in turn damage the physical integrity of the gene pool, or environmental or political factors within the La Milpa and Dos Hombres communities that led to stress, disease, or malnourishment that more severely affected the younger members of society. Or perhaps mortality and birth rates at these sites varied greatly from those of smaller communities. Another possibility is that certain families or individuals may not have been able to afford certain types of burials – financially, or based on the space and labor involved in interring the dead (Valdez, personal communication 2016).

Ardren (2006:13) posits another interesting aspect of the ancient Maya childhood experience. She cites Arnold's 1991 study of Aztec ceremonies in which children are chosen specifically for human sacrifice. Arnold's translation, reported by Ardren, notes that children were seen as appropriate tribute to the rain god, Tlaloc, and "as the earth sustained human life, children sustained the earth" (Ardren 2006:13). While this specific example stems from the Aztec culture to the west of the Maya area, evidence of child sacrifice among the Maya has been recorded through ethnohistoric accounts (Gates 1978: 48) and archaeological excavations (Pendergast et al. 1968; Romey 2005).

While it is certainly possible that sacrificed children were among the burial population at major ceremonial center sites in the PfB, no osteological or archaeological evidence for sacrificial practice were noted in regards to these children. The two examples provided above to address the heightened amount of children interred at major ceremonial center sites represent only a small fraction of possible scenarios that I hope will be further

explored in future studies. An application of the burial data to age categories more refined to those periods of cultural rites practices described above may also elucidate additional patterns that were not observed with the Western-based age range utilized in my study.

The distribution of adults within certain burial types is also of possible interest regarding age and the PfBAP burial sample. While only six tombs were reported among the 123 studied PfBAP burials, all of these graves contained the remains of adult individuals. Young adults were encountered in four of the tombs, one middle adult was reported in another, and the final tomb contained the remains of the only old adult identified within the entire PfBAP sample. The frequency in which these tombs occur is too small to be investigated by chi square analysis, but it is my hope that these instances noted among the PfBAP sites will be compared to other sites in and around the Peten region to further investigate the scenario.

Sex and Gender

Theoretical Considerations

The emphasis of identifying biological sex and only inferring gender in skeletonized specimens has seemed to settle in the past decade or so, but division of the two categories is still of great interest (and importance) to practicing bioarchaeologists (Soafer 2006, Arnold 2006). In order to obtain data and relevant information from human remains, an attempt to determine biological sex is a primary and necessary step. By looking at features of the skull and pelvis and comparing robusticity and height of the general skeleton, bioarchaeologists can gain pertinent information about the deceased individual that may lead to further revelations throughout the course of analysis (Bass 1971; Steele and Bramblett 1988).

Yet, some archaeologists argue that the consideration of sex as a biological construct and gender as socially determined is misguided. Arnold (2006) stresses that sex determinations be assessed along a continuum, rather than static binary categories Butler (1993), Geller (2008), Growland and Knüsel (2006), Joyce (2000), and Meskell (2001), among others, have challenged the binary split between sex and gender. These authors argue that, like gender, sex is a cultural construct that is non-binary and can change over time. As significant and accurate as these arguments are to studies of gender, the past, and osteology/bioarchaeology/forensic anthropology, the authors provide no practical means of applying their arguments to human osteological analysis. And so, while acknowledging the aforementioned critiques on gender and sex as culturally determined and fluid characteristics, I maintain the use of osteological determinations of biological sex for the purposes of organizing and identifying patterns within the data presented in this dissertation.

Considerations of sex and gender also relate closely to theories of age, status, and beauty, and will be addressed throughout the following sections. One question regarding age that is of interest to this study is: when does a person become gendered? (Hollimon 2011). I previously mentioned the various age rites reportedly practiced among the northern lowland Maya by de Landa (Gates 1978). At an early age, Maya children were gendered and socially marked through body adornments – clothing, jewelry, hairstyles, etc. (Joyce 2000). Around the early teenage years, Maya children participated in an event that then considered them eligible for marriage. Once married, men and women changed their hairstyles and dress to distinguish themselves from unmarried individuals. Married men and women could also adorn their bodies with tattoos (ibid.). This concept is difficult to approach through human remains due to the fact that sex determinations cannot be reliably made on remains of undeveloped individuals (Bass 1971; Steele and Bramblett 1988), but

a recognition of these noted practices is vital to a discussion of gender and sex among the ancient Maya.

One of the ways in which archaeologists have approached questions of sex and gender is through the spatial distribution of grave goods. Ardren (2002), Joyce (1999), Tolstoy (1989), Trachman and Valdez (2006), and Welsh (1988) have conducted spatial analyses of individuals and associated grave goods to identify potentially "gendered" artifacts among the ancient Maya. Trachman and Valdez (2006) and Storey (personal communication 2013) also illustrate examples in which biologically sexed individuals were interred with cultural markers more commonly associated with the opposite sex. Although these inferences are difficult to prove, they suggest the recognition among the ancient Maya of a possible third gender, or at least flexibility in the binary separation between modern Western constructions of "male" and "female".

Sex and Gender in Northwest Belize

The burial data presented in this dissertation illuminate a number of sex-based patterns, agreeing with previous suggestions that the ancient Maya valued and practiced gender-specific roles and norms. Males represented 39% of the total population in this study, while only 20% of individuals were assessed as female. Nonetheless, sex-based differentiation in burial treatment was noted in the sample, particularly in regards to grave type, body modification, and grave goods. Another interesting pattern within the data that will be discussed further below is the lack of gendered differentiation in some of the burial categories explored in this dissertation.

Of the six tombs recorded through PfBAP excavations, none of the decedents were estimated to be female. Five of the six individuals recovered from tomb graves were estimated to be male, and sex of the sixth individual could not be determined. Distributions

of males and females in simple and cist/crypt grave types were relatively even, and a chi square analysis confirmed that the proportions are not statistically significant. Due to the small number of tombs recorded in the sample, a chi square test of this distribution would not produce reliable results. Nonetheless, a further investigation into this potential pattern should be considered in future mortuary studies stemming from the PfBAP population.

The high proportions of body modification throughout the PfBAP sample was unexpected. Before addressing this pattern (in the section on body modification below), I want to briefly acknowledge the disparity in modification types by sex. Of all female burials, 28% exhibited body modification; however, none of these individuals exhibited cranial modification. Modification was noted in 42% of males – roughly half of this modification was in the form of cranial shaping, and the other half of observed modification were noted in the dentition. A chi square analysis of this distribution suggests an intentional, cultural influence for the lack of cranial modification in Maya females of the PfBAP burial population.

Perhaps the most enticing aspect of the data explored in this section appears in those cases of equal treatment between males and females. Throughout the burial sample, males and females were interred with similar characteristics regardless of time period, site type, geographic location, grave type, burial type, body position, and grave goods. The only scenarios in which sex seems to serve as a driving factor of difference is in the categories of body modification and human grave offerings. In both of these instances, the data and statistical analyses of the data indicate that males were preferred for both cases.

Wealth and status

Archaeological understandings of status among the ancient Maya have been explored through site size and settlement planning (Ashmore 1981; Hageman 2004; Hyde

2011; Kunen 2001; Robichaux 1995; Vogt and Leventhal 1983), political economy (Scarborough et al. 2003, Scarborough and Valdez 2009), architecture (Houk 1996; Trein 2016), and material culture (Hyde 2011; Riddick 2014; Trachman 2007). Generally, larger sites with more elaborate and labor-intensive architecture, higher-quality or imported materials, and evidence of control over resources and the surrounding labor force are good indications of high status communities and wealth. However, modern understandings of the ancient Maya do not consider the societies to be divided strictly between the elite and non-elite, or the top and the bottom (Chase and Chase 1992; Scarborough and Valdez 2009; Scarborough et al. 2003; Trinkaus 1995). In their focus on resource-specialized communities, Scarborough and Valdez (2009) and Scarborough et al. (2003) argue that an interdependence between these smaller communities allowed small sites to be self-sustaining from nearby ceremonial centers. Recent studies through PfBAP excavations at these communities indicate that hierarchies existed even among these smaller community groups (De Francisco 2014; Dodge 2014; Hyde 2011; Kunen and Hughbanks 2003). Additionally, Trinkaus (1995) reminds us that social rankings may have been determined or expressed through immaterial means – the evidence of which is no longer visible in the archaeological record.

With these past works in mind, it is important for me to acknowledge that the site categories defined in this study (Household Community, Minor Ceremonial Center, and Major Ceremonial Center) are not meant to serve as the three stationary tiers of ancient Maya society. The categories were applied and considered for the explicit purposes of this dissertation to allow for observations of broad mortuary patterns – patterns that might not be visible when sifting through minutiae of characteristics and categories. Yet it would be naïve of me to suggest that these site types do not also stand to discern categories with the most basic understanding of status and hierarchy. Using Bullard's (1960) categorization

technique (also applied to Geller's 2004 study of PfBAP burials), I do consider a basic division of the three site types to exist based on economic status of its inhabitants. Nonetheless, I want to also stress the arguments mentioned above – Maya hierarchies are not rigid, static systems of social organization. Within each group of site type identified above, individuals held a myriad of status and influence. And while more influential and revered residents at household community sites may not have experienced as much political power as high-status individuals within elite residences of La Milpa, they nonetheless existed.

Status considered throughout the PfBAP

Readers will note that I do not emphasize "value" in regards to the grave goods, grave locations, or grave types compared in this research. Overall, site types, tomb graves, and quantity (not quality) of grave goods are used to identify "higher status" burials in the most general sense. The goal of this dissertation was not to postulate who or what was important among ancient Maya communities, but to simply express some of the potentially significant aspects of Maya society as they appear in mortuary patterns. It is my hope that such interpretations will be investigated in future studies stemming from this research.

With this in mind, I will now introduce some of those intriguing patterns in the mortuary data that may influence future studies on ancient Maya wealth and status, or other influencing characteristics. In regards to grave type, tombs were most commonly encountered at major center sites (although one tomb was noted at a household community site). Cist/crypt burials were more commonly recovered from minor center sites. Primary interments were commonly observed throughout the overall PfBAP burial population. Regardless, burials containing multiple individuals are found at a higher proportion within minor center sites, and multiple and secondary interments influence burial types at major

center sites relatively consistently. While a contingency table analysis of these observations suggest that the same distributions could occur randomly nine times out of 100, further investigations into this pattern is warranted.

