

THE MOON TO LIGHT THE NIGHT: GENDER AS IDEOLOGY AND LIVED
EXPERIENCE ON THE NORTH COAST OF PERU

by

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by

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DEDICATION

This thesis is dedicated to my Dad, the best father a budding archaeologist could have asked for, who was taken too soon. Dad, I did it.

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ABSTRACT

THE MOON TO LIGHT THE NIGHT: GENDER AS IDEOLOGY AND LIVED EXPERIENCE ON THE NORTH COAST OF PERU

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George Mason University, 2020

Thesis Director: Dr. Haagen Klaus

This thesis explores gender ideology, identity, and roles on the north coast of Peru.

Utilizing a large dataset consisting of over one thousand individuals, statistical analysis

was conducted to compare the prevalence of pathological conditions between the pre-

Hispanic and postcontact periods, as well as between males and females in these periods.

The results of this analysis support ideas regarding the complementarity of genders in the

pre-Hispanic period, as well as changing gender ideology with the arrival of the Spanish.

Case studies are provided in an attempt to “fill in the gaps” of the broad trends indicated

by the statistical analysis. This thesis concludes by arguing for the existence of a gender

system of nesting mirrored and inverted complements which was internalized in the

form of relatively fluid gender identities which could shift over the life-course.

1.) MOON, SUN, AND STARS: AN INTRODUCTION

Thus saith the Lord, who giveth the sun for the light of the day, the order of the moon and of the stars, for the light of the night...

—*Jeremiah 31:35, Douay-Rheims*

When the Spanish invaded the region that would become the modern nation state of Peru, they brought their religion with them. They sought to stamp out every last spark of the culture of the indigenous population, labelling their beliefs as idolatry. It is for this reason that there is no unbiased account of the practices of the Inka and those who came before them. Those documents which do exist are written with either the intent of describing the supposed evils of native belief or to portray the Inka as sympathetic proto-Christians. Many of the mythological figures of the Inka, such as the androgynous creator being Viracocha, were co-opted to explain the Catholic faith. However, instead of successfully molding the people of the region into their own image, this co-opting of culture resulted in a vibrant hybrid of Spanish Catholic and Andean beliefs and practices.

Although the people of the region were incredibly resilient in the face of unprecedented cultural change and many of their traditions survived in one form or another, even more was lost in the wake of colonization. There are some aspects of ancient life in Peru (and, specifically on the north coast) which have totally vanished. Prime among these is gender ideology, that web of meaning constructed based on gender

difference (physical or otherwise). However, although there is no unbiased written record, it is still possible to reconstruct at least a fraction of this intangible element of ancient life and identity. It is this endeavor which is at the center of this thesis.

Rationale

The purpose of this thesis is to illuminate the impact of gender ideologies on the embodied experience of individuals who lived on the north coast of Peru from the Formative period through the Colonial period. Gender is a key component to both individual identity and social structure and influences individual behavior in innumerable ways. In order to glimpse the true richness of ancient life, the archaeologist or bioarchaeologist must take gender, an admittedly elusive subject, into account. Gender theory (stemming from feminist and queer theory) is a relatively recent import to the field of bioarchaeology. However, its application to the field has profound implications for how bioarchaeological and mortuary archaeological data is interpreted. Gender ideologies on the north coast of Peru have yet to be thoroughly investigated. As such, this thesis will provide a novel contribution to the field of bioarchaeology and the understanding of past experiences and worlds.

Hypotheses

Statistical analysis will be employed to test hypotheses which are intended to reveal aspects of gender ideologies in both the pre-Hispanic periods. The hypotheses which will be tested are as follows:

- 1.) The results of the statistical analysis will show significant differences between the pre-Hispanic and postcontact groups.

- 2.) The results of the statistical analysis will show significant differences between postcontact males and females.
- 3.) The results of the statistical analysis will show no significant difference between pre-Hispanic males and females.

Hypothesis 1 is intended to test the assumption that gender ideology and associated gender roles changed greatly due to the invasion of the Spanish and subsequent colonization. Hypothesis 2 is intended to test the idea that gender roles became increasingly different for postcontact males and females under the strict patriarchal system of the colonizers. Finally, Hypothesis 3 is intended to test the existence of a gender ideology centering around the complementarity of males and females in the pre-Hispanic period, with the assumption that if such a system existed, it would entail relative equality for males and females.

Contents

Chapter 2, entitled “A Theoretical Foundation,” explores gender theory and related concepts. It first provides a working definition of gender before delving into the complexities of the topic. After explaining several related theoretical approaches which are utilized in this thesis, Chapter 2 then proceeds to discuss the history of the archaeology and bioarchaeology of gender, before finally examining interdisciplinary ways in which the topic of gender may be approached.

Chapter 3, entitled “A History of Scientific Archaeology of the North Coast of Peru,” describes the history of the archaeological discipline in the region, beginning in the nineteenth century. This chapter traces the development of the different paradigms

and theoretical approaches which have been utilized in Peruvian archaeological research. In addition, chapter 3 also seeks to contextualize the relative lack of an archaeology of gender within the larger intellectual landscape of Peruvian archaeological theory and method.

Chapter 4, entitled “The Worlds of the North Coast,” seeks to provide environmental and cultural context for the work described in later chapters. Before delving into a chronological discussion of the cultures which inhabited the region, this chapter first describes the natural environment in which those cultures were situated. Chapter 4 then continues to discuss the culture history of the region, starting with the earliest known occupation and ending with the arrival of the Spanish.

Chapter 5, entitled “Materials and Methods,” provides a detailed overview of the bioarchaeological dataset which was used for this research. This chapter describes the sites from which the individuals included in the dataset were recovered. In addition, the pathobiology of the conditions examined in this thesis is discussed, with particular attention given to the biocultural information the presence or absence of those conditions can provide. Finally, chapter 3 concludes with a description of the methods of statistical analysis utilized to test the hypotheses laid out in the previous section.

Chapter 6, entitled “Results,” presents the results of the statistical analysis in textual and graphic format.

Chapter 7, entitled “Warp and Weft: Where Gendered Life Fits in the *Lliklla* of Culture,” discusses the results presented in chapter 6, seeking to contextualize them within a biocultural framework. This chapter continues by presenting several case studies

in order to provide more detail in support of the bioarchaeological evidence. Finally, this chapter attempts to provide an overview of reconstructed gender ideology on the north coast and how that gender ideology may have been incorporated into the identities of individuals in the past.

Finally, chapter 8, entitled “To Light the Night: Final Remarks and Future Prospects,” provides a summary of the findings presented in the preceding chapter. It concludes by discussing potential avenues for future research into gender and other facets of identity on the north coast of Peru.

Conclusion

A topic as vast and intangible as gender requires an equally varied approach. This thesis seeks to unify many disparate theoretical approaches in order to gain a more nuanced understanding of the impact of gender ideologies and identities on the embodied lives of individuals who inhabited the north coast of Peru throughout time. This is an ambitious goal, but one which merits the effort, due to the over-looked yet integral nature of the subject matter. If the only result of this thesis is to draw attention to the understudied and marginalized people investigated herein, it will have been worthwhile.

2.) A THEORETICAL FOUNDATION

In recent decades, gender theory has gained increasing significance in the theoretical considerations of the social sciences, for good reason. On an individual scale, gender is an incredibly important facet of identity – that complex, protean, and multifaceted whole which is comprised of many different interacting and intersecting constituent parts (Meskell, 2000). On a larger scale, gender ideologies influence the organization of society, structuring patterns of labor and influencing the dynamics of power. Gender identity contributes to the perception of self of both the individual and society and influences individual behavior in innumerable ways, including how individuals dress, speak, carry themselves, and interact with others. While frequently unnoticed or only unconsciously considered, gender is enshrined in cosmology and myth. It becomes a fundamental fact of “human nature,” coloring a people’s perception of the whole world in which they live and shaping aspects of worlds both ancient and modern.

Gender Theory

Gender as Part of the Sex/Gender Model

The term “gender” was initially appropriated by the sexologist John Money in studies of what was then known as hermaphroditism (a condition which is now known as intersex) that were conducted in the 1950s (Lindquist, 2012). The current Western academic concept of gender, as utilized throughout the following work, can be defined as

a culturally constructed category which is often (though not always) based on physical characteristics, especially the external genitalia. Gender is what it means to be male, female, or other (often referred to as non-binary) in a specific culture. In the common sex/gender model which originated in the 1970s (Pilcher and Whelehan, 2017), gender is opposed to or apart from sex, which is biological in nature and is often defined in relation to external primary and secondary sex characteristics and/or chromosomes (Pilcher and Whelehan, 2017).

The original purpose of the distinction between gender and sex was to point out that biological differences and their effects have been greatly exaggerated, perpetuating the androcentric normalization of the male and consequent othering of the female (Pilcher and Whelehan, 2017). In the second-wave feminism of the 1960s to 1980s, gender was often essentialized to biological sex (Pilcher and Whelehan, 2017). From this perspective, femaleness and maleness are seen to be biologically determined. However, this stance has been largely rejected by the scholarly community, though it remains fairly common in contemporary American culture at large. Recent developments in gender theory acknowledge the incredibly fluid nature of gender, recognizing the multitude of gender identities which exist across many different cultures and which often “conflict” with the biological sex of the individuals in question (e.g., Hollimon, 2017; Walley, 2018).

The Western scientific concept of sex is itself culturally constructed. While based on observations of biological phenomena (Pilcher and Whelehan, 2017) and strongly rooted in the Western scientific biomedical tradition, this model has changed significantly over the course of several thousand years. For example, Greek philosophers saw the

female as being a variation on the male, thus conceiving of only one sex (Meskell, 2000). The current, binary view of sex in the West arguably did not begin to develop until the nineteenth century (Gowland and Thompson, 2013).

At present, scientists are beginning to acknowledge that biological sex is less of a binary and more of a spectrum with a bimodal distribution. While most individuals may fall into one category or the other, there are individuals who do not. Intersex individuals possess atypical genitalia, which can be the result of a multitude of different developmental and genetic factors, such as androgen insensitivity, Klinefelter's syndrome (wherein an individual is born with two X chromosomes and one Y chromosome), and congenital adrenal hyperplasia, to name just a few (Crawford and Unger, 2000). While these individuals are the exception, rather than the rule, even "normal" or "typical" individuals vary in the morphology of their genitalia. As such, there is no real "textbook" biological female or male – only a world of variations on two idealized themes.

Meaning: The Building Blocks of Ideology

Personhood and identity are highly social—a culture's concept of a person is applied to the self (Mackenzie, 2009). Gender identities are constructed by a combination of individual preference and social pressure (Butler, 1988; Lindquist, 2012). However, gender plays a far more fundamental role, as it is woven into the larger ideology of a culture. Meaning and value are assigned to gender categories and gendered meaning is assigned to fundamentally sexless objects, activities, ideas, and even features of the landscape (Nelson, 2002a; Pilcher and Whelehan, 2017). For example, in modern American culture, the color blue is perceived as being male and pink as female. In the

West, gender is assigned to children at birth, based on the appearance of their genitalia. Upon being assigned a gender, a child inherits all of the trappings associated with gender, being now forever ensnared in the complex web society has woven around them.

Gender often plays a role in cosmology, with gender being assigned to natural phenomena (as will be discussed in greater detail in subsequent chapters, in Inka cosmology, the sun was male and the moon was female). Myths can be gendered “scripts for social action” (Nelson, 2002: 9a), reflecting socially structured relations between the different genders. For example, the Western Christian origin story of Adam and Eve (in which man is created first and woman is the method through which original sin entered into the world) has long been used to justify the patriarchal organization of Western society (Kvam, et al., 1999). Mary, the virgin mother of Jesus, is portrayed as the “New Eve” and is the Catholic image of the ideal woman: a pure, humble, and loving mother. Regardless of the veracity of these important religious figures, their impact on Western gender ideologies has been profound. The myths of any culture can similarly shape the culture which believes in them.

It’s Complicated: Intersectionality Theory

Although gender is often highly naturalized, constructed gender ideologies can vary greatly both between and within societies. Men, women, and others may have very different beliefs about gendered abilities and values (Nelson, 2002a,b). Other categories of identity, such as race, class, age, and sexuality, intersect with gender to greatly impact the lived experience of an individual. This intersection is very evident in the experience of African American women (Crenshaw, 1991) (in fact, intersectionality theory actually

originated in Black feminist thought [Carastathis, 2016]). The experience of these women is very different from the experience of both white women and African American men, because they are both African American and female simultaneously, which leads to a (for lack of a better term) compounding of oppression. While these facets of identity interact with each other, so too do the different forms of prejudice directed at each identity (Crenshaw, 1991). Of course, this explanation is oversimplified—it is not a purely additive process, but rather a true interaction. The different facets of identity are constructed differently because of the influence of another category of identity. In this example, gender is constructed, understood, and experienced differently because of race and vice versa. Therefore, any study of gender must also take into account the influence of other factors on the construction and experience of gender, something which is admittedly easier said than done.

The Whole World is a Stage: Performance Theory

Within a society, gender ideology is expressed through the dynamic social performance of gender. As Judith Butler (1988) argued, gender “is an identity tenuously constituted in time” (519). The individual performs gender through repetitive action, including gestures, manner of speech, and mode of dress. Society expects people to act in certain ways and carry out certain roles based on gender, which is often assigned at birth based on sex (Pilcher and Whelehan, 2017). However, human beings are not born men or women, but they become so as society demonstrates what it means to be a man or woman (Butler, 1988). This is not to say that people are passive, molded entirely by forces outside of their control. The individual may choose to perform the gender assigned by

society or enact a different gender, as in the case of the “transvestite” (Butler, 1988: 527). However, this non-conformity may infringe on cultural taboos, resulting in a certain degree of ostracization (Butler, 1988; Pilcher and Welehan, 2017).

Living Out Their Lives: Embodiment Theory

Gender, as both idea and performed process, is experienced by embodied individuals. Cartesian dualism, the prevailing model of the self in the West, holds that the mind and the body are separate entities (Meskell, 2000; Meynell, 2009; Pilcher and Welehan, 2017). This model has led to the creation of many related dichotomies in Western thought, such as culture versus nature and reason versus emotion (Meskell, 2000). The mind is often elevated above the body, which is seen as impure (Meskell, 2000; Meynell, 2009). Sherry Ortner argued that the female has been heavily associated with nature, beholden to bodily functions and emotions, and therefore has been considered to be lesser than the male, which is associated with culture (Ortner, 1972).

Although this bias in favor of a separate life of the mind exists in Western thought, not all cultures possess this model of the self. For example, linguistic studies of modern Quechua indicate that its speakers see no stark separation or opposition between body and mind. Rather, the Quechua self consists of private and public selves. The physicality of the body is inseparable from the mind or soul to form a harmonious duality of the inside and outside self (Carpenter, 1992). In a system such as this, the Western concept of gender and gender identity fits uneasily. If the mind and the body are not totally distinct entities, then the mind cannot possess a gender identity different from the identity of the body, at least not as conceptualized in the Western understanding. The

bodies of such people are thus only “gendered” by the Western observer, who reads both biological and cultural signs to arrive at a fundamentally etic understanding. This is not to say that the concept of gender should never be utilized to study non-Western peoples, but rather to acknowledge that any understanding of non-Western gender ideologies generated from the application of this very Western concept must, by their very nature, be imperfect.

Regardless of the immaterial or material nature of the mind and the self, human beings are incontrovertibly embodied. The body is the perspective from which the individual perceives and experiences the world (Mackenzie, 2009). Identity “is constituted in relation to an ongoing but changing bodily perspective” (Mackenzie, 2009; 114). Basic bodily habits, such as posture, movement, gestures, and voice form a part of individual identity. Mannerisms such as these belong uniquely to the individual—no one else has the same voice or the same way of moving. As the body develops and changes, so too does the sense of self (Mackenzie, 2009). However, there is also a continuity of self in spite of bodily change, which is maintained through the organization of experiences into a personal narrative (Mackenzie, 2009).

The body, therefore, greatly impacts identity. The experience of gender can be affected by the embodied experience of an individual. Biological sex contributes to the way individuals may experience gender—bodily processes resulting from biological difference, such as menstruation, greatly affect lived experience. In addition, these bodily processes are infused with cultural meaning. For example, with the onset of puberty and the concurrent changes to the body, young boys and girls are congratulated on becoming

men and women. When biological sex and gender do not coincide (such as when an individual is not cis-gender), a person may experience gender dysphoria, a sense of distress arising from the perceived misalignment of gender identity and biological sex. This psychological condition can include disgust at an individual's own primary or secondary sex characteristics (American Psychiatric Association, 2013). It is important to note that this diagnosis is embedded in a highly contentious debate regarding the medicalization of trans-ness. The sense of distress upon which the diagnosis of gender dysphoria is very real, but it is also culturally situated. If a trans/nonbinary person existed in a different culture, one which did not regard their "condition" as being pathological, it is possible that this distress might be mitigated.

As previously discussed, gender is not just an experience of the embodied mind, but a performance of gendered acts. The body is a biocultural entity which is shaped by intertwining biological and cultural processes (Pilcher and Welehan, 2017), including the performance of gender. The performativity of gender affects the body directly, as habitual actions elicit physical responses (for example, changes in muscle mass, which may result in skeletal changes to accommodate the biomechanical load). As Mackenzie states: "In learning to throw like a girl, one not only develops, or fails to develop, certain bodily capacities, one also incorporates social and cultural meanings related to gender into one's bodily perspective and one's narrative self-conception" (Mackenzie, 2009: 118) Gender and gendered action are learned. The repetitive actions of gender performance leave marks on the body and the consciousness. Learning how to throw (like a girl or not), shapes not only the way an individual throws a ball, but also how the individual learns to

think about their ability to throw a ball. This assigns gender and value to a skill which is not innately different in males versus females.

In summary, gender is one of many intersecting components of identity. Gender and the experience of gender are lived by embodied individuals, the identities of which both shape and are shaped by this experience. Although often naturalized or reduced to biology, gender is socially constructed and varies from culture to culture. Societal expectations influence the performance of gender, whether this performance is in agreement with, or in opposition to, social norms. Gender is woven into the cosmology of a culture, influencing the politics and rituals of society, and thus colors that culture's view of the world and a person's place in the world.

The Development of an Archaeology of Gender

The Inception of the Archaeology of Gender

The inception of the archaeology of gender is frequently pinned to Margaret Conkey and Janet Spector's "Archaeology and the Study of Gender," published in 1984. This chapter of *Advances in Archaeological Method and Theory*, Vol. 7 criticized the then-current approach to the study of women. The authors argued that archaeology has not been objective or inclusive regarding the study of gender. Cultural assumptions held by archaeologists regarding the masculine and feminine have introduced significant bias into archaeological interpretations. Androcentrism in archaeology can be linked to heavy androcentric bias in the ethnographic record, which is often used to aid in the interpretation of the archaeological record. In ethnography, the male perspective is frequently seen as being representative of the culture, while the female is largely ignored.

Researchers also make essentialist and presentist assumptions about gender roles (Conkey and Spector, 1984), such as the idea that men are strong and dominant and women are weak and passive. Presentist interpretations assume that both genders have always occupied more or less the same roles as those documented in the ethnographic present. Conkey and Spector cite the man-the-hunter theory as an example of the problematic bias within archaeology. This vision holds that hunting, which is perceived as an exclusively masculine task, has driven human cultural and psychological evolution. This model also implies that females contributed nothing to the development of *Homo sapiens*.

Conkey and Spector (1984) called for the formulation of a new theoretical framework which incorporates gender as a system of meaning. Feminist scholars contributed greatly to gender studies in sociocultural anthropology over the decade preceding the authors' work. They suggested that archaeologists should draw on this rich source of theory. Feminist anthropology typically follows a certain course. First, androcentrism in the field is critiqued. Second, "remedial" research into the roles of women is conducted, and third, new theoretical frameworks incorporating gender are formulated. Conkey and Spector advocate for this third stage. The rest of the seventh volume of *Advances in Archaeological Method and Theory* is dedicated to the successful integration of gender into archaeological research. In the framework proposed in that volume, gender and sexuality are acknowledged to be social constructs. The authors advocated an ethnoarchaeological or ethnohistorical approach, with a concurrent reconceptualization of gender dynamics in order to eliminate androcentric bias. Conkey

and Spector suggested a task-differentiation framework, which would investigate the different roles and relationships of men and women in a society, taking the social, temporal, spatial, and material dimensions of tasks into account.

Unfortunately, the archaeology of gender that Conkey and Spector called for in 1984 was not immediately adopted by the entire field. In her chapter of another pivotal work on the subject, *Engendering Archaeology*, Alison Wylie (1993) argued that gender archaeology has been hindered due to a widespread lack of interest. Wylie contended that methodological constraints could be relatively quickly dispelled if archaeologists began asking the right questions, instead of making essentialist assumptions about gender. However, Wylie placed the brunt of the blame on processualist ecological-systems theory model of thought.

Processualist and Postprocessualist Approaches

Lewis Binford, one of the key proponents of processualism (also known as the New Archaeology), formulated a version of the eco-system model which rejected ethnographic variables (Wylie, 1993; 35). Binford focused on the big picture, seeing ethnographic phenomena as being dependent on the cultural systems under study. Gender, as one of these ethnographic variables, is disregarded in the New Archaeology. In this paradigm, the objectivity of the researcher is meant to eliminate social and political biases. Research which focuses exclusively on the empirical world cannot see gender as a valid line of inquiry, as gender is seen as being idiosyncratic (Wylie, 1993). The enthusiastic adoption of processualism by a large portion of the field of archaeology thus prohibited an in-depth archaeology of gender. Moreover, gender is not necessarily

amenable to study using processual theory and methods that placed an intense focus upon quantification and statistic testing. If it cannot be quantified, it cannot be studied.

As the 1990s progressed and postprocessualist thought (which had originated mostly in the UK in the early 1980s) gained deepening traction, gender would finally be embraced as a line of serious inquiry in the field of archaeology. There was an explosion of work published on the subject after the publication of *Engendering Archaeology*. In the introduction to one of these works, *Gender and Archaeology*, Rita Wright (1996) described the development of the archaeology of gender, starting with Conkey and Spector 1984. Wright cited postprocessualist critiques as being a strong influence on interest in archaeological studies of gender. Postprocessualism has spurred archaeologists to become aware of nationalist and other biases in the interpretation of archaeological data (Wright, 1996). In general, archaeologists have become more self-aware, acknowledging the subjective nature of interpretation. Wright argued that, although this current of thought has certainly impacted approaches to the study of gender, not all researchers interested in the study of gender are postprocessualists, as there are many different scholars engaged in this research with many different influences.

Modern Approaches

Pamela Geller (2009) argued that, although archaeological studies of gender have come a long way since the publication of Conkey and Spector (1984), the points they raised are still important. Geller emphasized that Conkey and Spector did not advocate for the investigation of gender to be limited solely to women. However, at the time the study of gender drew directly from second-wave feminism (which was heavily

gynocentric and reductive). The archaeology of gender of the 1990s did not give adequate attention to developments in feminist literature associated with third-wave feminism.

Geller (2009) proposed an archaeology of gender of the 21st century. Modern researchers now consider gender as being intertwined with other aspects of identity, such as age, class, and sexuality (Geller, 2009). The 2004 conference, entitled “Que(e)rying Archaeology,” was intended to move beyond gynocentric and dualistic thought, engaging with third-wave feminism and queer theory. However, according to Geller, the conference did not meet this goal, as many of the papers presented demonstrated “stymied conceptual development and minimal critical assessment” (Geller, 2009; 67). Twenty-two presentations focused on reductive analyses of the division of labor by sex. However, other authors at this conference did stimulate the kind of discussion promised by the title of the conference. For example, Geller describes the work of Hannah Cobb (2005), who critiqued the influence of heteronormativity on interpretations of hunter-gatherer cultures (Geller, 2009).

Recently, third-wave feminism and queer theory have been more successfully incorporated into the field. However, archaeologists are often disparaging to theory building, over-emphasizing the importance of fieldwork (Geller, 2009). In addition, third-wave feminism and postmodern theory are seen as being highly abstract, difficult to apply, and dangerous to objectivity, which is the foundation of modern science. Geller argued that, while these theoretical developments may have rocked this foundation, this destabilization must be faced as a challenge in order to build a better field (Geller, 2009).

The Bioarchaeology of Gender

An (Unfortunately) Brief History

Biological sex has long been a subject of bioarchaeological interest, and the estimation of sex is considered to be standard practice as one of the most basic elements of skeletal data collection. However, sex has often been interpreted in an essentialist or deterministic manner (Geller, 2009). For example, in C. Owen Lovejoy's provocatively entitled "The Origin of Man" (1981), the onus of human evolution is placed firmly on the shoulders of the titular "man." Lovejoy naturalizes the Western norms of monogamy and the nuclear family, both of which are deeply linked to Western gender norms, stating that this version of the family originated before the Pleistocene. According to Lovejoy's model, bipedality arose in hominids due to male provisioning behavior—males were the providers for the family, while females were the reproducers, focusing only on childcare and thus contributing nothing to human evolution. In this article, sex-based division of labor is biologically determined and gender essentialized to physiology.

The sex/gender model and the concept of gender as a cultural construct were not adopted by the field of bioarchaeology until recently (Sofaer, 2006; Agarwal and Wesp, 2017; Grauer, 2019). As discussed in the previous section, this model originated within the social sciences and feminist discourse. Although anthropology in the United States is often touted as being a holistic, four-field approach, the modern field, while still highly interdisciplinary in nature, does not quite match up with this ideal. Historically, the more "humanistic" approaches of cultural anthropology follow a different trajectory than do the more "scientific" approaches of biological anthropology. For many years, biological

anthropology was firmly situated on the biological side of this biocultural divide (Robbins, 1977). Although Jane Buikstra first proposed the term “bio-archaeology” in the 1977 volume, *Biocultural Adaptation in Prehistoric America*, with the intention of integrating biological anthropological and archaeological approaches (Buikstra, 1977), the call was not immediately answered, and a true biocultural synthesis has been long in coming (Goldstein, 2006; Agarwal and Glencross, 2011).

With the advent of a more social bioarchaeology, which is heavily influenced by postprocessualism, the focus shifted to human behavior in the past, rather than simple quantification and classification (Grauer, 2019b). However, early efforts to include gender in bioarchaeological analysis often fell far short of the mark. For example, Larsen attempted to tackle the subject in 1998, by looking at gender roles in foragers and farmers in the Georgia Bight. While Larsen even acknowledged that gender and sex were not the same thing, he goes on to say that “the leap from sex determination to social identity and behavioral inference is not a long one” (Larsen, 1998: 165). This assertion is both presentist and essentialist in nature, similar to many publications from almost three decades prior. Luckily, in the last decade or so, bioarchaeologists have begun to follow the lead of archaeologists, drawing on third-wave feminism and queer theory, finally disentangling the concepts of sex and gender.

The Utility of the Sex/Gender Model in Bioarchaeological Research

Although criticism has been leveled at the sex/gender model (Geller, 2009), including that offered in the first section of this chapter, this conceptual method has great utility for the field of bioarchaeology. Bioarchaeologists observe natural variation in

skeletal assemblages, which allows for sex to be estimated with a certainty of up to 90 percent, depending on the method used (White et al., 2012). However, observation also indicates that biological sex is far less dichotomous than the Western tradition would indicate (Joyce, 2017). Sex estimates can often be highly ambiguous, as Wesp (2017) illustrated with an anecdote where a bioarchaeologist's sex estimation was incorrect according to DNA, but an archaeologist's estimate based on the mortuary assemblage was correct. The variation present in human skeletons supports the idea that the osteological understanding of biological sex is, as with gender, culturally constructed, as the scientific tradition from which human osteology springs is a product of Western culture and Western cultural ways of understanding (Sofaer, 2006; Hollimon, 2011). However, as Joanna Sofaer noted:

“It is possible to acknowledge that the particular notion of sex as it is understood in osteoarchaeology is the product of a particular contextual and historical perspective ...without suggesting that osteological determinations do not form a useful axis of analysis” (Sofaer, 2006; 158).

Shared biological sex can certainly be important in a cultural context (Joyce, 2017). As such, while the use of this culturally constructed category should be critically evaluated, sex remains a centrally important datum for the bioarchaeologist.

The sex/gender model allows for more nuanced interpretations of biological sex and other skeletal data. The theories of embodiment and gender performativity, which the field has borrowed from the social sciences and feminist discourse, cast the body as being integral to the identity of a person, malleable both to individual action and cultural

ideology (Hollimon, 2017; Wesp, 2017). Human bodies are highly plastic (though not infinitely so). The body develops in a manner related to the “totality of the environment in which a person is situated” (Sofaer, 2006; 160), meaning both the cultural environment and the natural environment. These influences are entwined including how the fetus is biologically affected by the cultural environment of the mother (Sofaer, 2006). For example, differences in nutrition based on socio-economic status (and gender) will impact the health of an individual throughout the life course, even affecting the life course of that individual’s offspring. Difference is experienced and lived (Joyce, 2017), leaving complex evidence which may be interpreted by the bioarchaeologist.

In bioarchaeological investigations of gender, the researcher takes advantage of the plasticity of the human skeleton, examining skeletal material for traces of habitual action, evidence of dietary difference, and the presence of intentional body modification (Hollimon, 2011). Habitual action, which is a result of the performance of gender, can be embodied and investigated through the analysis of degenerative joint disease (DJD), tooth wear, and possibly musculoskeletal markers (Hollimon, 2011). Most individuals who live to old age will exhibit at least some DJD, the product of movement throughout life. However, DJD can also be indicative of habitual action (Wesp, 2017). For example, DJD of the elbow has been called “metate elbow,” as this pattern of degenerative change has been interpreted as being associated with the grinding of corn, which was potentially a task assigned based on gender (Hollimon, 2011). Studies of tooth wear have indicated that teeth have been differentially used as tools in some populations, as is evidenced by

greater anterior tooth wear in females from a Mesolithic cemetery in Sweden (Hollimon, 2011).

Diet, which affects nutrition and health, may be differentiated based on gender or sex. These differences may be interpreted by analyzing patterns of pathological conditions such as linear enamel hypoplasias, carious lesions, cribra orbitalia, and porotic hyperostosis (Stuart Mcadam and Grauer, 1998). Other analytic methods, such as stable isotope analysis, may also be employed to reconstruct diet. For example, Lukacs (2017) examined sex differences in oral health in Southeast Asia, finding that females had a higher prevalence of carious lesions and antemortem tooth loss at 69.2 percent of the sites included in the study. Lukacs relates these kinds of pathological conditions to diet. Foods may be ascribed value apart from nutritional content. Different foods may have social, political, and ritual importance (Hollimon, 2011). For example, Hastorf's study in Peru indicates that males ritually consumed beer, possibly in relation to political or ritual circumstances stemming from the expansion of the Incan empire (Hollimon, 2011).

The study of intentional body modification in relation to sex and gender is a growing area of interest within bioarchaeology. The body, as interface with the social world, is prime ground for the display of social identities (Wesp, 2017). In living bodies, tattooing and scarification can portray a social identity in line with or in opposition to cultural norms (Wesp, 2017). Although these modifications do not leave traces on bone, dental and cranial modifications are fairly common in the archaeological record and are typically the basis of an analysis of gendered body modification (Hollimon, 2011). Other modifications, though not as common, do occur. For example, the Chinese practice would

bind the feet of women from early in life so the feet would remain small, a trait which was seen as aesthetically pleasing (Wesp, 2017) but that also curtailed mobility, both physically and socially.

Skeletal trauma associated with violence and warfare has also begun to be interpreted in light of sex and gender (Hollimon, 2011). In the past, trauma on male skeletons was often interpreted as being the result of warfare, casting males in aggressive, active roles. Conversely, trauma on female skeletons was interpreted as the result of domestic violence, casting females in passive, victimized roles (Hollimon, 2011; Novak, 2017). More recent analyses are more critical of these traditional interpretations and do not assume that males are essentially violent, while females are essentially passive. More recent studies take the performativity of gender and violence into account and break down essentialist assumptions about gender roles and violence (Novak, 2017).

The individual body, as previously mentioned, serves as the interface with the social world. The gender identity of the individuals does not exist in a vacuum, but is formed and reformed in relation to social conceptualizations of gender (Geller, 2009). Any consideration of the physical effects of the lived experience of gender on the body of the individual must be related to larger gender systems. The performance of gender is a response to these larger systems—the individual can perform gender in accord with or in defiance of the dominant gender ideology of a culture (Geller, 2009). Gender systems can be investigated through the comparative study of many individuals and associated mortuary artifacts.

Although gender systems have often been described as being either hierarchical or complementary based on the relations between males and females, the reality is assuredly much more complex (Gero and Scattolin, 2002). Not all gender systems are based around the Western binary of male and female (Rautman and Talalay, 2000; Gero and Scattolin, 2002) and gender is often highly fluid (Crass, 2000, 2001), further complicating the picture. In the past, non-Western gender identities were largely ignored by archaeologists and bioarchaeologists alike. However, there is a large amount of evidence to suggest the existence of plural, fluid, and nonbinary genders amongst many different cultures (Rautman and Talalay, 2000; Hollimon, 2017).

Avengers Assemble: Interdisciplinary Approaches to Gender Ideologies and Identities in the Past

The Biocultural Approach

As is evidenced by the preceding sections, gender has far-reaching impacts on both individuals and the societies in which they live. Because of this incredibly broad scope, any study of gender in the past must necessarily be interdisciplinary in nature. No one field has all the tools necessary to approach the topic alone. While skeletal analysis can provide the bioarchaeologist with useful data, cultural context is necessary for the interpretation of that data, as is evidenced in the discussion of the identification of non-binary individuals in the preceding paragraph. This context can be gained from multiple sources, including archaeology, mortuary archaeology, ethnography, and ethnohistory. The field of bioarchaeology was intended to bridge the science-theory divide, utilizing and aspiring to what is known as the biocultural approach (Goodman, 2013).

Unfortunately, the modern field does not always live up to this ideal. Change can be slow and generational in nature.

One of the best and earliest articulations of the biocultural approach was the landmark *Biocultural Adaptation in Prehistoric America* (Blakely et al., 1977). This slim volume contains approaches to human biocultural adaptation from nine different contributors. In his introduction, Blakely argued that, though anthropologists often dichotomize biology and culture, both factor into human adaptation and survival. In the past, biological anthropologists have studied the skeletons generated from archaeological excavations separate from the archaeologist's study of cultural materials. However, as biological, cultural, and environmental phenomena are highly related, the study of these phenomena needs to become more inter- and intradisciplinary (Blakely, 1977).

Jane Buikstra's ground-breaking contribution to this work, "Biocultural Dimensions of Archeological Study: A Regional Perspective," marks the first usage of the term "bio-archeology" in the US (Buikstra, 1977; Knüsel, 2009). Buikstra laid out the theoretical framework she and her team used in their "bio-archeological" approach to the Middle to Late Woodland transition in the Illinois River valley. This project was an interdisciplinary collaboration between biological anthropologists and archaeologists, combining mortuary site archaeology and human osteology. Areas of interest included social organization, estimates of population size and density, diet, disease, and daily life (Buikstra, 1977).

In general, the authors of *Biocultural Adaptation in Prehistoric America* called for greater integration of biological and archaeological approaches to anthropology, arguing

that “archaeologists and biological anthropologists were studying isolated segments of the same phenomenon...as though the segments were nonrelated” (Robbins 1977, p. 13). However, the two approaches can complement each other, weaving a more accurate and complex picture of ancient life. While these authors were not the first to suggest the idea (the beginnings of which are evident as early as the 1950s in Livingstone’s (1958) investigation into the relationship between malaria and sickle cell anemia [Zuckerman and Armelagos, 2011]), this work is foundational to the field of bioarchaeology.