Another intriguing aspect of the data relating to notions of status involves the goods interred within PfBAP burials. While the categories of grave goods I created dealt with the quantity of grave goods instead of intrinsic value, most of the burials with "many" grave goods also included materials that might be considered valuable (rare materials like greenstone and obsidian, jewelry, and non-utilitarian materials like eccentrics, elaborately designed and decorated ceramics, and figurines). While an interesting observation, this trend must be noted with caution in regard to archaeological preservation – burials within the PfBAP sample may have been "elaborately" decorated with perishable materials that simply did not survive to be observed in modern excavations. Additional burials that were recorded as having been interred with the primary decedent as a human grave offering were considered a separate category of grave good. Those burials with "many" grave goods were recorded at all site types, but 46% of these "elaborately" decorated graves were recovered from household contexts, while 22% and 27% were from minor and major centers, respectively. In fact, an overall majority of burials from major and minor center sites were recorded with no mention of grave goods. All nine cases of human "offerings" (as described in the original excavation notes and burial reports) were recorded from major ceremonial center sites. This brings up interesting ideas of validation and influence. Perhaps those powerful individuals in less powerful communities expressed and emphasized their local-level power through material goods and other elaborate mortuary practices.

Mortuary patterns between site types provide additional interest in regards to age and modification of decedents recovered at the sites. As was discussed earlier, younger

individuals were recovered in higher numbers at major center sites than at household and minor center communities. I have outlined some of the possible influences or explanations in the sections above, but this pattern again warrants further investigation. Distributions of burial treatment between sites in the different categories does not seem to possess gendered influences. Finally, while more individuals at minor ceremonial centers exhibited body modification than those at major centers or household communities, overall distributions of the modification types is consistent throughout the site categories. I will continue to address observations in regard to body modification in the following section.

Body Modification

Theoretical Considerations

The various forms of physical alterations of the human body are well-recognized among the ancient Maya. All considered expressions of beauty, tattoos, hairstyles, dress, piercings, and jewelry are noted in artistic and written records, as well as evidenced through archaeological excavations (Eppich 2006; Gates 1978; Geller 2004, 2006; Hyde and Shifrer 2007; Joyce 1999, 2008; Romero 1970; Saul 1972; Saul and Saul 1989, 1997; Welsh 1988). Geller (2004) provides a more detailed discussion of beautification of the ancient Maya, and the following discussion will only focus on the practices of cranial and dental modification.

Cranial modification is conducted at a very young age. While the bones of the cranium are still developing and malleable, a series of boards was placed on the top and bottom or the back of the skull to over time create an elongated, broadened, or flattened shape to the head. In other instances, fabric was wrapped circumferentially around the cranium to create a conical shape (Geller 2004; Hyde and Shifrer 2007; Saul 1972). As the cranial bones fused, these processes would create a permanent reshaping of the skull in

adults, leaving many Maya individuals with elongated or flattened foreheads, or broadened faces (12).

Dental modification refers to the practice of filing down certain teeth and/or implanting precious stones into the anterior surfaces of the teeth (Figure 10). Certain styles may have been particular to certain groups or individuals, and the presence of precious stones in some individuals suggests wealth or high status was a necessity for this practice. A variety of shapes and styles can be found throughout the Maya region (Buikstra and Ubelaker 1994, Geller 2004, 2006; Romero 1970) and a future study of such styles as they appear throughout the various contextual and demographic categories utilized in this dissertation may provide further insight into sociocultural, political, and ecological boundaries and limitations.

Body Modification among the PfBAP Burial Sample

An important aspect of theory relating to these two particular types of body modification among the ancient Maya involves a discussion of accessibility and agency of these practices. It is often suggested that the presence of cranial and/or dental modification in skeletons is an indication of the elite status of that individual (Eppich 2009, Hyde and Shifrer 2007, Massey 1989, Welsh 1988). While particular tools, skill, and wealth (particularly in the instance of precious stone inlays) are likely required in the practice of dental modification, the practice of cranial modification does not require any such necessities. In fact, if carrying babies on the backs of adults via the use of cradle-boards was commonly practiced among the Maya, it could be expected that a high number of ancient Maya individuals within burial samples would exhibit cranial modification.

The burial sample from PfBAP excavations provides insight into the suggestions of body modification and status proposed above. Thirty percent of the total PfBAP burial

population exhibited some form of body modification. While proportions of modified individuals were higher within major and minor ceremonial centers, three individuals with body modification were recovered from household contexts. Even more interesting is the fact that distributions of the two types of modification were consistent throughout site types. Dental modification is more commonly observed throughout the sample, and cranial modifications are less common.

If using site type as a proxy for status or wealth of a Maya community, the observations noted above contest long-held associations between body modification and elite status. And yet, as noted earlier, Maya society was not divided strictly into "the elite" at major centers and the others. With this in mind, the presence of body modification at hinterland communities may still serve as indicators of status among the ancient Maya, but specifically mark important or influential members of smaller communities as well as the ruling elites of larger ceremonial sites.

The distribution of modification and modification types at PfBAP sites nonetheless indicates some sort of limiting sociocultural influence. Hyde and Shifrer (2007) have argued that differing types of purposeful cranial modification were used among the prehistoric Maya to delineate cultural boundaries and serve as markers of cultural identity. Buikstra et al. (2005) note that differing types of purposeful cranial modification among ancient Andeans from the site of Chribaya mark temporal divisions, but do not seem to vary based on gender differences. Geller (2004) compares observations of purposeful cranial modification at PfBAP sites to ethnographic accounts of the practice, suggesting that modification may have been used among the Maya of northwest Belize as a way to mark certain individuals within populations as distinct. I find this stance intriguing, especially in comparison to the results of my own assessment of PfBAP burials. In essence, Geller notes that individuals with purposeful cranial modification are encountered in so

many varied contexts that it is impossible to argue for specific reasons that made these individuals so "special".

While cranial modification may have served as a marker of social distinction instead of social prestige or nobility, the distribution at PfBAP sites of this characteristic appears to have nonetheless been limited to certain members of society: males. A chi square analysis of the proportions of modification (dental and cranial) among males and females indicates that the distribution is significant. Modification appears in more males than females throughout the PfBAP, and this gendered-division, while not understood, is well-indicated among the data presented in this dissertation.

Agency and Identity

Theoretical Considerations

As Parker Pearson aptly stated, "the dead do not bury themselves" (1993:203). Indeed, the act of preparing and burying the dead is arguably just as interlaced with respect and reverence for the deceased as it is for political, social, and personal reasons of the living. For some societies, deceased individuals are still very much active entities, and building or cementing relationships between these ancestors and the living serves to tie individuals to landscapes, rights, and property.

> *"Placing the dead is one of the most visible activities through which human societies map out and express their relationships to ancestors, land and the living." (Parker Pearson, 1999:141).*

Despite physical death, these individuals nonetheless "play a very important and active role" (Weiss-Krejci 2011a:18) – they are "socially" alive (McAnany 2011). Weiss-Krejci goes on to argue that, especially during political turmoil of the seventh and eighth centuries AD (and possibly originating in the second half of the sixth century), remains of the Maya dead were used to solidify political identities and legitimate power among

descendants (2011a:22). Cannon also notes the rising trend in burials as legitimizing tools during this period (2005:59). This concept of using the dead to legitimize the living, commonly referred to as "ancestor veneration" or "ancestor worship" (Adams 1997; Gillespie 2000; Hammond 1982; McAnany 1995; Sharer and Traxler 2006) serves as an explanation for the common practice among the Maya to bury the dead within household floors and living spaces.

Yet, the term "ancestor" should perhaps be interpreted liberally. As Gillespie (2000) argues, Maya communities were not organized around rigid kinship structures. Notions of strict genealogical decent, nevertheless significant to Maya society, were not required to tie relationships to deceased individuals. And these concepts of ancestors and political validation through the dead are not only concerns of the ancient Maya elite. As noted above, burial placements (even within the household) are intentional political and social actions. The practice of burying the dead close to home serves to establish relationships between the living and the dead and legitimize certain rights in both the large-scale realm of the ruling class, and the more community-based realm of everyone else (McAnany 1995:158-160).

With these interpretations of human burial as a process of remembrance of the dead and a social vehicle for the living, an important question arises: whose agency is expressed through Maya burials? The archaeological concept of agency acknowledges that while individuals are embedded in their surrounding sociocultural and ecological realities, these realities are constructed by the actions of individuals (Brumfiel 2000). Social norms exist in every society, but agency represents an individual's choice in how to adhere to, contradict, and interact with those norms (Dobres and Robb 2000). Agency may be difficult to recognize through archaeological studies, but is often recognized through elaboration

and individual expressions of artifact design, decoration, and production (Sassman 2000; Wobst 2000), and through identification of social "outliers" (Chapman 2000).

Human burials represent a rare opportunity to view ancient society on the level of the individual. Osteological analysis of human remains provide insight into biological profiles, but also illustrate lived experiences of trauma, physical activity, and health and disease (Bass 1971; Komar and Buikstra 2008; Steele and Bramblett 1988). The osteobiographies serve well to address considerations of agency in archaeology, but what of the contextual features of a burial? The location of a burial within a site, the grave type, the body orientation of the deceased, the grave goods interred with the decedent – all of these aspects should provide further information regarding agency. When outliers to the norm are noted, it is common to identify these individuals as agents consciously acting outside of the norm. Yet, related to the question noted above, burials may reflect agency of the deceased, or those who oversaw the interment:

> *"If burial involves grave goods owned and used by the deceased in life, then who is the agent responsible for their association with the dead? Certainly someone among the living was responsible for the placement of the objects in the grave, but was that someone making a choice from among a range of possible options or merely following prescribed practice…" (Cannon 2005:59)*

The burial characteristics described and compared through this dissertation provide new insight into mortuary practices of the ancient Maya of northwest Belize. Outliers to overall trends (like those mentioned at the beginning of this chapter, among others) suggest other underlying factors that may have influenced these changes, but may also serve as evidence of social deviance. In his analysis of mortuary practices of Bronze Age burials from southeast Hungary, O'Shea (1995) identifies strict rules of interment throughout community cemeteries. Nonetheless, outliers and non-normative practices were observed, which O'Shea argues may have served as ways to differentiate familial groups between the

cemeteries. Similarly, it could be argued that non-normative burial practices observed in this data set could arguably have served as ways to identify certain groups within larger communities. Further exploration of this concept (and possible identification of those categories of differentiation) will hopefully be explored in future projects.