Although it had been formulated as early as the late 1950s, the biocultural approach was largely ignored for decades. In 1998, Alan Goodman and Thomas Leatherman published a new call for the integration of biological anthropology and cultural anthropology, entitled *Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology*. The authors argued that the world needs a biocultural synthesis now more than ever, as globalization continues to affect every corner of modern life, impacting both human culture and human biology in ways that could only be understood through the lens of biocultural anthropology. Unfortunately, such a synthesis has not “been a central concern of anthropological theory in the past two decades” (Goodman and Leatherman, 1998, p. 4). The authors argued that increased specialization within the subfields has only deepened the biocultural and science/theory divide. Recent (as of 1998) developments in biological anthropology were almost entirely methodological, while theoretical development has been neglected. On the other hand, social anthropology has become highly introspective, with rigorous interrogation of current theory. Physical anthropologists make jokes about postmodernism, while cultural

anthropologists see biological anthropology as being stuck in the racist nineteenth century (Goodman and Leatherman, 1998). The authors called for a united approach, where both subfields are on equal footing—after all, human beings are shaped by both biological and cultural factors, and an anthropology which truly seeks to understand humanity must take this into account.

Unfortunately, this reiteration of the need for a new biocultural synthesis still went largely unheeded. However, since the turn of the millennium, more anthropologists are beginning to realize the need for the integration of the biological and cultural approaches. In Buikstra and Beck's 2006 volume, *Bioarchaeology: The Contextual Analysis of Human Remains*, Lynne Goldstein argued that anthropology has still not truly answered the call for a biocultural synthesis formulated in 1977. Goldstein reviewed articles in eight journals from the period between 1995 and 2000 and found that archaeology and physical anthropology have continued to follow "very different trajectories" (Goldstein, 2006, p. 376). Goldstein argued in a somewhat reductionistic and tribalistic fashion that this is, in part, due to the influence of Clark Larsen in the field. Larsen's approach to bioarchaeology situates it firmly in the context of biological anthropology. This difference within bioarchaeology (between Buikstra's conceptualization and that of Larsen) is also noted by Knüsel (2009).

Goldstein stated that with an increase in specialization, the field of bioarchaeology has become much more laboratory-oriented, with bioarchaeologists potentially ignoring archaeological data because of the difficulty of incorporating it into modern osteological analysis (Goldstein, 2006). Alternately, mortuary analysis has

moved towards a more humanistic approach, largely abandoning the statistical analyses which had been prevalent during the processual movement. Mortuary analysts include only the most basic information about skeletons, such as the estimation of sex, neglecting paleopathological analysis. Both modern bioarchaeology and mortuary analysis are complex fields, and the attempt to integrate the two adds an additional layer of difficulty. Regardless, as Goldstein argued, the fact that something is difficult, it does not mean that it should not be done (Goldstein, 2006).

However, the field of bioarchaeology has recently began to focus on the contextualization of archaeological human remains (Agarwal and Glencross, 2011). The modern biocultural approach which is only now beginning to arise attempts to move beyond paleopathological and morphological description, focusing more on the varied and interconnected processes which produced the paleopathological lesions or morphological traits on a skeleton, as well as the meanings ascribed to varying biological human conditions (Agarwal and Glencross, 2011). Scientists are beginning to realize that human biology is far more flexible than modern DNA analysis would seem to indicate. For example, blood pressure and height/age distribution are products of not just one's genes, but the ecological and social environment, as well (Goodman, 2013). The field is beginning to embrace these complex relationships between human biology and cultural-natural environments.

Bioarchaeology is still interested in socioeconomic status and inequality (Klaus et al., 2017; Grauer, 2019b), which has been, and continues to be, the most common area of investigation for the integration of paleopathology and mortuary analysis. It has long

been assumed that socioeconomic rank affects diet and health. However, the Osteological Paradox threw this assumption into question, as the archaeological sample may not be truly representative. In addition, bioarchaeology is beginning to approach questions of human agency and identity (Agarwal and Glencross, 2011; Grauer, 2019b; Knudson and Stojanowski, 2009). Grave goods are placed by the living, not the dead, and therefore may indicate more about how the living perceive the dead, rather than a direct one-to-one relationship between the identity of the deceased and their burial treatment (Agarwal and Glencross, 2011; Andrews and Bello, 2006; Grauer, 2019b). Feminist and queer theory have been adopted into the field, as well, adding another layer of richness to the understanding of the ancient world. Earlier in the history of bioarchaeology, sex estimations were conflated with gender. However, this is now rarely the case. In addition, the rejection of the assumption that women were necessarily passive in the past has influenced the interpretations of trauma and fractures, as well as patterns of habitual activity (Grauer, 2019b). In a similar vein, disability theory has led bioarchaeologists to reassess their understanding of disability in the ancient past. Traditionally, paleopathology used the medical model of disability, which defines it as functional impairment. However, there is no reason to assume that modern understandings of impairment would have been present in the past. Physical traits are not the only marker of ability, and ancient people may not have seen these traits as impairments (Grauer, 2019b).

In summary, though the biocultural approach was proposed as early as 1977, it was not truly adopted until very recently. Modern bioarchaeology is beginning to seek the

integration of biological and cultural approaches (such as paleopathology and mortuary analysis). New lines of inquiry take the dual nature of burials into account, attempting to realize the influence of complex, interrelated cultural and biological environments on the human skeleton and how these environments may be reconstructed from the entire mortuary context.

Mortuary Archaeology and Gender

As discussed above, the synthesis of bioarchaeology and mortuary archaeology could prove very fruitful, but unfortunately the two fields have followed very different historical trajectories. Mortuary analysis could be a vital component to the reconstruction of gender ideologies in the ancient past, especially when utilized in tandem with a bioarchaeological approach. The following section will briefly outline the history and scope of the field of mortuary archaeology and attempt to elucidate how mortuary archaeology may be employed in archaeological studies of gender.

Mortuary analysis is the archaeological study of burial (McHugh, 1999) or, more precisely, the sociocultural study of mortuary practices (Bartel, 1982). In the study of mortuary practices, archaeologists borrow heavily from cultural anthropological theory (Bartel, 1982). For example, one idea revisited by the postprocessual camp involves meaning and ritual structure. Death is a rite of passage, consisting of pre-liminal, liminal, and post-liminal states (Van Gennep, 1909; Laneri, 2007; Parker Pearson, 2000). Where skeletal biology tells about life, mortuary analysis speaks about death and what comes after (Parker Pearson, 2000). Mortuary analysis is typically focused more on the practices of the living—those mourning the deceased—and is frequently concerned with

reconstructing social structure (Maurer Trinkhaus, 1984; McHugh, 1999) for this reason. The main assumption of mortuary analysis is that mortuary practices leave traces in the archaeological record in the form of grave goods and the arrangement of a body (Maurer Trinkhaus, 1984).

Much like the field of biological anthropology, the roots of mortuary analysis can be traced to at least the late-eighteenth and early-nineteenth centuries. Intellectuals such as American president Thomas Jefferson conducted excavations of many burial mounds throughout the original southeast in order to learn more about the builders of the mysterious mounds (Chapman and Randsborg, 1981). These early excavations were not scientific by modern standards, and their instigators often came to very wrong conclusions as to who built the mounds. However, these investigations were the first of their kind in North America.

Later in the nineteenth century, inquiry into the ancient past would become more scientific. Burials remained the most common line of evidence for these investigations, as settlements without any standing structures were difficult to locate (Chapman and Randsborg, 1981). The early history of archaeological mortuary analysis is also part of the early history of cultural anthropology, as there was no line between the two at the time. These 19th century anthropologists thought that belief in an afterlife is universal to all human cultures and that religion developed in evolutionary stages (Bartel, 1982). Fustel de Coulanges' *La cité antique*, originally published in 1864, was one of the first analyses of mortuary behavior, presenting it within a linear cultural evolutionary framework and relating it to social structure in the form of kinship ties (Bartel, 1982).

The most important and well-known work on death and religion was that of Edward Burnett Tylor (whose definition of culture would be paradigmatic for the field of cultural anthropology for the next century). Tylor focused on animism, which he defined as a basic belief in the existence of spirits or souls, and the relationship of this belief to the concept of an afterlife. Grave goods or offerings, in this scheme, are a form of ancestor worship, ensuring that the dead would help their living descendants (Bartel, 1982). Similar to theories of human evolution of the time, Tylor's conceptualization of religion and mortuary practice was again typological and linear, with animism being the most basic form of religion, progressing through polytheism to monotheism (Bartel, 1982).

Sir John Lubbock was a contemporary of Tylor who used the stages of religion to interpret burials, focusing especially on differences in quantity of grave goods. In addition, Lubbock was one of the first to realize the connection between burial treatment and the age, sex, and social status of the deceased (Bartel, 1982). He also correlated the monumentality of burial structures with the socioeconomic status of the individuals interred therein (Bartel, 1982), an assumption which is still used to an extent in modern mortuary analysis. Bartel argues that Lubbock is typical of late 19th and early 20th century archaeologists in that he acknowledged the variation in ethnographic mortuary practice, applied the analogy of ethnographic data to archaeological samples, and made correlations between socioeconomic status, quantity and quality of grave goods, and the monumentality of burials (Bartel, 1982). These assumptions would provide much of the foundation of mortuary analysis as the subdiscipline continued to develop.

Mortuary analysis would continue to be interested in questions of chronology, religion, and social organization into the twentieth century. However, the new century brought with it many shifts of paradigm in sociology and cultural anthropology, which were often incorporated into archaeology and mortuary analysis. In the first twenty years of the twentieth century, French sociologists would begin to criticize Tylor's animistic interpretation of religion, arguing that religion does not exist in a cultural vacuum. Instead, religious practices and associated phenomena were incorporated into the entire social system (Bartel, 1982). British social anthropological thought would expand upon the function of religion in a social context—Radcliffe-Brown would argue that mortuary ritual facilitated social cohesion, as the death of an individual represented a loss for the group and a threat to social cohesion (Bartel, 1982).

In the mid to late-twentieth century, mortuary analysis would be highly influenced by the New Archaeology (Chapman and Randsborg, 1981; McHugh, 1999; Parker Pearson, 2000), changing in focus from simple analysis of burials to attempting to uncover the mortuary practices a burial represents (Brown, 2007). Processualists such as Lewis Binford and Arthur Saxe sought to define universal cultural laws, seeing burials as being faithful reproductions of social structure. Binford focused on the symbolic nature of burials (Binford, 1971) and the two social components of a burial: the social persona of the deceased and the size and composition of the social group of the deceased (McHugh, 1999; Parker Pearson, 2000). Saxe's hypothesis eight (now known as the Saxe/Goldstein hypothesis, as it was later re-tested and validated by Goldstein, among others), which supposed that cemeteries are maintained by familial groups in order to

legitimize rights over resources, is still used today (Parker Pearson, 2000). Much like Binford, Saxe related burial practice to social structure (this shared theory would come to be known as the Saxe/Binford hypothesis) and operated under the assumption that mortuary remains are directly related to the identity and social status of the deceased.

Towards the end of the twentieth century, the New Archaeology was beginning to garner more criticism—some scholars argued that processualism has yielded only generalizations with too many exceptions and that it focused on what people in the past did rather than on the reasons behind human behavior (Parker Pearson, 2000). More recent studies began to follow the lead of scientists such as Ian Hodder, focusing more on context rather than the generation of cross-cultural laws (McHugh, 1999). This new movement was known as postprocessualism.

The mortuary analysis of today attempts to address the true complexity of mortuary remains (McHugh, 1999). Rather than simply looking at monumentality of architecture or the quality and quantity of burial goods, mortuary analysis now examines the full context of the burial, including the formation of the burial context and the cultural biography of the deceased (Laneri, 2007). The word “burial” itself has been redefined (Weiss-Krejci, 2011). Originally, a burial was viewed as the formal, intentional disposal of a body in a ceremonial context. However, this definition excludes those who, for whatever reason, did not receive a proper burial (Laneri, 2007). In addition, burials now include secondary and multiple interments (Weiss-Krejci, 2011). Mortuary analysis is no longer concerned only with the activities surrounding death, but with the wider implications and connections those activities imply (Charles, 2005). Postprocessual

mortuary analysis acknowledges the many interpretive layers that must be navigated in the process of investigating burials and their cultural significance (Charles, 2005).

Gender is very commonly signaled in burial through spatial distinctions, the orientation of a grave, inclusion of symbolic grave goods, distinctions in the treatment of the body, and differences in the ceremony surrounding a burial event (McHugh, 1999). As such, mortuary archaeology is well-suited to the study of gender in the past. By analyzing these elements of the mortuary archaeological record, the archaeologist may approach topics as diverse as the relative status of males and females and the rules which govern post-marital residence (McHugh, 1999). However, as McHugh cautions, the imprint of these more abstract concepts is notoriously difficult to interpret and any attempt at doing so must be carried out with great caution.

This being said, mortuary archaeology (especially when allied with bioarchaeology) is perhaps uniquely positioned to identify nonbinary individuals in mortuary assemblages (Hollimon, 2011), as mortuary archaeologists (and bioarchaeologists) have recourse both to the physical remains of the individuals as well as to indicators of social identity in the form of the burial itself. Grave goods can be compared to sex estimates, reconstructing the social identity of the embodied individual (Crass, 2000, 2001; Hollimon, 2017). If gendered grave goods (spindle whorls, for example) are found with an individual whose biological sex does not match the gender of the grave goods, that individual may not have been cis-gender. However, the mortuary assemblage may be a reflection of the survivors' perception of the deceased's identity, rather than an accurate portrayal of the personal identity of the individual. As such,

simple comparison between gendered grave goods and sex estimations should not be considered definitive.

For this reason, both mortuary archaeological analysis or bioarchaeological analysis should be utilized to investigate gender through the medium of burials and the individuals contained therein. While grave goods may tell a large portion of the story, the biological markers associated with one gender or another provide another line of evidence. For example, Sandra Hollimon has identified potential fourth-gender individuals in California by analyzing patterns of trauma associated with participation in warfare (Hollimon 2017). Hollimon found that biologically female individuals bore evidence of participating in combat. While cis-gender women could have been combatants, ethnographic evidence supports the idea that some of these individuals, at least, were fourth gender (Hollimon, 2017). The investigation of nonbinary genders holds great promise for a more detailed understanding of gender in the past. This research is best conducted utilizing as many lines of evidence as possible.

Calling in the Cavalry: Cultural Anthropology, Bioarchaeology, and Gender

Cultural anthropology adopted gender as an important concern earlier than archaeology. While feminist anthropology officially originated in the 1970s, female anthropologists were investigating women and their roles in society prior to that date (Mascia-Lees and Black, 2000). The most famous of these anthropologists is Margaret Mead, whose classic *Coming of Age in Samoa* (1928) investigated the adolescence of Samoan girls. However, while anthropologists such as Mead researched the place of women in society, their work was not perceived as being central to the anthropology of

the time (Mascia-Lees and Black, 2000). With the rise of feminist anthropology, gender became a major area of interest in the field, and the female-centered work of earlier anthropologists garnered new attention.

Feminist anthropology, as with the archaeology of gender, initially focused on women, in an attempt to deconstruct the androcentric bias present in the anthropological research of the time. Current cultural anthropology has moved beyond this sort of salvage work, focusing on gender as a topic in its own right. Modern investigations into non-binary genders, as well as masculinity, have proven very fruitful (Erickson and Murphy, 2017) and theoretical developments have moved at a rapid pace.

Unfortunately, while archaeology has historically borrowed many concepts from cultural anthropology, including gender, bioarchaeology has largely refrained from interacting with cultural anthropological work. The origins of this divide are complex and some of them have been discussed in a previous section. In previous decades, archaeologists utilized ethnography to directly explain what they observed in the archaeological record. This method is untenable, as it assumes that culture is stagnant and unchanging throughout time. However, ethnographic and ethnohistoric data can be very useful heuristic tools for archaeologists and bioarchaeologists alike, as long as these documents and the cultures they seek to represent are understood to be the process of historical and cultural processes. The incredibly detailed and nuanced understanding of gender which can be obtained from living populations is far superior to any such understanding archaeologists or bioarchaeologists alone are able to reconstruct, due to the very nature of the data to which they have access. As such, recourse to these modern

sources of information could only serve to strengthen an archaeological understanding of gender in the past.

Conclusion

Gender identities are important not only to the people who incorporate these social constructs into personal narratives, but to the societies which construct the systems of meaning of which gender identity is a part. By investigating gender in the past, archaeology and bioarchaeology can begin to paint a richer, more complete picture of the lives of past peoples. Although gender has only recently been incorporated into archaeological and bioarchaeological research, both fields have already deepened the understanding of how these ancient people understood themselves and related to one another. Through approaching the subject of gender from a truly interdisciplinary standpoint, the understanding of gender in the past grows ever more nuanced. As these fields continue to develop and refine the more inclusive theoretical frameworks which have enabled their current success, bioarchaeological investigations of gender will only grow more provocative and insightful.

3.) A HISTORY OF SCIENTIFIC ARCHAEOLOGY OF THE NORTH COAST OF PERU

The history of Peruvian archaeology is simultaneously a history of exploitation and a history of reclamation. The advent of scientific archaeology in Peru came about at the hands of foreigners, but the field has grown and flourished with the contributions of many Peruvian and non-Peruvian scholars alike. While some theory and methods were brought to the country by foreigners (especially North Americans), Peruvian archaeologists actively interrogated the paradigms of their non-Peruvian peers, incorporating or rejecting ideas as they saw fit. Therefore, while in some ways the history of Peruvian archaeology parallels the North American and European history of the field, Peruvian archaeology maintains its own unique flavor. This chapter will explore the history of the archaeology of Peru, focusing specifically on the archaeology of the north coast, and will trace the development of the many (and sometimes competing) paradigms which have been employed throughout time. While issues of bioarchaeology and gender are however relatively new themes in this history, they also relate and link back to the earliest days of the scientific study of the Andean past.

Early Days of Peruvian Archaeology (1800s – 1930s)

Grave Robbing

Since the Spanish first arrived in South America in the 16th century, Europeans have been interested in the material remains past of its inhabitants. Unfortunately, this

interest was often only monetary in nature. After Peru was colonized, many of its prehistoric sites were “mined” for the precious metals they contained or were thought to contain (Ramirez, 1996). For example, the Moche monumental platform mound of Dos Cabezas was extensively looted during the Early Colonial period. The center of the massive pyramid was removed and the back dirt was piled along one side of the structure, resulting in the current “two-headed” appearance of the mound (Donnan, 2007). Similarly, in the Moche valley, the Moche river was diverted by Spanish engineers in 1602 to erode the colossal Huaca del Sol, of which only its eastern one-third remains today. The recovered contents, likely precious metals, ceramics, textiles, and skeletal remains placed in tombs, were removed and sold, melted down, shipped abroad, kept in private collections, or otherwise disposed.

Huaca Dos Cabezas and Huaca del Sol are far from the only example of this kind of wanton destruction. Many other pre-historic sites were heavily damaged or destroyed in similar fashion, with looting continuing to the present day. Most Peruvian archaeological sites with visible architecture are dotted with looter’s pits and some prehistoric cemeteries are covered in human skeletal material which has been strewn about on the surface of the ground, discarded in the quest for valuable grave goods. This lengthy and large-scale pillaging of archaeological sites has resulted in large assemblages of artifacts with no associated contextual information, which have been sold to collectors and museums as art objects or curiosities. While their value was only monetary to those who uncovered them, these artifacts are still a valuable source of information to

contemporary archaeologists. However, it would still take many decades before this value was acknowledged.

Grave Robbing in the Name of Science

The extraction of the cultural resources of the country also extended to the skeletons of the prehistoric Peruvians themselves. However, unlike the efforts of Spanish looters and later *huaqueros*, these extractive activities were not conducted solely in the name of profit, but rather in the name of knowledge. European and later North American anthropologist and archaeologists saw Peru as a rich field in which to gather “specimens” for their collections. These men collected skeletal material (especially skulls) to further the nascent field of physical anthropology, a field whose origins and initial interests were highly problematic by modern standards, but which was believed to be highly scientific in its day.

Steeped in the typological approach originating with 18th century naturalists such as Johann Blumenbach, who studied and attempted to classify different human races (Wolpoff and Caspari, 2007), physical anthropology emerged as a scientific field in its own right in the nineteenth century. Men such as Samuel George Morton, a 19th century medical doctor and scholar, led the way by applying their medical expertise to the study of the human skeleton. Unfortunately, these early physical anthropologists, including Morton (who was later hailed as the first American physical anthropologist by none other than Aleš Hrdlička, founder of the *American Journal of Physical Anthropology*), believed that different races could be ranked by intelligence. These scholars explored this notion

through craniometry, as they believed that cranial capacity (as a proxy for brain size) was indicative of intelligence.

While this viewpoint greatly impacted the development of the entire field of biological anthropology, the pursuit of craniological research directly affected the archaeology of Peru. In the course of his research into the relationship between cranial capacity, intelligence, and race, Morton acquired a massive collection of human and nonhuman skeletal remains. As discussed in *Crania Americana*, Morton's interest in racial typology led to his analysis of almost one hundred Peruvian crania from amongst his own collection and the collections of others (Morton, 1839). The physician found that the Peruvian type was really divided into two types: Ancient Peruvians and those of the time of the Inka. Regaling the reader with the accomplishments of the ancient Peruvians, Morton declared in contradictory fashion that, though the small crania declared their lesser intelligence, these ancient people were adept at the arts, including architecture (Morton, 1839). The skulls Morton acquired would remain in his collection until his death, at which point they and many others were deaccessioned and found their way into private hands, far from Peru.

Measuring cranial capacity of Peruvian skulls that had already collected by various travelers to South America was as far as Morton ever went with his physical anthropological study of the peoples of Peru. However, one of Morton's ideological heirs, Aleš Hrdlička, would go a bit further. Hrdlička was one of the principal figures in the anthropology of the early 20th century. As with Morton before him, Hrdlička collected human skeletal remains for research. As with Morton, Hrdlička was very

interested in typology. In “Physical Anthropology: Its Scope and Aims” (1918), Hrdlička defines physical anthropology as being the study of human variation, with race as a central concept. However, unlike Morton, Hrdlička urged for new research to be done on the postcranial skeleton, as physical anthropology had not investigated the potential of the postcranial skeleton for the differentiation of racial types.

Hrdlička, as many explorers before him, collected skeletal material in Peru to bring back to his home country for study (Lozada, 2014). Hrdlička’s research interests included patterns of migration into the Americas, a topic he investigated through the study of morphological variation of crania. In his 1910 expedition to Peru alone, Hrdlička examined approximately 3,400 crania from the areas around Chan Chan and Pachacamac (Hrdlička, 1911). The anthropologist’s work here consisted primarily of collecting skeletal material from the surface of looted cemeteries and some excavation, with the assistance of German archaeologist, Max Uhle (who will be discussed in the next section). While Hrdlička made note of the most basic of contextual information, his assessment of the skeletal material he collected is largely (though not entirely) devoid of this context.

While Morton and Hrdlička were not the only early physical anthropologists to work with human skeletal remains from Peru, their work is representative of the problems with this period in the history of biological anthropology and bioarchaeology. The racial/typological approach is one such problem, as was the lack of archaeological context and the imperialist extraction of human skeletal remains. Together, these faults would create a physical anthropology not of Peru or its peoples, but of the Peruvian racial

type—an artificial construct born of European ethnocentrism, devoid of any real relation to the varying cultures to which the people under study belonged. The repercussions of this early biological anthropological work are still being felt by modern communities across the globe, as people fight to reclaim the ancestors who were stolen from them, and the cultural heritage and human dignity those ancestors represent (Martin et al., 2013).

The Advent of Scientific Archaeology in Peru

The scientific archaeology of Peru originated around the same time as physical anthropologists were becoming increasingly interested in South American skulls. Alexander von Humboldt, a German scholar, led an expedition to Peru from 1799 to 1804, which generated great interest in South America in Europe. Following this expedition, many other European scholars began discussing and publishing on a wide range of Peruvian topics, including geology, meteorology, biology, and history (Tantaleán, 2014; Quilter, 2014). However, scientific excavation methods were not used in the region until the late 19th century.

Max Uhle, a German scholar, conducted the first systematic archaeological excavation in all of Peru in 1896. The site in question was Pachacamac, a temple which had served as a locus for pan-Andean pilgrimage for at least several hundred years before the arrival of the Spanish. Uhle focused primarily on the cemeteries of the site. Based on the grave goods recovered from the burials of Pachacamac, Uhle was able to define early cultural designations, including Inka, Chimú, Huari, and Lima (Lozada, 2014; Reyecraft, 2005). Uhle remained in Peru from 1896 to 1900, during which time he conducted fieldwork at many more sites, including the Huacas de Moche on the north coast.

As previously mentioned, the German assisted Hrdlička in the collection of human remains, providing the Smithsonian Institution's anthropologist with material from the cemeteries Uhle excavated. Uhle's use of the culture concept, artifact seriation, and application of the horizon style of chronological reconstruction were cutting-edge at the time and would provide Peruvian archaeology with a firm theoretical and methodological foundation as the field continued to develop. During his time in Peru, Uhle was appointed to the position of director of the National History Museum. In this role, the German archaeologist faced criticism from the Lima political elite due to his status as a foreigner (Tantaleán, 2014). These criticisms are indicative of the historical tensions between native Peruvian scholars and foreign incursions into Peruvian scholarship which existed from virtually the very beginning.

While Uhle was the first to conduct scientific archaeological research in the region, he was not the most renowned archaeologist to do so. Rather, the Peruvian people have bestowed this honor on Julio C. Tello, the first indigenous Peruvian archaeologist and father of Peruvian archaeology (Lozada, 2014; Tantaleán, 2014). Tello was a medical doctor, a historian, and a social theorist. He was truly interdisciplinary in his approach, writing and publishing on a wide variety of topics, including trephination (Tello, 1912) and the feline deity found in many early Andean cultures (Tello, 1923), amongst many others (Burger, 2009). Tello utilized the theoretical foundation he had acquired through his studies in the United States: a cultural historical framework (a highly typological paradigm), relying heavily on the concept of diffusionism. The Peruvian believed that Chavín was the Andean “mother culture,” which spread (diffused)

across the region. Tello's hypothesized origin of Andean civilization was very different from that of Uhle, who believed that Andean civilization originated from elsewhere and diffused into the region (Tantaleán, 2014). Much of Tello's research had nationalistic undertones, linking the modern nation of Peru to a glorious Peruvian past, free from the shadow of colonialism.

Mirroring Uhle, much of Tello's work involved burials. However, unlike Uhle, Tello did not confine his interests to grave goods alone. Being a medical doctor, Tello was also interested in the analysis of the human remains themselves as well as the context in which they were buried (Lozada, 2014). While Tello did conduct numerous excavations of burials and subsequent skeletal analysis, he did not systematically analyze all the burials he recovered. Instead, he focused on individuals with pathological conditions, in order to study the history of disease. Yet, there remained a disconnect between archaeology and osteology in Tello's work which echoed the larger situation of the disparate fields of physical anthropology and archaeology.

Unfortunately, this divide persisted over the following decades, and few scholars would follow Tello's interdisciplinary approach. The predominate focus of Peruvian archaeology continued to be the definition of cultural chronology and typology (Reycraft, 2005). Among the key figures who developed the chronology of the region are Uhle, Tello, Alfred Kroeber, an American anthropologist and archaeologist, and Rafael Larco Hoyle, a Peruvian gentleman-scholar (Larco, 1966; Reycraft, 2005). Both Kroeber and Larco were especially interested in the archaeology of the north coast. In *Archaeological Explorations in Peru, Part II: The Northern Coast*, Kroeber (1930) describes the work

and findings of his 1926 field season. In this monograph, Kroeber defines two culture phases: Early and Late Chimú. He proceeds to describe the traits he based these categorizations on, before cursorily discussing each site he visited over the course of the field season. Kroeber focuses primarily on material culture and architecture, devoting only a few paragraphs to the burials of the region, and a few pages to the skulls found in those burials.

Rafael Larco Hoyle identified many other cultures on the north coast of Peru, including Moche (1939), Cupisnique (1941), and Salinar (1944). The classificatory focus of this period of Peruvian archaeology is especially evident in Larco's work—the Peruvian scholar defined a five-phase chronology for the Moche, a chronology which, in an altered and updated form, is still used today. Though he based much of his work on burials, Larco typically never dove into detail regarding his discussion of the individuals within those burials. Regardless of this fact, Larco's description and definition of the cultures he discovered are very thorough, exemplifying the highly typological approach of the archaeology of his day while still being truly (and literally) groundbreaking for the time.

The work of these early archaeologists established the unique tone of Peruvian archaeology. Cemeteries and monuments were seen as the richest source of archaeological data, and as such, were made the focus of much archaeological research. The definition of chronology and typology was the main goal of early Peruvian archaeology under the cultural historical paradigm (Shimada and Vego-Centeno, 2011). Though burials were frequently excavated, relatively little attention was given to skeletal

material, instead favoring the grave goods with which individuals were buried (Shimada and Fitzsimmons, 2015). In addition, Peruvian archaeology was highly nationalistic in nature, heavily influencing the modern culture of the country (Tantaleán, 2014; Burger, 1989). The work of Tello, especially, serves as a point of national pride, as the medical doctor and anthropologist proved that the great civilizations of Peru were native in origin, in contrast to Uhle, who proposed that civilization was brought to Peru from elsewhere (Tantaleán, 2014; Burger, 2009).

Many of these trends continued into later periods, even until the present day. The cultural-historical paradigm influenced archaeological thought in Peru for almost a century. Monumental architecture and high-status burials continue to be considered to be the most information-rich types of site. Finally, the archaeology of Peru is still very much a point of national pride, heavily influencing the popular culture of the country. However, as the 20th century progressed, new theoretical and methodological approaches began to interact with the old, slowly changing the face of the field as a new generation of archaeologists began their work.

The Archaeology of the Mid to Late 20th Century (1940s – 1980s)

Theoretical Developments

A major theoretical and methodological shift in the archaeology of Peru was initiated in the 1940s as more North American archaeologists began to work in the country (Tantaleán, 2014). At the time, there were relatively few professionally trained Peruvian archaeologists in Peru, meaning that the influx of foreign scholars drastically impacted the manner in which Peruvian archaeology was conducted. These scholars took

advantage of both the close political bonds between the United States and Peru at the time and the rich archaeology of the region in order to conduct their research, bringing then-current North American methods and theoretical perspectives to the region, including the North American style of the cultural-historical approach of which Julio C. Tello had been an early adopter. Towards the end of the 1940s, the North Americans would begin employing neo-evolutionary theory and functionalism. Marxism would also be added to the mix later in the century and more humanistic approaches would also begin to gain popularity. The cultural history of Tello and the later foreign scholars would interact with this influx of new theoretical developments, leading to the development of a hybrid archaeology unique to the Peru of this era.

The Virú Valley Project (1946)

In 1946, Gordon Willey and colleagues launched the Virú Valley Project (Reycraft, 2005; Shimada and Vego-Centeno, 2011; Tantaleán, 2014). This project consisted of a holistic study of the entire history of human occupation of the Virú valley, involving experts from diverse fields and backgrounds. Rather than seeking only to define cultures and periods (the goal of many scholars using the cultural historical approach), the Virú Valley Project was interested in the distribution of settlements across the landscape (a more functionalist approach [Tantaleán, 2014]), paleoethnobotanical analysis, and the beginnings of preceramic archaeology (Shimada and Vego-Centeno, 2011). The approach used in the Virú Valley Project was the product of a combination of cultural history and functionalism (Tantaleán, 2014). Willey and other North American

proponents of this approach opposed Tello's unified Andean civilization, instead gravitating more to the particularistic work of Larco Hoyle (Tantaleán, 2014).

John H. Rowe, John V. Murra, and the Origins of *Lo Andino* (1940s -1950s)

Around the same time as the Virú Valley Project, but in a very different vein, John H. Rowe, a North American archaeologist, began his classic work in Peru. Rowe used a humanistic approach in his studies (Tantaleán, 2014) relying heavily on ethnohistoric documents, especially the many chronicles detailing the history and lives of the Inka (Shimada and Vego-Centeno, 2011). He was also trained in the cultural historical approach that was prevalent towards the beginning of his career, which led him to formulate chronological and spatial categorizations (periods and horizons) in which to contextualize archaeological data. However, Rowe did not see these classifications as being unchangeable. Rather, he remained open to new data and new interpretations (Tantaleán, 2014). In addition, Rowe was also heavily influenced by his training as a classicist and by the art history approach utilized in other humanistic disciplines. Rowe's primary contribution to the field was his synthesis of archaeological data and ethnohistoric information, an approach which proves useful in Peruvian archaeology to this day (Shimada and Vego-Centeno, 2011).

This ethnohistorical approach was continued and improved upon by John Murra, who was a contemporary of Rowe (Shimada and Vego-Centeno, 2011; Tantaleán, 2014). Although Murra had lived under the communist regime in Eastern Europe and fought in the Spanish Civil War and was therefore disillusioned with aspects of Marxism, his thinking was still influenced by materialism (Tantaleán, 2014). This influence is

especially clear in Murra's early work, such as his dissertation "The Economic Organization of the Inca Empire" (Shimada and Vega-Centeno, 2011; Tantaleán, 2014). Through pairing ethnohistorical data with archaeological findings, Murra investigated the political and economic organization of the Inka state, specifically the relationships between the state government, local governments, and ecogeography in a form of organization Murra called the "vertical archipelago" (Shimada and Vega-Centeno, 2011; Tantaleán, 2014). This model is still one of the most influential models of political economy in the Andes and held that Andean socioeconomic power was based on the political economic integration of unevenly distributed constellations of peoples and resources at different altitudinal/ecological gradients in the mountainous southern Andes. Murra argued later in his career that the concept of vertical organization was shared across cultures in the Andes, representing a "common essence" for these cultures (Tantaleán, 2014). This notion of a shared essence is the root of one of the most used and abused concepts in Peruvian archaeology: *lo andino*.

Lo andino translates roughly to "that which is Andean" and refers to a cluster of cultural traits which some anthropologists see as being shared by all Andean cultures, both ancient and modern. This concept is not readily defined or delineated, as the specific aspects of these supposed pan-Andean cultural patterns are debated. However, there are some core tenants of *lo andino* which are generally agreed upon. Murra's vertical archipelago model is one such aspect. A separate, but related, form of social organization seen as being fundamental to the Andes is the *ayllu* (Beaule, 2016), which revolves around kinship and reciprocal, dualistic marriage patterns (Bastien, 1985; Silverblatt,

1987). An even more fundamental ideological characteristic of *lo andino* is dualism (Beaule, 2016), which is evident in practices as diverse as the reciprocal structure of moieties and the veneration of the sun and moon as dual deities in the religion of the Inka.

The concept of shared cultural patterns is a product of a very specific theoretical moment in the mid-20th century. Ruth Benedict published *Patterns of Culture* in 1934, which compares the cultural personalities or “gestalts” of the Kwakiutl, the Zuni, and the Dobuan, and *The Chrysanthemum and the Sword* in 1946, a work which describes the “national character” of Japan (Erickson and Murphy, 2017). While the work of Benedict was far removed from that of Peruvianists such as Rowe and Murra, these North American scholars were exposed to the same political and cultural climate, resulting in similar ideas. The theory of personalities of culture fell under heavy critique, as some anthropologists (such as Geoffrey Gorer) began to make wild generalizations and tenuous links between child-rearing practices and national character (Erickson and Murphy, 2017).

Unlike the theoretical approach of Benedict and Gorer, *lo andino* is still frequently invoked in Peruvian archaeology. It has proven a powerful tool for the interpretation of many otherwise enigmatic archaeological and anthropological discoveries. However, it is not without its critics. As with personalities of culture, *lo andino* can be used to make over-generalizations. Many different cultures inhabited the Andes over a long period of time. To argue that all of these cultures shared a suite of cultural traits, depending on the specificity of the traits in question, falls dangerously

close to folly at best and ethnocentrism at worst. In addition, those who use this concept in their research have also been accused of viewing pre-Hispanic Andeans and their culture as being one-dimensional, frozen in time (Tantaleán, 2014).

At its heart, the main criticism of *lo andino* is that, if used improperly, it becomes nothing more than forced Inka analogy, filtered through a colonial lens (Shimada and Vego-Centeno, 2011). After all, *lo andino* is based on accounts about the Inka projected backwards through time. These accounts were also written by Spanish or colonized indigenous authors. They are far from unbiased, reliable, or complete. Therefore, those facets of ideology and social organization which have been parsed from the ethnohistoric record are very particular to those ethnohistoric documents, which have been biased by the particular worldviews of their authors. The Spanish authors were frequently motivated by anti-pagan sentiment, attempting to “extirpate idolatry” in the region. Their documents were often meant to serve as records of what the “heathens” were doing which needed to be stopped. Conversely, the indigenous chroniclers were also biased in their writing, as their descriptions of native practices were often heavily romanticized in an attempt to counteract the dehumanizing, vilifying efforts of the Spanish extirpators of idolatry. In addition, these authors, in many cases, were themselves Christianized and were at least one generation removed from the people and practices which they described. These different biases which are present in the ethnohistoric record mean that insight gained from them cannot be applied even to the Inka in a straightforward manner. The ethnohistorian/archaeologist must take these distinct lenses of bias into account when utilizing *lo andino* to describe the Inka.

Matters are further complicated when one attempts to apply this concept to pre-Inka cultures. The Inka were conquerors, originating from Cusco, their capital. Their empire extended over an astonishingly large territory, consisting of four different *suyus* which encompassed the coast, sierra, and Amazonian forest. These different regions were inhabited by many different peoples, each with their own distinct history, stretching far back in time. When these people were conquered by the Inka (in a manner which was very different from the European concept of conquest), their cultures were not strictly wiped out and replaced with the culture of the Inka. Rather, local cultures interacted with the culture of the Inka in an incredibly complex and idiosyncratic manner. Therefore, when invoking *lo andino* to explain the beliefs and practices of pre-Inka cultures, the scholar must take into account that the cultures under study were not Inka before they were conquered. On the north coast, this is even *further* complicated by the fact that there was another predatory empire, the Chimú, who employed a manner of conquest which was similar to that of the Inka. The “signal” becomes more and more muddled through the centuries, becoming increasingly difficult to interpret.

In spite of these criticisms, *lo andino* is still a useful concept in Peruvian archaeology, when applied with great care. The idea that there are some general cultural trends in a given region is not a wild leap. Basic cosmological and ideological structures can be maintained for millennia, as is evidenced in the Andes by the incredible longevity of dualism in the ideologies of many Peruvian cultures. Dualism is evident in architecture, in mortuary patterns, and in iconography on the north coast from at least the Early Intermediate (ca. 400 BC). Therefore, while direct, linear Inka analogy must be

avoided, *lo andino* should not be discarded, because many of the ideological concepts under the umbrella of *lo andino* have been archaeologically proven to have roots deep in the pre-history of the region.

The impact of *lo andino* extended beyond the field of archaeology into the political environment of 1950s Peru. The *indigenismo* movement which had developed earlier in the century and in which Julio C. Tello played no small part, adopted *lo andino* as a unifying concept. *Lo andino* was, and is, used in identity politics (Tantaleán, 2014). It has been used in attempts to reclaim Andean culture from a colonized past, a goal which modern Peruvians and Peruvianist archaeologists (regardless of origin) should share.

Luis Lumbreras and Social Archaeology

The Peruvian political environment of the 1960s would heavily influence the trajectory of Peruvian archaeology. A resurgence of leftist ideology occurred at this time, resulting in the formation of the *Movimiento de Izquierda Revolucionaria* and the *Ejército de Liberación Nacional* (Tantaleán, 2014). The militaristic government of Juan Velasco Alvarado, who took power in a military coup in 1968, also promoted an official populist ideology (Tantaleán, 2014). Velasco's coup and subsequent restructuring of the Peruvian government was a reaction, in part, to the neocolonialist role of foreign governments in Peruvian politics, which allowed upper class Peruvians to take advantage of the lower classes. The Agrarian Reform, which had technically begun under the previous government, was actually carried out under Velasco. While in theory this reform was intended to redistribute land back to the people, in actuality its effects were

far more complicated. The Agrarian Reform would eventually lead to the formation of *Sendero Luminoso* and other terrorist groups, which would plague the country for decades.

In this political environment, North American scholars found it very difficult to conduct their research in-country. Conversely, Peruvian scholars such as Luis Lumbreras flourished under the state socialism of Velasco's government in the 1970s (Tantaleán, 2014). In this heavily leftist environment, Latin American Marxist archaeology bloomed. In 1974, Lumbreras published *Archaeology as a Social Science*, marking the beginning of Marxist archaeology in Latin America (Tantaleán, 2014). While Lumbreras had published another book in 1969 which applied Marxist theory to the archaeology of Peru, the 1974 work was a "programmatic proposal" (Shimada and Vego-Centeno, 2011: 587) for what would become Peruvian social archaeology. In this work, Lumbreras critiques the concept of culture, arguing instead for a shift in focus on "social formation" (Shimada and Vego-Centeno, 2011; Politis, 2003).

This new paradigm was in part a reaction to the theoretical frameworks of foreign archaeologists. Social archaeologists criticized the French structural materialism of Althusser and Godelier (Tantaleán, 2014). They also theoretically rejected the cultural-historical approach which had been utilized in Peruvian archaeology since the advent of the field. Social archaeologists were also extremely politically active, unlike the majority of foreign archaeologists of the time. However, while social archaeology was widely adopted as a theoretical framework by many Peruvian archaeologists, Marxist archaeology was (and still is) very difficult to put into practice. For example, Lumbreras

himself worked on Chavín for many years, but the work he produced is not truly Marxist, but rather, is not much more than a continuation of the culture-historical approach (Politis, 2003). Therefore, these innovations of Latin American social archaeology are theoretical, rather than practical, in nature.

Social archaeology has always competed with other, contemporaneous paradigms. The earlier culture-historical and neo-evolutionary paradigms which dominated Peruvian archaeology for the first century of its existence did not cease to exist with the advent of newer paradigms, nor were they ever denounced as harshly as they were in the United States. Even though Latin American social archaeology was a reaction to the theoretical frameworks of foreign scholars (including culture-history, neo-evolutionism and French structuralist materialism), these approaches were incorporated into social archaeology (Tantaleán, 2014). This admixture of theory continues to the present day, as will become evident in the next section.

The Archaeology of the Late 20th and Early 21st Centuries (1980s – Present)

The Political Situation at the End of the Millennium

Velasco left power in 1975, marking the end of his militaristic government and resulting in the opening of Peru to foreign investors once again. This, coupled with the abandonment of various reforms instigated under Velasco, led to a period of economic and political instability (Tantaleán, 2014). The return to democracy did little to ease the political unrest which was fomenting across the country. Beginning in the 1980s, the activities of *Sendero Luminoso* (Shining Path) and the Tupac Amaru Revolutionary Movement made life difficult and deadly for both the Peruvian people and

archaeologists (Shimada and Vego-Centeno, 2011; Tantaleán, 2014). It was not until 1994, when the Shining Path were defeated, that both daily life and archaeology could fully resume. During this time, the most significant impact were experienced in the south-central Andean region and the capital of Lima.

The Chan-Chan—Moche Valley Project: Processual Archaeology Comes to Peru

This period saw the advent of processualism in Peru. Processual archaeology had its origins in the United States in the 1960s, where it would revolutionize the field. However, processualism did not become truly established in Peru until two decades later, due in part to the political state of the nation (Tantaleán, 2014). The violence instigated by the Shining Path made it nearly impossible for North American archaeologists to work in the sierra (Tantaleán, 2014). However, there were no such impediments on the coast, meaning that processualism was introduced in this area much earlier than it was elsewhere. However, due to the dominant leftist ideology present throughout the country, processualism did not gain much traction in Peruvian academic circles until the 1990s.

Processual archaeology is above all else, scientific. It revolves around the application of the scientific method to archaeological research and the formulation of hypotheses. This means that, unlike previous archaeological paradigms, processual archaeology seeks to definitively answer research questions and discover universal laws, instead of focusing solely on typology, like the culture-historical approaches of the past. It is informed by systems theory, which originated in cybernetics and treats culture as a system of with inputs, outputs, and feedback loops (Erickson and Murphy, 2017). It also

found much inspiration from cultural ecology, which investigates human adaptation to both natural and cultural environments.

Peruvian processualism drew very heavily from the work of Gordon Willey (Tantaleán, 2014). Settlement patterns, such as those studied by Willey in 1946 under the auspices of the Virú Valley Project, continued to be conducted, as generalizations based on cultural patterns were the goal of processualist archaeology. This paradigm found support predominantly amongst the North American archaeologists who worked in Peru. However, some Peruvian archaeologists, such as Ramiro Matos, also adopted this paradigm (Tantaleán, 2014).

There were many different projects which employed processual theory and methods being conducted in Peru in the 1970s and 1980s. A pioneer amongst these projects was the Chan-Chan—Moche Valley Project, directed by Michael Moseley and Carol Mackey. This project was a regional study similar to the Virú Valley Project, focusing on the titular Moche Valley of the north coast. Major sites studied under this project include Chan Chan, the capital of the Chimú Empire, and the Huacas de Moche, an important Moche political and religious center. Unfortunately, while many publications resulted from this work (e.g. Moseley and Day, 1982; Moseley and Cordy-Collins, 1990), no final report has ever been published (Tantaleán, 2014). This lack of a full report of the results of this project is especially frustrating considering the foundational nature of the research conducted.

While projects of a processual bent were quite common during this time, they were mainly conducted by North American scholars. Though there was some transfer of

theory and methods, Peruvian archaeologists, for the most part, continued working under the particularly Peruvian archaeological paradigm which had developed over the decades. The archaeology of Peru became a mixture of this approach and the positivist processual approach (Tantaleán, 2014)

New Millennium, New Interests

Sendero Luminoso was defeated in 1994 and the archaeology of Peru changed forever after this date. Archaeologists started to reorient towards cultural resource management and contract archaeology as Peru's economy started to boom. With increasing development all across the nation, more sites were being put in danger by construction projects, from cell phone towers to shopping malls. For this reason, research became a matter of secondary importance, while salvage archaeology became the new focus for Peruvian archaeologists in particular (Shimada and Vego-Centeno, 2011).

In more recent years, the Peruvian government has begun to emphasize archaeological tourism for the benefits it provides to the Peruvian economy. Unfortunately, this means that big, impressive sites receive the majority of funding, while the regional studies of the 1970s have grown less important. This is not to say that no other forms of archaeology are being conducted. A quick internet search reveals numerous archaeological field schools throughout the country. The modern archaeology of Peru faces many challenges, including a lag in theoretical development, as postprocessualism has not gained wide acceptance among Peruvian archaeologists (Shimada and Vego-Centeno, 2011). However, as work continues and archaeologists of

many different backgrounds continue to work together and promote discussion, the field will continue to grow and change.

The Bioarchaeology of Peru

In comparison to Peruvian archaeology, the bioarchaeology of the region is still in its infancy. The two fields have followed their own distinct historical trajectories.

Peruvian archaeology is lent a unique perspective and approach due to its historical emphasis on the burial as the basic unit of study. However, the human remains within those burials were hardly ever the primary focus of research, as they are in bioarchaeology. While Julio C. Tello conducted research of a bioarchaeological and paleopathological nature, very few scholars followed his lead. Those who did study skeletal remains did so from a medical perspective. However, true bioarchaeological research in Peru did not take off until the 1970s (Lozada, 2014).

Robert Benfer conducted the first bioarchaeological project in Peru in 1976 at the site of La Paloma (Lozada, 2014). Of course, at the time it was not called bioarchaeology, as the term as it is currently used was coined by Jane Buikstra in 1977. Benfer used skeletal data to explore the impact of coastal lifeways on the demography, stress, and nutrition of the population of La Paloma (Lozada, 2014). This approach recognized the importance of larger context and sought to answer bigger questions than previous investigations of human remains had attempted, especially surrounding the transition to agriculture (Verano, 1997). Benfer found that earlier inhabitants of the site experienced more stress than later inhabitants, indicating that the transition to agriculture was beneficial for the people of La Paloma (Verano, 1997). Though somewhat suspect

due to current understandings of stress and morbidity, this research attempted to look at larger cultural subjects utilizing a bioarchaeological approach.

In the 1980s, John Verano, then a graduate student at UCLA, began his bioarchaeological research on the north coast. Verano used osteological data to test archaeological hypotheses regarding biological kinship at the site of Pacatnamú (Lozada, 2014). After completion of his doctorate, Verano has continued work in the region (mostly in the Moche valley region) and has trained many students in the field, including Dr. Guido Lombardi (Lozada, 2014). Verano's foci generally revolve around ancient disease, violence, and sacrifice and his influence has embedded these issues as central themes in the bioarchaeology of the region.

Just as with the field of Peruvian archaeology, the activities of *Sendero Luminoso* also impacted bioarchaeology. The violence led to the deaths and disappearances of tens of thousands, both those killed by the Maoist rebels and those killed by Peruvian government counter-insurgency campaign that involved acts declared as crimes against humanity. In the late 1990s and early 2000s, after the violence ended, interest grew in the fields of bioarchaeology and biological anthropology, as these disciplines could be applied to help identify the dead and bring them some modicum of justice. An increased emphasis on this kind of work led José Pablo Baraybar to found the *Equipo Peruano de Antropología Forense* in order to search for those who had disappeared during the conflict (Lozada, 2014). The recognition of the importance of forensic anthropology aided in the popularization and development of the field of bioarchaeology in Peru (Lozada, 2014).

The current bioarchaeology of Peru has grown in sophistication considerably since Benfer's project at Paloma. New technologies and techniques have been added to the bioarchaeologist's arsenal, allowing for the testing of more refined hypotheses. For example, Klaus, Alva, Bourget, and Chero (2018) employ modern methods of biodistance analysis in order to explore potential relationships between kinship and political organization among the Moche. This kind of research allows for a relatively fine-grained window onto biological interaction between groups. Even more recently, Tiffany Tung, Rick Smith, and colleagues have applied epigenetics to the Wari, in order to understand the biological impact of the collapse of the Wari state on the inhabitants of the region (Smith, 2019, December).

Modern bioarchaeological research on the north coast is driven by a few key scholars: Haagen Klaus, Bethany Turner, Marla Toyne, and John Verano. The work of these scholars brings novel theoretical and methodological approaches to the bioarchaeology of the region, investigating questions of identity, paleodemography, social structure, and life history. Spanning across multiple time periods and cultures, the work of these scholars seeks to answer anthropological questions involving the complex biological and cultural consequences of the Conquest, the biological element of politics and ethnogenesis, population history, and paleodiet and mobility (e. g. Klaus and Toyne, 2016; Turner and Klaus, 2016; Verano, 2001a).

Where Are the Women?

Throughout this history, however, archaeological and bioarchaeological investigation of gender in Peru is virtually non-existent. This is not particularly

surprising, as the archaeology of gender is a relatively new topic of interest, originating in the 1980s, with Conkey and Spector's landmark 1984 work, "Archaeology and the Study of Gender." However, the processualist leanings of many members of the field prohibited the study of gender from gaining much traction until the 1990s. In this decade, the archaeology of gender blossomed, though developments in the feminist theory of the time were largely ignored to the great detriment of the field. Finally, in the early 21st century to the present day, the archaeology of gender has begun to incorporate third-wave feminism and queer theory into the theoretical framework of the field. However, there is still much room for improvement, as archaeologists attempt to reconcile established archaeological theory and method with postmodern critiques of scientific objectivity. A true archaeology of gender has yet to reach Peru (Politis, 2003).

A very few authors have published on Andean gender ideologies in the late precontact and postcontact periods (Silverblatt, 1987; Horseywell, 1997) and about women in prehistory (Silverblatt, 1987; Cordy-Collins, 2001a, 2001b; Villavicencio, 2017; Rostworowski, 2018). Only a few more have published on the lives of women in the Colonial period (Silverblatt, 1987; Rostworowski, 2015; Rosas, 2019). However, these authors often rely heavily on the concept of *lo andino*, drawing more from ethnohistory than being grounded in actual archaeological evidence (the exception from amongst those listed being Cordy-Collins). In addition, the study of gender is not just the study of women, contrary to the publication trends of second-wave feminism. While most of these works do not claim to truly be a study of gender, one of those that does (Silverblatt, 1987) espouses a hard male/female binary as a given – a universal an immutable feature

of Andean personhood. While concepts of dualism structured much of Andean thought for several thousand years, triads were also important. In assuming that gender in the Andes was always dualistically constructed along a Western (or even an Inka) binary, a large amount of nuance is very probably ignored. After all, human gender is an incredibly complicated topic and the archaeological investigation of this topic, as with all things worth doing, is quite difficult.

To date, Horsewell (1997) is the one exception to this point which has been found. Rather than assuming that a binary gender system is the natural result of Andean dualism, Horsewell argues that the related concepts of dualism and inversion lend themselves to the existence of third genders in the pre-Hispanic world. Horsewell sees modern ethnographic accounts of men dressing as women in certain ceremonial situations as being echoes (what he calls “phantasms”) of a ceremonial role played by third gender individuals. While Horsewell’s work is intriguing, it is based heavily on ethnohistoric accounts, with very little connection to archaeology or bioarchaeology. In addition, Horsewell’s thesis was submitted in more than 20 years ago. Very little to no subsequent investigation of the existence of third genders in the Andes has since been conducted. To put it simply, gender beckons.

Conclusion

The developmental history of archaeology in Peru was not linear. In general, the early period of Peruvian archaeology was defined by the culture-history paradigm and its intensive chronological and typological approach. Marxist theory was introduced into the mix in the mid 20th century, followed by processualism. In addition, the more humanistic

and humanized ethnohistorical approach also influenced the archaeological miasma of the middle of the century. However, the many paradigms which were at play over the course of the development of the field did not yield one unto another in an orderly fashion. Rather, these paradigms interacted with each other, blending into a uniquely Peruvian mixture of theory, methods, philosophies, and ethos which has retained its own identity in the face of foreign research in the region. The field has always been marked by tension between these two factors. This is not to say that there is a harsh divide between foreign and Peruvian archaeologists. In actuality, the interaction between Peruvian and foreign archaeologists has driven theoretical and methodological innovation in the field.

The Peruvian archaeology and bioarchaeology of the 21st century has lagged somewhat in theoretical developments. While North American archaeology has moved into postprocessualism, this paradigm has yet to gain much traction amongst Peruvian archaeologists. The many foreign archaeologists who work in the region frequently use this paradigm in their research. Based on the history of the field, it is likely that postprocessualism will filter into Peruvian archaeology through the continuing interaction of foreign archaeologists and Peruvian archaeologists. However, at the current time, the tenants of postprocessualism have not been largely adopted. For this reason, gender has yet to be studied archaeologically in any great detail, though this is now beginning to change.

4.) THE WORLDS OF THE NORTH COAST

Since the arrival of the first humans over 15,000 years ago, life on the north coast of Peru has been shaped by a complex confluence of natural and anthropogenic forces. The development of north coast cultures was not the inevitable result of their geographic location and environmental situation. Rather, the tension between and complex interplay of the demands of a harsh environment and human cultural patterns led to the development of the unique lifeways and worldviews which have captured the interest of the scholars discussed in the last chapter. Because of this complex entanglement of human adaptation, cultural practice, natural environment and history, it is first necessary to understand the geography, geology, hydrology, and ecology of the region, in order to then contextualize the many cultures who have inhabited it through time.

Natural Environment

The General Geography and Ecology of Peru

The modern nation of Peru extends from the southern border of Ecuador to the northern border of Bolivia and from the Pacific Ocean on the west to the western border of Brazil on the east. Peru is located within the larger region of the Andes, specifically, the Central Andes. The Andes Mountains proper consist of two cordilleras, consisting of a set of eastern and western peaks, running along the western edge of the South American continent. The western cordillera consists of folded and metamorphized Mesozoic marine

sediment while the eastern cordillera consists of folded, metamorphosed Paleozoic rock with granite and schist inclusions (Brush, 1982). Between the two cordilleras lies the plateau known as the *altiplano*. The Andes Mountains are still actively growing, due to the tectonic activity of the region (specifically, the subduction of the Nazca Oceanic Plate under the South American Plate [Klaus, 2008]). For this reason, earthquakes and landslides are a fairly frequent problem for human inhabitants of the region. In addition, slower effects of tectonic activity also impact human life in Peru, as uplift changes the underlying topography of canals, causing water to flow differently than when the canals were first constructed (Klaus, 2008).

Rising to a maximum altitude of over 5,500 meters above sea level (Brush, 1982), the mountains disrupt the flow of air masses from both the east and west, creating climactic differentiation between the western coast and the eastern forest. In general, the coast is in the rain shadow of the mountains, therefore this region is cool and dry, while the forest of the interior is hot and humid. Biomes vary based on a combination of temperature, humidity, and altitude, meaning that they are arranged horizontally across the topography of the region. Generally speaking, the coastal region (< 2000 meters above sea level [m.a.s.l.]) is desertic, interspersed with meadows (*lomas*) watered by the fog (*garua*) coming off the ocean. The region between 2000 and 3500 meters above sea level is covered with thorny bushes and cacti, while above 3500 meters above sea level is covered in stiff bunch grasses and shrubs (Brush, 1982). Those regions which are specific to Peru are: the coast or *chala* (0 – 500 meters above sea level), the *yunga* (500 – 2300 m.a.s.l.), the *quechua* (2300 – 3500 m.a.s.l.), the *suní* or *jalca* (3500 – 4000 m.a.s.l.), the

puna (4000 – 4800 m.a.s.l.), and the *janca* or cordillera (4800 – 6768 m.a.s.l.) (Quilter, 1989; Pulgar, 1987).

Each of these biomes is suited for different types of agricultural and pastoral produce. The coast is arid, and this makes agriculture difficult (though not impossible). Simultaneously, marine life is plentiful. The *yungas*, or warm valleys, are very fertile, providing habitats for a wide array of flora and fauna. The *quechua* is the traditional zone for maize agriculture. The *suní* is best suited for the growth of quinoa and root crops, while the *puna* is most known for herds of camelids. The *janca* is snowcapped and provides few resources for human habitation (Quilter, 1989; Pulgar, 1987).

The Geography, Ecology, and Hydrology of the North Coast

The north coast of Peru is bounded by the cold Pacific Ocean to the west, the Andes to the east, the Sechura Desert to the north, and an expanse of coastal sand dunes to the south. The land in between is a patchwork of coastal desert and dry forest and is divided into 14 river valleys: the Olmos, Motupe, La Leche, Lambayeque, Reque, Zaña, Jequetepeque, Chicama, Moche, Virú, Chao, Santa, Nepeña, and Casma Valleys (Klaus, 2008; Shimada, 1994). As previously discussed, the climate is generally cool and very arid, with minimal rain fall most of the year (Brush, 1982). What sparse rain the coast receives will typically fall during the wet season (February-April). This cycle is driven through the complex interplay of the cold water of the ocean, the warm landmass, and the mountains, where cold, humid air rolls onto the warm landmass, which heats up the moisture-laden air, causing the moisture to rise far above the land, until it hits the Andes and precipitates.

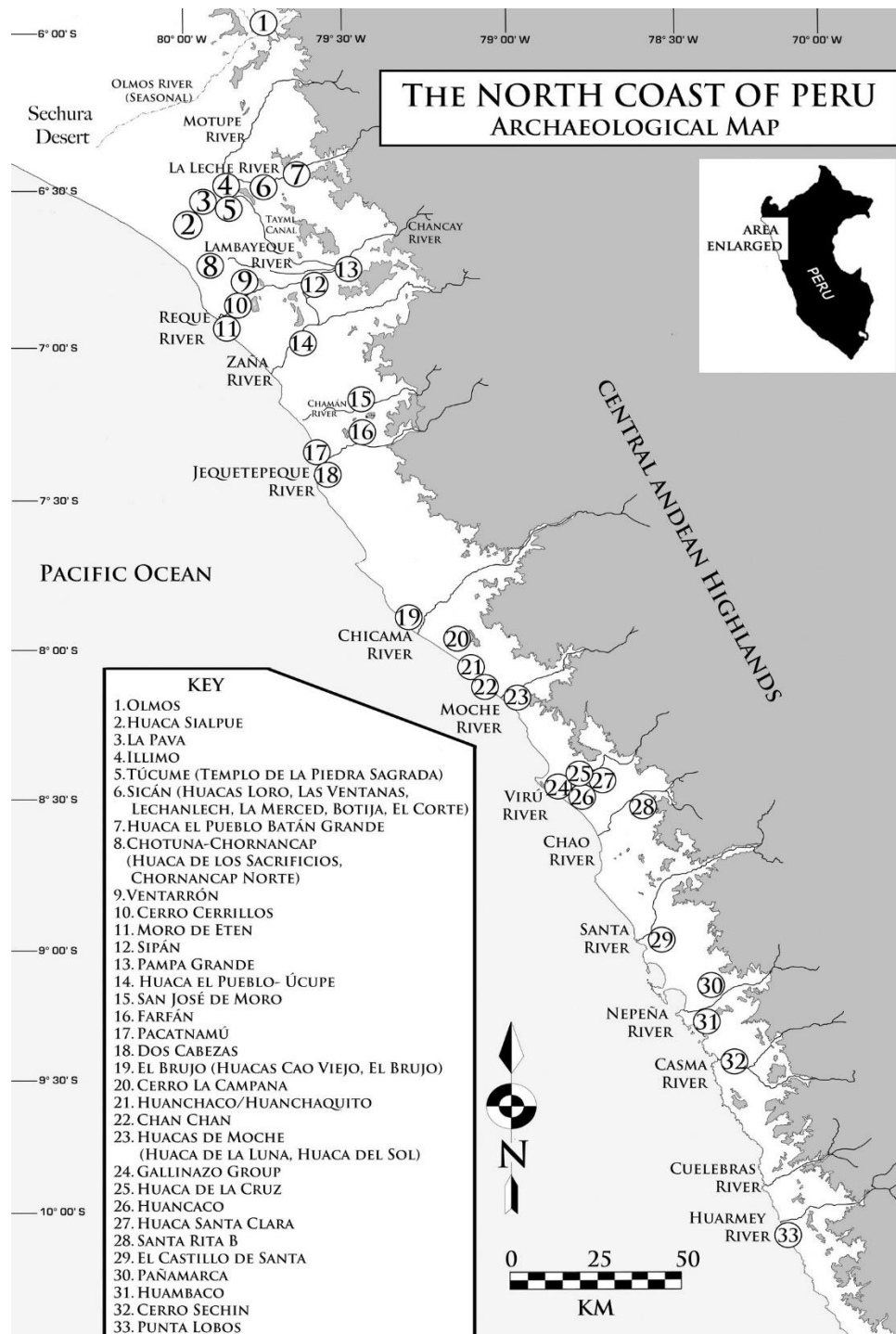


Figure 1: Map of the north coast of Peru with key site locations (Klaus, 2016).

Because of the dryness of the region, water is an incredibly important resource for all living things that live there, including humans. While fog rolling in from the ocean provides an important source of humidity for plant life, the rivers flowing from the highlands are the most vital water source. The rivers of the north coast originate in the mountains, being fed by rainfall and glacial melt. In general, the course of these rivers is very narrow and precipitous in the mountains, before broadening into fertile river valleys. The widest of the 14 is the Lambayeque Valley Comeplex, which contains five different rivers: the Motupe, La Leche, Lambayeque, Reque, and Zaña Rivers. The majority of the population of Peru lives in these river valleys and the soil is capable of supporting large-scale agriculture. Most of the native flora and fauna of the coastal regions is found within these defined regions. The valleys are separated by relatively high rocky ridges, which can be difficult to traverse. However, a succession of cultures built and maintained irrigation canals to carry water from the rivers across these ridges, connecting the inter-valley irrigation systems. Many of these canals are still in use to this day.

The El Niño Southern Oscillation (ENSO)

ENSO events are the result of complex meteorological and oceanological events involving water temperature, air temperature, and current directionality. The result is torrential rain, lasting up to nine months, followed by a period of drought (Bourget, 2016). Because rainfall is normally scarce, El Niño rains often prove devastating for the human inhabitants of the region. The adobe brick architecture of the late Cupisnique, Gallinazo, Moche, Sicán, and Chimú was not designed to withstand heavy rain and melted into mud. Rivers overwhelm their banks, causing flooding. Floods destroy crops

and can lead to dangerous mudslides and mudflows, of the kind which were seen in the recent coastal ENSO event of 2017.

While El Niño events impact human life on the north coast, they also bring temporary changes to the entire ecology of the region. Because of the warmer water brought to the coast from the north, phytoplankton dies off, causing native species to decrease in numbers due to the scarcity of one of the fundamental food sources of coastal marine life. Non-local marine life, such as several species of ray, sharks, swimming crabs, sea turtles, and many more, then begins to replace the native species during an ENSO event (Bourget, 2016). While flooding can prove destructive to preexisting fields, the excess water reaches dormant vegetation and the desert blooms with life (Bourget, 2016; Shimada, 1994). Floodwaters drive fauna to higher ground, causing all manner of creatures to be significantly more visible than usual. This can be both blessing and curse for the human inhabitants of the region, as more animal and insect life means new food sources, but also new pests. In summary, ENSO events affect nearly every aspect of life on the north coast, from the smallest crab to the largest adobe pyramid.

The Ideological Landscape

Land and Water

Andean belief was (and is) inextricably linked to the environment in which these people lived. The land itself was a living thing for ancient *norcosteños*, dotted with powerful sacred places (including mountains, hills, and springs) which are known today as *huacas* (Benson, 2001). Mountains were especially important to highland peoples, who viewed them as a sort of ancestor-heroes (Bastien, 1985; Rostworowski, 2018 [1983];

Steele and Allen, 2004). In the ethnographic present, many Andeans still perceive the relationship between humans and *Apukuna* (the Quechua term for such mountains, which literally translates to “lords”) as being that of children and parent (Steele and Allen, 2004). It is probable that this deep reverence has its roots in the pre-Hispanic period, along with the many myths and legends which, though heavily influenced by Spanish Catholicism, still retain a distinctly Andean flavor.

Mountains were also likely very important to lowlanders. It has been theorized that the many adobe pyramids and mounds which dot the coast were constructed to echo the mountains in a directly mimetic fashion, from whence flowed the vital rivers of the region. Sometimes these artificial *huacas* were built near or on natural *huacas*, such as Cerro Blanco, on the flank of which was built the imposing Moche Huaca de la Luna. In Andean thinking, a part can serve as the whole (Weismantel, 2015) so it is likely that the rocky outcrops around which these pyramids were sometimes built (for example, the outcrop in Plaza 3A of Huaca de la Luna [Bourget, 2016] or the outcrop under Huaca Botija at the site of Sicán [Klaus, personal comm. 2020]) represented a whole mountain at least in concept, meaning that pyramids may have shared in the power of the associated natural *huaca* and which was now in the domain of human influence.

The earth itself also features prominently in Andean cosmology, as seeds are planted in the earth and undergo a sort of transformation into vibrant and vital crops. However, without another vital component, water, this change cannot take place. Dry earth begets nothing, and its fertility is dormant. Water, in the form of river water diverted to fields through the use of canals, or rain water, which falls very rarely on the

north coast, is necessary to agriculture and life in general on the north coast. For this reason, the natural forces which shape the character of life in the region were regarded with both reverence and fear.

Rivers are therefore the lifeblood of the region. From their origins high in the mountains, the rivers of the north coast flow to the sea. For modern Quechua members of *ayllu* Kaata, rivers originate from a lake at the *uma pacha*, the top of the mountain and flows down the sides of the mountain. It returns to the peak through tunnels (Bastien, 1985; Sherbondy, 1992). The river erodes the land as it goes, bringing sickness and disaster to the people that live there. However, the river can also bring healing and connection, as they form the boundaries of the *ayllu* and, in a way, bind all its peoples together (Bastien, 1985). This cosmological understanding of hydrology is very similar to those held by the Inka, who saw the sea as being the beginning and end of all water in the Andes. In the Inka model, large lakes were upwellings of the ocean, linked by underground rivers. These larger lakes fed smaller lakes and above-ground rivers. Eventually all of this water flows back to the sea and the cycle continues (Sherbondy, 1992).

Though the symbolic importance of the ocean to the peoples of the north coast is somewhat mysterious, it likely varied considerably from what is described in the ethnohistoric and ethnographic record, as coastal peoples lived much closer to the ocean and relied more heavily on the resources which came from it. Marine resources have likely been exploited on the north coast since the arrival of humans in the area, as is evidenced by the (currently) coastal site of Huaca Prieta, which was utilized from around

14,500 BP to 3,500 BP (Dillehay, 2017). Although the coast line changed significantly over the course of the site's use-history, evidence suggests varying intensities of the utilization of marine resources. The ritual importance of the ocean to at least some of the people who have used Huaca Prieta over the course of its long history is evidenced by the large concentration of salt (mixed with charcoal from burning) in the soil of the *huaca*, indicating that large amounts of seawater were poured on top of the mound (Dillehay, 2017).

As is evidenced by the preceding discussion of ENSO and the normal arid conditions of the coast, water was both life and death for the people who called this region home. ENSO rains brought devastating floods to the region, wiping out crops and eroding architecture. Under normal climactic conditions, limited rainfall meant that the management of water was vital for agriculture. These environmental conditions have remained much the same for at least the last 6,000 years (Dillehay, 2017), meaning some kind(s) of the vital importance ascribed to water in this region has existed for at least this long. The construction and maintenance of canals was one aspect of water management in the region. Ritual activity, especially sacrifice (of humans, llamas, and others), was another. Through many diverse rites, people on the north coast petitioned and placated the *huacas*, assuring the continuation of life in the region. These rituals will be discussed in greater detail in the following section.

Blood and Water

The dyad of life and death is inextricably linked to the land and water in Andean cosmology. Life springs from death as seedlings spring from the earth. They are

complementary and cyclical. In the Andes, human lives were sacrificed in order to assure the fertility of the land and the people (Cordy-Collins, 2001a,2001b; Bourget, 2006, 2016; Klaus and Shimada, 2016; Reinhard and Ceruti, 2005). Moche blood sacrifice is the most well-known expression of this belief, due to the heavily-studied iconography on ceramic vessels and temple walls, as well as the bioarchaeological evidence from a multitude of sites across the north coast. However, while the Moche were certainly very prolific in their sacrificial rites, they were not the only culture on the north coast to sacrifice human beings. In fact, human sacrifice appears on the north coast fairly early on in the history of the complex societies of the region and continued throughout the pre-Hispanic period.

Violence on the north coast possessed a sacred character which is not so easily understood by modern Westerners. Warfare and human sacrifice in pre-Hispanic Peru were not merely cruelty for the sake of cruelty—they were a form of generative violence. Sacrifice was not about death, but about life. Blood was spilled and bodies offered for the life of the people. Dangerous natural phenomena, such as ENSO events, presented a threat to everyone who lived on the north coast. People believed that, through human sacrifice, they could persuade the mountains themselves to halt the rains and save their people. It is no wonder, then, that the sacrificers wielded political power when their rites were successful, and were eventually overthrown when their sacrifices became ineffectual.

For example, the blood of the warriors of Moche could not stop the rains of El Niño from damaging the very walls of the adobe *huacas* and the power of the ones who

built them. However, despite the failure of the Moche nobility, the linkage of blood and water remained strong in the *norcosteño* consciousness, leading to the continuation of blood sacrifice until late pre-Hispanic times. While the Moche state collapsed, to be replaced by the subsequent states of Sicán and Chimor and the Inka empire, the Muchik people lived on in the region. While the noble classes practiced sacrifice in distinct ways, the Muchik continued to practice sacrifice in ways that their ancestors would have recognized, with novel additions and changes to traditional rites.