Expressions of Agency and Identity within the PfBAP

Because this research project took such a broad overview of mortuary practice within a broad geographic region, I have no intentions here to provide specific identifications of agency within the PfBAP burial population. What I will do in this section is highlight some of the outliers, providing possible direction for any future studies of burials from this area of northwest Belize.

The most notable outliers in the PfBAP burial sample are perhaps those who were interred in non-normative body positions and orientations. Only five total individuals from the 123 samples studied were reported in extended positions. Four of these individuals were interred within minor and major elite centers (Dos Hombres, La Milpa, and Say Kah), while another was interred at the Barba Group household community site. All were interred on their backs, and three were interred in an east-west orientation (though head direction varied).

North-south oriented burials were most common throughout the PfBAP sample, but east-west orientations were noted at a higher proportion as well. It is interesting to note that of the 21 individuals interred in an east-west manner, only one was recovered from a household community. The majority of these east-west oriented burials also date to the Late, Terminal, or transitional Late-Terminal Classic periods. Five individuals who were oriented to the inter-cardinal directions all dated to the Late Classic period. Body positions and site type varied, and while the geographic location of the Liwy Group site is currently

unknown, the remaining four individuals were recorded at sites to the west of the escarpment.

Nine individuals are suggested to have been included within another grave to serve as a human offering. All but one of these individuals date to the Late Preclassic or Early Classic – the outlier in this case was assigned to the Late-Terminal Classic period. All individuals included as human grave goods were also recorded at major center sites, and were subadults or young adults at the time of death. This suggests that young individuals were specifically chosen to accompany someone else in death at Late Classic Dos Hombres and La Milpa. In fact, within one burial feature at Dos Hombres, six individuals are reportedly interred as grave offerings to another individual. Age ranges of these six were somewhat varied, with two individuals aged 3-5 years at the time of death, one aged 5-7 years, and three aged 20-34 years at the time of death (three young adults and three subadults under the age of 10). Situations like this bring up many questions of cultural practice, social identity, and agency. It is my hope that future studies will address this uncommon trend of human grave offerings within the Maya of the Southern Lowlands to provide further insight into possible influences for this observed pattern.

Cases like the one identified above can be particularly intriguing to considerations of agency in archaeology. They also serve to complicate such studies. Whose agency is practiced in the instance of possible human sacrifice or human offerings? Are material items (and sometimes remains of other humans) included in burials to serve as indicators of status, occupation, or persona of the decedent, or do they perhaps imply something more about those individuals who are still living? Perhaps each of these variants in Maya burials represent cultural fluidity, in which people from non-local cultures come together and maintain their own cultural traditions and practices, translating to an inconsistent archaeological landscape. In the final chapter of this dissertation, I will provide further

insight into these patterns and present suggestions for broader impacts I hope this study will influence.

Chapter Six: Conclusions

In this dissertation, I have compiled various characteristics of burial data from northwest Belize. The data was collected through 25 years' worth of excavations under the auspices of the PfBAP. By compiling and presenting the data in various forms, I worked to compare characteristics of 123 individuals recovered from 100 burial features recorded at 12 different archaeological sites. The ultimate goal of this research was to compare various characteristics of the burial data collected for each of the 123 individuals to highlight specific trends in Maya mortuary practice within the region. While approximately 150 burials have been recorded through PfBAP excavations, not all of these provided adequate documentation of many or all the following characteristics desired for this study: Time Period, Geographic Location of Site, Site Type, Burial Type, Grave Type, Body Position, Body Orientation, Age at Death, Sex, Modification, and Grave Goods.

Overall, my research has confirmed previous assessments of Maya mortuary practices (Geller 2004; Welsh 1988) and illuminated trends that have gone overlooked (or, perhaps, under-published). While a minority of PfBAP burials touted each of the following characteristics, the presence of these characteristics as majorities within their categories leads to a suggestion of a general trend in mortuary practices of the ancient Maya of northwest Belize, regardless of time period or geographic location. Generally speaking, favored trends included primary interments within simple graves. Decedents were often placed in a flexed position on the left side, with the body aligned north-south and the head oriented to the south. Other trends, like the fact that all individuals interred in extended body positions were also placed supine within the grave, and the secondary trend of east-west oriented burials within the population were also observed. Through a series of pivot tables, graphic representations, contingency tables, chi square probability tests, and mosaic

plots, I was also able to identify less-obvious trends within the data. Some of the more interesting observations include a generally equal treatment of males and females throughout burial categories, a higher incidence of subadults among burial populations at major ceremonial center sites, and a possible gender-based preference of cranial modification among males not observed within females of the population.

The data presented in this dissertation were collected over the course of seven years through published works and unpublished Master's and Dissertation projects, field notes and burial reports, and my own field excavations conducted through the PfBAP. Geller's 2004 dissertation, which compiled a great amount of PfBAP burial data between the years of 1992-2002 and briefly indicated some of the patterns mentioned in my own work, served as a great starting point for this research. Projects involving regional analyses of mortuary patterns like Welsh (1988), Tolstoy (1989) and Joyce (1999) also served as inspiration for the present project. And of course patience and guidance from Dr. Fred Valdez, Jr. (Director of the PfBAP), Dr. Lauri Martin (former Project Osteologist for the PfBAP), Dr. Frank and Julie Saul (former Project Osteologists for the PfBAP), members of my dissertation committee (Drs. Michelle Hamilton, Martha Menchaca, Allan Moore, and Samuel Wilson) and the Institute of Archaeology, National Institute of Culture and History, and the people and Government of Belize, were instrumental to the formulation, development, and completion of this project.

While some of the trends and patterns illuminated through this research were introduced in Chapter Five ("Discussion") and briefly touched upon again at the beginning of this chapter, there is still much more to be said and investigated. I plan to continue this research to fully address some of the concepts introduced in this project, and hope that the information presented in this dissertation will prove useful and interesting for the readers.

In the following section, I will outline the broader implications of this research and future studies that I hope will develop from my project.

This research project set out to address common assumptions that the ancient Maya did not possess singular burial traditions. While my research has shown that this is overall true at archaeological sites from northwest Belize, smaller-scale patterns do indeed exist. This finding calls for smaller-scale analysis of burial trends at the site- or community level, following which a comparative perspective can be approached. Overall, I anticipated that my research would highlight various trends in the burials that differed along temporal or demographic shifts. In particular, I expected to identify differential mortuary treatment of males and females throughout the burial sample. I am stunned to now know that the ancient Maya of northwest Belize did not appear to have emphasized specific differential treatment for their deceased based on biological sex. The only indication I was able to record of possible sex-based differential treatment within this sample was through the lack of purposeful cranial modification noted in female decedents. The other main goal of this project (as mentioned in Chapter One) was to compile a searchable database containing as much information on PfBAP burials as possible. Having completed this, I have provided the database as Supplemental Material to this dissertation and hope it will prove a valuable resource to any who choose to use it.

BROADER IMPLICATIONS OF RESEARCH

In addition to identifying and discussing patterns in mortuary practice of the ancient Maya of northwest Belize, another major goal of this research project was to continue to compile burial information (cf. Geller 2004) from PfBAP excavations into an accessible and useful format. Instead of individual burial reports, my research utilizes burial data in a

database-format. By separating out details into specific, individualized categories, this format provided me with the ability to quickly compare aspects of the data from through myriad methods (depicted and described throughout the dissertation).

While this database maintains a bioarchaeological focus in recording as many aspects of the burial (contextual and biological) as possible, individualized reports are also necessary for a large research project like the PfBAP. These reports are available (with thanks in particular to the Sauls) for a majority of burials recovered from PfBAP excavations, but inevitably some information has fallen through the cracks in the process. The first step of my dissertation research was to piece all of this information back together to the best of my abilities. I have presented that information here (see supplemental data file).

Following the completion of this dissertation project, I intend to create a formalized reporting form for PfBAP burials. Not all burial reports from the PfBAP appear in the same format, and this will likely remain true as osteologists and excavators come and go through the Programme. Over the course of the next year, I aim to compile all available burial data into a format that will ideally be easily completed with or without the aid of an osteologist, and will continue to be useful for excavators, students, and researchers following its completion. The forms will largely utilize past burial report formats, but will include further details of the excavation and analysis processes.

Future Studies to stem from this Research

Isotope and aDNA analysis

One of the arguments posited in Chapter 5 suggests that variation in certain burial trends within the PfBAP burial population may have stemmed from cultural practices

maintained by non-local individuals. While various methods exist to study migration in prehistory, recent projects involve analyses of stable isotopes and genomics using ancient DNA (aDNA). These methods are minimally destructive, but have been successful in many past projects to study genetic relatedness and geographic origins of individuals through aDNA, and geographic locations and diet through stable Carbon (C), Nitrogen (N), Oxygen (O), and Sulfur (S) and radiogenic Strontium (Sr) analyses (Weiner 2005).

Preservation is a limiting factor to the studies proposed above. As I described in Chapter Two ("Project Background"), bone preservation within most of the PfBAP sites is quite poor. To test for the validity of future DNA studies from the RBCMA, minimal samples of dentition were removed from burials throughout the area and submitted for aDNA analysis. In total, teeth from seven individuals were processed and analyzed through Dr. Deborah Bolnick's Ancient DNA Laboratory at The University of Texas at Austin. Viable DNA was sequenced from four individuals (from the sites of Dos Hombres, Medicinal Trail, and La Milpa (Sak Chen, specifically). Contamination and degraded DNA recovered from the other samples (representing three separate individuals from the Sak Chen group at La Milpa) prevented any reliable results. In the original tests, haplogroup was determined from the HVR1 sequence of mitochondrial DNA (mtDNA), and haplogroups C and A were recorded. The individuals from Dos Hombres and Medicinal Trail also yielded minimally contaminated results, but both belong to haplogroup A2. Results of further analysis of these two individuals in the form of Amelogenin and Short Tandem Repeats (STRs) are forthcoming (Smith, personal communication 2016). These additional DNA analyses will provide further insight into sex determination of the individuals and identification of individual-specific genetic mutations to provide better insight into genetic relatedness (ibid.).