It is probably impossible to know exactly how *norcosteños* felt about the rites that were performed in the sacred high places. While the persistence of human sacrifice, and blood sacrifice especially, seems to indicate continued faith that the offering of human life could procure desirable outcomes for the community, it is difficult to imagine that every single sacrificial victim held that faith to the bitter end. A very few sacrificial victims at the site of Huaca de los Sacrificios bore perimortem trauma suggestive of resistance to being sacrificed (Klaus et al., 2016), potentially indicating that these individuals did not want to die, regardless of whether their death would be beneficial to the community. However, other victims may have gone to their deaths gladly, knowing that they would become powerful protectors of their home. As Tanta Carhua, the *acllacapacocha*, said: “Finish now with me, for the celebrations which were made in my honor in Cuzco were more than enough” (Silverblatt, 1987; 98).

Life and Death

As has been hinted at in the previous section, death was not an end for the people of the north coast, but rather a transition from one state of being to another. The physical

and the spiritual were and are not separate in Andean thought, but intertwined and inseparable (Allen, 1982). Due to the aridity of the region, dead bodies mummify naturally—a visible, physical transformation from soft, living tissue to hard, dead flesh. At Paracas, the hardness of the dead was likened to the hardness of a seed and, like seeds, the dead were believed to sprout into new life (Frame, 2001). While Paracas is further to the south than the region currently under discussion, it is very likely that broadly similar ideological linkages between seeds and the dead existed in north coast cultures as well (Klaus et al., 2016; Lau, 2016). In any case, the theme of transformation from corpse into powerful ancestral being recurs in many of the cultures of the north coast.

Unfortunately, the evidence for these abstract concepts in the archaeological record is difficult to parse. For example, Kaulicke (2015) links the coastal location of Formative cemeteries, such as Moro de Eten, to concepts of regeneration and rebirth. He cites the potentially complicated symbolism of the sea, and briefly attempts to relate it to Formative understandings of death. The much later Inka viewed the sea as the ultimate source of all water, and thus, all life (Sherbondy, 1992). However, these cultural beliefs were far removed from those of the Formative period, and while it is tempting to apply this belief backwards in time, it is ill advised. More speculative still, is the relationship between the sun, the sea, and the mountains. The sun sets into the sea and rises again the next morning, reborn. Kaulicke mentions this notion in passing, but justifiably does not lend it much weight. A more tenable argument for the ancestrality and transformation of the dead in Formative Peru is found in mortuary goods with vegetal and transformative motifs (Kaulicke, 2015).

Moche iconography is much more explicit in regards to beliefs about the persistent existence of the deceased. This much later culture also perceived death as the beginning of the transformation of the deceased into an ancestral being, based on the depictions of mortuary ritual in their iconography (Bourget, 2006; Hill, 1998). The Burial Theme depicts the narrative of an individual's death and subsequent burial. After burial, the deceased was "awakened" through the ritual use of sound. Iguana (a key figure in Moche iconography) holds a rattle staff with copper bells, presumably the instrument used to awaken the dead. The deceased individual then leaves the tomb, undergoing a transformation from dead corpse to inhabitant of the afterlife. While uncertain, there is what may be a vegetal symbol associated with the scene of the coffin rising from the grave—a sprouting seed (Bourget, 2006). After the transformation, the individual is reinstated into their position of power in the afterlife.

Vegetal metaphors are present in Cupisnique (Klaus and Toyne, 2016), Moche (Bourget, 2006), Sicán (Klaus and Shimada, 2016), Chimú (Klaus et al., 2016), and Inka imagery, to varying degrees. For some of these cultures, it is difficult to differentiate whether the plant imagery is related to the fertility produced and reproduced by sacrifice, or whether it is meant to symbolize the transformation of the deceased into a powerful ancestor. Images of seeds, where they exist, is likely related to the transformation of the dead, as is the case at Paracas, as previously discussed. However, plant life is generally associated with vitality and fertility—concepts which are related to both sacrifice and the ancestor beings to which that sacrifice may be offered.

Modern scholars have arrived at this interpretation of plant imagery based on ethnohistoric accounts of Inka beliefs and practices, as well as ethnographic evidence of modern Quechua and Aymara belief. The Inka preserved the bodies of their emperors in the Temple of the Sun in Cuzco. These mummies were, in many ways, treated as if they were still alive—they were dressed in fine clothes, given food and drink, and owned land (Allen, 1982; Salomon, 1995). Similar beliefs regarding the dead were practiced throughout Tahuantinsuyu, with the mummies of different *ayllus* kept in caves or tombs and nurtured by their descendants, as part of an ancestor cult (Salomon, 1995). These *huacas*, both the mummy and the place, were deeply important to the well-being of the *ayllu* (Allen, 1982).

Modern Quechua beliefs regarding the persistence of the dead are similar to those of the Inka. However, they are filtered through the colonial history of the region. Catherine Allen (1982) described the storage of dried potatoes and related it to the Quechua understanding of the dead. Like the potatoes, a corpse becomes dry and hard. Like the potatoes, which are “dead but potentially alive” (Allen, 1982; 187), mummies, as ancestor beings, are powerfully vital. In the case of the historic community of Sonqo (where Allen conducted her research), the older dead are heaped up in a collective pile of bones and the ancestors are collectively referred to as *Machula Aulanchis* (Our Old Grandfathers). This particular treatment likely arose due to the incursion of Catholicism and the insistence that the dead be given a proper (and permanent) burial. As such, graves in Sonqo were not tended, other than to be turned over so more burials could be fit.

Regardless, the *Macula Aulanchis* retain their ancestral power. It is they who make the fields fertile and the potatoes grow big (Allen, 1982).

The Living and the Dead

Based on the above discussion, it does not seem so strange that the dead remained integral to the social lives of those left behind. The living did not abandon their dead to the earth. Rather, they cared for them as important members of society—the ancestors were *huacas*, and as such, needed to be fed and tended to. In exchange for this care, the ancestors would exercise their power in order to protect and assist their descendants. The desiccated corpses and bones of the once-human, now supernatural beings or ancestors, were important sources of fertility and (re)generation. However, ancestor *huacas* were not necessarily benevolent entities. The ancestors could be easily angered or offended, potentially leading to dire consequences for their living descendants.

In isolated historic Quechua communities, the *huacas* (both ancestor beings and animistic entities) were still propitiated with offerings of food and drink, in order to keep them from turning against the population (Bastien, 1985; Allen, 1982). The pre-Hispanic dead were also provided with sustenance by the living. However, it is probable that interactions with the dead were seen in a more positive light in the past (Allen, 1982). As previously discussed, the ancestor mummies of the Inka frequently interacted with their living descendants, as briefly discussed in the previous section. The living fed the dead and clothed them, treating the mummies as living beings. Family members would petition their ancestors for help and children would be presented to the ancestors when they reached a certain age (Salomon, 1995). Mummies of the Inkas (the ruler of the emperor)

were treated with especial reverence and honor. In the place where the mummies were kept, a living woman would sit and fan flies from them and anyone who wished for an audience with the dead king would first have to remove their footwear (Salomon, 1995).

While the Inka occupied the north coast of Peru, they originated much further to the south, in the southern highlands in and around the valley of Cuzco. The local peoples of the north coast retained much of their own religious beliefs and practices, as discussed in the section on sacrifice. However, there is evidence from the north coast that suggests that the idea of feeding and tending the Andean dead probably had its origins in pre-Inka beliefs and practices and was not confined to the central coast. At the Sicán site of Huaca Loro, Shimada and colleagues noted a cane tube at the mouth of the tomb, which would have allowed at least symbolic access to the dead for feeding. The authors hypothesize that liquids may have passed along this conduit, possibly symbolically nourishing those who were interred there, in a fashion similar to later Inka practice (Shimada et al., 2015).

The manipulation and curation of the dead after burial was very common on the north coast, especially among the Moche (Gayoso-Rullier and Uceda-Castillo, 2015) and Sicán (Shimada et al., 2015). The living would remove skeletal elements from the tomb and presumably include them in ritual activities, before eventually reburying them. The most common elements removed were skulls, possibly due to the identification of the head with personality or individuality (Weismantel, 2015), and long bones. There is evidence that this practice continued amongst the Muchik well into the Colonial period, in spite of Spanish Catholic influences (Klaus and Tam, 2015).

The bodies of sacrificial victims were also manipulated after death. Differing forms of the postmortem manipulation of sacrificial victims have been noted amongst the Moche (Bourget, 2016), Sicán (Shimada et al., 2015), and Chimú (Klaus et al., 2016). Patterns of manipulation differ across time periods and even across individual sacrificial events. At Huaca de la Luna, there is significant evidence of the postmortem manipulation of human remains. Isolated skeletal elements, as well as semi-articulated units, were found outside of anatomical position in very intentional locations. For example, a rib and mandible were inserted into the sacrum and thoracic cage of one individual (Bourget, 2001b). Other victims were treated in a similar fashion (Bourget, 2001b; 2016). In addition, intact limbs were found divorced from the rest of the skeleton. These skeletal elements were removed when the body was still partially fleshed, but in a state of decomposition advanced enough to allow for the relatively easy removal of intact limbs (Backo, 2016). At Chornancap Norte, three burials of sacrificial victims had been incompletely exhumed at some point in the past (Klaus et al., 2016). Finally, at Huaca de los Sacrificios, burial Chamber 2 was opened, as is evidenced by the unnatural disarticulation of the individuals within the tomb (Klaus et al., 2016).

Evidence (missing distal phalanges, disarticulated bones, and fly pupae) suggests that delayed interment was practiced across the north and central coast (Shimada et al., 2004; Shimada et al., 2015). At Huaca de los Sacrificios, the majority of the individuals had not been immediately interred after death, but before decomposition had advanced to the point of the disarticulation of the distal phalanges (Klaus et al., 2016). At Huaca Loro, some retainer burials had experienced a long period of curation prior to interment

(Shimada et al., 2004). Taphonomic evidence points to delayed burial of some of the retainers of the Moche Lord of Sipán as well (Bentley and Klaus, 2016). It is possible that the delayed interment of the deceased and the ensuing processes of decay (especially the deposition and hatching of fly eggs) was necessary for the proper departure of the *anima* (not to be confused with the Catholic conceptualization of the soul). Quechua folklore held that the *anima* travels from a decaying corpse in the form of flies. Moche ceramics sometimes depict fly puparia, lending credence to the notion that perhaps similar thoughts led pre-Inka peoples to allow the dead to be colonized by maggots (Shimada et al., 2015).

After the Conquest, the Spanish directed much of their anti-pagan ire towards the veneration of the dead. They burned mummies in front of people and made sure that the dead were “properly” buried in churchyards, forbidding the living from tending to the dead as they had for centuries (Arriaga, 1621). The trauma this must have caused Colonial Peruvians is unimaginable—to watch your beloved ancestor, who had protected your community for time immemorial, burned like so much cheap straw. Even worse, Peruvians were prohibited from giving those ancestors food and drink, tending to them as was right and proper. The newly colonized people of the north coast must have felt great anguish at the fact that their ancestors were slowly starving and suffocating beneath the earth (Murphy et al., 2011). They must have been afraid that the ancestors were angry at them for having abandoned their dead to the earth, regardless of the fact that this was beyond their control. Through the calculated cruelty of their actions, the Spanish introduced a new kind of violence into Peru including western-style structural violence

(Klaus, 2012), which involves subtle forms of non-overt violence or restricted access to resources for the gain of a few at the cost of the health and well-being of the many. One poignant example of this change can be found in the history of the site of Túcume. On the top of the *huaca*, where once the blood of sacrificial victims was spilt to ascertain the fertility of the land and the people, heretics were burned alive by Spanish Inquisitors, in yet another effort to forcibly convert and control the native population and the land (Klaus and Tam, 2015).

Culture History

First Peoples

As noted earlier, the north coast of Peru has been inhabited for over 15,000 years. The region has seen the rise and fall of many different cultures, from the enigmatic first people to the massive Inka empire. The date of the first migration to South America is hotly debated—the consensus for many years was that North America was peopled around 15,000 BP and Central and South America were subsequently populated around 13,000 BP. However, new evidence indicates a deeper antiquity. As of 2015, radiocarbon and luminescence dates from the site of Monte Verde, in Chile, placed an initial colonization of South America around 18,500 to 14,500 BP (Dillehay et al., 2015). Therefore, it is probable that the peopling of the north coast of Peru occurred sometime in that interval or slightly before, prior to the establishment of Monte Verde. Even more recently, the earliest use of the north coast site of Huaca Prieta has been dated to 14,500 BP (Dillehay, 2017), extending the first occupation of the north coast further back in time.

The Preceramic Period

The long period between the enigmatic first inhabitants of the region and the development of ceramic production technology is known as the Preceramic Period. This period saw the rise of ceremonial centers and interaction and trade between peoples across the region (Dillehay, 2017). This period was very long, spanning the entirety of the time before ceramics were developed, from the first human migration at least 15,000 years ago to around 1,500 BC (3,500 BP) on the north coast of Peru.

This period is still quite understudied. Indeed, its defining feature is the lack of ceramics, rather than the presence of some other emblematic style or technology. Though lithic technologies have been relatively intensively studied over the course of the 20th century, resulting in the definition of technological cultures such as the Paiján, these studies were undertaken in the highly descriptive approach of the time. From 1972 to 1979, Claude Chauchat and colleagues conducted fieldwork in the Cupisnique region, located between the Chicama and Jequetepeque Valleys. This work was undertaken with a processualist approach, resulting in interpretations heavily centered on the Paiján's adaptation to their environment and emphasized the form of technology and subsistence. A postprocessual investigation of these people has yet to be conducted.

Radiocarbon dates generated from Chauchat's study reveal that the Paiján tradition, which was first described by Larco Hoyle and Junius Bird in the 1940s, dates to between 10,720 BP and 7,940 BP (Chauchat, 2006 [1992]). The lithic technology for which these people are known underwent subtle changes over time, but the hallmark of this style remains their long projectile points, which are readily recognizable as paleo-

style points. Chauchat interpreted the wide distribution of these points across the landscape as being evidence of the highly mobile existence of the Paiján, who were hunter-gatherers. Lithic workshops (archaeologically definable as concentrations of debitage) were typically located relatively close to a source of stone. The Paiján subsisted on fish and small terrestrial fauna, including lizards, *caracoles* (land snails), catfish, and rodents. It is also likely they used flora as well, based on the lifeways of modern hunter-gatherers, but this material has not been well preserved (Chauchat, 2006 [1992]).

More recently, Tom Dillehay's investigation of the site of Huaca Prieta has complicated and enriched our understanding of the Preceramic. As previously mentioned, this site was utilized (not inhabited, as it was never a domestic site) for an incredible length of time, stretching from around the time of the first inhabitants of the region to the beginnings of the manufacture of pottery (14,500 BP to 3,500 BP) (Dillehay, 2017). Dillehay and colleagues have divided this long occupation into five different phases. For the first 7,000 years of its history, the site was used infrequently by both marine and terrestrial foragers (similar to the Paiján). Construction of the mound began around 7,571 BP and continued for the rest of the mound's history.

This site differs greatly from later mound sites in its construction, use, and history. The people who built it were not strictly sedentary agriculturalists. While at some points in the site's history, people lived in permanent locations, at others they did not. Subsistence also varied over the course of time, but was in general mixed, with people exploiting terrestrial and marine resources as well as small-scale farming. The mound itself was not the result of a large-scale effort with a centralized authority organizing

large numbers of people to build the monument. Rather, it was built over a long course of time via small-scale depositional rituals, including burials, by relatively egalitarian peoples. The mound served as a center for ritual and memory, a commonality of many diverse household units. The social network surrounding this site spread across many different biomes, resulting in the presence of exotic food and goods at the site, probably offered as part of the rites which occurred there. Finally, the presence of salt and charcoal in the soil of the mound indicates the pouring out of salt water and the lighting of fires. It is possible that these ritual actions indicate a belief in the dual nature of water and fire, perhaps an early expression of the dual and cyclical nature of life and death (Dillehay, 2017). In summary, Huaca Prieta and the surrounding domestic sites provide evidence that the cultures of the Preceramic period did not simply revolve around subsistence and survival. Rather, they possessed their own unique cultural expressions and lifeways. They were as human as their pottery-making descendants.

The Cupisnique

The development of pottery on the north coast coincided with the rise of the Cupisnique culture, which lasted from around 2,200 BC to 300 BC (Elera, 1998), in the Early Horizon (Elera, 1993; Klaus and Toyne, 2016). This culture was first described by Rafael Larco Hoyle in 1941 and was located primarily in the Chicama, Jequetepeque, and Lambayeque Valleys. While earlier scholars believed Cupisnique to be a northern expression of Chavín culture, Carlos Elera (1998) first argued that Cupisnique culture originated on the north coast and was not directly related to Chavín. In fact, Cupisnique predates the Chavín horizon (Jones, 2010). Unlike their predecessors, the Cupisnique

were more intensive agriculturalists, while still relying heavily on marine and terrestrial resources. Their social organization was also more hierarchical than anything in the Preceramic, as is evidenced by the patterns of material culture they left behind.

Cupisnique architecture was built out of stone in the Early Cupisnique period and in stone and/or conical adobes later in time (Larco, 1941). This early culture constructed large ceremonial sites, such as Huaca de los Reyes (Elera, 1993) and Puémapa (Elera, 1998). Based on this evidence, it is likely that the Cupisnique possessed some form of centralized authority or power structure run by a small number of influential and powerful peoples, one which could organize sufficient labor to construct such large structures (Klaus and Toyne, 2016; Elera, 1993). The Cupisnique were organized into a number of small polities across the north coast at this time, as there are a number of ceremonial centers of roughly equal size or status (Elera, 1998; Jones, 2010). These polities were ruled by an elite class whose existence is evidenced by the differential distribution of high-status grave goods such as anthracite mirrors (Jones, 2010). In the iconography, and likely in life, ear plugs/spools served as status markers (Jones, 2010). Social status was likely ascribed at birth, as is evidenced by the burial of children with high-status objects (Elera, 1998).

Cupisnique ceramics are crude in comparison to those of later traditions, but they possessed the same stirrup spout form found throughout the prehistory of the north coast. Like the many later peoples who inhabited the region, the iconography which decorates these ceramic vessels is rich, allowing the partial reconstruction of Cupisnique beliefs and ideology. Based on this visual corpus, their religion appears to have centered around

a feline, decapitator beings, and the idea of balance or dualism (Jones, 2010; Elera, 1993; Larco, 1941). Depictions of this feline in association with a cactus, likely the San Pedro cactus which is still used by *curanderos* for its hallucinogenic properties, seem to indicate the importance of shamanism in Cupisnique belief (Jones, 2010; Elera, 1998). The presence of decapitators (especially Spider Decapitators) indicate that the Cupisnique may have practiced human hunting or capture and sacrifice. This is further supported by the prominent portrayal of captives (both human and non-human) in the iconography (Jones, 2010). Finally, the importance of dualism is perhaps best evidenced by the *Strombus-Spondylus* dyad, which may be linked to other paired concepts, such as male-female, right-left, and water-blood, based on the natural attributes of these shells (such as color) and their contextual placement (Jones, 2010).

. Cupisnique art portrays human decapitation as a frequent theme (Cordy-Collins, 2001), meaning that human sacrifice may have been conducted as far back as the Early Horizon. Five distinct supernatural decapitator-beings are depicted in Cupisnique art: a spider, a bird of prey, a fish, a monster, and a human (Cordy-Collins, 2001).

Interestingly, Moche iconography also depicts decapitator-beings, even though the two cultures were separated by a significant amount of time. It is possible that these beings were invoked by the Moche in order to legitimate themselves by a link to the past. While it is very likely that the Cupisnique decapitator-beings, like those of the later Moche, were actually embodied by ritual specialists who conducted actual human sacrifice, no bioarchaeological evidence of this sacrifice has yet been found, leaving the question of the actual practice of human sacrifice in the Early Horizon open to further investigation.

Little is known about Cupisnique gender roles. Males are portrayed as wearing loincloths and ear plugs, while females are portrayed as wearing long decorated cloaks (Jones, 2010). It is probable that male and female were seen as being complementary to one another, an ideological dyad, as was the case in later Andean societies. However, this notion is based heavily on analogy with these later cultures, rather than archaeological and bioarchaeological data.

The Salinar

The Salinar culture was first described by Rafael Larco Hoyle in a 1944 monograph and occupied the Moche, Virú, and Santa Valleys during the period following the collapse of the Cupisnique around 600 BC (Klaus and Toyne, 2016). Salinar ceramics feature naturalistic representations of flora, fauna, and humans. The Salinar were the first to represent coitus on the north coast in the form of sculptural ceramics (Larco, 1944). Burials contain offerings of ceramics, seeds, caracoles, clams, camelids, and fruit, as well as skeletons covered with red pigment (Larco, 1944). It is likely that there was some degree of continuity between the Cupisnique and the Salinar, based on the existence of Salinar occupations of Cupisnique sites, such as Puémape (Elera, 1998) and the similarity of some aspects of Salinar decorative motifs with those of Cupisnique (Larco, 1944). It is possible that there may have been conflict between the Salinar, who were likely an intrusive culture (based on stylistic analysis of Salinar ceramics), and the descendants of the Cupisnique (Klaus, 2008). This culture is still poorly understood and under-researched.

The Gallinazo

The Gallinazo phenomenon (also known as Virú) was first identified by Wendell Bennet in 1936 in the form of a diagnostic ceramic ware (Donnan, 2009; Bennett, 1939). The influential Larco Hoyle (1945) coined the term “Virú culture,” but Gallinazo has become the accepted name of the phenomenon in question (Makowski, 2009). The Gallinazo people rose to prominence on the north coast around the same time as the decline of the Salinar (Klaus, 2008). Traditionally defined based on the distinctive ceramic types noted by Bennett and Larco Hoyle, the true nature of Gallinazo has been debated in more recent times (see Donnan, 2009; Uceda, Gayoso, and Gammara, 2009; and Castillo, 2009). The general consensus seems to be that Gallinazo is a tradition representative of an ethnic group, a group which persisted into and coexisted with the later Moche, but which was not biologically distinct from the Moche (Castillo, 2009; Shimada, 1994; Sutter, 2009). The Gallinazo constructed monumental architecture, which likely served as ceremonial-civic centers as was the case with other mound-building cultures in the region.

The Moche

The Moche culture is one of the most intensively studied cultures on the north coast of Peru. First identified by Larco Hoyle (1939), the Moche inhabited the coastal region stretching from the Huarmey Valley to the Piura Valley from around AD 100 to 800 (Benson, 2012). The Moche heartland was centered in the valley which gave the culture its name, the Moche valley. Since the definition of the Moche culture in 1934, scholars believed the Moche to be a single, united state-level civilization. However, the

current understanding is that there were multiple Moche polities across the north coast, with a shared cultural tradition (Castillo and Donnan, 1994; Shimada 1994; Benson, 2012; Klaus et al., 2018). The main two Moche polities were located in the northern and southern parts of the north coast and are distinguished by differences in their ceramics, metallurgy, and regionally variable artistic representations of underlying Moche ideological themes. Sculptural portrait vessels are nearly exclusively associated with the southern polity, while fine-line painted vessels originated in the north especially in the Late Moche era. The metalwork of the north was arguably far finer than that of the south, as can be seen in the comparison between the stunning artwork and objects buried with the Lord of Sipán and the less intricate (even what could be called perhaps technically crude by comparison) metalwork uncovered at the Huacas de Moche.



Figure 2: Moche portrait vessel, Museo Larco, Lima, Peru. Photo taken by K. Sargent.



Figure 3: Huaca del Sol, Moche, Peru. Photo taken by K. Sargent.

Moche religious and political life centered on the large adobe *huacas* which towered above the landscape, where rituals were performed to perpetuate the life of the Moche people as well as the power and legitimacy of the Moche elite (Benson, 2001; Bourget, 2001a; 2001b; 2016). Among these rituals were the previously discussed rites of sacrifice, wherein human blood was offered to the *huacas*. Moche iconography features Decapitator entities very prominently, along with captured warriors whose blood was to be offered for the fertility of the land. Multiple types of human sacrifice are portrayed in Moche iconography—humans are fed to wild animals, potentially thrown off of mountain peaks, and decapitated (Bourget, 2016). Though it is impossible to know for certain precisely what the different purposes behind these methods were, they all have the shared characteristic of making their victims bleed profusely. Blood, therefore, is a central theme of Moche sacrifice, and its sacrificial offering to the *huacas* secured the life of the people

by ensuring the fertility of the land (Toyne, 2015). The Moche offered human blood to the earth itself—as humans need water and food, *huacas* need blood (Benson, 2001).

During El Niño events, the Moche offered special rites to make the torrential rains cease. Some of these sacrificial victims were uncovered at Plaza 3A of Huaca de la Luna. Skeletons of at least 117 individuals were found embedded in dried mud, interspersed with deposits of dry wind-blown sand, indicating that the ritual activities in which these individuals were involved were likely associated with the torrential rains of an ENSO event. Ritual specialists likely returned to Plaza 3A multiple times, in order to observe and manipulate the decomposing remains in a ritually-prescribed manner, as many skeletal elements are disarticulated in specific patterns (Bourget, 2016). Broken ceramic figurines of captive warriors have also been found in the same context as the human sacrifices. Some of these figurines bear decorations which Bourget links to the pupal cases of muscoid flies, further supporting the notion that the process of decomposition was just as important as the actual moment of sacrifice to the rites of the Moche.

Moche sacrificial practices are deeply tied to different kinds of power. It appears that both sacrificer and sacrificed were members of the Moche elite, at least in some cases (Klaus et al., 2018). Priestly burials have been uncovered at multiple Moche sites, most notably at Sipán and the Huacas de Moche. These individuals were interred with many fine grave goods and buried in a place of sanctified status on the adobe *huacas* themselves. On the other hand, their victims appear to have constituted a warrior class who engaged in ritual warfare for the explicit purpose of taking captives for sacrifice (Bourget, 2005). While in the past it has been debated whether Moche warfare was ritual

or secular in nature (Bourget, 2001b; Verano, 2001b) Bourget (2001a; 2016) has argued that the Moche linked ritual hunting of deer and seal with warfare and the captives taken for sacrifice, indicating the possibility that Moche warfare possessed a highly ritualized character. In the iconography, battles are overseen by a central personage, who Bourget calls Wrinkle Face and others call Ai Apaec, a supernatural being. However, Wrinkle Face was very likely embodied by an actual human being, as were other figures related to the Sacrifice Theme. Through the association of human lords and supernatural *huacas*, the Moche elite may have laid claim to supernatural power over their environment. Therefore, human sacrifice became a way to invoke both supernatural power and political power. Those who control the rains control life. Those who wield the *tumi* control death. Those who control both, rule.

Beneath the elite class were members of a middle and lower class. At the site of Huacas de Moche, the lower class lived outside of and beyond the urban precinct, and were responsible for producing adobe bricks, building and maintaining the canals, and producing food. The middle class, composed of artisans, servants, ritual specialists, and others, lived within the urban precinct at this site (Chapdelaine, 2001). The artisans or craftspeople worked under elite patronage, providing the upper class with the high-quality goods they required. These crafts included the manufacture of ceramics, copper objects, textiles, *chicha*, and shell objects (Shimada, 2001). Both biological males and females were artisans (Rengifo and Castillo, 2015).

Moche beliefs and practices surrounding death and the dead were both complex and fundamental to Moche cosmology. Upon death, an individual would begin a

transformation into an ancestor being or *huaca*, wielding great power to help or harm the living (Bourget, 2006; Hill, 1998). Moche mortuary practice reflected both this belief and the resultant respect due the dead through burials filled with sumptuous burial goods and carefully placed bodies, typically buried in an extended position, but sometimes flexed (Donnan, 1995). The bones of the dead were sometimes manipulated after death (Bentley and Klaus, 2016).

Although gender has not been a topic of much interest in Moche studies, both the iconography and the rich tombs of both elite and middle-class men and women have shed some light on the matter. Women are portrayed with long braids often ending in “fox-snake” heads and long tunics or dresses. Men are portrayed with shorter hair, wearing tunics and breechcloths or skirts. Depending on the status of the individual in question, elaborate headdresses were worn by both genders. In ritual spaces, it seems that the roles of male and female priests were distinct. Male and female personages in the iconography, who were embodied by flesh-and-blood priests and priestesses, are depicted carrying out different ceremonial roles (Bourget, 2016; Cordy-Collins, 2001a). For example, in the Presentation Theme, it is a woman who bears the cup of sacrificial blood. The skeletons of these individuals have been uncovered at the site of San José de Moro. The rich funerary assemblage of the female skeletons uncovered there (and elsewhere) speaks to power and prestige to rival that of the male priests (Villavicencio, 2017).

Lower class men and women may have also been on a somewhat equal footing as well, as both males and females worked as craftspeople in the workshops (Rengifo and Castillo, 2015). Little is known about the lower-class men and women of Moche society.

However, based on the above evidence, combined with the heavy emphasis on dyads and complementarity of the ideology of the Moche and other Andean societies, it seems reasonable to argue for a rough equality of the genders, at least in theory.

The Sicán

The Sicán culture, also known as the Lambayeque culture by some scholars, emerged around the time of the collapse of Moche (AD 700 - 800) in the La Leche Valley and flourished in its Lambayeque heartland until AD 1375 (Klaus et al., 2017). The Middle Sicán period (AD 900-1100) was the apogee of the Sicán culture (Shimada 2000). Although Sicán ceramics and textiles were impressive, the pinnacle of their artwork was their metallurgy. Utilizing advanced techniques such as arsenical copper alloying, the Sicán crafted both practical metal instruments, such as *tumis* and hoe blades, and stunningly beautiful high-status items such as the famous golden headdress (Fig. 5) uncovered from the Huaca Loro East Tomb at the site of Sicán (Shimada, 2000). Different metals possessed deep social and religious significance for the Sicán, with gold and silver being reserved for the highest class, *tumbaga* (a gold-silver-bronze alloy) for the second highest class, and bronze and copper for the lower classes (Shimada et al., 2000).



Figure 4: Middle Sicán vessel, representing the Sicán Deity . Photo taken by S. Scholes, courtesy of H. Klaus.



Figure 5: Mask of the central personage of the Huaca Loro East Tomb. Photo taken by Y. Yoshii, courtesy of H. Klaus.

The Sicán culture (the capital of which was located at the site of Sicán) was a theocratic and multi-ethnic state, with a hierarchically-ranked population of ethnic Sicán

nobility and Muchik (and others) commoners. The principle deity of the Sicán elite is simply known as the Sicán Deity (Fig. 6), with human counterparts in the Sicán lords (Shimada, 2000). Adobe *huacas* were important ceremonial centers and places of great spiritual power. These imposing structures were constructed in a different manner from similar Moche structures. Instead of solid columns of adobe bricks, Sicán *huacas* were typically constructed using adobe brick chamber filled with dirt and refuse. Important individuals were interred in elaborate shaft tombs under and around the *huacas*, while commoners were buried in shallow pits in the floors of residences and workshops (Shimada, 2000). As with the Moche before them, the Sicán performed rituals on their *huacas*. However, the character of these rituals was different from that of their predecessors, centering around the veneration of ancestors (Klaus and Shimada, 2016).



Figure 6: Sicán Deity, reconstruction from a painted textile from Huaca Las Ventanas. (Klaus and Shimada, 2016).

The Sicán practiced human sacrifice, but they did so in a manner totally different to that of their Cupisnique and Moche predecessors. While these cultures focused on making sacrificial victims bleed, the Sicán frequently dispatched victims in manners which left no trace on the bones (Klaus and Shimada, 2016). Ligatures have been found around the necks of some victims, indicating that some individuals, at least, were strangled (Verano, 2001a). The Sicán elite practiced sacrifice for the dedication of tombs and buildings under normal circumstances and to stop the rain under the catastrophic conditions of an ENSO event (Klaus and Shimada, 2016). However, Sicán was a multi-ethnic society. While the elite Sicán ethnic group may have practiced sacrifice very differently from their predecessors, the persistent Muchik ethnic group, which made up much of the commoner population of Sicán, continued reproducing rituals in forms that would have been quite recognizable to their ancestors, the Moche. Bioarchaeological evidence from the site of Cerro Cerrillos reveals that the Muchik slit the throats of their victims for blood-letting and opened their chests, possibly for the removal of the heart or lungs (Klaus, Centurión, and Curo, 2010).

As in Moche society, both men and women wielded politico-religious power. The Late Sicán Señora de Chornancap was the central personage of her tomb, the extravagance and placement of which indicated that she was undoubtedly a member of the highest elite of Late Sicán society (Villavicencio, 2017; Wester, 2018). Her importance is also emphasized by the portrayal of females in the iconography. It is possible, as Wester La Torre argues, that she embodied both the goddess of the sea and the goddess of the moon. Both of these natural forces were associated with the feminine

throughout the history of the Andes. The prominent place of female divinities/*huacas* such as the goddess of weaving, as well as the depiction of a female figure birthing the rivers (Narváez, 2014), indicates that the feminine held importance within Sicán religion. The status of human females (and males) in Sicán society varied with their class (which was also associated with their ethnicity). Women could be “*madres, trabajadoras de campo, tejedoras, chicheras, funcionarias intermedias, doncellas, concubinas, curanderas, sacerdotisas, (y) sacerdotisa suprema...*” [mothers, fieldworkers, weavers, makers of *chicha*, intermediate functionaries, elite ladies, concubines, shamans, priestesses, (and) supreme priestess] (Wester, 2018: 236, translation mine). Not all of these professions were exclusive to women. Men could also be field workers, weavers (among other kinds of artisanry), lords, and priests. As the Moche, it appears that the gender ideology of the Sicán centered around ideas of complementarity, with emphasis on the generative aspect of the feminine and the fertilizing aspect of the masculine (Villavicencio, 2017).

The Chimú

The Chimú rose to prominence before the fall of the Late Sicán, around AD 1375, expanding outwards from their capital at Chan Chan located in the Moche Valley (Shimada, 2000). Chimor (another name for the Chimú state) was conquered by the Inka around AD 1460 (Klaus, 2008; Rowe, 1948; Cabello, 1586). This kingdom is predominantly known from the site of Chan Chan, with most studies focusing on the architecture of the site (e.g., Moseley and Day, 1982; Sakai, 1998). Chan Chan consists of urban area and *ciudadelas*, which belonged to royal lineages and were the seat of each

ruler's power. These large complexes contain plazas of varying sizes, storage rooms, and audience chambers (Day, 1982). Each *ciudadela* is surrounded by a wall of approximately nine meters in height. This impressive feat of engineering and all the architecture of the Chimú capital was built using *mit'a* labor, a system of tribute where subject peoples were required to work for the state for a period of time after which they were rewarded in a conceptually reciprocal fashion (e.g., access to irrigation water, food redistributed by the state) (Moseley, 1982).

When they were not working for the state, the common people of Chimor worked and lived in diverse means. There was a rural lower class, who farmed the land and provided food for the kingdom. The goods from the satellite sites spread across the valleys where the majority of the rural Chimú subjects lived supported the capital and especially the elite who lived there (Pozorski, 1982). There was also an urban class, who were largely craftspeople, organized by kinship and profession (Topic, 1982). Some of these craftspeople were once the metalsmiths of the Late Sicán, who were perhaps taken to the capital to yield their talents to new patrons. Craft production followed much the same pattern as that of the Moche and Sicán, with multiple crafts being practiced in the same workshop (Shimada, 2001). In addition to this urban population of craftspeople, there was also at any given time a fairly large transient population in Chan Chan who were serving their *mit'a* time. This mixture of many different groups of people must have made the capital a bustling city-scape in its time

The Chimú state was largely secular in nature, expanding aggressively, but, for the most part, allowing local peoples to maintain their religious beliefs (Klaus et al.,

2016; Shimada, 2000; Keatinge, 1982). In contrast to the art of the Moche and Sicán, Chimú art featured repetitive motifs of animals and occasionally humans or anthropomorphic beings, as seen on the walls of the *ciudadelas* of Chan Chan. This could indicate the absence of an official state religion. However, it is also possible that Chimú kings were seen as divine beings (Moseley, 1982). Chimú kings were buried with large numbers of retainers in platform mounds located in their *ciudadelas* (Conrad, 1982). This implies the existence of some form of cult of the dead, perhaps similar to that of the later Inka. In an admittedly older work, John Rowe states that the Chimú bore special reverence for the moon (Rowe, 1945). However, in this account he conflates the Chimú and Sicán since more than 30 years would pass before the latter was distinguished as separate and earlier in time. Rowe stated that the primary temple of the Chimú was named *Si-an*, which he translates as House of the Moon. This term or some version of it was widely used on the north coast to name a ceremonial center.

The Chimú also practiced human sacrifice, including blood sacrifice. It is probable that the linkage between water and blood continued into the Chimú period, based on the association of water-related artifacts and imagery with sacrificial victims (Klaus et al., 2016). Like the Moche and the Sicán before them, the Chimú performed human sacrifice in the face of ENSO events. While the Sicán sometimes sacrificed children as a form of extra-powerful offering for this purpose (Klaus and Shimada, 2016), the Chimú sacrificed children in far greater numbers. At the Huanchaquito-Las Llamas site, the bodies of over 140 sacrificed children were uncovered. Many of these children revealed a single transverse cut through the sternum, a method for opening the chest not

seen at previous sites (Prieto et al., 2019). During normal circumstances, the Chimú also practiced dedicatory sacrifice. At the capital of the Chimú state, Chan Chan, many young females were buried in the burial platforms of the nobility as retainers (Verano, 1995; Conrad, 1982). In one burial platform, 93 burials were uncovered (Verano, 1995). The Chimú also offered young women as dedicatory sacrifices for the construction of buildings (Verano, 1995).

At Chornancap Norte, located in the complex of Chotuna-Chornancap, bioarchaeologists uncovered individuals showing clear signs of having their throats slit, chests opened, and sometimes heads removed, indicating the persistence of local traditions under the Chimú (Klaus et al., 2016). The Chimú state (Chimor) was largely secular in nature. As such, while sacrifice in the Chimú heartland of the Moche Valley was conducted in the manner discussed in the preceding paragraph, the people the Chimú conquered were more or less left to their own devices in regards to practicing their religious beliefs. For this reason, Muchik forms of sacrifice continued under both Chimú and later Inka rule.

Very little is currently known about the gender ideology of the Chimú. If Rowe's notion of the importance of the moon is to be believed, and, in addition, the Chimú ascribed a feminine gender to that celestial body in a manner similar to that of many other Andean cultures, then perhaps women enjoyed a place of special importance in Chimú society. However, this argument is tenuous at best, requiring significantly more data to support it.

The Inka

The Inka Empire, called *Tahuantinsuyu* by the Inka themselves, is one of the most intensively studied cultures in South America. Encompassing most of the Andes and the coast from Ecuador to Chile and extending into parts of Bolivia and Argentina, the empire was divided into four administrative quarters, or *suyus*: *Contisuyu*, *Antisuyu*, *Chinchaysuyu*, and *Collasuyu*. The north coast of Peru was located inside *Chinchaysuyu*. The Inka Empire is well known for their accomplishments in engineering including ultra-precise masonry, complex irrigation systems, highly developed infrastructure, and highly effective administrative functions which spanned the entirety of the empire. *Tahuantinsuyu* was governed via a complex and hierarchical system of the emperor and empress (the Inka and Coya), Inka lords, and local lords (*curacas*) in what was known to the Spanish as *parcialidades* (Silverblatt, 1987; Shimada, 2001; Klaus, 2008). The empire expanded by either winning the allegiance of local lords (*curacas*) or by subjugating those who were uncooperative (Klaus, 2008). Some of these lords were female (Villavicencio, 2017; Silverblatt, 1987; Rostworowski, 2015).

The state religion of the Inka is the best documented pre-Hispanic religion of the Andes. It is from the ethnohistoric record that the pan-Andean concepts of *lo andino* are drawn, so the beliefs of the Inka should seem familiar by now. Inkan cosmology is heavily dualistic. Although Viracocha (alternatively Wiracocha) was their (sometimes androgynous) creator deity, the sun and moon were their primary *huacas*. The Sun, Inti, was seen as the divine ancestor of the emperor and the people. In the Huarochirí Manuscript, there is a depiction of the Inka world order, in which Viracocha is at the top,

the sun and moon are next, followed by the Inka and the Coya, then man and woman, and finally a storage pit. Other important dyads include day and night, gold and silver, sky and earth, and foreign conqueror and local subject (Steele and Allen, 2004). Many of these dyads are also gendered (by convention, the male is listed first, then the female). Cycles, reciprocity, and circulation are important themes as well (as discussed previously in regards to sacred hydrology). This particular cosmological understanding extends beyond religion into kinship and marital patterns, as well as rulership.

The Inka practiced a strategy of indirect rule. Existing governmental structures were left largely intact. If local lords submitted to Inka rule, they were left in power. If they did not submit, they were forcibly removed from office. At Huaca de los Sacrificios, located at Chotuna and utilized during the Inka occupation of the region, evidence was found suggesting the conceptual linkage of blood and water. In addition, sacrificial victims were found with the same pattern of cut marks as those at Chornancap Norte—throats slit and chests opened (Klaus et al., 2016). While this blood sacrifice represented a continuation of earlier, pre-Inka practices by the local people, the Inka themselves also practiced human sacrifice on special occasions. Perhaps the most well-known form of sacrifice they employed is the rite of *capacocha* (alternately, *ccapac cocha*, *capac cucha*, or *qhapac cucha*), the sacrifice of children. This rite was a lengthy process, starting in Cuzco and often terminating on distant mountain peaks. Children would be presented in the Inka capital, then process to the site of their sacrifice. The actual act of sacrifice itself could be done via four different methods: strangulation, a blow to the head, suffocation, or being buried alive (Reinhard and Ceruti, 2005). The rite was performed for many

different reasons, including special events in the life of the emperor as well as to stop natural disasters (Reinhard and Ceruti, 2005). These children, both boys and girls, were chosen for their physical perfection and were sent to become ancestor-*huacas* to protect and serve their communities (Silverblatt, 1987; Reinhard and Ceruti, 2005). For example, Tanta Carhua, a young girl sent to Cuzco as an *accha-capacocha*, was returned to her homeland and buried alive in a hill near her *ayllu*. Her ancestors continued to worship her and turned to her for aid, especially in matters of fertility (Silverblatt, 1987).

The cult of the dead was especially important in Inka religion. The dead were housed in caves or structures built specifically for this purpose and revered as powerful *huacas* (Salomon, 1995). Of tantamount importance were the mummies of deceased Inkas, who continued to be tended to as they were in life. These especially powerful royal *huacas* were fed and served by the members of the Inka's household. All such *huaca* (also known as *mallquis*) were consulted by the living in important matters such as the fertility of the fields and family matters.

Inka gender ideology is also the best understood in the Andes, though it is still an imperfect vision. As previously discussed, men and women were viewed as being complementary. For example, it was men who dug the furrows in the earth for farming and women who planted the seeds. In theory, the Inka ruled over all the men of the empire, while the Coya ruled over all the women. Men and women were ideologically equal. In practice, this may not have always been the case (Silverblatt, 1987). This may be due to a misunderstanding on the part of later scholars, as it seems that some dyads in Inka cosmology were unbalanced, with one factor being slightly inferior to another.

However, the relationship of this kind of dyad (seen in the relationship between mother and son, for example) and gender is tenuous.

The Colonial Period

The Spanish arrived in Peru in 1531. After conquering the Inka, the Spanish colonized the region. The Catholic Church sought the conversion of the native populace by any means necessary, which led to the attempted eradication of much of Andean culture (see Arriaga, 1621). However, the peoples of the Andes (including the north coast of Peru) were not passive entities, but maintained their own agency in spite of the harsh methods of the colonizers (see Klaus and Tam, 2015 for an example of the persistence of native beliefs and their negotiation with Catholicism). Andean culture continues to grow and change, maintaining a distinctive Andean flavor while not becoming stagnant (see Femenías, 2005; Bastien, 1985; Gillin, 1947).

Conclusion: On the Complexity of (Pre)History

The north coast of Peru has seen a succession of many diverse cultures, each with their own understanding of the world and how best to live in it. It is important to note that the above discussion of the culture history of the region is heavily over-simplified. Many of these cultures coexisted at times, with varying degrees of conflict. Most importantly, while the state-level societies some of these people built fell, the people themselves did not necessarily vanish or fully assimilate. For example, the Gallinazo very probably coexisted with the Moche (Shimada, 1994; Bourget, 2010) and the Muchik people continued to live and practice rituals which would have been recognizable to their Moche ancestors (Klaus et al., 2010). Prehistory is seldom simple or linear, and our

understanding of it is far from perfect. There is much still to be learned, especially in regards to gender ideologies and how those ideologies were experienced by the people who held them.

5.) MATERIALS AND METHODS

The dataset utilized in this thesis is the product of 20 years of bioarchaeological research on the north coast of Peru generated by the Lambayeque Valley Biohistory Project. It consists of individuals uncovered from a diverse array of sites in the region and dating from the early Formative to late Colonial periods. A full biological profile for each individual was constructed (as far as state of preservation allowed) according to standard bioarchaeological practice. This information was then simplified and entered into an Excel spreadsheet, to facilitate statistical analysis. This analysis was conducted utilizing SAS 9.4 and consisted of odds ratio analyses for the skeletal data and maximum likelihood chi-square analysis (g-tests) for the oral health data. The following sections will provide more detailed descriptions of the dataset itself, as well as the methods of analysis employed in this work.

Archaeological Contexts

The dataset represents individuals from 32 sites. These sites are, in alphabetical order: El Arenal, Caleta San José, Cascajales, Cerro Cerrillos, the Chapel of San Pedro de Mórrope, Chornancap, Chotuna, Eten, El Brujo, El Chorro, Huaca Collud, Huaca del Pueblo Batán Grande, Huaca El Pueblo, Huaca El Triunfo, Huaca Las Ventanas, Huaca Limón, Huaca Santa Rosa, Huaca Sialupe, Huaca Susy, Huaca Ventarrón, Huaca Zarpán, Illimo, Inmaculada, Jotoro, La Pava, Moro de Eten, Olmos, Pampa Grande, Purulén,

Sicán, Sipán, Túcume, and Úcupe. Of these 32 sites, 30 are prehistoric and the remaining 2 are postcontact. In total, there are 2,048 individuals (and from some contexts, individual skeletal elements) represented in the sample. Of these 2,048 entries, 1,050 entries are attributed to the pre-Hispanic period (1500 BCE-1532 CE), while the remaining 998 are represent the postcontact period (ca 1535-1750). Due to a multitude of factors, including state of preservation, young age, or missing skeletal elements, sex could not be estimated for 1,350 of the entries. However, sex was estimated for the remaining 698. Of these individuals, 379 were estimated to be male and 319 were estimated to be female (representing 54.3% and 45.7% of the sexed individuals, respectively).

Purulén, an important ceremonial center constructed during the Initial Period, is located in the Zaña Valley. It consists of 15 platform mounds and a relatively extensive urban area (Shimada, 1994). It was excavated by Walter Alva in 1986 and again in 2019. One burial (a biologically female individual) from this site is included in the dataset.

The Ventarrón Complex and Collud-Zarpán Complex are located north of the Reque River next to Cerro Ventarrón, in the Lambayeque Valley. The former consists of Huaca Ventarrón and the surrounding buildings, which are collectively known as El Arenal. The latter consists of Huaca Collud, and Huaca Zarpán. Huaca Ventarrón is the oldest example of monumental architecture in the Lambayeque Valley Complex, dating to the Late Preceramic period, and contains the oldest mural in the New World (Alva Meneses, 2013). Collud and Zarpán are paired *huacas*, constructed by the Cupisnique during the Late Formative period (Alva Meneses, 2013; Turner and Klaus, n.d.). The

occupational history of these sites is complex, spanning from the Late Preceramic to the Chimú period. Usage of these sites varied considerably over time, though it remained ceremonial in nature. Excavations at both complexes were conducted by Ignacio Alva Meneses and began in 2007. Included in this analysis are 53 individuals from El Arenal, 43 from Huaca Ventarrón, and 53 from Huaca Zarpán. Sex was estimated for 12 individuals from El Arenal (7 biological males, 5 biological females), 18 individuals from Huaca Ventarrón (9 biological males, 9 biological females), and 29 individuals from Huaca Zarpán (15 biological males, 14 biological females). 38 individuals from El Arenal, 16 from Huaca Ventarrón, and 14 from Huaca Zarpán were subadults. Sex could not be estimated for the remaining individuals.

Moro de Eten, which is located in the southern portion of the Reque drainage, was a religious center of the Middle to Late Cupisnique. The site consists of a small temple complex on a mountaintop and an associated cemetery located in the dunes on the sides of the mountain. Carlos Elera conducted the first research at this site for his 1986 BA thesis. Seventeen individuals were recovered from this site. Sex was estimated for seven individuals (4 biological males, 3 biological females). Five individuals were subadults. Sex could not be estimated for the remaining five individuals. Little has been published about this site since Elera completed his thesis.

Huaca El Brujo is a site in the eponymous El Brujo Complex, which consists of five mounds including Huaca El Brujo, Huaca Prieta, and Huaca Cao Viejo. The El Brujo Complex is located on a terrace in the lower Chicama Valley and was utilized from the Preceramic period to the Colonial period (Dillehay 2017). Huaca El Brujo itself is the

“middle child” of the Complex. While Huaca Prieta and Huaca Cao Viejo have both been studied intensively, Huaca El Brujo has been relatively ignored. Excavations conducted by Franco and Gálvez indicate that the mound was constructed by the Gallinazo/ Early Moche cultures (Franco and Gálvez, 2009). The mortuary assemblage which is incorporated in this analysis dates to the Middle Sicán and consists of 50 individuals. Sex was estimated for 31 individuals (21 biological males, 10 biological females). The remaining individuals were subadults.

El Chorro was probably a Moche site, but the cultural affiliation of the individuals from this site could not be verified due to the outbreak of COVID-19. Nine individuals from this site were included in the analysis at hand. Sex was estimated for seven individuals (six biological males, one biological female). The remaining two individuals were subadults. Nothing has yet been published regarding this site.

The architectural complex of Huaca El Pueblo de Úcupe, a monumental Early Moche center, is located to the south of the Zaña River. The main structure at this site was the Huaca El Pueblo. A chamber tomb within the *huaca* contained the remains of a Middle Moche elite man, referred to colloquially as the Lord of Úcupe. His burial goods were rich and their organization was similar to that of the Lord of Sipán (Klaus et al., 2018). Additional commoner burials were also uncovered. 39 individuals from this site are incorporated in the dataset. Sex was estimated for 21 of these individuals (15 biological males, six biological females). Nine individuals were subadults. Sex could not be estimated for the remaining nine individuals.

La Inmaculada, which dates to the Late Moche period, is located in the southern Lambayeque Valley. Excavation was conducted by the Museo Tumbas Reales de Sipán in 2016. Nine individuals were recovered from this site (six of which were sufficiently intact to estimate age). Sex could be estimated for only two biologically female individuals. Three individuals were sub-adults. Sex could not be estimated for the remaining four individuals. Findings from the work conducted in 2016 have yet to be published.

La Pava was a major satellite center for Túcume, with construction of the monumental core of the site beginning in the Middle Sicán period and continuing into the Chimú period. The burials of 30 ethnically Muchik individuals were recovered from the site. Of these 30 individuals, sex was estimated for 17 (six biological males, 11 biological females). Ten individuals were subadults. Age and sex could not be estimated for the remaining three individuals. Very little has been published about this site.

Sipán was the heart of the northern Middle to Late Moche polity. One of the most famous sites in Peru, it is located in the Reque River drainage, in the Lambayeque Valley Complex. Sixteen elite tombs have been uncovered at the site since 1987, among them the incredibly rich tombs of the Lord of Sipán, the Old Lord of Sipán, and the Warrior-Priest. Military leaders were buried in the northern sector of the mound, while religious leaders were buried in the southern sector (Alva, 2001; Klaus et al., 2018). These high-status individuals (all male) were often buried with retainers (mostly females and subadults). Investigations at the site have been conducted since 1987 and are still ongoing, conducted primarily by the Museo Tumbas Reales de Sipán. Twenty-four

individuals from this site have been included in the analysis at hand. Sex was estimated for 11 of these individuals (six biological males, five biological females). Three individuals were subadults. Sex could not be estimated for the remaining 10 individuals.

Huaca Santa Rosa is located in the Lambayeque Valley, north of the site of Sipán, and was possibly a companion site to that larger Moche center. Huaca Santa Rosa is affiliated with the Early, Middle, and Late Moche, as well as the Sicán and Wari. It continued to be occupied until the Inka period. The site is comprised of the huaca itself and surrounding smaller mounds. While Sipán lost its place of political prominence in the Late Moche period (possibly due to an ENSO event), Huaca Santa Rosa maintained its status during this period (Bracamonte, 2015). Toward the transition from the Late Moche to the Sicán periods, evidence of both Wari and Sicán influence begins to appear in the archaeological record of the site. This site, which has suffered severely from looting, was first investigated by Hartmut Tschauner and Marianne Tschauner in 1991. Edgar Bracamonte began his investigations at the site in 2011 (for the complete results of his work up to 2015, see Bracamonte, 2015). The skeletal sample included in this analysis consists of 38 total individuals (unfortunately, the cultural affiliations of these individuals could not be confirmed due to the outbreak of COVID-19). Sex was estimated for 22 of these individuals (nine biological males, 13 biological females). Two individuals were subadults. Sex could not be estimated for the remaining 14 individuals.

Pampa Grande was a large Late Moche urban site located to the north of Sipán. After the fall of Sipán (likely precipitated by environmental factors), Pampa Grande became the most politically powerful site of the Late Moche period (Bracamonte, 2015;

Shimada, 1994). The site is dominated by the imposing Huaca Fortaleza. The site was inhabited by both ethnically Muchik and Gallinazo commoners (Shimada, 1994). Work began at this site with the Royal Ontario Museum's expeditions in the 1970s and was continued by Izumi Shimada, who published his findings in 1994 and later by Lucho Chero of the Museo Tumbas Reales de Sipán. It was in these latter excavations that the 20 individuals from Pampa Grande which are included in the dataset were recovered. Sex was estimated for 10 individuals (five biological males, five biological females). Eight individuals were subadults. Sex could not be estimated for the remaining two individuals.

Huaca El Triunfo is a Late Moche site located in the southern region of the Lambayeque Valley. Excavations were conducted in 2016 by the Museo Tumbas Reales de Sipán. Fourteen individuals were recovered. Of these individuals, sex was estimated for six (five biological males, one biological female). Four individuals were subadults. Sex could not be estimated for the remaining four individuals. The findings from the 2016 work conducted at the site have yet to be published.

The site of Sicán was the capital of the civilization of the same name, located on the La Leche River in the Pomac Forest. It consists of six primary mounds, surrounded by a multitude of additional buildings. These six mounds are Huaca Loro, Huaca Sontillo, Huaca Rodillona/Lercanlech, Huaca Las Ventanas, Huaca La Merced (destroyed), and Huaca Botija. Sicán was the nerve center for a massive network of sites, stretching across the entire Lambayeque Valley Complex. It was the spiritual heart of its people. This site has been intensively studied by Izumi Shimada and colleagues under the auspices of the Sicán Archaeological Project since 1978.

Among some of the most important discoveries at the site are the Huaca Loro East and West Tombs and Matrix 101. The former are the tombs of two elite individuals and their retainers. The East Tomb contained a principal personage (male, 40-50 years old), his retainers, and literal tons of grave goods. The West Tomb, on the other hand, contained relatively few grave goods, but many retainers, most of whom were female. Approximately half of these individuals were related to the principal personage, a 30- to 40-year-old male (Shimada et al., 2004). Matrix 101 was essentially a pit filled with bodies, manipulated in varying ways, representing a mass sacrificial event. The deposition of the victims in Matrix 101 occurred around the end of the Middle Sicán and just before the leadership was seemingly killed by the populace and temples devoted to the elite ancestor cult were destroyed (Klaus and Shimada, 2016). The Sicán Deity disappears at this time, though most other cultural motifs remain the same.

Included in the current analysis are 71 individuals from the general site of Sicán, 61 individuals from Huaca Las Ventanas, and 155 individuals from Matrix 101. Sex was estimated for 60 individuals from Sicán (23 biological males, 37 biological females), 13 individuals from Huaca Las Ventanas (six biological males, seven biological females), and 60 individuals from Matrix 101 (54 biological males, six biological females). Four individuals from Sicán, 13 individuals from Huaca Las Ventanas, and 11 individuals from Matrix 101 are subadults. Sex could not be estimated for the remaining individuals.

The large complex of Túcume is located in the northern region of the Lambayeque Valley. The site, which is comprised of 26 adobe *huacas*, was built at the base of Cerro La Raya, a natural rocky outcrop. Construction began during the Middle

Sicán occupation of the site, which continued to be occupied until the Spanish arrival in the region. The *huacas* served as both elite residential house mounds as well as ceremonial and administrative buildings (Toyne, 2011). Though the site was documented by the Spanish (and subsequently destroyed), Túcume was rediscovered by Heinrich Brüning around the beginning of the twentieth century. The site was visited by other early anthropologists and archaeologists. Excavations have been conducted by Bennett (published in 1939) and Trimborn (published in 1979). The well-known adventurer Thor Heyerdahl organized the first large-scale project at the site in 1988 (Heyerdahl et al. 1995). More recently, Marla Toyne conducted her dissertation research at the site and continues to publish on the subject (see: Toyne, 2008; 2011; 2015). There are multiple cemeteries located at the site, but many have been destroyed by looters (Toyne, 2008). The skeletal sample from this site included in this thesis consists of 22 individuals dating to the Inka occupation of the site. Sex was estimated for all 22 individuals (four biological males, 18 biological females).

The modern town of Olmos is located in the far northern portion of the Lambayeque Valley. A Middle Sicán cemetery was uncovered during normal construction in 2013, necessitating a salvage excavation. Preservation of the skeletal material was generally poor (Klaus, 2014, September 10). Ninety-seven individuals were recovered from the site. Sex was estimated for 33 of these individuals (nine biological males, 24 biological females). Twenty-three individuals were subadults. Sex could not be estimated for the remaining 41 individuals.

Cerro Cerrillos is located to the south of the Reque River drainage, in the Lambayeque Valley. Salvage excavation was conducted due to the planned construction of telecommunication towers. The site is affiliated with the Middle Sicán and consists of two superimposed platforms and a plaza. Burials were uncovered under the plaza and the surface of the platform mound (Klaus et al., 2010). Thirty-two individuals were recovered from the site. Sex was estimated for nine of these individuals (all biological males). Sixteen individuals were subadults. Sex could not be estimated for the remaining seven individuals.

The Chotuna-Chornancap Archaeological Complex is located in the lower Lambayeque River drainage. The earliest structures were constructed during the Middle Sicán period, but the sites were greatly expanded upon during the Chimú period. Chotuna consists of six huacas, among which are Huacas Chotuna and Susy, as well as additional smaller structures. Chornancap consists of Huaca Chornancap and its associated structures. Chornancap flourished during the Late Sicán and Chimú periods, but was abandoned by the time of the Inka (Klaus et al., 2016). Based on the evidence of Muchik-style sacrificial rites performed at Chornancap, it appears that, though the area was under foreign dominion, the people themselves were ethnically Muchik. Chornancap is perhaps best known for the extravagant tomb of the Señora de Chornancap, a display of wealth and power to rival that of the contemporaneous centers in the Lambayeque Valley.

These sites were discovered in the late nineteenth century, but the first large scale excavations were conducted in the 1980s by Donnan (2013). The current, ongoing project was begun in 2006 by the Museo Brüning. Sixty individuals from Chornancap, seven

from Chotuna, and three from Huaca Susy are included in this analysis. Sex was estimated for 28 individuals from Chornancap (13 biological males, 15 biological females), two individuals from Chotuna (both biologically female), and no individuals from Huaca Susy. Seventeen individuals from Chornancap, four individuals from Chotuna, and all three individuals from Huaca Susy were subadults. Sex could not be estimated for the remaining individuals. Huaca del Pueblo Batán Grande was a small habitational and workshop mound and is located in the Batán Grande region in the La Leche Valley. The *huaca* was in use from the Early Intermediate period to the early Inka period. It was excavated by Carlos Elera and José Garcelen in 1981 as part of the Sicán Archaeological Project. Due to the presence of domestic refuse on 12 different occupational floors, the *huaca* seems to have been a residence, which also may have served as a workshop for the processing of copper (Shimada, 1981). The burials were located underneath the occupational surfaces. These burials consisted of nine individuals, dating to the Middle Sicán. Sex was only able to be estimated for one individual, a biological female.

Located approximately five kilometers to the west of the site of Sicán, Illimo was a Middle Sicán satellite center. It was excavated in the 1990s by the Brüning Museum as part of a salvage/abatement project spurred on by construction projects of an electrical substation and a new sewage system. The work there uncovered over 45 Muchik burials. One of these burials contained the Lord of Illimo, a local Muchik lord who was a member of the lower Middle Sicán elite. Thirty individuals from this site were entered into the database. Of these 30 individuals, sex was estimated for 19 (13 biological males, 6

biological females). Four of the 30 individuals were subadults. Sex and age could not be estimated for the remaining seven individuals. Very little has been published regarding this site.

Huaca Sialupe, located to the southeast of the modern town of Mórrope, was a Middle Sicán multi-craft workshop which produced sumptuary ceramic and metal objects for the Sicán elite (Shimada and Wagner, 2001). This site was excavated by the Proyecto Arqueológico Sicán in 1999 and 2001 and consists of several small mounds. The people who lived and worked at Huaca Sialupe were ethnically Muchik. 13 individuals from this site were included in the present analysis. Sex was estimated for seven individuals (six biological males, one biological female). Five individuals were subadults. Sex could not be estimated for the remaining one individual.

Cascajales was a Middle to Late Sicán center. Salvage excavation at the site uncovered seven mid-status and commoner Muchik-style burials dating to the Late Sicán period. One of these individuals was decapitated (Klaus, 2014b). Sex was estimated for two individuals, both of whom were biological males. Little has been published regarding this site.

The name Úcupe can refer to two different sites and their associated samples. One site is Huaca El Pueblo- Úcupe, which is the Early to Middle Moche occupation of Huaca El Pueblo (which has been previously discussed). The other Úcupe sample was located nearby and consisted of Chimú period Muchik burials. A salvage excavation was conducted at this Úcupe in the 1990s by the Museo Brüning.

La Caleta San José, located near the mouth of the Lambayeque River, is a modern fishing village with both Colonial and pre-Hispanic occupations. The latter probably extends as far back in time as the Moche period (and possibly even earlier). In 1998, a salvage excavation was conducted by the Museo Brüning, uncovering 24 burials from the Chimú period. Of these burials, sex could be estimated for 14 individuals (12 biological males, two biological females). An additional five individuals were subadults. The age and sex of the remaining four individuals could not be estimated. Very little has been published regarding this site.

Jotoro is located on the northern edge of the Pomac Forest, close to a mountain also called Jotoro. Dating to the Chimú and Inka periods, the commoners who inhabited this site appear to have been ethnically Muchik. Forty-four burials were recovered from this site. Interestingly, some of these burials were “boot-shaped tombs,” representing possible southern Ecuadorian influence. Of the individuals recovered, sex was estimated for 20 (13 biological males, seven biological females). Twenty individuals were subadults. The sex and age of the remaining four individuals could not be estimated. Very little has been published about this site.

Eten, a Colonial settlement, was located in the southwest region of the Lambayeque Valley, close to the mouth of the Reque River, with a view of the coast. A small missionary church, the Capilla de Santa María Magdalena de Eten (CSMME) was, according to oral tradition, constructed in 1533 by a Franciscan missionary (Klaus and Alvarez-Calderon, 2017). In the first half of the seventeenth century, a larger church, the Capilla del Niño Serranito (CNS), was constructed to accommodate Eten’s growing

population. Due to three apparitions of the Christ Child in 1649, Eten became a pilgrimage site. To this day, a small chapel stands on the site of colonial Eten, where pilgrims can attend Mass and light votive candles. The town of Eten was abandoned between 1740 and 1760 (Klaus and Alvarez-Calderon, 2017). Burials at the site span both the Early to Middle Colonial and Middle to Late Colonial periods. There were 253 individuals associated with the first period (CSMME) and 242 individuals associated with the second period (CNS). Sex was estimated for 17 individuals (eight biological males, nine biological females) and 79 individuals (38 biological males, 41 biological females), respectively. 217 (CSMME) and 127 (CNS) individuals were subadults. Sex could not be estimated for the remaining 55 individuals.



Figure 7: The Capilla del Niño Serranito as it stands today. Photo taken by H. Klaus.

The Chapel of San Pedro de Mórrope is located on the northwest edge of the Lambayeque Valley, on the town square of the modern town of Mórrope. The chapel was built in 1536 and abandoned in the early- to mid-eighteenth century. Over the three centuries of the site's occupation, hundreds of individuals were buried under the floor of the chapel, resulting in a very large bioarchaeological sample. The site was excavated over ten months, from 2004 to 2006, as part of Klaus' dissertation research (Klaus, 2008; Klaus and Alvarez-Calderon, 2017). Evidence suggests cultural resilience in the face of the massive religious shifts which occurred with colonization, as burials at Mórrope demonstrate clear signs of pre-Hispanic, non-Catholic interactions with the deceased. 503 entries (due to the disturbed nature of some of the skeletal material, some entries represent isolated elements) from this site are included in the dataset. Sex was estimated for 91 individuals (49 biological males, 42 biological females). 171 individuals were subadults. Sex could not be estimated for the remaining 241 individuals.



Figure 8: The Capilla de San Pedro de Mórrope as it stands today. Photo taken by H. Klaus.

Social Difference, Embodied

Early Life Stress

As discussed in Chapter 2, gender is often assigned at birth based on the perceived biological sex of a child. The social repercussions of that assignment can often be immediate, as male and female children may be raised and treated very differently by their adult caregivers. For example, boys may be provided with a very different diet than their female counterparts (Hollimon, 2011). Differential treatment can result in differing degrees of physiological stress experienced by one gender relative to another. Poor nutrition is one such stressor. Disease and heavy labor are other examples. Stress experienced early in life leaves traces in the human skeleton which prove very useful in bioarchaeological analysis. Among these are enamel hypoplasias, cribra orbitalia, and porotic hyperostosis.

Dental development is highly canalized, meaning that insults resulting in disruption of tooth formation or eruption must be particularly severe (Larsen, 2015). In general, the timing of tooth formation is the most resistant to external influence, while tooth eruption is slightly more responsive to these influences (Larsen, 2015; Alvarez, 1995; and Alvarez et al., 1988). However, the most readily identifiable and bioarchaeologically utilized dental stress marker is the enamel hypoplasia (EH) (Fig. 7). These defects occur during the development of enamel, which is secreted incrementally by ameloblasts. Under normal circumstances, this method of enamel deposition creates fine striae (the striae of Retzius) which are visible on the surface of the tooth as perikymata which, when macroscopically visible, resemble the many fine grooves on a

vinyl record (Larsen, 2015). Under abnormal conditions, enamel may be deposited in thinner (hypoplastic) layers, resulting in relatively deep grooves or pits in the surface of the tooth (Kinaston et al., 2019).

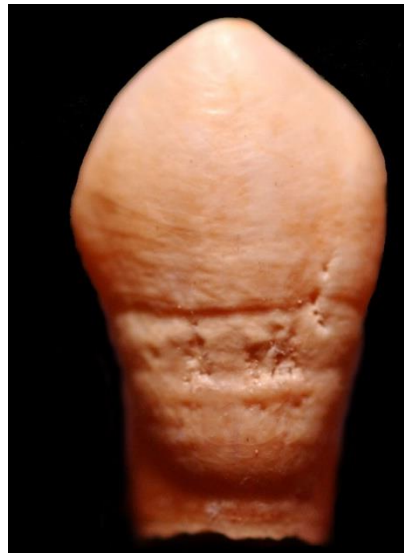


Figure 9: Linear enamel hypoplasias, Mórrope Burial U71C 03-2 (Klaus and Tam, 2009).

Many diverse factors can lead to hypoplastic enamel formation, including: malnutrition, weaning, illness, trauma, or environmental toxins (Kinaston et al., 2019). Due to the acellular nature of enamel, these defects are not resorbed or otherwise modified by the body itself, meaning that enamel hypoplasias (and their non-pathological analogs, perikymata) will remain visible for the rest of the existence of the affected tooth (fun fact: modern people often no longer possess visible perikymata because of the hygienic practice of brushing our teeth) . Because of the regular, chronological nature of enamel secretion (striae of Retzius and their associated perikymata are formed every 6 to

12 days in humans [Kinaston et al., 2019; Reid and Dean, 2006]), it is possible to determine when a stress event occurred, based on the location of an EH on the tooth. Therefore, enamel hypoplasias not only provide data about the mere presence or absence of a stress event in the early life of an individual, but also about the timing of that event (Temple, 2018).

The experience of stress in early life is also indicated by the presence of bony lesions such as cribra orbitalia and porotic hyperostosis. These two conditions are frequently cited together and have traditionally been assumed to be different expressions of the same condition, anemia. However, recent research reveals the etiologies of these conditions to be far more complicated (Klaus, 2019). Anemia can be caused by blood loss or impaired red blood cell production, resulting in a pathological deficiency in hemoglobin, the body's iron-rich oxygen transport system (Larsen, 2015). It is the latter cause which is most frequently cited in bioarchaeology, as red blood cell production can be greatly impacted by external factors such as (but not limited to) malnutrition, especially a lack of iron in the diet or a lack of the foods which can assist in making dietary iron from less digestible sources bioavailable (Larsen, 2015).

While both porotic hyperostosis and cribra orbitalia can certainly be related to nutrient deficiency induced anemia, this is not the only etiology for these pathological conditions. Cribra orbitalia has become a generalized term for all porosities of the orbital roof. However, only hyperporotic manifestations are linked with anemia. Pinpoint porosities are not (Grauer, 2019). Porosity in this region can also be related to local inflammation or rickets (Grauer, 2019; Wapler et al., 2004; Klaus, 2017). Likewise, the

link between porotic hyperostosis and anemia resulting from an iron deficient diet is tenuous at best (Walker et al., 2009). Instead, there are many different varieties (for lack of a better term) of anemia, with their own complex etiologies, which may result in porotic hyperostosis. Therefore, the presence of porotic hyperostosis and/or cribra orbitalia is not a clear indicator of anemia resulting from an iron deficient diet. Regardless, these conditions are still reliable indicators of stress experienced earlier in life.

Porotic hyperostosis (Fig. 8) is the visible signature of an expansion of the diploë of the cranial vault and is macroscopically observable as porosity on the ectocranial surfaces (Brickley, 2018). A similar process may cause the lesions of the roof of the orbits known as cribra orbitalia (Fig. 9). Cribra orbitalia can range in appearance from a slightly elevated and porous formation of new bone adhering to the orbital roof to spicules of bone invading the space where the eye and other associated soft tissue normally resides. Both porotic hyperostosis and cribra orbitalia are highly age-specific, with active lesions only occurring in sub-adults (Brickley, 2018). Adults may demonstrate healing or healed lesions (Larsen, 2015) since there is no real functional demand for remodeling of these areas.