At the time of writing this dissertation, only one isotope study has been conducted on human remains from the PfBAP. Knisely (2013) sampled human bone collagen from 82 individuals to investigate diet in the RBCMA region. Values and ratios of stable carbon and nitrogen analysis suggest that a general diet of the Maya of this region was reliant on maize, other plants, and terrestrial herbivores (Knisely 2013:95). While regional patterns of the data collected in her study suggest overall diet patterns, Knisely notes that local variations in diet are quite common. Her findings suggest that fluctuations in isotopic values of individual diets do not appear to be controlled by age, sex, or status, so Knisely posits these differences reflect personal preference or kin-based dietary preferences (ibid.).

Angelina Sweeney is currently working to extract and analyze samples of human teeth for strontium and oxygen values. This future research will explore migration and movement of ancient Maya populations. Results of these isotope analyses will also be compared to DNA results from planned future extractions (Sweeney and Drake, forthcoming).

While small in number, these isotopic analyses of ancient Maya human remains provide starting insight into Maya movements and diet. As noted by Knisely (2016), diet trends do not appear to be regimented through major social categories of age, sex, or status. This mimics the overall finding of this dissertation – while broad regional trends exist between ancient Maya burials and diet of northwest Belize, site- and individual-level comparisons suggest a significant influence of agency and autonomy among these groups. Continuing research into migration patterns of the region and a better understanding of the geographic and cultural origins of potential non-local individuals will provide further insight into these distributions and possibly address the absence of strict dietary and mortuary trends in the region.

Paleopathology

Stable isotope analysis of ancient dietary trends can also be combined with paleopathological analyses of the PfBAP remains to investigate status differentiation and treatment of groups of people during times of social and political stress. Recorded pathological conditions were noted in my data set and I was able to collect further information through new analyses of the remains in 2013-2015. Nonetheless, further investigation into paleopathology of this burial population are warranted. Preservation conditions have blurred possible evidence of pathology and trauma, or left new marks on bone that create the illusion of pathology. Microscopic, radiologic, and histologic investigations of the remains may help identify and separate taphonomic and pathologic damage on bone.

Local-level analyses

Overall trends in burial practices throughout the PfBAP population may be more strictly followed when these populations are observed at the level of the site. The Gateway/El Intruso site serves as a great example, in which 75% of burials were interred in the same manner (flexed on the left side, head north). Comparing the burial data within other sites may illuminate other patterns that were overlooked in this regional perspective. The analyses provided in this dissertation also do not closely address the myriad forms of grave goods, body modifications, or arm positions recorded in the burial population. Saul (personal communication 2016) has expressed particular interest in arm positioning, but this feature is only noted in the burial data at very low rates. Because few images and maps of PfBAP burials could not be located, the characteristic of arm position is not adequately addressed in this dissertation. Geller (2004) provides a more detailed analysis and interpretation of body modification and grave goods within the PfBAP burial sample

between 1992 and 2002, and further projects might stem from the combination of data and analyses provided in this dissertation with those observations and arguments posited by Geller in 2004. I anticipate a particularly interesting assessment of Maya inter-community relationships that could stem from a social bioarchaeological study of site-specific populations within the PfBAP.

Studies of the Past Integrated into the Present

The field of bioarchaeology is wrought with ethical concerns and moral dilemmas. While burials at the PfBAP in particular are only happened upon, not searched for, the recovery of human remains from archaeological contexts is a weighted process.

Awareness and sensitivity to concepts like cultural continuity (Fine-Dare 2002) and cultural heritage are at the heart of much bioarchaeological research. Laws such as the Native American Graves Protection and Repatriation Act (NAGPRA) of the United States and recent protests of the Dakota Access Pipeline led by the Standing Rock Sioux Tribe serve as reminders of the significance the past holds for many groups of people. Yet, even archaeological and bioarchaeological studies are destructive to that past. In striving to study it, understand it, and tell its story through excavations and destructive analyses, researchers inevitably damage elements of the past they work so hard to protect. From a bioarchaeological perspective, it becomes ever important to weigh the options when deciding whether to conduct destructive analyses of human remains. While the remains subjected to aDNA analysis in this study were minimal, they represent parts of an individual that have been forever altered. Such decisions were not taken lightly, but I am grateful for the communication and relationship that exists between the PfBAP, the IoA and Government of Belize and its many branches of the NICH, and the Belizean people. It

is my hope that these relationships and conversations will continue, and that future bioarchaeological studies from Belizean sites will produce studies that directly address questions of local Belizean people and Maya descendants. Throughout Mesoamerica, and particularly in Belize, descendant communities are often consulted on archaeological projects (Moore, personal communication 2016). In my experience, these individuals are excited and enthused to participate in these types of research, and I look forward to further conversations with these individuals in the future.

FINAL THOUGHTS

The information provided in this dissertation characterizes 25 years' worth of data collection from ancient Maya burials throughout the PfB property in northwest Belize. These burials represent mortuary practices of various groups of people over 260,000 acres of land and the course of 1,300 years. By comparing differing aspects of burial characteristics, my research project sought to identify possible cultural patterns of death and burial throughout the region. While I initially expected to find trends that clearly varied through time or by site type or region, the final product suggests otherwise. Overall burial trends were observed in the data, despite temporal or regional variances. Yet, the data also indicate that these trends were not strictly followed by all members of ancient Maya society. Perhaps most intriguing of noted patterns is that burial treatments generally did not indicate sex-based motives for differential treatment of decedents – in most of the categories compared, differences in burial treatment between males and females were not statistically significant.

While I was able to illustrate some trends in burial practices of the ancient Maya, I look forward to future studies that delve further into these trends. Further discussion of

these observations and comparisons to those trends observed in other regions will add to the growing understanding of ancient Maya burial practices. As research projects of the ancient Maya continue to grow along with techniques and interests of bioarchaeology, a more complete picture of trends and possible cultural influences will appear. It is my hope that research techniques will also continue to develop so that future bioarchaeologists will be able to say more by requiring less (ideally, no) damage to the remains. My contribution to investigations of Maya mortuary practices and ancient Maya culture have identified regional trends among burials in northwest Belize, and I look forward to seeing what impacts will be made in future studies.

Bibliography

Adams, Richard E. W.
1990 Archaeological Research at the Lowland Maya City of Rio Azul. *Latin American Antiquity* 1: 23–41.
1997 Prehistoric Mesoamerica, Third Edition. University of Oklahoma Press. Norman,
OK.
1999 Río Azul: An Ancient Maya City. University of Oklahoma Press, Norman.

Ardren, Traci
2002 Women and Gender in the Ancient Maya World. In *Ancient Maya* Women. Pp. 1-11. Ed., Traci Ardren. AltaMira Press, Walnut Creek, CA.
2006 Setting the Table: Why Children and Childhood are Important in an Understanding of Ancient Mesoamerica. In *The Social Experience of Childhood in Ancient Mesoamerica*. Eds., Traci Ardren and Scott R. Hutson. Pp. 3-22. The Univesity Press of Colorado. Boulder, CO.
2015 Social Identities in the Classic Maya Northern Lowlands: Gender, Age, Memory, and Place. The University of Texas Press, Austin, TX.

Ardren, Traci and Scott R. Hutson
2006 The Social Experience of Childhood in Ancient Mesoamerica. University Press of Colorado. Boulder, CO.

Argawal, Sabrina C. and Bonnie A. Glencross
2011 Social Bioarchaeology. Wiley-Blackwell, Oxford.

Arnold, Bettina
2006 Gender and Archaeological Mortuary Analysis. In *Handbook of Gender in Archaeology*. Ed, Sarah Milledge Nelson. Pp. 137-164. Alta Mira Press, New York.

Arnold, Bettina and Nancy L. Wicker
2001 Gender and the Archaeology of Death. AltaMira Press. Walnut Creek, CA.

Ashmore, Wendy
1981 Lowland Maya Settlement Patterns. School of American Research, University of New Mexico Press, Albuquerque, NM.

Ashmore, Wendy and Pamela Geller
2005 Social Dimensions of Mortuary Space. In *Interacting with the Dead*. Eds, Gordon F. M. Rakita, Jane E. Buikstra, Lane A. Beck, and Sloan R. Williams. University Press of Florida, Gainesville, FL. Pp. 81-95.

Aylesworth, Grant
2005 A Science of Networks Approach to Ancient Maya Sociopolitical Organization. Unpublished Doctoral dissertation, The University of Texas at Austin. Austin, TX.

Baker, Mary
1997 Invisibility as a Symptom of Gender Categories in Archaeology. In *Invisible People and Processes: Writing Gender and Childhood into European Archaeology*. Eds., J. Moore and E. Scott. Pp. 248-250. Leicester University Press. London.

Barrett, Autumn R. and Michael L. Blakey
2011 Life Histories of Enslaved Africans in Colonial New York: A Bioarchaeological Study of the New York African Burial Ground. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 212-251.

Bass, William M.
1971 Human Osteology: A Laboratory and Field Manual of the Human Skeleton, Second edition. The Missouri Archaeological Society, Inc. Columbia, MO.

Beach, T., N. Dunning, S. Luzzadder-Beach, D.E. Cook, and J. Lohse
2006 Impacts of the ancient Maya on soils and soil erosion in the central Maya Lowlands. *CATENA* 65(2): 166–178.

Beck, Lane Anderson
1995 Regional Approaches to Mortuary Analysis. Plenum Press, New York.

Binford, Lewis R.
1971 Mortuary Practices: Their study and their potential. In *Approaches to the Social Dimensions of Mortuary Practices*. Ed., J.A. Brown. Society for American Archaeology, Memoir 25, pp. 6-29.

Blom, Deborah E., Benedikt Hallgrimsson, Linda Keng, Maria C. Lozada C., and Jane E. Buikstra
1998 Tiwanaku "Colonization": Bioarchaeological Implications for Migration in the Moquegua Valley, Peru. In *World Archaeology*, 3(2): 238-261.

Bos, Kirsten I, Alexander Herbig, Jason Sahl, Nicholas Waglechner, Mathieu Fourment, Stephen A Forrest, Jennifer Klunk, Verena J Schuenemann, Debi Poinar, Melanie Kuch, G Brian Golding, Olivier Dutour, Paul Keim, David M Wagner, Edward C Holmes, Johannes Krause, Hendrik N Poinar
2016 Eighteenth Century Yersinia pestis Genomes Reveal the Long-Term Persistence of an Historical Plague Focus. In *eLIFE* 5:e12994.