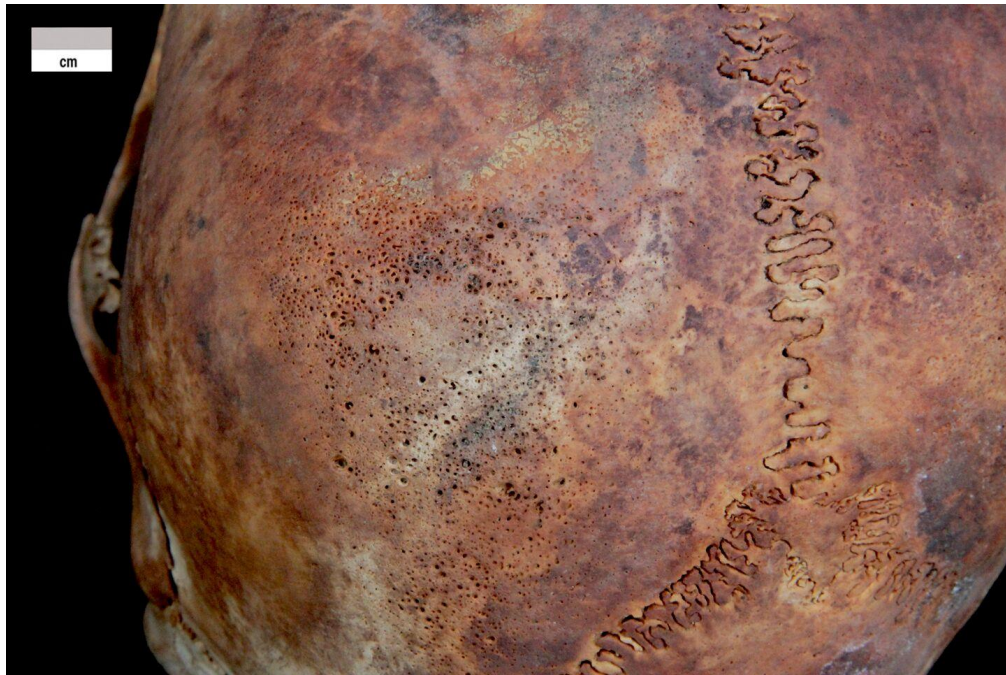


Figure 10: Healed porotic hyperostosis of the cranial vault. Chimú individual from Chornancap. Photo taken by H. Klaus.



Figure 11: Cribra orbitalia. Note the bilateral symmetry of the lesions. Mórrope Burial U10 05-38. (Klaus, 2017).

Disease

Stress experienced during adulthood can also leave traces on the skeleton. The net result of a multitude of environmental and cultural factors, stress can leave the body much more susceptible to disease, among other insults. While all members of any given society will experience some kind of stress during their lives, the factors which contribute to their overall allostatic load are frequently differentially distributed based on social criteria (such as gender). For example, individuals of lower socioeconomic status may have access to fewer or lesser quality resources and/or be exposed to more potential insults (pathogens or dangerous environments). While differential access to resources is frequently due to social inequality, this is not always the case. It is possible for different groups to have access to different resources and yet be social equals. For example, in the current day, a faithful Muslim cannot consume certain foods, while a faithful Jain cannot consume a different set of foods. The difference in resources consumed is not rooted in status difference, as the two are not necessarily members of different socioeconomic groups. For this reason, the phrase “social difference” is more accurate in this context than the more frequently cited “social inequality.” In this manner, social difference becomes embodied, allowing the bioarchaeologist to make inferences regarding social organization and lifeways based on data gathered from the human skeleton.

Although human beings suffer from a multitude of diseases, only a small percentage of those diseases result in skeletal changes which are bioarchaeologically visible. Even smaller is the number of ways in which bone actually responds to insult. At the most basic level, there are only two skeletal reactions—adding or subtracting bone.

This is accomplished at the cellular level by three varieties of cell: osteoblasts, osteoclasts, and osteocytes. Osteoblasts build new bone while osteoclasts remove old bone. In a manner which is still little understood, osteocytes act as a sort of control center, relaying instructions to the “worker” cells (Lynnerup and Klaus, 2019). The coordinated action of these cells results in net bone formation, resorption, or maintenance. While these processes are both normal and necessary, under certain conditions these processes may take on an abnormal character, often as a result of the body’s incredibly complex immune function. Few disease processes actually affect bone cells and the tissue they produce directly (cancer being one exception). The skeletal conditions which paleopathologists utilize in their differential diagnoses are the result of the reaction of the body’s own cells to an insult, rather than the action of the insult itself on the bone.

One of the most common skeletal manifestations of disease is periostosis. Periostosis is a bony reaction to inflammation of the periosteum, where new bone is laid down quickly, resulting in highly porous, disorganized bone (Klaus and Lynnerup, 2019). This condition is considered non-specific, as periosteal reactions can result from many different kinds of infection, none of which are necessarily diagnosable based on the mere presence of periostosis alone (Larsen, 2015). Inflammation (and the inflammatory response it elicits from bone) can be the result of many different disease processes, including treponemal disease, staphylococcal infection, or scurvy (Klaus and Lynnerup, 2019). These disease processes (amongst many others) often involve both the formation and destruction of bone, resulting from changes in cellular signaling mechanisms

stemming from inflammation (Klaus and Lynnerup, 2019). The patterning of lesions and new bone formation allow differential diagnosis to be undertaken with differing degrees of certainty, depending on the nature of the disease processes in question and the observed pathological conditions.



Figure 12: Periostosis of the later distal tibia (Klaus and Tam, 2009).

Degenerative Joint Disease

Degenerative joint disease (DJD) is not a communicable disease. Rather, DJD, or osteoarthritis, is largely a product of age and is one of the most common afflictions observed in human skeletal remains (Waldron, 2019). This condition is caused by the breakdown of the cartilage lining the joints, related to age, mechanical loading, and/or trauma. Eventually, the cartilage may be almost entirely worn away, resulting in direct bone-on-bone contact, which is a highly abnormal situation in the human body. The initial stages of DJD are not skeletally visible, as it is soft tissue (cartilage) that is first

affected. However, as the disease progresses, bony changes become apparent. These changes which reflect the body's attempt to heal, often by trying to stabilize the joint, and include irregular osteophytosis (Fig. 11B and D), regions of abnormal focal porosity (Fig. 11A and C) on the joint surfaces related to subchondral bone death (mediated also by inflammation), and, in cases of bone-on-bone contact, eburnation (polishing of the joint surfaces do to bone-on-bone wear) (Waldron, 2019).



Figure 13: A. Arthritic porosity on the distal humerus. B. Osteophytosis on the distal femur. C. Porosity on the proximal tibia. D. Osteophytosis on vertebrae. Examples drawn from various individuals from the Capilla del Niño Serranito at Eten (Klaus and Alvarez-Calderón, 2017).

While osteoarthritis is highly correlated with age, it is also linked with repetitious patterns of movement. For this reason, the presence or absence of the pathological conditions associated with osteoarthritis can be both indicators of advanced age as well as activity. While the relationship between repeated motions and the development of osteoarthritis is not straightforward (Larsen, 2015; Klaus et al., 2009), differences in the observed patterning of pathological conditions associated with osteoarthritis can be informative at the population level. Specifically, comparisons can be made between groups (in the case of this thesis, these are sex and time period) by joint system. While it is currently impossible to reconstruct the exact activities in which an individual was engaged by analyzing patterns of DJD, it is possible to assess which joint systems are being used relatively more intensely by one group as compared to another (for an example, see Klaus, Larsen, and Tam, 2009).

Trauma

Skeletal trauma, when present, can provide indications of both the lifestyle of an individual as well as the actions and beliefs of the society in which they lived. Only a limited set of traumatic injuries are skeletally visible. Foremost among these are fractures. These pathological conditions are variable in expression and appearance, depending on the method of injury and the interval between the traumatic event and the time of death. A perimortem fracture will appear skeletally as a break in the bone whose margins are the same color as the surrounding bone (Byers, 2011). Antemortem fractures will exhibit varying degrees of healing (Byers, 2011; Redfern and Roberts, 2019). Over a period of months to years, the bone may remodel so completely that most evidence of the

fracture is erased. However, if the bone is not perfectly reduced, the morphology of the bone will be altered, depending on the former location of the fracture, thereby leaving evidence of the traumatic event (Fig. 12).

An individual may break a bone either accidentally, during the course of daily activities, or the individual may be injured by another person, resulting in a fracture (Judd and Redfern, 2012). Either scenario provides information about life in the past. Prevalence of traumatic injuries provides information regarding the lifestyle of a society, especially in concert with knowledge of local terrain, as the relative ruggedness of the landscape will impact the prevalence of traumatic injury (Larsen, 2015). Interpersonal violence is reflected in the patterning of traumatic injuries (Judd and Redfern, 2012). For example, while a fracture of the distal radius and ulna is likely due to an accidental fall, a fracture of the mid-shaft ulna and/or radius and may be related to the blocking of an incoming blow with the forearm (Byers, 2011).



Figure 14: Well-healed fracture of rib, Burial CNS U4-4 (Klaus and Alvarez-Calderon, 2017).

Oral Environment and Diet

Teeth are the most information-rich element in the entire skeleton, providing data on early life stress (as previously discussed), biological relatedness, and diet. The first two points of interest are related to the genetic makeup of an individual. The latter is related to the oral environment of an individual, which is heavily dependent on the diet. The mouth houses a unique microbiome, the makeup of which is influenced by the environment in which an individual lives, the food an individual consumes, and the idiosyncratic biochemical and biocultural environment of an individual's body. While the relationship between the microbiome and host is largely symbiotic, variations in the oral environment (such as a preponderance of sugar due to a sugar- and/or carbohydrate-rich diet) can cause biotic overgrowth, leading to dental pathological conditions such as carious lesions, abscesses, and periodontitis.

The former two of these pathological conditions are frequently interrelated. Carious lesions are the direct result of the aforementioned biotic overgrowth. The increased number of organisms in the oral cavity leads to an increase in the volume of waste produced by those organisms. Unfortunately for the host, this waste consists of an organic acid which slowly demineralizes the enamel, dentin, and enamel of a tooth (Larsen, 2015; Hillson, 2008), leading to the formation of a carious lesion (a cavity, in non-scientific parlance). As the lesion grows deeper, it provides more surface area for bacteria and their waste to occupy. If allowed to continue unchecked, dental caries can infiltrate the pulp chamber of the tooth. This is both very painful and very dangerous, as the nerves and blood vessels inside the pulp chamber are now directly exposed to the oral

environment. The microbiome which is more or less benign when confined to the oral cavity becomes potentially lethal in the blood stream. An infection of the pulp chamber of the tooth results in the formation of an abscess, which presents skeletally as a perforation in the alveolar bone. If left untreated, the infection can enter the bloodstream and prove fatal.



Figure 15: Advanced carious lesions with associated abscesses, Burial CNS U3-50 (Klaus and Alvarez-Calderón, 2017).

For reasons which are still not entirely understood, there is a global greater prevalence of dental caries in females than in males. While in some cases the prevalence of this condition may be explained through recourse to behavior, such as gender roles

related to subsistence, this is not the only possible explanation (Larsen, 2015; Temple, 2016). Among the alternate explanations are differences in the timing of tooth eruption and changes in the oral environment due to pregnancy. However, neither possibility seems to be an adequate explanation (Larsen, 2015).

The biotic overgrowth which can be responsible for the formation of carious lesions and subsequent abscesses can also cause the tissues surrounding teeth (the gums) to become inflamed. The alveolar bone underlying the inflamed tissue reacts accordingly (in a manner similar to that discussed in the previous section). In addition to the bony response of the alveolar bone, the collagen which anchors a tooth in the alveolus weakens. As this linkage disappears and the alveolar bone resorbs, the tooth may exfoliate (Larsen, 2015). Periodontitis is visible skeletally as resorption of the alveolar bone, exposing the roots of the teeth, and greater porosity of the alveolar bone. In cases where the tooth has been exfoliated, the bone will totally remodel, eventually resulting in a smooth area of cortical bone in the space a tooth once occupied.

Yet another result of biotic overgrowth in the oral cavity is dental calculus (Fig. 14)—calcified bacterial plaque covering the surfaces of the teeth (typically the crown, though if the root of a tooth is exposed to the oral environment, calculus may accumulate there as well). Calculus builds up over the life of an individual, if not removed by hygienic practices such as tooth brushing. Though calculus is primarily composed of calcium and phosphorous, organic material (such as phytoliths and bacteria) may become embedded in the matrix (Kinaston et al., 2019). Therefore, the presence of calculus on teeth reveals information regarding the diet of an individual at two different levels of

resolution. Simple presence/absence combined with severity (how many teeth are affected) speaks to the rough composition of an individual's diet (probably high in starch or sugar) and their hygienic practices. On the microscopic level, analysis of the microfossils present in teeth (phytoliths, starch granules, DNA, and bacteria) provides direct and specific evidence of what the individual consumed over the course of their life (or, at least, over the time in which the calculus accumulated).



Figure 16: Dental calculus on the mandibular dentition. Intrusive Middle Sicán burial from Ventarrón. Photo taken by H. Klaus.

Recording Skeletal Pathological Conditions

All pathological conditions observed were recorded according to the standards and codes laid out in Buikstra and Ubelaker (1994). Data collection protocols were based on both Buikstra and Ubelaker (1994) and Cox et al., (2009). Subsequently, select data points were simplified to simple presence or absence of condition for ease of analysis. The conditions in question were: cribra orbitalia, porotic hyperostosis, enamel hypoplasias, periostosis, other lesions (this category consisted of all non-periostotic lesions), degenerative joint disease (categorized by joint system: temporomandibular joint [TMJ], shoulder, elbow, wrist, hand, cervical spine, thoracic spine, lumbar spine, hip, knee, ankle, and foot), and trauma. Dental data was simplified to counts per individual of each condition.

Methods of Statistical Analysis

Odds Ratios

As this thesis seeks to compare prevalence of pathological conditions between sexes through time, crude prevalence measurements are not suited to this purpose. While simple to calculate and useful for general understandings of prevalence within a single group, the nature of the dataset (which includes individuals of different ages and sexes in different proportions) requires a more nuanced approach to comparisons. For this reason, odds ratios were employed, as they take into account differences in age and sample size, as well as the probabilistic nature of exposure to a disease and the non-normal distribution of real-world bioarchaeological samples (Klaus, 2014a). The odds ratio is an estimate of the odds of a pathological condition being present (for details on the

calculation of odds ratios, see Waldron, 1994). As such, information regarding these pathological conditions must be constrained to dichotomous presence versus absence. Common odds ratios (the sum of the age-specific prevalence divided by the overall sample size) provide a comparison of the two samples under analysis as a whole. This method of statistical analysis is commonly used in the field of epidemiology, as its power as a measure of probability of exposure to disease is widely accepted (Klaus, 2014a).

In order to calculate common odds ratios, individuals must first be assigned to age groups, based on mean age-at-death (6 age groups were utilized in this thesis: 0 - 4.9, 5 - 14.9, 15 - 24.9, 25 - 34.9, 35 - 44.9, and 45+). An odds ratio, which is based on a risk ratio (Equation 1), is calculated for each age group. The risk ratio consists of the age-specific prevalence ($p_1 \dots p_n$) over the sample size ($q_1 \dots q_n$). The equation for the odds ratio can be seen in Equation 2. The common odds ratio is simply the sum of these age-specific odds ratios divided by the total sample size (Klaus, 2008; 2014a).

Equation 1: Risk ratio. Taken from Klaus, 2014.

$$\frac{p_1}{q_1} \dots \frac{p_n}{q_n}$$

Equation 2: Odds ratio. Taken from Klaus, 2014.

$$\frac{\frac{p_1}{1-p_1}}{\frac{q_1}{1-q_1}} \dots \frac{\frac{p_n}{1-p_n}}{\frac{q_n}{1-q_n}}$$

Age-specific and common odds ratios, as well as the associated χ^2 values and 95 percent confidence intervals, were calculated in SAS 9.4, utilizing a program written by Haagen Klaus (see Klaus, 2008: 605).

The sample was sorted into six age groups (as used by Paine, 1989 and Milner et al., 1989), two periods (pre-Hispanic and postcontact), and two biological sexes.

Comparisons were made between the entire pre-Hispanic and postcontact groups, between males and females within each period, and between pre-Hispanic and postcontact sex groups. The following pathological conditions were included in the calculation of odds ratios: cribra orbitalia, porotic hyperostosis, enamel hypoplasias, periostosis, other pathological lesions, trauma, Schmorl's Depressions, and degenerative joint disease for the temporomandibular joint (TMJ), shoulder, elbow, wrist, hand, cervical vertebrae, thoracic vertebrae, lumbar vertebrae, hip, knee, ankle, and foot.

Odds ratios were not calculated for age groups 1 and 2 for male and female groups, as sex estimation is not currently possible for these age groups. In addition, for the general period comparisons (pre-historic versus postcontact), odds ratios were not calculated for age groups 1 and 2 for degenerative joint disease, to the etiology of this pathological condition. Finally, due to mathematical constraints (the impossibility of division by 0), all frequencies of 0 were entered as 0.1, in order to make calculation possible. A frequency of 0.1 is sufficiently small to preclude significant error in the calculation of the odds ratios, but it helps retain the significance of a zero value because absence of a pathological condition indeed means something.

Finally, a result of 1.0 indicates that the prevalence of a given condition is precisely equal in both groups. The further away from 1 the result, the more different the prevalence. For example, a common odds ratio of 2.0 indicates that the odds of prevalence are two times greater for the first sample than for the second. For a common odds ratio less than 1.0, the opposite is true—the odds of prevalence are greater for the second sample under comparison and the odds are calculated as the inverse of the odds ratio itself. Significance of difference is indicated by the χ^2 value, which is compared to the critical value of the χ^2 distribution for one degree of freedom and a p-value of 0.05 ($\chi^2 = 3.841$).

G-Statistics (Maximum-Likelihood Chi-Square)

While odds ratios are based on dichotomous absence versus presence, the G-statistic is not. For this reason, the G-statistic is better suited for dental data, as the actual number of carious lesions, abscesses, and other such data is more valuable as count data than simple presence or absence of condition, as it provides not just an indication of prevalence but also of severity. The G-statistic (also known as maximum-likelihood χ^2) is a measure of goodness-of-fit, comparing observed counts with expected counts to test for significant difference of frequencies between groups (Klaus, 2008). In the case of dental data, the observed counts are counts of dental pathological conditions, which are compared to expected counts and the total number of teeth present. This statistic is calculated by utilizing the expected count as the denominator in a likelihood ratio which calculates a χ^2 (Klaus, 2008).

The G-statistic analog of the common odds ratio is a statistic called summary G (first introduced by Turner and Klaus, in press). This statistic is calculated by adding the totals for all age classes together and inputting the result into the G-test. As such, this statistic is not as compelling as the common odds ratio, because of its brute-force approach. However, the resultant statistic can still provide a useful, though imprecise, understanding of the overall difference in prevalence between two groups.

G-statistics were calculated in SAS, utilizing a program written by Klaus (2008: 606). The same age groups (1-6) and the same groupings were utilized to calculate g-statistics (pre-historic versus postcontact, same-period males versus females, same-sex pre-historic versus postcontact). The following counts of pathological conditions were included in the calculation of G-statistics: carious lesions on the anterior dentition, anterior teeth lost antemortem, carious lesions on the posterior dentition, posterior teeth lost antemortem, abscesses, calculus on the anterior dentition, calculus on the posterior dentition, average wear on the anterior dentition, and average wear on the posterior dentition. Again, G-statistics were not calculated for age groups 1 and 2 for male and female groups, as sex estimation is not currently possible for these age groups and all frequencies of 0 were entered as 0.1 for the same rationale as previously discussed.

Finally, in order to interpret the G-statistic, it must be compared to the critical value for the G distribution. SAS provides the p-values for each G-statistic, making this step significantly easier. A p-value of less than 0.05 indicates a significant result, meaning that there is significant difference between the prevalence of a pathological condition in the two groups. The directionality can be approached by calculating crude

prevalence for each group in a comparison. While a direct comparison of crude prevalence should not be made, this statistic is useful to gain a general understanding of which group has the higher prevalence. Again, the significance of this difference is indicated by the G-statistic and associated p-value.

Conclusion

In order to approach the embodiment of gender in the bioarchaeological record, it is necessary to cast a wide methodological net. For this reason, virtually every bioarchaeologically intelligible data point is under consideration. Early life stress, pathological conditions, trauma, degenerative joint disease, and oral environment—all are being invoked in the course of this analysis. The sample under consideration encompasses almost the entire history of human occupation of the north coast of Peru, providing both width and breadth of information. Utilizing these statistical tools, this data begins to reveal aspects of life in ancient Peru which have until now been never been the subject of study. The results are presented in the next chapter.

6.) RESULTS

The results of the odds ratios and G-tests are presented in this chapter. Patterns of changes and continuities in prevalence of the pathological conditions laid out in the previous chapter are described here.

Odds Ratios

Cribra Orbitalia

Prevalence of cribra orbitalia (Tables 1 and 2) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of cribra orbitalia was found to be approximately three times greater in the pre-Hispanic sample than in the postcontact sample ($COR = 3.14$, $\chi^2 = 27.93$). The χ^2 value is greater than 3.81, indicating that the difference is significant. Prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 1.04$, $\chi^2 = 0.01$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 1.48$, $\chi^2 = 0.35$). The prevalence of cribra orbitalia in pre-Hispanic males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups ($COR = 1.10$, $\chi^2 = 0.04$). Finally, the prevalence of this condition in pre-

Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups (COR = 1.49, $\chi^2 = 0.48$).

Table 1: Crude prevalence, cribra orbitalia.

Cribra Orbitalia		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	24.41	93/381
Postcontact	9.39	31/330
Pre-Hispanic Males	20.00	24/120
Pre-Hispanic Females	20.79	21/101
Postcontact Males	17.95	7/39
Postcontact Females	8.11	3/37
*Crude prevalence		

Table 2: Odds ratios, cribra orbitalia.

COMPARISON	Cribra Orbitalia							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	4.95	4.83	6.38	0.97	1.25	4.34	3.14	27.93	Significant decrease in Postcontact period
Pre-Hispanic Males v Females	.	.	1.04	1.00	0.48	45.00	1.04	0.01	No significant difference
Postcontact Males v Females	.	.	23.33	1.50	1.50	0.12	1.48	0.35	No significant difference
Pre-Hispanic v Postcontact Males	.	.	1.25	0.69	0.59	33.75	1.10	0.04	No significant difference
Pre-Hispanic v Postcontact Females	.	.	28.00	1.03	1.84	0.09	1.49	0.48	No significant difference

Porotic Hyperostosis

Prevalence of porotic hyperostosis (Tables 3 and 4) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of porotic hyperostosis was not significantly different between the two groups (COR = 1.09, $\chi^2 = 0.43$). The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups (COR = 1.52, $\chi^2 = 3.33$). Next, the prevalence of this condition in postcontact

males and females was compared (Table 6.8). The results again indicated no significant difference between the two groups (COR = 1.01, $\chi^2 = 0.0003$). The prevalence of porotic hyperostosis in pre-Hispanic males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups (COR = 1.23, $\chi^2 = 0.63$). Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups (COR = 0.87, $\chi^2 = 0.25$).

Table 3: Crude prevalence, porotic hyperostosis.

Porotic Hyperostosis		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	35.82	226/631
Postcontact	25.97	154/593
Pre-Hispanic Males	47.78	97/203
Pre-Hispanic Females	38.41	58/151
Postcontact Males	42.11	32/76
Postcontact Females	19.59	29/148
*Crude prevalence		

Table 4: Odds ratios, porotic hyperostosis.

COMPARISON	Porotic Hyperostosis							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	0.89	1.72	1.92	0.7	0.72	1.85	1.09	0.43	No significant difference
Pre-Hispanic Males v Females	.	.	1.38	2.51	1.05	1.44	1.52	3.33	No significant difference
Postcontact Males v Females	.	.	0.83	1.69	1.10	0.43	1.01	0.0003	No significant difference
Pre-Hispanic v Postcontact Males	.	.	2.75	0.83	0.61	4.03	1.23	0.63	No significant difference
Pre-Hispanic v Postcontact Females	.	.	1.67	0.56	0.64	1.20	0.87	0.25	No significant difference

Enamel Hypoplasias (EH)

Prevalence of enamel hypoplasias (Tables 5 and 6) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of EH was not significantly different between the two groups ($COR = 0.76$, $\chi^2 = 2.93$). The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.95$, $\chi^2 = 0.05$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 1.55$, $\chi^2 = 1.31$). The prevalence of EH in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.49$, $\chi^2 = 5.60$), with the odds of EH being approximately two times higher for the postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.84$, $\chi^2 = 0.30$).

Table 5: Crude prevalence, enamel hypoplasias.

Enamel Hypoplasias (EH)		
GROUP	%*	n _{present} /N _{total}
Pre-Hispanic	37.79	226/598
Postcontact	25.63	133/519
Pre-Hispanic Males	43.62	82/188
Pre-Hispanic Females	47.85	78/163
Postcontact Males	60.00	36/60
Postcontact Females	49.09	27/55
*Crude prevalence		

Table 6: Odds ratios, enamel hypoplasias.

Enamel Hypoplasias (EH)									
COMPARISON	O1	O2	O3	O4	O5	O6	COR	χ^2	Interpretation
Pre-Hispanic v Postcontact	1.13	0.88	0.87	0.51	1.09	0.40	0.76	2.93	No significant difference
Pre-Hispanic Males v Females	.	.	0.99	1.80	0.39	1.17	0.95	0.05	No significant difference
Postcontact Males v Females	.	.	1.07	2.67	3.05	0.67	1.55	1.31	No significant difference
Pre-Hispanic v Postcontact Males	.	.	1.16	0.40	0.32	0.49	0.49	5.60	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	1.25	0.59	2.44	0.28	0.84	0.30	No significant difference

Periostosis

Prevalence of periostosis (Tables 7 and 8) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of periostosis was significantly different between the two groups ($COR = 0.26$, $\chi^2 = 31.30$), with the postcontact group being almost four times more likely to suffer from this condition. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was a significant difference in prevalence between these two groups ($COR = 3.69$, $\chi^2 = 8.52$). Pre-Hispanic males were over three times as likely to suffer from this condition. Next, the prevalence of periostosis in postcontact males and females was compared. The results indicated no significant difference between the two groups ($COR = 1.05$, $\chi^2 = 0.02$). The prevalence of this condition in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.40$, $\chi^2 = 7.58$), with postcontact males being two and a half times more likely to suffer from periostosis than their pre-Hispanic counterparts. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups ($COR = 0.13$, $\chi^2 = 17.80$), with postcontact females being over seven times more likely to suffer from periostosis than pre-Hispanic females.

Table 7: Crude prevalence, periostosis.

Periostosis		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	6.02	40/664
Postcontact	7.33	48/655
Pre-Hispanic Males	13.89	30/216
Pre-Hispanic Females	4.17	6/144
Postcontact Males	27.78	20/72
Postcontact Females	28.79	19/66
*Crude prevalence		

Table 8: Odds ratios, periostosis.

COMPARISON	Periostosis								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	2.66	0.32	0.29	0.30	0.49	0.08	0.26	31.30	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	23.14	4.55	2.13	24.86	3.69	8.52	Significant difference, pre-Hispanic males +
Postcontact Males v Females	.	.	2.18	2.79	2.17	0.23	1.05	0.02	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.47	0.34	0.56	0.32	0.40	7.58	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.15	0.21	0.57	0.00	0.13	17.80	Significant increase in Postcontact females

Other Lesions/Disease Conditions

Prevalence of other lesions (Tables 9 and 10) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of other lesions was not significantly different between the two groups (COR = 1.36, $\chi^2 = 1.44$). The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups (COR = 1.37, $\chi^2 = 0.57$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups (COR = 0.92, $\chi^2 = 0.02$). The prevalence of other lesions in pre-Hispanic

males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups (COR = 1.54, $\chi^2 = 0.59$). Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups (COR = 1.07, $\chi^2 = 0.01$).

Table 9: Crude prevalence, other lesions.

Other Lesions		
GROUP	%*	n _{present} /N _{total}
Pre-Hispanic	5.97	45/754
Postcontact	3.12	21/674
Pre-Hispanic Males	8.00	20/250
Pre-Hispanic Females	6.21	10/161
Postcontact Males	5.06	4/79
Postcontact Females	5.56	4/72
*Crude prevalence		

Table 10: Odds ratios, other lesions.

Other Lesions									
COMPARISON	O1	O2	O3	O4	O5	O6	COR	χ^2	Interpretation
Pre-Hispanic v Postcontact	3.39	0.34	0.32	0.89	2.77	1.45	1.36	1.44	No significant difference
Pre-Hispanic Males v Females	.	.	13.78	0.96	1.23	2.22	1.37	0.57	No significant difference
Postcontact Males v Females	.	.	0.09	0.34	15.00	1.44	0.92	0.02	No significant difference
Pre-Hispanic v Postcontact Males	.	.	6.22	1.56	1.50	1.42	1.24	0.59	No significant difference
Pre-Hispanic v Postcontact Females	.	.	0.13	0.55	18.37	0.92	1.07	0.01	No significant difference

DJD-TMJ

Prevalence of DJD of the TMJ (Tables 11 and 12) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the TMJ was not significantly different between the two groups (COR = 0.61, $\chi^2 = 0.33$). The prevalence

of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups (COR = 1.74, $\chi^2 = 0.44$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups (COR = 0.16, $\chi^2 = 2.12$). The prevalence of DJD of the TMJ in pre-Hispanic males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups (COR = 0.27, $\chi^2 = 2.47$). Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was a significant difference between these two groups (COR = 0.03, $\chi^2 = 33.70$), with the odds of having DJD of the TMJ being *33 times more likely* for postcontact females.

Table 11: Crude prevalence, DJD-TMJ

DJD in the TMJ		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	2.05	6/293
Postcontact	0.42	1/239
Pre-Hispanic Males	3.33	4/120
Pre-Hispanic Females	1.60	3/188
Postcontact Males	11.11	1/9
Postcontact Females	50.00	7/14
*Crude prevalence		

Table 12: Odds ratios, DJD-TMJ.

COMPARISON	DJD in the TMJ							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	.	.	0.98	0.03	5.18	0.05	0.61	0.33	No significant difference
Pre-Hispanic Males v Females	.	.	11.00	0.68	1.96	0.23	1.74	0.44	No significant difference
Postcontact Males v Females	.	.	0.10	0.05	0.03	1.00	0.16	2.12	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.50	0.04	2.61	0.004	0.27	2.47	No significant difference
Pre-Hispanic v Postcontact Females	.	.	0.004	0.003	0.03	0.02	0.03	33.70	Significant increase in Postcontact females*

DJD-Shoulder

Prevalence of DJD of the shoulder (Tables 13 and 14) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the shoulder was significantly different between the two groups (COR = 0.19, $\chi^2 = 53.62$), with the odds of the condition being 5 times greater for the postcontact period. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups (COR = 1.14, $\chi^2 = 0.13$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups (COR = 1.56, $\chi^2 = 1.12$). The prevalence of DJD in the shoulder in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups (COR = 0.15, $\chi^2 = 36.21$), with the odds of suffering from this condition being almost 7 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups (COR = 0.16, $\chi^2 = 21.25$), with the odds of suffering from this condition being approximately 6 times greater for postcontact females.

Table 13: Crude prevalence, DJD-Shoulder.

DJD in the Shoulder		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	13.93	51/366
Postcontact	43.82	78/178
Pre-Hispanic Males	15.54	30/193
Pre-Hispanic Females	13.74	18/131
Postcontact Males	52.24	35/67
Postcontact Females	48.48	32/66
*Crude prevalence		

Table 14: Odds ratios, DJD-Shoulder.

COMPARISON	DJD in the Shoulder								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	0.27	0.22	0.17	0.15	0.19	53.62	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	1.81	5.47	0.83	0.74	1.14	0.13	No significant difference
Postcontact Males v Females	.	.	1.10	2.09	2.23	0.77	1.56	1.12	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.45	0.22	0.07	0.12	0.15	36.21	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.42	0.08	0.18	0.12	0.16	21.25	Significant increase in Postcontact females

DJD-Elbow

Prevalence of DJD of the elbow (Tables 15 and 16) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the elbow was significantly different between the two groups ($COR = 0.14$, $\chi^2 = 100.04$), with the odds of suffering from DJD of this joint being approximately 7 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.86$, $\chi^2 = 0.211$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 2.09$, $\chi^2 = 3.13$). The

prevalence of DJD of the elbow in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups (COR = 0.09, $\chi^2 = 51.15$), with the odds of suffering from this condition being approximately 11 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups (COR = 0.23, $\chi^2 = 15.25$), with the odds of suffering from DJD in this joint being approximately 4 times greater for postcontact females.

Table 15: Crude prevalence, DJD-Elbow

DJD in the Elbow		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	16.54	68/381
Postcontact	59.75	141/236
Pre-Hispanic Males	17.73	36/203
Pre-Hispanic Females	19.08	25/131
Postcontact Males	62.50	40/64
Postcontact Females	50.77	33/65
*Crude prevalence		

Table 16: Odds ratios, DJD-Elbow.

COMPARISON	DJD in the Elbow							Interpretation
	O1	O2	O3	O4	O5	O6	COR	
Pre-Hispanic v Postcontact	.	.	0.02	0.15	0.21	0.13	0.14	100.40 Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	7.84	0.53	0.92	1.07	0.86	0.21 No significant difference
Postcontact Males v Females	.	.	4.50	1.40	7.58	0.84	2.09	3.13 No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.07	0.11	0.05	0.15	0.09	51.15 Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.04	0.28	0.38	0.12	0.23	15.25 Significant increase in Postcontact females

DJD-Wrist

Prevalence of DJD of the wrist (Tables 17 and 18) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the wrist was significantly different between the two groups ($COR = 0.19$, $\chi^2 = 35.22$), with the odds of suffering from this condition being approximately 5 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 1.20$, $\chi^2 = 0.12$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 2.14$, $\chi^2 = 3.30$). The prevalence of DJD of the wrist in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.15$, $\chi^2 = 25.90$), with the odds of suffering from DJD in the wrist being almost 7 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups ($COR = 0.29$, $\chi^2 = 6.75$), with the odds of suffering from this condition being approximately 3 times greater for postcontact females.

Table 17: Crude prevalence, DJD-Wrist.

DJD in the Wrist		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	5.17	21/361
Postcontact	25.83	39/151
Pre-Hispanic Males	6.70	13/194
Pre-Hispanic Females	32.31	21/65
Postcontact Males	6.70	13/194
Postcontact Females	32.31	21/65
*Crude prevalence		

Table 18: Odds ratios, DJD-Wrist.

COMPARISON	DJD in the Wrist								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	0.02	0.11	0.23	0.22	0.19	35.22	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.79	1.83	1.82	0.68	1.2	0.12	No significant difference
Postcontact Males v Females	.	.	28.89	2.29	2.00	1.53	2.14	3.3	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.01	0.13	0.20	0.16	0.15	25.90	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.43	0.17	0.22	0.37	0.29	6.75	Significant increase in Postcontact females

DJD-Hand

Prevalence of DJD in the hand (Tables 19 and 20) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the hand was significantly different between the two groups ($COR = 0.19$, $\chi^2 = 22.14$), with the odds of suffering from this condition being approximately 5 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.51$, $\chi^2 = 1.18$). Next, the prevalence of this condition in postcontact males and females was compared. The results indicated a significant difference between the two groups ($COR = 5.55$, $\chi^2 = 1.11$), with the odds of suffering

from DJD in the hand being approximately 5 times greater for postcontact males. The prevalence of DJD in the hand in pre-Hispanic males was then compared to that of postcontact males. The results again indicated a significant difference between the two groups ($COR = 0.10$, $\chi^2 = 25.32$), with the odds of suffering from this condition being 10 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.59$, $\chi^2 = 0.82$).

Table 19: Crude prevalence, DJD-Hand

DJD in the Hand		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	3.38	12/355
Postcontact	4.87	24/493
Pre-Hispanic Males	2.63	5/190
Pre-Hispanic Females	4.80	6/125
Postcontact Males	23.44	15/64
Postcontact Females	9.52	6/63
*Crude prevalence		

Table 20: Odds ratios, DJD-Hand.