Brown, James
1995 On Mortuary Analysis – with special reference to the Saxe-Binford research program. In *Regional Approaches to Mortuary Analysis*. Ed, Lane Anderson Beck. Plenum Press, New York.

Brumfiel, Elizabeth M.
2000 On the Archaeology of Choice: Agency Studies as a Research Strategem. In *Agency in Archaeology*. Eds., Marcia-Anne Dobres and John Robb. Pp. 249-255. Routledge, New York.

Buikstra, Jane E. and Douglas H. Ubelaker
1994 Standards for Data Collection from Human Skeletal Remains. Arkansas Archaeological Survey Research Series No. 44. Fayetteville, AR.

Buikstra, Jane E., Paula D. Tomczak, Maria Cecilia Lozada Cerna, and Gordon F. M. Rakita
2005 Chiribaya Political Economy: A Bioarchaeological Perspective. In *Interacting with the Dead*. Eds., Gordon Rakita, Jane Buikstra, Lane Beck, and Sloan Williams. Pp. 66-80. University Press of Florida, Gainesville, FL.

Bullard, William R., Jr.
1960 Maya Settlement Pattern in Northeastern Peten, Guatemala. In *American Antiquity* 25:355-372.

Burman, Erica
1994 Deconstructing Developmental Psychology. Routledge. London.

Butler, Judith
1993 Bodies that Matter: On the discursive limits of sex. Routledge, New York.

Buttles, Palma and Fred Valdez, Jr.
2016 Social-Political Manifestations f the Terminal Classic: Colha, Northern Belize, as a Case Study. In *Ritual Violence, and the Fall of the Classic Maya Kings*. Eds, Gyles Iannone, Brett A. Houk, and Sonja A. Schwake. University Press of Florida, Gainesville, FL. Pp. 187-202.

Cannon, Aubrey
2005 Gender and Agency in Mortuary Fashion. In *Interacting with the Dead*. Eds, Gordon F.M. Rakita, Jane E. Buikstra, Lane A. Beck, and Sloan R. Williams. University Press of Florida, Gainesville, FL. Pp. 41-65.

Chapman, John
2000 Tension at Funerals: Social practices and the subversion of community structure in later Hungarian prehistory. In *Agency in Archaeology*. Eds, Marcia-Anne Dobres and John Robb. Routledge, New York. Pp. 169-195.

Charles, Douglas K.
1995 Diachronic Regional Social Dynamics: Mortuary Sites in the Illinois Valley/American Bottom Region. In *Regional Approaches to Mortuary Analysis*. Ed., Lane Anderson Beck. Plenum Press, New York. Pp. 77-99.

Chase, Diane Z. and Arlen F. Chase
1992 Mesoamerican Elites: An Archaeological Assessment. University of Oklahoma Press, Norman, OK.
2011 Ghosts Amid the Ruins: Analyzing Relationships between the Living and the Dead among the Ancient Maya at Caracol, Belize. In *Living with the Dead*. Eds, James L. Fitzsimmons and Izumi Shimada. The University of Arizona Press, Tuscon, AZ. Pp. 78-101.

Crumley, Carole L.
1995 Heterarchy and the Analysis of Complex Societies. In *Archaeological Papers of the American Anthropological Association* 6(1):1-5.

Culbert, T. Patrick
1991 Polities in the Northeast Peten, Guatemala. In Classic Maya Political History:
Hieroglyphic and Archaeological Evidence, edited by T. Patrick Culbert, ed. Pp. 128-146. Cambridge: Cambridge University Press, Cambridge.

DeFrancisco, Nicole
2014 RB 72: Research Report for the 2013 Field Season. In *Research Reports from the Programme for Belize Archaeological Project, Volume Eight*. Ed., Fred Valdez, Jr. pp. 67-81. Occasional Papers, Number 16. Center for Archaeological and Tropical Studies. The University of Texas at Austin, Austin, TX.

Dingwall, Eric J.
1931 Artificial Cranial Deformation: A Contribution to the Study of Ethnic Mutilations. John Bale, Sons and Danielsson, Ltd., London.

Dobres, Marcia-Anne and John Robb
2000 Agency in Archaeology. Routledge, New York.

Dodge, Robyn L.
2014 Research Report on the 2013 Excavations at Hun Tun: Operation 6. In *Research Reports from the Programme for Belize Archaeological Project, Volume Eight*. Ed., Fred Valdez, Jr. pp. 59-65. Occasional Papers, Number 16. Center for Archaeological and Tropical Studies. The University of Texas at Austin, Austin, TX.

Drake, Stacy
2011 Excavation and Preliminary Analysis of a Maya Burial at the Medicinal Trail Archaeological Site, Belize, Central America. Unpublished Master's report, The University of Texas at Austin.
2012 Preliminary Notes on a Chultun Burial at La Milpa - LM4. In *Research Reports from the Programme for Belize Archaeological Project, Volume 6*, edited by Marisol Cortes-Rincon and Jr. Fred Valdez, pp. 63–68. 14th ed. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX.
2013 Several Burials from La Milpa, LM4 in NW Belize. In *Research Reports from the Programme for Belize Archaeological Project, Volume 7*, edited by Grant Aylesworth and Jr. Fred Valdez, pp. 55–58. 15th ed. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX.

Eppich, Keith
2006 WK-09: Excavaciones en el Grupo Tolok in Proyecto Arqueológico El Perú- Waka': Informe No. 3, Temporada 2005, edited by Hector Escobedo and David Freidel, pp. 302-389. Informe Entrgado a la Dirección General del Patrimonio Cultural y Natural de Guatemala, Guatemala.

Everson, Gloria E.
2003 Terminal Classic Maya Settlement Patterns at La Milpa, Belize. Unpublished doctoral dissertation. Tulane University, New Orleans, LA.

Fine-Dare, Kathleen S.
2002 Grave Injustice: The American Indian Repatriation Movement and NAGPRA. University of Nebraska Press, Lincoln, NE.

Fitzsimmons, James L.
2009 Death and the Classic Maya Kings. University of Texas Press. Austin, TX.

Fitzsimmons, James L.
2011 Perspectives on Death and Transformation in Ancient Maya Society: Human Remains as a Means to an End. In *Living with the Dead: Mortuary Ritual in Mesoamerica*. Eds, James L. Fitzsimmons and Izumi Shimada. University of Arizona Press, Tucson, AZ. Pp. 53-77

Fitzsimmons, James L. And Izumi Shimada
2011 Living with the Dead: Mortuary Ritual in Mesoamerica. University of Arizona Press, Tucson, AZ.

Gates, William
1978 Yucatan before and after the Conquest. Translated from Diego de Landa's *Relación de las cosas de Yucatan* (1556). Dover Publications, Mineola, NY.

Geller, Pamela L.
2004 Transforming Identities, Transforming Bodies: A Consideration of Pre-Columbian Maya Corporeal Beliefs and Practices. University of Pennsylvania.
2006 Altering Identities: Body Modification and the Pre-Columbian Maya. In *Social Archaeology of Funerary Remains*. Eds, Rebecca Gowland and Christopher Knüsel. Oxbow Books, Oxford. Pp. 279-291.
2008 Conceiving sex: Fomenting a feminist bioarchaeology. In *Journal of Social Archaeology* 8:113-137. Sage Publications
2009 Identity and Difference: Complicating Gender in Archaeology. *Annual Review of Anthropology* 38(2009): 65–81.
2012 From Cradle to Grave and Beyond: A Maya Life and Death. In *The Bioarchaeology of Individuals*. Eds, Ann L. W. Stodder and Ann M. Palkovich. University Press of Florida, Gainesville, FL. Pp. 255-270.

Gillespie, Susan D.
2000 Rethinking Ancient Maya Social Organization: Replacing "Lineage" with "House." *American Anthropologist* 102(3): 467–484.
2002 Body and Soul among the Maya: Keeping the Spirits in Place. In *The Space and Place of Death*. Eds, H. Silverman and D. Small. Archaeological Papers of the American Anthropological Association. 11:67-78.

Gowland, Rebecca and Christopher Knüsel
2006 Social Archaeology of Funerary Remains. Oxbow Books, Oxford.

Guderjan, Thomas H., Michael Lindeman, Ellen Ruble, Froyla Salam, and Jason Yaeger
1991 Archaeological Sites in the Rio Bravo Area. In *Maya Settlement in Northwestern Belize*. Ed. Thomas H. Guderjan. Pp. 55-88. Maya Research Program and Labyrinthos, Culver City, California.

Hageman, Jon B.
2004 Late Classic Maya Social Organization: A Perspective from Northwestern Belize. Southern Illinois University Carbondale.

Halcrow, Siân E., and Nancy Tayles
2011 The Bioarchaeological Investigation of Children and Childhood. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 333-360.

Hammond, Norman
1982 Ancient Maya Civilization. Rutgers, The State University of New Jersey.

Hammond, Norman and Gail Tourtellot
1993 Survey and Excavation at La Milpa, Belize, 1992. In *Mexicon* 15:71-75.
1999 Shifting Axes: Spatial Expressions of Power at La Milpa. Paper presented at the 64th Annual Meeting of the Society for American Archaeology, Chicago.
2004 Out with a Whimper: La Milpa in the Terminal Classic. In *The Terminal Classic in the Maya Lowlands*. Eds, Arthur A. Demarest, Prudence M. Rice, and Don S. Rice. University of Colorado Press, Boulder, CO. Pp. 288-301.

Hanna, Jonathan A. and Stanley L. Walling
2015 Summary of Research on the Residential Terraces of Chawak But'o'ob, Belize: The 2006 and 2007 Seasons. In *Mono y Conejo: The Journal of the Mesoamerican Archaeological Research Laboratory*. Volume 7 (2): 5-28. Eds, Fred Valdez, Jr. and Brett A. Houk. The University of Texas at Austin, Austin, TX.

Hard, R. J. and M. A. Katzenberg
2011 A Stable Isotope Study of Hunter-Gatherer-Fisher Diet, Mobility, and Intensification on the Texas Gulf Coast. In *American Antiquity* 76:709-751.

Hodder, Ian and Scott Hutson
2003 Reading the Past: Curent Approaches to Interpretation in Archaeology, Third Edition. Original publication, 1986. Cambridge University Press, Cambridge.

Hodder, Ian
1980 Social Structure and Cemeteries: A Critical Appraisal. In *Anglo-Saxon Cemeteries, 1979*. Eds, P. Rahtz, T. Dickinson, and L. Watts. BAR British Series 82:161-169.

1982 Symbols in Action: Ethnoarchaeological Studies of Material Culture. Cambridge University Press, Cambridge.

Hollimon, Sandra E.
2011 Sex and Gender in Bioarchaeological Research: Theory, Method, and Interpretation. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 149-182.

Houk, Brett A.
1996 The Archaeology of Site Planning: An Example from the Maya Site of Dos Hombres, Belize. The University of Texas at Austin.
2010 An Introduction to the 2007 Season of the La Milpa Core Project. In *The 2007-2009 Seasons of the La Milpa Core Project*, edited by Brett A. Houk, pp. 1–14. 3rd ed. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

Houk, Brett A., Grant Aylesworth, Liwy Grazioso Sierra, and Rebecca E. Bria
2007 Results of the 2006 Investigations at Say Kah, Belize. In *Research Reports from the Programme for Belize Archaeological Project*, edited by Jr. Fred Valdez, pp. 127–156. 8th ed. Occasional Papers, Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, Texas.

Houk, Brett A., Debora Trein, and Gregory Zaro
2010 Overview of the 2008 Season of the La Milpa Core Project. In *The 2007-2009 Seasons of the La Milpa Core Project*, edited by Brett A. Houk, pp. 41–55. 3rd ed. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

Houk, Brett A. and Gregory Zaro
2012 The 2011 La Milpa Core Project Season Summary. In *The 2011 Season of the La Milpa Core Project*. Ed, Brett A. Houk. Occasional Papers, No. 13. Mesoamerican Archaeological Research Laboratory. The University of Texas at Austin, Austin, TX. Pp. 1-14.

Hughbanks, Paul James
2006 Landscape Management at Guijarral, northwestern Belize. Unpublished doctoral dissertation. Tulane University. New Orleans, LA.

Hyde, David Michael
2011 Power Dynamics at a Commoner Hinterland Community in the Maya Lowlands: the Medicinal Trail Site, Northwestern Belize. The University of Texas at Austin.

Hyde, David M., Krystle Kelley, Michael Stowe, Zack Hall, Kristie Hollon, Kimberly Wren, and Stacy Drake
2015 Summary Report on Archaeological Investigations at the Medicinal Trail Community: The 2014 Season. In *Research Reports from the Programme for Belize Archaeological Project, Volume Nine*. Eds, Brandon S. Lewis and Fred Valdez, Jr. Occasional Papers, Number 19. Center for Archaeological and Tropical Studies, The University of Texas at Austin, Austin, TX. Pp. 97-108.

Hyde, David M. and Dara Shifrer
2007 Artificial Cranial Modification on the Frontier: Social Identity at the Southeastern Maya Periphery site of Copan. Paper presented at the 72nd Meeting of the Society for American Archaeology. Austin, TX, April 26, 2007.

Hyde, David M., and Fred Valdez
2007 Overview of Activities at the Medicinal Trail Site for the 2006 Season. In *Research Reports from the Programme for Belize Archaeological Project*, edited by Jr. Fred Valdez, pp. 15–22. 8th ed. Occasional Papers, Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX.

Iannone, Gyles
2007 On Drought and the "Collapse" of the Ancient Maya. In *Research Reports in Belizean Archaeology* 4:55-65.

Iceland, Harry Bame
1997 The Preceramic Origins of the Maya: The results of the Colha preceramic project in northern Belize. Unpublished doctoral dissertation. The University of Texas at Austin. Austin, TX.

Jackson, Sarah E., Lindsey Argo, and Meredith Coats
2010 Excavations at Group B, Say Kah, Belize 2009. In *Research Reports from the Programme for Belize Archaeological Project, Volume Four*. Eds, David M. Hyde and Fred Valdez, Jr. pp. 61-83. Occasional Papers, Number 11. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin. Austin, TX.

Jackson, Sarah E. and Linda A. Brown
2012 Excavations at Groups B and C, Say Kah, Belize 2011. In *Research Reports from the Programme for Belize Archaeological Project, Volume Six*. Pp. 69-102. Eds, Marisol Cortes-Rincon and Fred Valdez, Jr. Occasional Papers, Number 14. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin. Austin, Tx.

Joyce, Rosemary A.
1999 Social Dimensions of Pre-Classic Burials. In *Social Patterns in Preclassic Mesoamerica*. Eds, David C. Grove and Rosemary A. Joyce. Pp. 15-47. Dumbarton Oaks, Washington, D.C.
2000 Girling the Girl and Boying the Boy: The production of Adulthood in Ancient Mesoamerica. In *World Archaeology* 31 (3):473-483.
2006 Gender and Mesoamerican Archaeology. In *Handbook of Gender in Archaeology*. Ed, Sarah Milledge Nelson. Pp. 785-811. Alta Mira Press, New York.

Kalamara Cavazos, Angeliki
2009 A Late Preclassic Burial at Medicinal Trail: Excavation and Analysis of Burial 3. In *Research Reports from the Programme for Belize Archaeological Project, Volume Three*. Eds, Rissa Trachman and Fred Valdez, Jr. Occasional Papers, Number 10. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX. Pp. 97-109.

Knisely, Denise E.
2013 Ancient Maya Diet in the Three Rivers Region of Northwest Belize. Unpublished Master's Thesis, University of Cincinnati.

Komar, Debra A. and Jane E. Buikstra
2008 Forensic Anthropology: Contemporary Theory and Practice. Oxford University Press, New York.

Kunen, Julie Lynn
2001 Study of an Ancient Maya Bajo Landscape in Northwestern Belize. The University of Arizona.

Kunen, Julie L. and Paul J. Hughbanks
2003 Bajo Communities as Resource Specialists: A heterarchical approach to Maya socioeconomic organization. In *Heterarchy, Political Economy, and the Ancient Maya*. Eds., Vernon Scarborough, Fred Valdez, Jr., and Nicholas Dunning. Pp. 92-108. University of Arizona Press, Tucson, AZ.

Larsen, Clark Spencer
1997 Bioarchaeology: Interpreting Behavior from the Human Skeleton. *Cambridge Studies in Biological Anthropology 21*. Cambridge University Press, Cambridge.

Leach, Rose
2015 Results of 2014 Burial B-3 Excavations at the Tapir Group of the Medicinal Trail Community. In *Medicinal Trail Hinterland Communities Archaeological Project: The 2013 and 2014 Seasons*. Ed, David M. Hyde. Occasional Papers, Number 20. Center for Archaeological and Tropical Studies, The University of Texas at Austin, Austin, TX. Pp. 45-53.

Lewis, Brandon
1995 The Role of Specialized Production in the Development of Sociopolitical Complexity: A Test Case for the Late Classic Maya. Unpublished Doctoral Dissertation. The University of California at Los Angeles, Los Angeles, CA.

Littleton, Judith
2011 Moving the Canary from the Coalmine: Modeling Childhood in Bahrain. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 361-389.

Logan, Michael H., Corey S. Sparks, and Richard L. Jantz
2003 Cranial Modification Among 19th Century Osages: Admixture and Loss of an Ethnic Marker. In *Plains Anthropologist*. 48(187):209-224.

Lohse, Jon C.
1993 Operation 4046 Colha, Belize: a reconsideration of a lowland archaic deposit. Unpublished Master's thesis. The University of Texas at Austin, Austin, TX.
1999 Results of 1997 Excavations at RB-1 (Op 12) and 1998 Mapping in the Dos Hombres Site Core. Mesoamerican Archaeological Research Laboratory, University of Texas at Austin.
2001 The Social Organization of a Late Classic Maya Community: Dos Hombres, Northwestern Belize. Unpublished doctoral dissertation, The University of Texas at Austin. Austin, TX.

Lohse, Jon C., Jaime Awe, Cameron Griffith, Robert M. Rosenwig, and Fred Valdez, Jr.
2006 Preceramic Occupations in Belize: Updating the Paleoindian and Archaic Record. In *Latin American Antiquity* 17(2):209-226.

Mann, Melanie
2010 The 2009 Season of Excavations at Courtyard 100. In *The 2007-2009 Seasons of the La Milpa Core Project*, edited by Brett A. Houk, pp. 123–136. 3rd ed. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock, TX.

Martinez, Maria Magdalena
2013 Defining the Development and Meaning of a Commemoration Complex: The Los Pisos Courtyard, La Milpa, Belize. The University of Texas at Austin.

Massey, Virginia K.
1989 The Human Skeletal Remains from a Terminal Classic Skull Pit at Colha, Belize. Papers of the Colha Project, Volume 3. College Station: The University of Texas at Austin, Texas Archaeological Research Laboratory, and Department of Anthropology.

Mata-Miguez, Jaime, Lisa Overholtzer, Enrique Rodriguez-Alegria, Brian M. Kemp, Deborah A. Bolnick
2012 The Genetic Impact of Aztec Imperialism: Ancient Mitochondrial DNA Evidence from Xaltocan, Mexico. In *American Journal of Physical Anthropology* 149:504-516.

McAnany, Patricia
1995 Living with the Ancestors. Cambridge University Press, New York.
2011 Towards a Hermeneutics of Death: Commentary on Seven Essays Written for *Living with the Dead*. In *Living with the Dead*. Eds, James L. Fitzsimmons and Izumi Shimada. University of Arizona Press, Tucson, AZ. Pp. 231-239.

Me-Bar, Yoav and Brandon Lewis
2005 Dos Barbaras, Group B, Structure 6:2003 to 2004 Excavations. In *Programme for Belize Archaeological Project: Report of Activities from the 2004 Field Season*. Ed, Fred Valdez, Jr. pp. 159-186. Occasional Papers, Number 4. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX.

Meskell, Lynn
2001 Archaeologies of Identity. In *Archaeological Theory: Breaking the* Boundaries. Ed., Ian Hodder. Pp. 187-213. Cambridge Press. Cambridge, UK.

Moats, Lindsey R., Alter Beckwith, and Gregory Zaro
2012 The 2011 Excavations at Courtyard 100. In *The 2011 Season of the La Milpa Core Project*, edited by Brett A. Houk, pp. 39–76. 13th ed. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX.