COMPARISON	DJD in the Hand								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	0.04	0.43	0.19	0.09	0.19	22.14	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.86	1.71	0.37	0.04	0.51	1.18	No significant difference
Postcontact Males v Females	.	.	13.00	1.33	5.45	4.50	5.55	1.11	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.03	0.20	0.08	0.003	0.10	25.32	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.43	0.39	1.13	0.43	0.59	0.82	No significant difference

DJD-Cervical Vertebrae

Prevalence of DJD in the cervical spine (Tables 21 and 22) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the cervical spine was significantly different between the two groups ($COR = 0.28$, $\chi^2 = 28.49$), with the odds of suffering from this condition being approximately 4 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 1.43$, $\chi^2 = 0.90$). Next, the prevalence of this condition in postcontact males and females was compared. The results indicated a significant difference between the two groups ($COR = 3.04$, $\chi^2 = 7.34$). The prevalence of DJD in the cervical spine in pre-Hispanic males was then compared to that of postcontact males. The results again indicated a significant difference between the two groups ($COR = 0.18$, $\chi^2 = 26.50$), with odds of suffering from this condition being approximately 6 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups ($COR = 0.34$, $\chi^2 = 6.91$), with odds of suffering from this condition being approximately 3 times greater for postcontact females.

Table 21: Crude prevalence, DJD-Cervical Spine

DJD in the Cervical Spine		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	11.49	47/409
Postcontact	8.67	49/565
Pre-Hispanic Males	13.21	28/212
Pre-Hispanic Females	9.40	14/149
Postcontact Males	42.03	29/69
Postcontact Females	24.62	16/65
*Crude prevalence		

Table 22: Odds ratios, DJD-Cervical Spine.

DJD in the Cervical Spine									
COMPARISON	O1	O2	O3	O4	O5	O6	COR	χ^2	Interpretation
Pre-Hispanic v Postcontact	.	.	0.33	0.31	0.22	0.30	0.28	28.49	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.90	1.59	1.53	1.33	1.43	0.90	No significant difference
Postcontact Males v Females	.	.	11.82	85.00	1.25	2.67	3.04	7.34	Significant difference, Postcontact males+
Pre-Hispanic v Postcontact Males	.	.	0.27	0.15	0.20	0.17	0.18	26.50	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.07	8.10	0.17	0.33	0.34	6.91	Significant increase in Postcontact females

DJD-Thoracic Vertebrae

Prevalence of DJD in the thoracic spine (Tables 23 and 24) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the thoracic spine was significantly different between the two groups (COR = 0.44, χ^2 = 14.24), with odds of suffering from this condition being approximately 2 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups (COR = 1.001, χ^2 = 0.00003). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups (COR = 1.37, χ^2 = 0.57). The

prevalence of DJD in the thoracic spine in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups (COR = 0.41, $\chi^2 = 8.68$), with the odds of suffering from this condition being approximately 2 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups (COR = 0.51, $\chi^2 = 3.01$).

Table 23: Crude prevalence, DJD-Thoracic Spine.

DJD in the Thoracic Spine		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	27.25	115/422
Postcontact	12.33	71/576
Pre-Hispanic Males	27.80	62/223
Pre-Hispanic Females	26.00	39/150
Postcontact Males	47.06	32/68
Postcontact Females	45.31	29/64
*Crude prevalence		

Table 24: Odds ratios, DJD-Thoracic Spine.

COMPARISON	DJD in the Thoracic Spine								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	1.05	0.58	0.35	0.29	0.44	14.24	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	1.37	1.36	0.84	0.78	1.001	3E-05	No significant difference
Postcontact Males v Females	.	.	26.00	3.47	1.02	0.49	1.37	0.57	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.56	0.55	0.29	0.36	0.41	8.68	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	10.54	1.41	0.36	0.22	0.51	3.01	No significant difference

DJD-Lumbar Vertebrae

Prevalence of DJD in the lumbar spine (Tables 25 and 26) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the

lumbar spine was significantly different between the two groups ($COR = 0.52$, $\chi^2 = 9.95$), with the odds of suffering from this condition being approximately 2 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 1.24$, $\chi^2 = 0.71$). Next, the prevalence of this condition in postcontact males and females was compared. The results indicated a significant difference between the two groups ($COR = 2.96$, $\chi^2 = 6.59$), with the odds of suffering from this condition being almost 3 times greater for postcontact males. The prevalence of DJD in the lumbar spine in pre-Hispanic males was then compared to that of postcontact males. The results again indicated a significant difference between the two groups ($COR = 0.31$, $\chi^2 = 14.10$), with odds of suffering from this condition being approximately 3 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.64$, $\chi^2 = 1.64$).

Table 25: Crude prevalence, DJD-Lumbar Spine.

DJD in the Lumbar Spine		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	33.49	139/415
Postcontact	51.61	80/155
Pre-Hispanic Males	36.49	81/222
Pre-Hispanic Females	30.56	44/144
Postcontact Males	61.76	42/68
Postcontact Females	46.15	30/65
*Crude prevalence		

Table 26: Odds ratios, DJD-Lumbar Spine.

COMPARISON	DJD in the Lumbar Spine							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	.	.	0.91	0.44	0.50	0.32	0.52	9.95	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.89	1.08	1.63	1.14	1.24	0.71	No significant difference
Postcontact Males v Females	.	.	3.60	6.22	1.80	1.81	2.96	6.59	Significant difference, Postcontact males+
Pre-Hispanic v Postcontact Males	.	.	0.37	0.27	0.39	0.21	0.31	14.10	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	1.50	1.55	0.43	0.33	0.64	1.64	No significant difference

Schmorl's Depressions

Prevalence of Schmorl's depressions (Tables 27 and 28) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of Schmorl's depressions was significantly different between the two groups ($COR = 0.42$, $\chi^2 = 4.58$), with the odds of suffering from this condition being approximately 2 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 2.03$, $\chi^2 = 1.19$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 3.33$, $\chi^2 = 3.54$). The prevalence of Schmorl's depressions in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.32$, $\chi^2 = 6.04$), with the odds of suffering from this condition being approximately 3 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.43$, $\chi^2 = 1.04$).

Table 27: Crude prevalence, Schmorl's Depressions.

Schmorl's Depressions		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	3.37	14/415
Postcontact	7.74	12/155
Pre-Hispanic Males	4.52	10/221
Pre-Hispanic Females	2.03	3/148
Postcontact Males	12.86	9/70
Postcontact Females	4.84	3/62
*Crude prevalence		

Table 28: Odds ratios, Schmorl's Depressions.

COMPARISON	Schmorl's Depressions								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	0.02	1.92	0.52	0.11	0.42	4.58	No significant difference
Pre-Hispanic Males v Females	.	.	0.93	2.88	1.41	6.15	2.03	1.19	No significant difference
Postcontact Males v Females	.	.	23.64	6.09	2.79	2.19	3.33	3.54	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.01	1.57	0.32	0.11	0.32	6.04	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.34	3.33	0.63	0.04	0.43	1.04	No significant difference

DJD-Hip

Prevalence of DJD in the hip (Tables 29 and 30) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the hip was significantly different between the two groups ($COR = 0.46$, $\chi^2 = 6.75$), with the odds of suffering from this condition being approximately 2 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.79$, $\chi^2 = 0.29$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 1.09$, $\chi^2 = 0.03$). The prevalence of

DJD of the hip in pre-Hispanic males was then compared to that of postcontact males.

The results indicated a significant difference between the two groups ($COR = 0.39$, $\chi^2 = 4.99$), with the odds of suffering from this condition being approximately 3 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.53$, $\chi^2 = 2.09$).

Table 29: Crude prevalence, DJD-Hip.

DJD in the Hip		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	7.43	29/390
Postcontact	16.03	25/156
Pre-Hispanic Males	7.73	16/207
Pre-Hispanic Females	8.63	12/139
Postcontact Males	17.14	12/70
Postcontact Females	18.75	12/64
*Crude prevalence		

Table 30: Odds ratios, DJD-Hip.

COMPARISON	DJD in the Hip							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	.	.	0.04	1.54	0.25	0.47	0.46	6.75	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.94	0.46	2.04	0.64	0.79	0.29	No significant difference
Postcontact Males v Females	.	.	0.12	0.58	1.57	1.11	1.09	0.03	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.31	1.14	0.25	0.34	0.39	4.99	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.04	1.79	0.19	0.59	0.53	2.09	No significant difference

DJD-Knee

Prevalence of DJD in the knee (Tables 31 and 32) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD of the knee was

significantly different between the two groups ($COR = 0.22$, $\chi^2 = 36.94$), with the odds of suffering from this condition being approximately 5 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 1.46$, $\chi^2 = 0.93$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 1.13$, $\chi^2 = 0.08$). The prevalence of DJD of the knee in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.23$, $\chi^2 = 17.53$), with the odds of suffering from this condition being approximately 4 times greater for postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. Again, there was a significant difference between the two groups ($COR = 0.17$, $\chi^2 = 19.82$), with the odds of suffering from this condition being approximately 6 times greater for postcontact females.

Table 31: Crude prevalence, DJD-Knee.

DJD in the Knee		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	13.04	48/368
Postcontact	38.00	57/150
Pre-Hispanic Males	16.23	31/191
Pre-Hispanic Females	10.61	14/132
Postcontact Males	40.91	27/66
Postcontact Females	41.94	26/62
*Crude prevalence		

Table 32: Odds ratios, DJD-Knee.

COMPARISON	DJD in the Knee							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	.	.	4.27	0.29	0.13	0.24	0.22	36.94	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	10.33	2.81	1.42	0.89	1.46	0.93	No significant difference
Postcontact Males v Females	.	.	1.30	1.51	0.62	1.67	1.13	0.08	No significant difference
Pre-Hispanic v Postcontact Males	.	.	3.33	0.34	0.19	0.14	0.23	17.53	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	0.42	0.18	0.08	0.27	0.17	19.82	Significant increase in Postcontact females

DJD-Ankle

Prevalence of DJD of the ankle (Tables 33 and 34) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the ankle was significantly different between the two groups ($COR = 0.40$, $\chi^2 = 8.49$), with odds of suffering from this condition being 2.5 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.45$, $\chi^2 = 2.37$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 1.33$, $\chi^2 = 0.34$). The prevalence of DJD in the ankle in pre-Hispanic males was then compared to that of postcontact males. The results indicated a significant difference between the two groups ($COR = 0.23$, $\chi^2 = 9.42$), with odds of suffering from this condition being approximately 4 times greater for the postcontact males. Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.66$, $\chi^2 = 0.84$).

Table 33: Crude prevalence, DJD-Ankle.

DJD in the Ankle		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	6.20	22/355
Postcontact	16.30	22/135
Pre-Hispanic Males	4.76	9/189
Pre-Hispanic Females	8.66	11/127
Postcontact Males	17.24	10/58
Postcontact Females	17.24	10/58
*Crude prevalence		

Table 34: Odds ratios, DJD-Ankle.

COMPARISON	DJD in the Ankle								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	.	.	4.03	1.11	0.08	0.53	0.40	8.49	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.10	0.58	0.31	0.47	0.45	2.37	No significant difference
Postcontact Males v Females	.	.	0.55	0.60	1.21	1.79	1.33	0.34	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.33	0.94	0.05	0.23	0.23	9.42	Significant increase in Postcontact males
Pre-Hispanic v Postcontact Females	.	.	3.67	0.97	0.19	0.89	0.66	0.84	Significant increase in Postcontact females

DJD-Foot

Prevalence of DJD in the foot (Tables 35 and 36) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of DJD in the foot was significantly different between the two groups ($COR = 0.29$, $\chi^2 = 15.69$), with the odds of suffering from this condition being approximately 3 times greater for the postcontact sample. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was no significant difference in prevalence between these two groups ($COR = 0.90$, $\chi^2 = 0.04$). Next, the prevalence of this condition in postcontact males and females was compared. The results again indicated no significant difference between the two groups ($COR = 0.57$, $\chi^2 = 1.18$). The prevalence of

DJD in the foot in pre-Hispanic males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups (COR = 0.41, $\chi^2 = 3.17$). Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was a significant difference between the two groups (COR = 0.27, $\chi^2 = 6.89$), with odds of suffering from this condition being approximately 4 times greater for postcontact females.

Table 35: Crude prevalence, DJD-Foot.

DJD in the Foot		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	6.16	21/341
Postcontact	20.30	27/133
Pre-Hispanic Males	6.45	12/186
Pre-Hispanic Females	7.08	8/113
Postcontact Males	14.04	8/57
Postcontact Females	26.79	15/56
*Crude prevalence		

Table 36: Odds ratios, DJD-Foot.

COMPARISON	DJD in the Foot							χ^2	Interpretation
	O1	O2	O3	O4	O5	O6	COR		
Pre-Hispanic v Postcontact	.	.	4.59	0.22	0.25	0.28	0.29	15.69	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.69	0.52	1.72	0.71	0.90	0.04	No significant difference
Postcontact Males v Females	.	.	1.11	0.25	1.50	0.40	0.57	1.18	No significant difference
Pre-Hispanic v Postcontact Males	.	.	0.31	0.61	0.36	0.4	0.41	3.17	No significant difference
Pre-Hispanic v Postcontact Females	.	.	0.5	0.29	0.31	0.23	0.27	6.89	Significant increase in Postcontact females

Trauma

Prevalence of trauma (Tables 37 and 38) was first compared between the general pre-Hispanic and postcontact populations. Prevalence of trauma was significantly

different between the two groups ($COR = 0.64$, $\chi^2 = 3.93$), with the odds of suffering some form of trauma being 1.56 times greater for the postcontact period individuals. The prevalence of this condition was then compared between pre-Hispanic males and females. Based on the χ^2 value, there was a significant difference in prevalence between these two groups as well ($COR = 2.75$, $\chi^2 = 10.30$), with the odds of suffering trauma being almost 3 times greater for males. Next, the prevalence of this condition in postcontact males and females was compared. The results indicated no significant difference between the two groups ($COR = 1.45$, $\chi^2 = 0.82$). The prevalence of trauma in pre-Hispanic males was then compared to that of postcontact males. The results again indicated no significant difference between the two groups ($COR = 0.86$, $\chi^2 = 0.22$). Finally, the prevalence of this condition in pre-Hispanic females was compared to that of postcontact females. There was no significant difference between the two groups ($COR = 0.47$, $\chi^2 = 3.51$).

Table 37: Crude prevalence, trauma.

Trauma		
GROUP	%*	n_{present}/N_{total}
Pre-Hispanic	8.93	71/795
Postcontact	6.06	41/677
Pre-Hispanic Males	19.77	51/258
Pre-Hispanic Females	8.15	15/184
Postcontact Males	22.50	18/80
Postcontact Females	18.06	13/72
*Crude prevalence		

Table 38: Odds ratios, trauma.

COMPARISON	Trauma								Interpretation
	O1	O2	O3	O4	O5	O6	COR	χ^2	
Pre-Hispanic v Postcontact	0.23	0.29	2.08	0.65	0.69	0.48	0.64	3.93	Significant increase in Postcontact period
Pre-Hispanic Males v Females	.	.	0.77	4.99	7.07	2.22	2.75	10.3	Significant difference, pre-Hispanic males+
Postcontact Males v Females	.	.	10.77	0.93	1.87	1.32	1.45	0.82	No significant difference
Pre-Hispanic v Postcontact Males	.	.	1.66	1.1	0.87	0.53	0.86	0.22	No significant difference
Pre-Hispanic v Postcontact Females	.	.	23.33	0.21	0.23	0.32	0.47	3.51	No significant difference

G-Statistics

Carious Lesions-Anterior Dentition

Prevalence of carious lesions on the anterior dentition was first compared between the general pre-Hispanic and postcontact samples for each age group. In general, there was no significant difference in prevalence between the two periods. However, there was a significant increase in prevalence for the postcontact period for age group 3 ($G = 11.79$, $p = 0.0006$) and a significant decrease in prevalence for the postcontact period for age group 4 ($G = 9.8$, $p = 0.002$). Prevalence of this dental pathological condition was then compared between males and females in the pre-Hispanic period. There was no significant difference between these two groups. Next, prevalence of carious lesions was compared between males and females in the postcontact period. Though there was no significant difference for most of the age groups under comparison, males in age group 3 demonstrated significantly more carious lesions ($G = 9.32$, $p = 0.002$). In fact, this difference was substantial enough to influence the summary G value ($G = 18.03$, $p < 0.0001$). Prevalence of carious lesions on the anterior dentition in males was compared between the pre-Hispanic and postcontact periods. There was no significant difference in all age groups tested, but the summary G indicated a significant decrease in the postcontact period, though this difference is likely meaningless in this instance (due to

the brute-force nature of the summary G-statistic). Finally, the prevalence of this pathological condition in females was compared between the two periods. There was no significant difference in most age groups. However, there was a significant increase in the postcontact period for age group 3 ($G = 20.23$, $p = 0.0001$), which is echoed in the summary G ($G = 13.41$, $p = 0.0002$).

Table 39: G-statistics, Carious lesions-Anterior.

AGE GROUP	Carious Lesions, Anterior														
	COMPARISON														
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males			Pre-Hispanic v Postcontact Females		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1	0.45	0.5	No significant difference	.	.	.	.	.	.	.	.	.	.	.	.
2	2.45	0.11	No significant difference	.	.	.	.	.	.	.	.	.	.	.	.
3	11.79	0.0006	Postcontact +	1.97	0.16	No significant difference	9.32	0.002	Males +	0.29	0.59	No significant difference	20.23	0.0001	Postcontact +
4	9.8	0.002	Pre-Hispanic +	0.06	0.81	No significant difference	0.59	0.44	No significant difference	3.66	0.06	No significant difference	3.24	0.07	No significant difference
5	2.9	0.09	No significant difference	1.86	0.17	No significant difference	2.09	0.15	No significant difference	0.02	0.88	No significant difference	1.84	0.18	No significant difference
6	0.14	0.71	No significant difference	2.2	0.14	No significant difference	2.94	0.09	No significant difference	3.35	0.07	No significant difference	1.84	0.18	No significant difference
Summary G	0.4	0.53	No significant difference	1.12	0.29	No significant difference	18.03	<0.0001	Males +	6	0.01	Pre-Hispanic +	13.41	0.0002	Postcontact +

Carious Lesions-Posterior Dentition

Prevalence of carious lesions on the posterior dentition was first compared between the general pre-Hispanic and postcontact samples for each age group. Half of the age groups demonstrated no significant difference. However, age groups 1 ($G = 20.00$, $p < 0.0001$), 3 ($G = 6.35$, $p = 0.01$), and 4 ($G = 39.13$, $p < 0.0001$), as well as the summary G ($G = 13.93$, $p = 0.0002$), indicated a significant increase in the prevalence of this condition in the postcontact period. Prevalence of dental caries was then compared between males and females in the pre-Hispanic period. There was no significant difference between the sexes. Next, prevalence of carious lesions was compared between males and females in the postcontact period. Again, there was no significant difference between the two sexes. Prevalence of carious lesions on the posterior dentition in males

was compared between the pre-Hispanic and postcontact periods. The results of this test were scattered, with age groups 3 and 5 demonstrating no significant difference, age group 4 demonstrating a significant increase in the postcontact period ($G = 41.04$, $p < 0.0001$), and a significant decrease in the postcontact period for age group 6 ($G = 4.46$, $p = 0.03$). The summary G indicates an increase in the postcontact period ($G = 16.00$, $p < 0.0001$). Finally, the prevalence of this pathological condition in females was compared between the two periods. There was no significant difference in age groups 5 and 6. However, there was a significant increase in the postcontact period for age group 3 ($G = 5.63$, $p = 0.02$) and 4 ($G = 12.57$, $p = 0.0004$). The summary G value ($G = 16.00$, $p < 0.0001$) echoes this postcontact increase.

Table 40: G-statistics, Carious lesions-Posterior.

AGE GROUP	Carious Lesions, Posterior											
	COMPARISON											
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1	20	<0.0001	Postcontact +	.	.	.	.	.	.	.	.	.
2	0.12	0.73	No significant difference	.	.	.	.	.	.	.	.	.
3	6.35	0.01	Postcontact +	0.45	0.50	No significant difference	0.45	0.50	No significant difference	0.37	0.54	No significant difference
4	39.13	<0.0001	Postcontact +	1.63	0.20	No significant difference	1.63	0.20	No significant difference	41.04	<0.0001	Postcontact +
5	1.94	0.16	No significant difference	1.84	0.18	No significant difference	1.84	0.18	No significant difference	0.35	0.55	No significant difference
6	1.69	0.19	No significant difference	2.29	0.13	No significant difference	2.29	0.13	No significant difference	4.46	0.03	Pre-Hispanic +
Summary G	13.93	0.0002	Postcontact +	0.05	0.83	No significant difference	0.05	0.83	No significant difference	16.98	<0.0001	Postcontact +

Antemortem Tooth Loss

Prevalence of antemortem tooth loss (ATL) was first compared between the general pre-Hispanic and postcontact samples for each age group. Age groups 1 and 2 demonstrated no significant difference. Age group 3 demonstrated a decrease in prevalence in the postcontact period ($G = 54.67$, $p < 0.0001$). The remaining age groups (4 [$G = 15.04$, $p = 0.0001$], 5 [$G = 64.09$, $p < 0.0001$], 6 [$G = 11.61$, $p = 0.0007$]) as well

as the summary G ($G = 30.78, p < 0.0001$) indicate an increase in prevalence in the postcontact period. Prevalence of ATL was then compared between males and females in the pre-Hispanic period. There was a greater prevalence of this condition in females for age groups 3 ($G = 51.75, p < 0.0001$), 4 ($G = 60.29, p < 0.0001$), and 6 ($G = 97.42, p < 0.0001$). This difference is also echoed in the summary G ($G = 103.44, p < 0.0001$). Age group 5 ($G = 24.93, p < 0.0001$) demonstrated a greater prevalence of this condition in males. Next, prevalence of this condition was compared between males and females in the postcontact period. Age groups 3 ($G = 13.56, p = 0.0002$), 4 ($G = 12.66, p = 0.0004$), and 5 ($G = 5.81, p = 0.02$) demonstrated greater prevalence in males, while age group 6 ($G = 15.67, p < 0.0001$) and the summary G ($G = 6.86, p = 0.01$) indicated greater prevalence in females. Prevalence of ATL in males was compared between the pre-Hispanic and postcontact periods. Only age group 5 ($G = 25.20, p < 0.0001$) and the summary G ($G = 9.54, p = 0.002$) indicated a significant increase in the postcontact periods. Finally, the prevalence of this pathological condition in females was compared between the two periods. There was a significant decrease in the postcontact period for age groups 3 ($G = 37.57, p < 0.0001$), 4 ($G = 41.01, p < 0.0001$), and 6 ($G = 5.74, p = 0.02$). There was an increase in the postcontact period for age group 5 ($G = 27.36, p < 0.0001$). However, the summary G yielded a non-significant result.

Table 41: G-statistics, Antemortem tooth loss.

AGE GROUP	Antemortem Tooth Loss														
	COMPARISON														
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males			Pre-Hispanic v Postcontact Females		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1		0.76	0.38												
2		0.16	0.68												
3	54.67	<0.0001	Pre-Hispanic +	51.75	<0.0001	Postcontact +	13.56	0.0002	Pre-Hispanic +	0.68	0.41	No significant difference	37.57	<0.0001	Pre-Hispanic +
4	15.04	0.0001	Postcontact +	60.29	<0.0001	Postcontact +	12.66	0.0004	Pre-Hispanic +	0.29	0.59	No significant difference	41.01	<0.0001	Pre-Hispanic +
5	64.09	<0.0001	Postcontact +	24.93	<0.0001	Pre-Hispanic +	5.81	0.02	Pre-Hispanic +	25.2	<0.0001	Postcontact +	27.36	<0.0001	Postcontact +
6	11.61	0.0007	Postcontact +	97.42	<0.0001	Postcontact +	15.67	<0.0001	Postcontact +	0.20	0.65	No significant difference	5.74	0.02	Pre-Hispanic +
Summary G	30.78	<0.0001	Postcontact +	103.4	<0.0001	Postcontact +	6.86	0.01	Postcontact +	9.54	0.002	Postcontact +	0.001	0.97	No significant difference

Abscesses

Prevalence of abscesses was first compared between the general pre-Hispanic and postcontact samples for each age group. Half of the age groups tested demonstrated no significant difference. However, age groups 3 ($G = 4.16$, $p = 0.04$) and 6 ($G = 6.61$, $p = 0.01$) indicated a significant decrease in the prevalence of this condition in the postcontact period. Prevalence of abscesses was then compared between males and females in the pre-Hispanic period. There was no significant difference between the sexes. Next, prevalence of this condition was compared between males and females in the postcontact period. Again, there was no significant difference between the two sexes. Prevalence of abscesses in males was compared between the pre-Hispanic and postcontact periods. Age groups 3 and 4 were not significantly different. Age group 5 demonstrated a significant increase in the postcontact period ($G = 3.94$, $p = 0.047$) and age group 6 demonstrated a significant decrease in this period ($G = 4.21$, $p = 0.04$). The summary G indicates a decrease in prevalence in the postcontact period ($G = 4.97$, $p = 0.03$). Finally, the prevalence of this pathological condition in females was compared between the two periods. There was no significant difference in the prevalence of abscesses in these periods.

Table 42: G-statistics, Abscesses.

AGE GROUP	Number of Abscesses														
	COMPARISON														
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males			Pre-Hispanic v Postcontact Females		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1	.	.		.	.		.	.		.	.		.	.	
2	.	.		.	.		.	.		.	.		.	.	
3	4.16	0.04	Pre-Hispanic +	0.33	0.57	No significant difference	0.02	0.88	No significant difference	1.98	0.16	No significant difference	1.27	0.26	No significant difference
4	0.25	0.61	No significant difference	0.34	0.56	No significant difference	1.38	0.24	No significant difference	0.24	0.62	No significant difference	2.97	0.08	No significant difference
5	0.93	0.34	No significant difference	1.36	0.24	No significant difference	3.80	0.05	No significant difference	3.94	0.047	Postcontact +	1.63	0.20	No significant difference
6	6.61	0.01	Pre-Hispanic +	0.27	0.6	No significant difference	0.50	0.48	No significant difference	4.21	0.04	Pre-Hispanic +	0.45	0.50	No significant difference
Summary G	0.04	0.84	No significant difference	1.97	0.16	No significant difference	0.0013	0.97	No significant difference	4.97	0.03	Pre-Hispanic +	1.04	0.31	No significant difference

Calculus-Anterior Dentition

Prevalence of calculus on the anterior dentition was first compared between the general pre-Hispanic and postcontact samples for each age group. The majority of the age groups (3 [G = 4.18, p = 0.04], 4 [G = 22.53, p < 0.0001], and 5 [G = 8.56, p = 0.003], as well as the summary G [G = 16.03, p < 0.0001]) indicated a significant decrease in prevalence in the postcontact period. There was no significant difference in age group 6. Prevalence of calculus on the anterior dentition was then compared between males and females in the pre-Hispanic period. There was a greater prevalence of this condition in males for age groups 3 (G = 22.46, p < 0.0001) and 6 (G = 14.77, p = 0.0001). This difference is also echoed in the summary G (G = 38.67, p < 0.0001). Next, prevalence of this condition was compared between males and females in the postcontact period. There was no significant difference between the two sexes in this period. Prevalence of calculus in males was compared between the pre-Hispanic and postcontact periods. Age group 6 was not significantly different. However, age groups 3 (G = 5.20, p = 0.02), 4 (G = 14.40, p = 0.0001), and 5 (G = 4.34, p = 0.04), as well as the summary G, demonstrated a significant decrease in the postcontact period (G = 22.33, P < 0.0001). Finally, the prevalence of this pathological condition in females was compared between the two periods. There was no significant difference in age groups 3 and 6, as well as the

summary G. Age groups 4 ($G = 5.22$, $p = 0.02$) and 5 ($G = 4.04$, $p = 0.04$) indicated a significant decrease in the postcontact period.

Table 43: G-statistics, Calculus-Anterior

AGE GROUP	Calculus, Anterior											
	COMPARISON											
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.
3	4.18	0.04	Pre-Hispanic +	22.46	<0.0001	Males+	0.09	0.41	No significant difference	5.28	0.02	Pre-Hispanic +
4	22.53	<0.0001	Pre-Hispanic +	1.26	0.26	No significant difference	0.32	0.57	No significant difference	14.4	0.0001	Pre-Hispanic +
5	8.56	0.003	Pre-Hispanic +	0.74	0.39	No significant difference	0.001	0.97	No significant difference	4.34	0.04	Pre-Hispanic +
6	3.52	0.06	No significant difference	14.77	<0.0001	Males+	0.007	0.94	No significant difference	0.31	0.58	No significant difference
Summary G	16.03	<0.0001	Pre-Hispanic +	38.67	<0.0001	Males+	0.28	0.60	No significant difference	22.33	<0.0001	Pre-Hispanic +

Calculus-Posterior Dentition

Prevalence of calculus on the posterior dentition was first compared between the general pre-Hispanic and postcontact samples for each age group. All age groups demonstrated significant difference. While age group 3 ($G = 9.72$, $p = 0.002$) demonstrated an increase in the postcontact period, the rest of the groups (4 [$G = 21.89$, $p < 0.0001$], 5 [$G = 20.68$, $p < 0.0001$], and 6 [$G = 13.48$, $p = 0.0002$], as well as the summary G [$G = 35.02$, $p < 0.0001$]) indicated a significant decrease in prevalence in the postcontact period. Prevalence of calculus on the posterior dentition was then compared between males and females in the pre-Hispanic period. There was a greater prevalence of this condition in males for age groups 3 ($G = 23.29$, $p < 0.0001$) and 5 ($G = 5.70$, $p = 0.02$). This difference is also echoed in the summary G ($G = 29.30$, $p < 0.0001$). Next, prevalence of this condition was compared between males and females in the postcontact period. There was no significant difference between the two sexes in this period. Prevalence of calculus in males was compared between the pre-Hispanic and postcontact

periods. All age groups demonstrated a significant decrease in the postcontact period ($G_3 = 9.50$, $p_3 = 0.002$; $G_4 = 6.90$, $p_4 = 0.009$; $G_5 = 16.32$, $p_5 < 0.0001$; $G_6 = 8.04$, $p_6 = 0.005$; $G_{\text{sum}} = 41.65$, $p_{\text{sum}} < 0.0001$). Finally, the prevalence of this pathological condition in females was compared between the two periods. There was no significant difference in age groups 3 and 6. Age groups 4 ($G = 7.18$, $p = 0.007$) and 5 ($G = 6.88$, $p = 0.009$), as well as the summary G ($G = 10.12$, $p = 0.002$) indicated a significant decrease in the postcontact period.

Table 44: G-statistics, Calculus-Posterior.

AGE GROUP	Calculus, Posterior											
	COMPARISON											
	Pre-Hispanic v Postcontact			Pre-Hispanic Males v Females			Postcontact Males v Females			Pre-Hispanic v Postcontact Males		
	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation	G	p	Interpretation
1	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.
3	9.72	0.002	Postcontact +	23.29	<0.0001	Pre-Hispanic +	0.59	0.44	No significant difference	9.50	0.002	Pre-Hispanic +
4	21.89	<0.0001	Pre-Hispanic +	0.59	0.44	No significant difference	1.07	0.30	No significant difference	6.90	0.009	Pre-Hispanic +
5	20.68	<0.0001	Pre-Hispanic +	5.70	0.02	Pre-Hispanic +	0.20	0.66	No significant difference	16.32	<0.0001	Pre-Hispanic +
6	13.48	0.0002	Pre-Hispanic +	0.17	0.68	No significant difference	0.30	0.58	No significant difference	8.04	0.005	Pre-Hispanic +
Summary G	35.02	<0.0001	Pre-Hispanic +	29.3	<0.0001	Pre-Hispanic +	0.14	0.70	No significant difference	41.65	<0.0001	Pre-Hispanic +

Conclusion

Both the odds ratios and the G-statistics provide plentiful quantities of information in regards to gender and skeletal biology throughout the prehistory and history of the north coast of Peru. The biocultural, historic, behavioral, and gender-related interpretations of this information will be discussed and contextualized in the next chapter.

7.) WARP AND WEFT: WHERE GENDERED LIFE FITS IN THE *LLIKLLA* OF CULTURE

In the southern Central Andes, a *lliklla* is a woman's carrying cloth, worn across the back and secured with a *tupu* (a kind of pin) in front. These garments were used in *Tahuantinsuyu* and continue to be used in modern Quechua communities to carry everything from firewood to small children. A *lliklla* may be embroidered or woven with deeply meaningful designs, which speak to the identity of the wearer and her community and express cultural values and cosmology (Seibold, 1992; Heckman, 2005). Such textiles can be very important to those who wear them (Femenías, 2005), especially in an increasingly globalized world where such distinctive markers of ethnic and gender identity may be perceived as "backwards." There is evidence to suggest that identity has long been woven into Peruvian textiles, with cultural markers evident in textiles uncovered at the El Brujo Complex from a range of temporal and cultural contexts (Rodman and Fernandez, 2005). For these reasons, the *lliklla* is a fitting metaphor for the many cultures who have existed on the north coast. These people were wrapped and carried in cloth from birth to death, just as they were entwined and enmeshed in their culture. The question is: how was gender woven into this cloth? How was it worn, and by whom?

The previous chapter described the results of the statistical analysis and interpreted those results in the most basic of terms. This chapter will seek to

contextualize those results in the larger picture of life in pre-Hispanic and postcontact Peru. The data will serve as a starting point, a diving board, from which to launch a larger discussion of gender ideology and its impact on the day to day life of the multitude of individuals who have called the north coast home over the past several thousand years. Building on that foundation, this discussion will then turn to the possibility of the existence of non-binary genders in the Andean past, in an attempt to present as holistic picture of gender ideologies in the region as possible.

However, before engaging in this discussion, it is necessary to first provide a brief summary of the “lay of the land,” as it were. As has been discussed in previous chapters, relatively little is known about gender ideologies in Peru and even less is known about the north coast in particular. The picture which has been painted by research thus far is of a heavily dualistic, binary gender system, with males and females engaging in totally distinct, but harmoniously reciprocal, lifeways. Scholars have constructed this understanding of Andean gender based on the ethnohistoric record. Thus, this system is innately particular to the Inka, though it (along with the related theme of dualism in general) has been projected back into the recesses of Andean pre-history. The binary of male and female has become enshrined in *Lo andino*, even though its foundations are sunk in the mire of Spanish Catholic bias and the whisper chamber that is the passage of time.

It must be emphasized that this application of an innately Western understanding of the male-female dyad to the very non-Western people of the Andes is likely unsound. Simultaneously, much of what is known about pre-Hispanic cultures on the north coast

fits relatively neatly into the projected dualistic conceptual framework, and therefore the pan-Andean nature of dualism is not being contested. As such, this chapter invokes dualistic concepts in the attempt to move towards a more nuanced understanding of gender, while beginning with the assumption that the previously utilized binary male-female paradigm, as understood in the West, is an anachronism introduced by the Spanish and perpetuated by Western scholars.

“Hard Biology:” Embodied Existence and Gender

Early Life

Some societies raise male and female children very differently. On the extreme end, one sex may be greatly preferred over another, as in the case of late twentieth century China, whose one-child policy resulted in higher rates of infanticide of female children and an imbalance in the gender ratio due to a strong preference for male children (Lock and Nguyen, 2018; Crawford and Unger, 2000). In some cultures, nutrition is heavily influenced by sex, with male offspring being breast-fed for a longer period of time than their female counterparts. Males of all ages often have access to food before females, leading to a difference in the quantity or quality of the food consumed by each sex (Crawford and Unger, 2000). As was discussed in Chapter 5, poor nutritional intake in the early years of life can result in permanent physiological changes. Emerging research indicates that even a nutrient-poor *in vitro* environment will result in certain trade-offs impacting the future life of an individual (see Temple, 2018). Therefore, if cultural practices such as those discussed above existed on the north coast during any

time period, the impact of those practices would be discernible in the skeletons of the affected individuals.