Morris, John M., Gyles Iannone and Jaime J. Awe
2007 Terminal Classic Maya of Belize: Key Issues and Questions. In *Research Reports in Belizean Archaeology* 4:3-12.

Munoz, Arturo Renee
1997 Excavations at RB-11: an ancient Maya household in northwestern Belize. Master's thesis. The University of Texas at San Antonio. San Antonio, Texas.

National Institute of Culture and History
2015 Institute of Archaeology. Electronic document, http://www.nichbelize.org/ia-archaeology/archaeological-sites-and-parks.html. Accessed September 24, 2016.

Obledo, Micaela Nerio
2004 Tombs and Burials: A Catalogue of the Interments of Kaminaljuyu, Guatemala. Master's thesis, The University of Texas at Austin.

O'Shea, John M.
1995 Mortuary Custom in the Bronze Age of Southeastern Hungary: Diachronic and Synchronic Perspectives. In *Regional Approaches to Mortuary Analysis*. Ed, Lane Anderson Beck. Plenum Press, New York. Pp. 125-145.

Pader, E.-J.
1982 Symbolism, Social Relations and the Interpretation of Mortuary Remains. BAR International Series 130.

Parker Pearson, M.
1982 Mortuary Practices, Society and Ideology: An ethnoarchaeological study. In *Symbolic and Structural Archaeology*. Ed, Ian Hodder. Cambridge University Press, Cambridge. Pp. 99-113.
1993 The Powerful Dead: Archaeological Relationships between the living and the dead. Cambridge Archaeological Journal 3:203-229.
1999 The Archaeology of Death and Burial. Texas A&M University Press. College Station, TX.

Pendergast, David M., Murray H. Bartley, and George J. Armelagos
1968 A Maya Tooth Offering from Yakalche, British Honduras. In *Man*, New Series, Vol. 3, 4:635-643.

Powell, Mary Lucas and Della Collins Cook
2005 The Myth of Syphilis: The Natural History of Treponematosis in North America. University Press of Florida, Gainesville, FL.

Programme for Belize
2014 Conservation About Us. Electronic document, http://www.pfbelize.org/conservation/?page_id=488. Accessed September 24, 2016.

Prowse, Tracy L.
2011 Diet and Dental Health Through the Life Course in Roman Italy. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 410-437.

Rakita, Gordon F. M., Jane E. Buikstra
2005 Introduction. In *Interacting with the Dead*. Eds, Gordon F. M. Rakita, Jane E. Buikstra, Lane A. Beck, and Sloan R. Williams. University Press of Florida, Gainesville, FL. Pp. 1-11.

Rakita, Gordon F. M., Jane E. Buikstra, Lane A. Beck, and Sloan R. Williams.
2005 Interacting with the Dead. University Press of Florida, Gainesville, FL.

Rasmussen, Simon, Morten Erik Allentoft, Kasper Nielsen, Ludovic Orlando, Martin Sikora, Karl-Göran, Sjögren, Anders Gorm Pedersen, Mikkel Schubert, Alex Van Dam, Christian Moliin Ourzen Kapel, Henrik Bjorn Nielsen, Soren Brunak, Pavel Avetisyan, Andrey Epimakhov, Mikhail Viktorovich Khalaypin, ArtakGnuni, Aivar Kriiska, Irena Lasak, Mait Metspalu, Vyacheslav Moiseyev, Andrei Gromov, Dalia Pokutta, Lehti Saag, Liivi Varul, Levon Yepiskoposyan, Thomas Sicheritz-Ponen, Robert A. Foley, Marta Mirazon Lahr, Rasmus Nielsen, Kristian Kristiansen, and Eske Willerslev
2015 Early Divergent Strains of Yersinia pestis in Eurasia 5,000 years ago. In *Cell* Vol. 163:571-582.

Reese-Taylor, Kathryn, Marc Zender, and Pamela L. Geller
2006 Fit to be Tied: Funerary Practices among the Prehispanic Maya. In *Sacred Bundles: Ritual Aspects of Wrapping and Binding in Mesoamerica*. Eds. Julia Guernsey and F. Kent Riley. Boundary End Archaeology Research Center.

Reid, Ann H., Thomas G. Fanning, Johan V. Hultin, Jeffery K. Taubenberger
1999 Origin and Evolution of the 1918 “Spanish” Influenza Virus Hemagglutinin Gene. PNAS96:1651-1656.

Riddick, Deanna Marie
2014 Late to Terminal Classic Household Strategies: An Exploration of the Art of Feasting, Storage, and Gifting at La Milpa, Belize. The University of Texas at Austin.

Roberts, Charlotte
2011 The Bioarchaeology of Leprosy and Tuberculosis: A Comparative Study of Perceptions, Stigma, Diagnosis, and Treatment. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 252-281.

Roberts, C. A. and J. E. Buikstra
2003 The Bioarchaeology of Tuberculosis: A global view on a reemerging disease. University Press of Florida, Gainesville, FL.

Robichaux, Hubert Ray
1995 Ancient Maya Community Patterns in Northwestern Belize: Peripheral Zone Survey at La Milpa and Dos Hombres. The University of Texas at Austin.
2007 Fifteen Years of Settlement Pattern Surveys in the Three Rivers Region of Northwestern Belize: What Have We Learnt? In *Research Reports in Belizean Archaeology* 4:197-212.

Romero, Javier
1958 Multilaciones dentarias prehispanicas de Mexico y America en general. MexicoL Instituto Nacional de Antropologica e Historia.
1970 Dental Mutilation, Trephination, and Cranial Deformation. In *Handbook of Middle American Indians: Physical Anthropology*. Ed, T.D. Stewart. The University of Texas Press, Austin, TX. Pp. 50-67.

Romey, Kristen
2005 Watery Tombs. In *Archaeology*, Vol. 58, 4:42-49.

Rose, John J.
2000 A Study of Late Classic Maya Population Growth at La Milpa, Belize. Unpublished doctoral dissertation. University of Pittsburgh, Pittsburgh, PA.

Sagabiel, Kerry L.
2006 La Milpa: Shifting Allegiances Shifting Fortunes. In *Research Reports in Belizean Archaeology* 3:329-339.

Santana, Jonathan, Rose Fregel, Emma Lightfoot, Jacob Morales, Martha Alamón, José Guillén, Marco Moreno, and Amelia Rodriguez
2016 The Early Colonial Atlantic World: New Insights on the African Diaspora from Isotopic and Ancient DNA Analyses of a Multiethnic 15th – 17th Century Burial Population from the Canary Islands, Spain. In *American Journal of Physical Anthropology*, 159: 300-312.

Sassaman, Kenneth, E.
2000 Agents of Change in Hunter-Gatherer Technology. In *Agency in Archaeology*. Eds., Marcia-Anne Dobres and John Robb. Pp. 148-168. Routledge, New York.

Saul, Frank P.
1972 The Human Skeletal Remains of Altar de Sacrificios: an osteobiographic analysis. Papers of the Peabody Museum of Archaeology and Ethnology, Vol. 63, No. 2. Harvard University, Cambridge.

Saul, Frank P. and Julie M. Saul
1989 Osteobiography: a Maya example. In *Reconstructing Life from the Skeleton*. Eds. M. Y. Iscan and K. A. R. Kennedy. Pp. 287-302. Alan R. Liss, New York.
1997 The Preclassic Skeletons from Cuello. In *Bones of the Maya: Studies of Ancient Skeletons*. Eds., S. L. Whittington and D. M. Reed. Pp. 28-50. Smithsonian Institution Press, Washington, D.C.

Saul, Julie Mather, Frank P. Saul, and Lauri McInnis Thompson
2007 *Recovery and Documentation of Skeletal Remains: A Brief Field Guide*. Austin, TX.

Saxe, Art A.
1970 Social Dimensions of Mortuary Practices. Unpublished Ph.D. dissertation. University of Michigan, Ann Arbor.

Scarborough, Vernon L., and Fred Valdez
2003 Engineered Environment and Political Economy of the Three Rivers Region. In *Heterarchy, Political Economy, and the Ancient Maya: The Three Rivers Region of the East-Central Yucatan Peninsula*, edited by Nicholas Dunning Vernon L. Scarborough, Fred Valdez Jr., pp. 3–13. The University of Arizona Press, Tucson.
2009 An Alternative Order: The Dualistic Economies of the Ancient Maya. In *Latin American Antiquity*. 20(1):207-227.

Scarborough, Vernon L., Fred Valdez, Jr., and Nicholas Dunning.
2003 Heterarchy, Political Economy, and the Ancient Maya: The Three Rivers Region of the East-Central Yucatan Peninsula. The University of Arizona Press, Tucson, AZ.

Scherer, Andrew K.
2015 Mortuary Landscapes of the Classic Maya: rituals of body and soul. University of Texas Press, Austin, TX.

Schroeder, Hannes, Maria C Ávila-Arcos, Anna-Sapfo Malaspinas, G. David Poznik, Marcela Sandoval-Velasco, Meredith L. Carpenter, José Victor Moreno-Mayar, Martin Sikora, Philip L. F. Johnson, Antonio Salas, Ludovic Orlando, Eske Willerslev, Carlos D. Bustamante, and M. Thomas P. Gilbert
2015 Genome-Wide Ancestry of 17th Century Enslaved Africans from the Caribbean. In *PNAS*, 112-12: 3669-3673.

Schwarcz, Henry P., Thomas W. Stafford Jr., Martin Knyf, Brian Chisholm, Fred J. Longstaffe, James C. Chatters, Douglas W. Owsley
2014 Stable Isotopic Evidence for Diet and Origin. In *Kennewick Man: the scientific investigation of an ancient American skeleton*. Eds. Douglas W. Owsley and Richard L. Janz. Texas A&M University Press, College Station, TX.

Shanks, M. and C. Tilley
1982 Ideology, Symbolic Power and Rituatl Communication: A reinterpretation of Neolithic mortuary practices. In *Symbolic and Structural Archaeology*. Ed, Ian Hodder. Cambridge University Press, Cambridge. Pp. 129-154.

Sharer, Robert J., and Loa P. Traxler
2006 *The Ancient Maya*. 6th ed. Stanford University Press, Stanford.

Soafer, Joanna
2006 The Body as Material Culture: A theoretical osteoarchaeology. Cambridge University Press, Cambridge.
2011 Towards a Social Bioarchaeology of Age. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 285-312.

Steele, D. Gentry and Claud A. Bramblett
1988 The Anatomy and Biology of the Human Skeleton. Texas A&M University Press. College Station, TX.

Stodder, Ann L. W. and Ann M. Palkovich
2012 Osteobiography and Bioarchaeology. In *The Bioarchaeology of Individuals*. Eds, Ann L. W. Stodder and Ann M. Palkovich. University Press of Florida, Gainesville, FL. Pp. 1-8.

Sullivan, Lauren A.
1997 Classic Maya Social Organization: A Perspective from Las Abejas. Unpublished Doctoral dissertation. The University of Texas at Austin. Austin, TX.

Sullivan, Lauren A. and Kerry L. Sagabiel
2003 Changing Political Alliances in the Three Rivers Region. In *Heterarchy, Political Economy, and the Ancient Maya: The Three Rivers Region of the East-Central Yucatán Peninsula*. Eds, Vernon L. Scarborough, Fred Valdez, Jr., and Nicholas P. Dunning. The University of Arizona Press, Tucson, AZ. Pp. 25-36.

Sullivan, Lauren A. and Fred Valdez, Jr.
2004 NW Belize: A Regional Perspective on Culture History. In *Archaeological Investigations in the Eastern Maya Lowlands: Papers of the 2003 Belize Archaeology Symposium*. Eds, Jaime Awe, John Morris, and Sherilyne Jones. Research Reports in Belizean Archaeology Volume 1:185-196.
2006 The Late Preclassic to Early Classic Transition in the Three Rivers Region. In *Research Reports in Belizean Archaeology* 3:73-83.

Sullivan, Lauren A., Brett A. Houk, and Fred Valdez, Jr.
2007 The Terminal Classic in the Three Rivers Region. In *Research Reports in Belizean Archaeology* 4: 135-146.

Sutro, Livingston D. and Theodore E. Downing
1988 A Step Toward a Grammar of Space: Domestic Space Use in Zapotec Villages. In *Household and Community in the Mesoamerican Past*. Eds, Richard R. Wilk and Wendy Ashmore. University of New Mexico Press, Albuquerque, NM. Pp. 29-50.

Sweeney, Angelina and Stacy Drake
2017 Exploring Migration and Kinship of the Ancient Maya through Isotopes and aDNA in NW Belize. Paper to be presented at the 82nd Annual Meeting of the Society for American Archaeology. Vancouver, Canada.

Thompson, Lauri McInnis
2005 A Comparative Analysis of Burial Patterning: The Preclassic Maya Sites of Chiapa de Corzo, Kaminaljuyu, Tikal, and Copan. Doctoral dissertation, The University of Texas at Austin.

Thompson, Lauri McInnis, Brandon Lewis, Julie Saul, and Frank Saul
2004 Analysis of Dos Barbaras Burial (Op 3, SubOp DJ, Lots 1-3). Paper presented at the 69th Annual Meeting of the Society for American Archaeology, in Montreal, Canada.

Tolstoy, Paul
1989 Coapexco and Tlatilco: Sites with Olmec Materials in the Basin of Mexico. In *Regional Perspectives of the Olmecs*. Eds, Sharer and Grove. Cambridge University Press, Cambridge.

Tourtellot, Gair
1983 An Assessment of Classic Maya Household Composition. In *Prehistoric Settlement Patterns*. Eds, Evon Z. Vogt and Richard M. Leventhal. University of New Mexico Press, Albuquerque, NM. Pp. 35-54.

Trachman, Rissa
2007 Excavated Households Excavated Lives: Social Reproduction, Identity, and Everyday Life for the Ancient Maya in Northwestern Belize. The University of Texas at Austin.

Trachman, Rissa M., and Fred Valdez
2006 Identifying Childhood Among the Ancient Maya: Evidence Toward Social Reproduction at the Dancer Household Group in Northwestern Belize. In *The Social Experience of Childhood in Ancient Mesoamerica*, edited by Traci Ardren and Scott R. Hutson, pp. 73–100. University Press of Colorado, Boulder, Colorado.

Trein, Debora Cristina
2016 Variable Use of a Monumental Space at the Ancient Maya Site of La Milpa, Belize. Unpublished Doctoral dissertation. The University of Texas at Austin, Austin, TX.

Trinkaus, Kathryn Maurer
1995 Mortuary Behavior, Labor Organization, and Social Rank. In *Regional Approaches to Mortuary Behavior*. Ed., Lane Anderson Beck. Plenum Press, New York. Pp. 53-75.

Valdez, Fred
2008 Situating Research: an introduction to the PfBAP research reports (Vol. 2). In *Research Reports from the Programme for Belize Archaeological Project, Volume Two*, edited by Fred Valdez, Jr. pp. 1–10. Occasional Papers, No. 9. Mesoamerican Archaeological Research Laboratory. The University of Texas at Austin, Austin, Texas.
2014 Background and Introduction to the 2013 Season of the Programme for Belize Archaeological Project. In *Research Reports from the Programme for Belize Archaeological Project, Volume Eight*, edited by Fred Valdez, Jr. pp. 1–5. 16th ed. The Center for Archaeological and Tropical Studies The University of Texas at Austin, Austin, Texas.

Valdez, Fred and Grant Aylesworth
2005 A Fluted Paleoindian Point and Other Chipped Stone Tools from August Pine Ridge, Belize. In *Mono Y Conejo* 3:36-40.

Valdez, Fred and David Hyde
2010 Introduction and Overview of Contributions to PfBAP Volume 4. In *Research Reports from the Programme for Belize Archaeological Project, Volume 4*. Eds, David M. Hyde and Fred Valdez, Jr. Occasional Papers, Number 11. Mesoamerican Archaeological Research Laboratory. The University of Texas at Austin, Austin, TX. Pp. 1-5.

VanPool, Todd L. and Robert D. Leonard
2011 Quantitative Analysis in Archaeology. Wiley-Blackwell, Oxford.

Vogt, Evon Z. and Richard M. Leventhal
1983 Prehistoric Settlement Patterns: Essays in Honor of Gordon R. Willey. University of New Mexico Press. Albuquerque, NM.

Walling, Stanley L.
2015 Preliminary Overview of the 2015 Rio Bravo Survey and CCP Study Abroad Archaeological Field School. Unpublished Private Work Product. Accessed with permission from author.
2016 Rio Bravo Archaeological Survey Maya Archaeology in Belize. Unpublished Information Packet. Accessed with permission from author.

Walling, Stanley L., Peter F. Davis, Sandra Dias, and Melissa DeVito
2005 Report of the 2004 Rio Bravo Archaeology Project: Site RB47: Chawak But'o'ob. *Occasional Papers, Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin* 4: 115–143.

Weiner, Stephen
2010 *Microarchaeology: Beyond the Visible Archaeological Record*. Cambridge University Press, New York.

Weiss-Krejci, Estella
2011a The Role of Dead Bodies in Late Classic Maya Politics: Cross-Cultural Reflectsion on the Meaning of Tikal Altar 5. In *Living with the Dead: Mortuary Ritual in Mesoamerica*. Eds., James L. Fitzsimmons and Izumi Shimada. The University of Arizona Press. Tuscon, AZ.

Welsh, W. B. M.
1988 An Analysis of Classic Lowland Maya Burials. BAR International Series 409. Oxford.

White, Christine D.
1999 Reconstructing Ancient Maya Diet. University of Utah Press, Salt Lake City, UT.

White, C. D., P. F. Healy, H. P. Schwarcz
1993 Intensive Agriculture, Social Status, and Maya Diet at Pacbitun, Belize. In *Journal of Anthropological Research* 49:347-375.

White, Christine D, Rebecca Storey, Fred J Longstaffe, and Michael W Spence
2004 Immigration, Assimilation, and Status in the Ancient City of Teotihuacan: Stable Isotopic Evidence from Tlajinga 33. *Latin American Antiquity* 15(2): 176–198.

Wobst, H. Martin
2000 Agency in (Spite of) Material Culture. In *Agency in Archaeology*. Eds., Marcia-Anne Dobres and John Robb. Pp. 40-50. Routledge, New York.

Wright, Lori E.
2006 *Diet, Health, and Status among the Pasion Maya: A Reappraisal of the Collapse*. Ed. Arthur Demarest. Volume 2. Vanderbilt University Press, Nashville.

Wright, Lori E. and Christine White
1996 Human Biology in the Classic Maya Collapse: Evidence from paleopathology and paleodiet. In *Journal of World Prehistory* 10:147-198.

Wren, Kimberley T., Stacy Drake, and David M. Hyde
2015 Burial A-6 at Group A of the Medicinal Trail Site: Report of the 2014 Season Excavations. In *Medicinal Trail Hinterland Communities Archaeological Project: The 2013 and 2014 Seasons*. Ed, David M. Hyde. Occasional Papers, Number 20. Center for Archaeological and Tropical Studies, The University of Texas at Austin, Austin, TX. Pp. 55-62.

Wren, Kimberley and Angeliki Kalamara Cavazos
2008 Burial 2 at Group A of the Medicinal Trail Site: Report of the 2008 Season Excavations. In *Research Reports from the Programme for Belize Archaeological Project, Volume 2*. Ed, Fred Valdez, Jr. Occasional Papers, Number 9. Mesoamerican Archaeological Research Laboratory, The University of Texas at Austin, Austin, TX. Pp. 147-151.

Wrobel, Gabriel D.
2012 Mortuary Evidence for Maya Political Resistance and Religious Syncretism in Colonial Belize. In *The Bioarchaeology of Individuals*. Eds, Ann L.W. Stodder and Ann M. Palkovich. The University Press of Florida, Gainesville, FL. Pp. 68-83.

Zakrzewski, Sonia
2011 Population Migration, Variation, and Identity: An Islamic Population in Iberia. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 183-211.

Zaro, Gregory and Brett A. Houk
2012 The Growth and Decline of the Ancient Maya City of La Milpa, Belize: New Data and New Perspectives from the Southern Plazas. *Ancient Mesoamerica* 23(1):143-159.

Zuckerman, Molly K. and George J. Armelagos
2011 The Origins of Biocultural Dimensions in Bioarchaeology. In *Social Bioarchaeology*. Eds, Sabrina C. Argawal and Bonnie A. Glencross. Wiley-Blackwell, Oxford. Pp. 15-43.