The tests which were ran on prevalence of cribra orbitalia, porotic hyperostosis, and enamel hypoplasias were intended to provide insight on this topic. As discussed in Chapter 5, these conditions are deeply linked with nutrition (among other environmental and cultural factors) in early life. The results of these tests all indicated that there was no significant difference in the prevalence of these conditions between males and females in either the pre-Hispanic or postcontact samples. While this does not demonstrate that males and females never had differential access to food, or that male and female subadults did not consume different kinds of food, it does reveal that both boys and girls were provided with similar nutritional intake and/or similar environments. It can therefore be inferred that one sex was not universally preferred over another to the extent that it would begin to impact the relative health of the less-preferable subadults.

This finding is especially interesting in light of modern ethnographic evidence. The hair-cutting ceremony is an important landmark in a Quechua child's life. It is at this point that he or she receives adult clothes (Bastien, 1987). Another key element of this ceremony is the beginning of a child's right to property, as a list of all gifts and the names of the gift-givers are recorded and kept to be given to the child upon their marriage (Bastien, 1987). It has been argued that this ceremony marks the first gendering of a child (Sillar, 1994) and that before this ceremony, a child is essentially genderless (Dean, 2001). The lack of significant difference in the prevalence of cribra orbitalia, porotic hyperostosis, and enamel hypoplasias between the sexes may support this idea.

Interestingly, the hair-cutting ceremony has also been observed on the north coast, in the town of Moche (Gillin, 1947).

Though it is possible that more detailed analysis of the timing of dental defects might reveal more subtle differences in the treatment of children of different sexes in either period, it is especially interesting to note that, in spite of the intrusion of the heavily patriarchal Spanish, the prevalence of these conditions does not differ significantly between the sexes in the postcontact period. The slightly elevated prevalence of cribra orbitalia in males is the opposite of the anticipated differences. However, the results of the odds ratio analysis of the prevalence of EH in pre-Hispanic and postcontact males did differ significantly. Though there is a disparity in the data (females did not experience a similar increase in prevalence, even though there is no significant difference between the sexes in both periods) which may be explained away as an artifact of differences in sample size based on the inability to estimate sex for subadults, a cultural explanation may also be likely.

With the arrival of the Spanish, life grew much harder for the indigenous population of Peru. While the intensity of labor increased for both sexes, the influence of Spanish concepts of gender norms may have led to a harsher division of labor. It is likely that children began assisting their parents in their economic pursuits and thus, if the notion that the much harsher labor under Spanish rule was divided along gender lines is correct, male children may have experienced greater stress earlier in their lives than they had in the pre-Hispanic period, resulting in the observed increase in prevalence. Enamel hypoplasias may form on the anterior permanent dentition between the approximate ages

of 1.1 and 6.2 years (Temple, 2018), as the crowns of these teeth form. Therefore, if an individual experienced more acute forms of significant stress (not necessarily a nutritional deficit) before the age of 6.2, a dental defect such as an EH could form on the anterior dentition. The intense physiological demands of heavy manual labor could certainly be such a stressor. However, if this was the case, one would expect either a significant difference between males and females in the postcontact period, or a significant increase in both sexes.

Regardless of this observation in the results, the evidence suggests that male and female children were not exposed to drastically different environments in their formative years, especially in the pre-Hispanic period, and possibly in the postcontact period.

Disease and Illness

As mentioned in Chapter 5, relatively few diseases are identifiable from dry bone alone. Those diseases that are skeletally visible require a careful and methodical approach to differentially diagnose. While the value of such diagnoses is indisputable, they are relatively rare in comparison to the prevalence of non-specific pathological conditions (in particular, periostosis). For this reason, the focus of this section will be on illness, rather than disease. This distinction originates in the field of medical anthropology, but is unfortunately not often employed in the field of bioarchaeology. The disease/illness model maintains that a disease is a biomedical construct against which symptoms are compared in order for a diagnosis to be reached. Illness, on the other hand, is how a disease, how *suffering* is experienced and lived (Kleinman, 1988). Illness is disease in context, it is more nebulous, more fluid than disease. For this reason, the medical

anthropological disease/illness model united with a bioarchaeological knowledge of disease in the ancient past becomes a powerful theoretical tool.

Based on the data in hand, the prevalence of specific infections (as evidenced by non-periostotic skeletal lesions) was relatively low on the north coast of Peru, with a crude prevalence ranging from 3.11% to 8% depending on the time period and/or sex in question (crude prevalence, as discussed in Chapter 5, is not useful for purposes of comparison, but in this instance, it provides a basic understanding of the relative rareness of diagnoseable diseases in the sample.) The odds of exposure to the diseases represented by these lesions were not significantly different between time periods or between sexes, remaining low throughout time. This is surprising, considering that one of the most commonly cited consequences of the European invasion of the Americas was the spread of disease amongst native populations. Based on this data, this does not seem to be the case in the populations represented by the two colonial sites included in the dataset. This may be related to the relatively rural locations of these two sites—while both the Capilla del Niño Serranito and the Capilla de San Pedro de Mórrope were located in colonial towns, with the former being a port town, neither location was close to the much larger urban centers of Trujillo, Lima, or Cusco (the latter two cities being very far from these two towns). However, the reason behind the consistent level of these diseases through time is beyond the scope of this thesis.

While the prevalence of non-periostosis lesions remained relatively consistent regardless of time period or sex, this was not the case for the prevalence of periostosis. The prevalence of this condition increased significantly for both sexes in the postcontact

period and, during this time, the prevalence of periostosis was not significantly different between the two. However, in the pre-Hispanic period, males demonstrated significantly higher prevalence of periostosis lesions than females. As discussed in Chapter 5, there are multiple complex etiologies for this condition, making its presence rather difficult to interpret at times. However, the general increase in prevalence over time is readily explained by increasingly demanding work-loads and a generally harsher life-style for indigenous Peruvians under the rule of the Spanish.

The difference in prevalence between pre-Hispanic males and females, however, is more difficult to explain, due to the non-specific nature of the condition. At the most basic level, it is evident that there was a difference in the conditions under which the sexes lived. The most general explanation is that males were experiencing greater physiological stress and chronic-non-lethal forms of infection than females (this is frequently the case for periostosis), but the cause of this stress is unknown. Perhaps males worked in an environment(s) or participated in events which led to greater rates of injury, resulting in infection and the inflammation which is associated with periostosis. Either of these explanations, or perhaps both, is possible. Regardless, it appears that the lives (or at least the environments in which they lived) of women and men diverged at some point after childhood.

The non-specific nature of periostosis and the difficulty in nailing down one specific cause (especially in the attempt to avoid creating a “just-so story”) leads the discussion back to the disease/illness model. Diagnosing the specific cause of periostosis is difficult, if not impossible. The “disease” in this instance is out of the reach of the

bioarchaeologist, but the “illness” is not. The presence of periostosis is indicative of human suffering and often is a reflection of compromised immunocompetence (Klaus, 2014; Larsen, 2015). Whatever the cause (or causes) of this condition, it would have likely resulted in varying degrees of discomfort. The fact that there was a significant difference in the prevalence of such a condition between two contemporaneous groups is thought-provoking. Though the following is perhaps more speculation than science, it begs the question: was the discomfort associated with whatever caused the higher prevalence of periostosis in males considered a part of life, of what it meant to be male? Conversely, was the lack of that discomfort part of being female? Was this “illness” (or “illnesses”) an innate part of the embodied and engendered experience?

While the level of statistical analysis is coarse grained, generalizing hundreds of years of prehistory into one massive time period, it would seem that at some point during prehistory, and perhaps at multiple points, there was a systematic difference in the embodied experience of the sexes which may have been itself a result of gender ideology.

Degenerative Joint Disease

The postcontact period was marked by significant increases in the prevalence of DJD in every single joint system. This finding echoes the results reported by Klaus, Larsen, and Tam (2009) and, as those authors argued, is a product of economic intensification in the region as a result of the invasion and colonization of the region by the Spanish. It appears that, though the people of Eten did not live lives as harsh as those of the people of Mórrope, the severity of DJD at the latter site is statistically overwhelming. However, colonial life in Eten may well have been harsher than before

the arrival of the Spanish, even if it was not as physically demanding as life in Mórrope. Again, because this topic has been discussed in other publications, it will not be discussed further here.

In general, the postcontact increase in DJD holds true for both males and females, and the prevalence of this pathological condition is not significantly different between the groups. Though some results also indicate that there was no significant increase in DJD of some joint systems in females during the postcontact period, this is evidently an artifact of sample size, as the rest of the results (as well as crude prevalence) indicate that there was an increase across the board, with no significant difference between males and females for most joint systems. However, prevalence of this condition did differ for two joint systems: the cervical vertebrae and the hand. Postcontact males demonstrated significantly greater prevalence of DJD in these two systems, which is most likely explained by changing gender roles, as men became more associated with heavy labor and women began to be more confined to the domestic sphere (Klaus et al., 2009; Rostworowski, 2015). While it is impossible to determine exactly what these men were doing to precipitate DJD in these joints, the hands and the neck are certainly affected by hard labor, as anyone who has spent any amount of time digging holes and lifting heavy objects can attest.

In the pre-Hispanic period, there was no significant difference in the prevalence of DJD between males and females. There are two possible explanations for these results. The first is that there was no repetitive action or group of actions performed by one group that was performed less by another. While there is no evidence of specific gendered

actions in this scenario, that certainly does not mean that males and females were performing the same or complementary tasks. It also indicates that neither sex was involved in systematically strenuous labor that damaged joint systems in any patterned way. The ethnographic, ethnohistoric, archaeological, and iconographic evidence indicates that there were at least some gender-specific roles (a topic which will be discussed later in this chapter). However, as previously mentioned, there is no bioarchaeological method which can precisely reconstruct specific repetitive actions from bone (this includes both DJD and entheses). The other possible explanation for these non-significant results is simply that any variation is being drowned out due to the general nature of the all-encompassing “pre-Hispanic” grouping. Again, this topic requires further, more thorough investigation.

Trauma

Trauma is a surprisingly complex topic. On the north coast of Peru, “trauma” is often synonymous with “sacrifice.” This association is not unfounded, as many of the most intensively studied cultures in the region certainly engaged in this practice (as discussed in Chapter 4). However, traumatic injury definitely occurred outside of this very specific ritual context. The nature and intensity of large-scale interpersonal violence has varied considerably over the long history of human occupation of the north coast. While the evidence of conflict in the region is minimal in the earliest periods and increased over time, intensity of warfare generally peaked at two intervals, as is evidenced by both bioarchaeological data and the construction of defensive architecture. The first was during the Final Formative to Early Intermediate periods (~400 BC to AD

100) and the second during the Late Intermediate (~AD 1000 to AD 1450) (Arkush and Tung, 2013). Though these peaks are based on pan-Andean trends of violence, the first peak coincides with the dominion of the Moche culture, whose practice of warfare (ritual or otherwise) and cultural emphasis on militarism is well documented (Verano, 2001b; Bourget, 2005; Billman, 1997) while the second coincides with the Chimú, who were an aggressively expansive state (Moseley and Cordy-Collins, 1990; Arkush and Tung, 2013).

Warfare is not the only explanation of traumatic injury, of course. In addition to smaller scale interpersonal violence (such as abuse [Wheeler et al., 2013]), traumatic injury may also be reflective of an active lifestyle or traversal of rough terrain (Larsen, 2015). Because of the wide array of potential causes of traumatic injury, any attempt at the interpretation of trauma in the bioarchaeological record must be approached with great caution. It is with this in mind that the discussion of prevalence in the sample under study is undertaken.

In general, the prevalence of traumatic injury increased in the postcontact period, likely correlating with either (or both) an increase in violence during and after the Spanish invasion of the region (indigenous men served as soldiers at times, fighting for the conquerors [Rostworowski, 2015]) and the aforementioned increasingly physically demanding lifestyle of indigenous people which resulted from this invasion. However, neither sex alone demonstrates a significant increase in prevalence in this period, and there is no significant difference between males and females during the postcontact period. Therefore, the general increase observed is likely not related to conflict, making

the second option (an increasingly demanding lifestyle) the more likely explanation. However, if the increase in trauma was simply related to changes in labor, and those changes included increasingly gendered division of labor as has been previously argued, males would be anticipated to demonstrate higher rates of traumatic injury than females. This is not the case. Therefore, the difference may indicate that women also began to partake in new patterns of labor with a higher risk of traumatic injury. Even though Spanish gender ideology may have held that women's place was in the home, women participated in economic activities outside the home as well, though they were not directly responsible for the provision of tribute (Klaus et al., 2009). It is also possible that this change has darker origins—the Spanish often resorted to cruelty in the course of the forceful conversion of the populace. For example, oral records tell of those unwilling to convert being burned alive on top of the mounds of Túcume (Klaus and Alvarez-Calderón, 2017; Heyerdahl et al., 1995). It is not beyond the realm of possibility that the Spanish also resorted to other forms of violence.

While there was no significant difference in the prevalence of traumatic injury between males and females in the postcontact period, this was not the case in the pre-Hispanic period. Males exhibited significantly greater odds of traumatic injury. While the first explanation that comes to mind is that this difference is related to the role of males as warriors in pre-Hispanic society, this seems to be too simple an explanation. As discussed above, warfare was very important to various societies on the pre-Hispanic north coast. However, the evidence suggests that, in the most militaristic of these societies (such as the Moche), warriors comprised a separate class in society. Therefore, a

heightened prevalence of traumatic injury associated with a warrior's profession would be related to the intersecting identities of gender, class or status, and occupation. The entire male population (as far as it can be represented by the males in the sample utilized in this analysis) would not necessarily meet these criteria. There is no indication that any of the societies in this region consisted entirely of warriors. Thus, there must be another explanation for this trend.

It is equally improbable that the greater prevalence of traumatic injury in males in the pre-Hispanic period is tied to other forms of inter-personal violence. While it is entirely possible that males may be the victims of domestic abuse (Judd and Redfern, 2012), it is again unlikely that this kind of violence would be sufficiently widespread to yield a statistically significant result. Likewise, it is improbable that any sort of interpersonal violence would be so widespread across such a long period of time and such a wide variety of cultures. Therefore, an explanation related to lifestyle is the most probable. The north coast is a challenging environment in which to live. The coast is rocky, with powerful waves, the desert (when not sandy) is also rocky, making footing treacherous, and the *cerros* and mountains are equally difficult to traverse. As such, movement across this landscape comes with a certain level of risk. If male gender roles involved venturing out into some of the more dangerous environments (as would be the case with fishermen, who risked broken ribs from the pounding of the waves against the coast [Klaus and Alvarez-Calderón, 2017]), this could explain the greater prevalence of traumatic injury in males.

Oral Environment and Diet

The diet of the inhabitants of the north coast of Peru changed considerably during the postcontact period, with the introduction of large-scale production of sugar cane and associated economic intensification in the region (Klaus and Tam, 2010; Klaus and Alvarez-Calderón, 2017). The changes in prevalence of dental pathological conditions (especially carious lesions, calculus, antemortem tooth loss, and abscesses) in the postcontact period have already been discussed in detail by these scholars and therefore will only be given cursory consideration in this chapter. The focus, instead, will be on the pre-Hispanic period as well as differences in prevalence between the sexes and what those differences may mean in both periods.

In the postcontact period, changes in the gendered division of labor and associated patterns of movement across the landscape (Klaus and Tam, 2010) likely resulted in the differences in oral environment (and the inferred differences in diet) which are observed in the sample. However, it is important to note that the results generated from the statistical analysis employed in the course of research for this thesis were very different from those reported by Klaus and Tam (2010), in spite of relying on a very similar sample. This is due to the inclusion of data from Colonial Eten in the postcontact sample. Because of the very different patterns of cultural resilience present between the two postcontact sites (Klaus and Alvarez-Calderón, 2017), the results from this analysis portray a broader picture of life in the Colonial period.

Likewise, the results regarding the pre-Hispanic period must also be taken with a large grain of salt, as they reflect a massive generalization. However, the insights they

provide are still of use for the topic of gender. The prevalence of carious lesions and abscesses are not significantly different between the two sexes, indicating that there was little difference in the cariogenicity of their diets—that is, neither sex was generally consuming more starches or sugars than the other. This is also reflected in the lack of significant difference in the prevalence of dental calculus for most age groups. However, males in age group 3 (approximately 15 to 25 years of age) demonstrated higher prevalence of this condition than their female counterparts. If this difference was dietary in origin, the rates of carious lesions would mirror the increased prevalence of calculus. However, this is not the case. Therefore, another explanation must be sought. It is possible that this difference occurred due to a difference in dental hygiene associated with the intersecting social identities of age and gender.

In regard to antemortem tooth loss, pre-Hispanic females generally were at greater risk, with the exception of age group 5 (approximately 35 to 45 years of age), where males demonstrated significantly higher prevalence of this condition. While it is possible that this significant difference in prevalence is associated with female reproductive biology (see Arnes, 1999; Lukacs and Largaespada, 2006; Lukacs and Thompson, 2008), the greater prevalence of ATL in females does not coincide with a greater prevalence of carious lesions or abscesses, which would be expected if the difference was a result of biology. An alternate explanation would be a difference in tooth wear, which was not included in statistical analysis due to inconsistencies in the inclusion of the relevant data in the dataset.

It is possible that patterns of tooth wear and associated tooth loss are different between the sexes. If this is the case, the difference could potentially be explained by a difference in diet that does not involve starch and sugar, but rather the relative hardness or coarseness of food. The utilization of teeth as tools is an alternate explanation. In the late pre-Hispanic period (specifically among the Inka), women frequently worked with fiber, as textile production was one of their prime economic pursuits. There is evidence from sites around the world indicating that teeth were used as tools in the processing of fiber, with the occasional result of severe attrition of the most frequently used teeth (Sperduti et al., 2018). However, women were not the sole textile workers throughout all of prehistory, so this particular explanation does not necessarily hold true throughout time. There may have been other tasks which involved the use of teeth as tools, resulting in the patterning observed in the data.

Case Studies: Filling in the Gaps

The picture painted by the very broad strokes of the statistical analysis discussed in the preceding sections aligns very well with the established understanding of gender roles in pre-Hispanic and postcontact Peru. In the pre-Hispanic period, it seems that male and female children were not treated so differently as to result in skeletally perceivable difference and it is apparent that this held true into adulthood, at least in regards to diet. For these reasons, it can be inferred that neither sex was valued over another (at least, to the point of biological impact). However, there appears to be gendered differentiation of tasks and practices, as reflected in the significantly higher prevalence of antemortem tooth loss in females and traumatic injury in males of all ages, as well as the curious

difference in dental calculus presence in males of 15 to 25 years of age. In the postcontact period, the evidence suggests that, for the most part, males and females suffered from many of the same afflictions resulting from Spanish colonization of the region. However, it is also apparent that gender roles did shift significantly in this time period, resulting in new gendered divisions of labor.

While the results of this analysis are compelling, details have been eradicated by the coarse-grained nature of the approach taken. The generalizations made in both periods are just that—generalizations, constrained both by the nature of the groupings made for statistical analysis and by the nature of bioarchaeological data itself. The shifting nature of life and culture in the region after the arrival of the Spanish was far more complex than the results would indicate. It is for this reason that additional lines of information and inquiry must be followed, a feat which is significantly easier in the postcontact period than the pre-Hispanic, due to the existence of written records. However, the archaeological record is not mute on this subject. The following case studies, drawn from bioarchaeological, archaeological, and historical contexts, are intended to provide more specific detail. However, the individuals discussed in the following subsections are not “every-women.” They were all individuals, with their own, idiosyncratic histories. Gender is not the only factor at play in these stories. Rather, in the lives of these people, gender intersects with socioeconomic status, the environment in which they lived, religious belief, race, and innumerable other facets of identity. This complexity cannot be avoided. It is better embraced.

The Priestesses of San José de Moro—Figure C

During the first field season at the site of San José de Moro, which is located in the Jequetepeque Valley, the incredibly rich and complex burial of an older woman was uncovered. Dating the Late Moche, her tomb consisted of a large, subterranean, adobe-walled chamber filled with ceramic vessels (including three of foreign origin), camelid remains, and *Spondylus* shell. The form and decoration of some of the ceramics (among them a chalice similar to that depicted in the Moche Sacrifice Theme), as well as the presence of a distinctive headdress, indicated that this woman was a priestess (Donnan and Castillo, 1994). In fact, she was most likely Figure C of the Sacrifice Theme.

This extraordinary woman was not alone. In subsequent field seasons, Donnan and Castillo unearthed another tomb, similar to that of the first priestess, which contained the burial of a young woman. She was also buried with ceramics, but of lesser quality (including many *crisoles*), as well as camelid and dog remains. Unlike the previously uncovered burial, this woman was buried in a coffin, surrounded by textiles and copper and silver artifacts. Among these metal goods were a silver burial mask and large metal legs and arms. In addition to these material goods, this personage was also buried with multiple attendants, including two older individuals who had been curated before her death (Castillo and Rengifo, 2008). This find indicated that Figure C was a role played by several individuals—there were multiple Moche priestesses (Donnan and Castillo, 1994).

These women were evidently powerful members of their societies. In their role as priestess of the Sacrifice Ceremony, they are depicted performing one of the most important rites of Moche politicoreligious belief and practice. Whether these women

exercised political power equal to that of their male counterparts is unknown. However, the wealth of their tombs (in both material goods and human life) indicates that they commanded considerable resources and respect in Late Moche society.

The Craftswomen of San José de Moro—A Glimpse of a Different Social Stratum

The Textile Worker

This burial (dating to the “Transitional Period” between the Late Moche and Early Sicán) was also found at San José de Moro and contained the remains of a woman of approximately 33 to 46 years of age. She was buried with many tools associated with the working of textiles, including spindles, spindle whorls, needles, combs, and pigments. She wore beaded necklaces and bracelets of turquoise and shell and was surrounded by the tools, as well as ceramics and additional tools, the purpose of which is unclear (though it may relate to the processing of pigment into dye). These additional tools included chisels, spoons, and a knife (Rengifo and Castillo, 2015).

The Carver

Another burial from San José de Moro and dating to the “Transitional” Period contained the remains of a woman of approximately 30 years of age. She was buried with the remains of a perinatal infant to her left and the legs of a camelid to her right. Her wrists bore bead bracelets and a bead necklace was draped around her neck. In addition to the 38 ceramic vessels surrounding her were tools associated with carving. Among these tools were punches, a copper knife, and stone implements of unknown purpose. There were also bone flutes and whistles, as well as bone spindles (Rengifo and Castillo, 2015).

These bone items may have perhaps been a representation of some of her work, though this is impossible to ascertain.

The Artisan

Yet another burial from San José de Moro, M-U909 contained the remains of a woman of approximately 25 years. She was buried with 10 ceramic vessels, as well as tools and raw materials. Among these tools were a bone punch, copper chisel, and a spindle whorl. A bag contained pieces of *Spondylus*, snail shell, beads, pigments, and a piece of obsidian. She wore a bead necklace and two *Spondylus* shells were located at her hips (Rengifo and Castillo, 2015).

Women as Craftspeople During the Late Moche-Early Sicán Period

The burials of these three women seem to represent members of a lower status than that of the Priestesses. However, it is evident, based on the contents of these tombs, that these women were of sufficient importance to not only merit multiple grave foods, but goods which were seemingly related to their profession in life. While the relationship between burial goods and the individuals interred in burials are complex and not at all straightforward, the notion that these artifacts were used by these people in life or represented objects used by these people in life seems probable. Therefore, these burials indicate that women could pursue multiple lines of work, though the possibility that there were other intersecting elements of their identities which made this possible (specifically, class or status) should not be ignored.

The Priestess of Chornancap—Political and Religious Power

The tomb of the Priestess of Chornancap, which dates to the Late Sicán period, is as elaborate as any of the famous tombs of the north coast, containing vast quantities of grave goods and attendant burials. The first indication the excavators found of the large tomb were multiple layers of ceramic offerings. Underneath the many vessels, a textile made of vegetal fibers covered two painted cloth textiles of very fine workmanship, covered in iconography associated with the sea and the moon. After approximately 20 centimeters of sand, the excavators uncovered a mud structure which likely represented some element of the funerary rites of the principal personage below. Beneath this structure was another layer of ceramics on top of a cotton textile. Beneath this textile was the silver-plated burial mask of the principal personage of the tomb, as well as her headdress and a golden crown. With her were buried many metal objects of incredible workmanship, the majority of which were silver, though there were also large quantities of gold and bi-metallic objects. Many of the burial goods interred with her were covered in iconography associated with the moon and the sea, as well as depictions of a female figure, presumably the Priestess herself. In addition to the metal artifacts, there were also large quantities of beads of many colors and materials.

The principal personage surrounded by all this wealth was a female of approximately 45 to 50 years of age. Osteophyte formation was observed on her cervical vertebrae and the phalanges of her hands. No other pathological conditions were observed, indicating that she was relatively free of disease. In addition, her cranium

exhibited cultural modification. She was accompanied by eight female attendants (Wester, 2016, 2018).

This woman was clearly a member of the highest levels of the elite. It is possible that her position was both religious and political in nature, as the iconography seems to indicate that she was a leader of some kind. Regardless of the exact nature of her power, this tomb and the individual contained within reveal that females could attain high degrees of social status, rivaling that of males. This discovery represents at least one point of continuity in gender ideology from the earlier Moche period into the Late Sicán.

The Young Woman in the Floor—Women as Sacrificial Victims

At the site of Huaca Sialupe, the remains of an adolescent female were found beneath the floor of a ceramic workshop. There was a puncture wound on the anterior surface of the first lumbar vertebrae, consistent with a stab wound to abdominal region (Klaus and Shimada, 2016). This wound would likely have resulted in the perforation of her aorta or vena cava (or perhaps both). Due to the careful positioning of her body in the floor of the workshop in close proximity to several offerings of llama fetuses, it is likely she was an offering intended to ensure the success of the ceramic firing process (Klaus and Shimada, 2016). It is very possible that her gender was significant in this context, as it seems that the sacrifice of females in particular held significance for the Sicán due to the numbers in which females were sacrificed (Klaus and Shimada, 2016; Klaus et al., 2010).

Martina de Velasco—The Advantages of Marriage

Martina de Velasco lived in seventeenth century Cuzco (Najarro, 2019). The daughter of Francisca de Cárdenas y Lara (who will be discussed in the next section), Francisca used societal expectations of marriage to her (and her family's) advantage when she decided to marry her first husband. This union was mutually beneficial to both parties, as her husband received a large dowry and Martina received an *arras* payment (payment given to a new bride if she was a virgin). Her husband (Antonio Gonzales de Valdez) was economically successful, amassing a fairly substantial amount of wealth. He eventually died, and his estate was probated. Rather than remain a widow for the customary period of mourning and waiting for her husband's estate to be distributed to her, Martina remarried, breaking the social norms of the day. Eventually, Martina received the lion's share of her first husband's assets. She would go on to divorce her second husband, in part because he went on to squander the finances that belonged to her, which included both the *arras* from the *arras* payment as well as the money she inherited on the death of her husband (Najarro, 2019).

Martina de Velasco's story is emblematic of the ways in which colonial Peruvian women could exercise their agency while still being constrained by a heavily patriarchal system. Though women were required to attain the permission of their fathers, husbands, brothers, or other male relatives for most official business, they were still able to instigate legal divorce. In addition, while their husbands had access to their assets, those assets remained the woman's property. Finally, women did not always act according to social

norms of the time, as is evidenced by de Velasco's speedy remarriage. However, the activities of a married woman were still greatly curtailed by her husband.

Francisca de Cárdenas y Lara—The Forceful Widow

Francisca de Cárdenas y Lara (Martina de Velasco's mother) was likely a member of a relatively high social class, as a dowry was paid on the occasion of her marriage to a Spaniard, Captain Juan de Velasco. However, sometime later in life, she was left widowed with three children. Though the economy was the province of men, Francisca took control of her family's resources. Through shrewd investment and careful machinations, she assured the future social and economic success of her children (Najarro, 2019).

The first of these children was Martina de Velasco. It was Francisca who secured Martina's marriage, in part by ear-marking a large part of the family's assets to go towards Martina's dowry. Francisca saw the benefit such a marriage (to a Spanish Captain) could bring to both her daughter and the family, with the potential for a degree of upward social mobility. This decision would prove beneficial for both mother and daughter, as the large dowry Francisca paid for the marriage of her first daughter would eventually mean that, in order to provide for her other two children, Francisca was left with no home. Martina took her mother under her own protection when this came to pass (Najarro, 2019).

Marriage was not the only path to elevate one's social status in colonial Peru, as is evidenced by the vocations followed by Francisca's other two children. Her only son became a member of the clergy. However, his path to this prestigious position was paved

by the efforts of his mother. The bishop would not allow the son's entrance into a religious vocation without the construction of a chantry (an endowed chapel). For this reason, Francisca founded such a chapel on one of her only properties. Through this means, she ensured that her son would not be swindled of his portion of the inheritance (Najarro, 2019).

The path followed by Martina's third child, Ignacia de Velasco, pursuing a religious vocation, was nested within a complex web of intersecting socioeconomic, religious, racial, and gendered factors. Entry into a religious vocation ensured a degree of economic stability for a woman that a *soltera* did not have. In addition, this vocation allowed a certain degree of upward social mobility for indigenous women in a society which was heavily racially stratified. Through the sale of Martina's final property, Ignacia took the "*velo negro*," a version of religious orders that required a significant monetary contribution, a different kind of dowry. The *velo negro* came with a degree of freedom and status that was not shared by the *velo blanco*, which required only half the monetary contribution and therefore was more accessible to families of lesser means (Najarro, 2019). Through this means, Martina ensured the future of her final daughter.

The Morropena—A Life of Hardship

Burial U705-30 at the site of Mórrope was a female of approximate 45 to 50 years of age. She was buried in the back of the church, outside the walls, in an informal manner (her right forearm was flexed, and general positioning of the body was not consistent with the rest of the burial patterns at the site). Porotic hyperostosis and enamel hypoplasias, as well as periostosis and DJD of the shoulder, elbow, thoracic spine,

lumbar spine, hip, and knee were observed on her skeleton. Her oral health was poor, with two carious lesions on the anterior dentition and two on the posterior dentition, as well as 11 total teeth lost antemortem, three abscesses, and two teeth affected by calculus. In addition, her nasal bones exhibited healing fractures, consistent with interpersonal violence (specifically, a blow or blows to the face). Other fractures present throughout her skeleton also attested to the experience of violence.

This woman lived a hard life. The traumatic injuries she experienced may have been the result of long-term abuse, as the patterning of these injuries (specifically those of the facial region) is consistent with patterns of domestic abuse. The presence of cribra orbitalia and porotic hyperostosis indicates a childhood marked by a period or periods of chronic stress and the presence of periostosis as well as generally poor oral health indicates that such stress was likely experienced in adulthood, as well.



Figure 17: Burial Mórrope U705-30. Photo taken by H. Klaus.

Intersections and Agency

Gender intersected in many ways with socioeconomic status, ethnicity, and race throughout the long history of human occupation in Peru. The lives of the women discussed in this section were inextricably linked with relatively high status and, in the cases of the colonial women, an urban setting. Gender roles in more rural settings and among lower status people were likely very different in both the pre-Hispanic and postcontact periods. Relatively little is known about lower status individuals in prehistory, regardless of region or culture. This unfortunate fact is due to the relative paucity of information and interest when compared to richer burials and higher status settings. While lower status individuals were included in the statistical analysis, a detailed analysis of the mortuary archaeology (which could reveal more information about their identities) was beyond the scope of this thesis. In-depth investigations into this topic would prove invaluable for a multitude of reasons.

Likewise, relatively little is known about the lives of lower-status women on the north coast during the colonial period. The lives of rural people are frequently overlooked in written records and, on top of this general lack, the north coast did not have a chronicler. Though the ideological changes brought by the Spanish infiltrated these regions and classes as well, the practical demands of day to day existence in the colonial economic climate meant that practice did not always align with ideology. The north coast was more rural than Lima or Cusco to the south, women apparently tended livestock and participated in agriculture (Klaus et al., 2009). The preceding discussion of the Morropena is likely not indicative of conditions for all women in the region, but it seems

clear that the life-styles of rural women had the propensity to be much harsher than their urban contemporaries. Unfortunately, very little is known about the day to day lives of these people and how Spanish gender ideology affected them.

In spite of the egregious omission of lower-status women, these case studies were intended to demonstrate the variety of ways in which women exercised their agency. In the pre-Hispanic period, females held office (whether religious, political, or both) and worked as craftspeople. Their lives were valuable, making their ritual killing a true sacrifice. In this period, women demonstrated a level of independence and autonomy which would be greatly reduced upon the introduction of Spanish ideology. However, in spite of the new, stricter gender roles put in place by the invaders, women continued to find ways to exercise their agency. Whether this was by manipulating societal expectations to their benefit or by flaunting those expectations, colonial women were not necessarily the passive victims which they are often made out to be. The picture is far more complicated.

Weaving the *Lliklla*: Reconstructing Gender on the Pre-Hispanic North Coast

No neat and perfect garment can be woven with what has been left after time and colonization have taken their toll. The yarn is too knotted, too messy, too moth-eaten. However, this section will attempt what is almost certainly impossible—the reconstruction of gender ideologies and identities in the past. This section will draw on the evidence which has already been discussed and add additional threads from other sources, attempting to weave a *lliklla* which, though not without plenty of holes, may possess sufficient strength to make it to the door of future research.

Ideology

In pre-Hispanic Peru, dating at least as far back as the Moche, the masculine and the feminine were embedded in and expressions of a structure of complementary dyads. While the cosmologies of the many cultures who have inhabited the north coast possessed different foci, different elements, it seems that much of the underlying structure was very similar. There may be evidence of dualism in north coast thought emerging in the preceramic period (Dillehay, 2017), though the Cupisnique certainly incorporated dualistic elements into their beliefs (Jones, 2010). However, *norcosteño* dualism is far more complex than simple opposing forces or binaries. Rather, it consists of many entangled concepts who exist as both complements and (sometimes) inversions. Thus, the concepts of the masculine and the feminine are inextricably linked to many other concepts, which possess interacting, interrelated meanings. For example, “female” is one component, one strand, in a complex that also includes “earth,” “moon,” “sea,” “silver,” “dry,” “valley,” “left,” “*hurin*,” and “local.” “Male,” on the other hand, exists in a complex that includes “water,” “sun,” “mountain(s),” “gold,” “wet,” “right,” “*hanan*,” and “foreign.” These concepts have been frequently cited in reference to Andean dualism (Silverblatt, 1987; Golte, 2008; Steele and Allen, 2004; Bastien, 1985; Allen, 1982; Beaulieu, 2016). Not all of these concepts were necessarily present contemporaneously in a given cosmology, but it seems that there was a good amount of overlap between cosmologies, with concepts weaving in and out of the larger cultural cloth.

These dyadic complexes were complements, not opposites. One complex was equally important (although not necessarily equal to) the other. For example, in the Inka system, “foreign” was dominant, while “local” was subject (Silverblatt, 1987). But in this particular example, the rule of reciprocity, *ayni*, held each element accountable to the other. Both were necessary to perpetuate the system; therefore, both were equally important in that sense. This example is particular to the Inka. Related terms to this asymmetrical dyad included the mother-son pair, the cross-level moiety system (still in use in more isolated modern Quechua communities, such as Ayllu Kaata [Bastien, 1985]), and the Inka system of dual male leaders (Rostworowski, 2018). It is uncertain whether this sort of asymmetrical dualism existed prior to the Inka, as the foreign-local dyad component to the complexes may be a product of Inka imperial dogma (Silverblatt, 1987). It seems that, in Moche and Sicán times, both male and female were each powerful in their own right, implying a degree of equality and perhaps symmetry. The bioarchaeological data discussed earlier in this chapter seems to echo relative equality of the two in lived practice, in spite of its coarse grain of resolution.



Figure 18: Bi-metallic bowl, Chimú. Museo Larco, Lima, PE. Photo taken by K. Sargent.

The Inka concept of *yanantin* involves the union of complements to create a whole—for example, the *quariwarmi* the Man-Woman, or the fully-socialized married pair (Horsewell, 1997). This notion of the complementary whole was likely present in the cosmologies of the Moche and Sicán as well, as is evidenced by the existence of multiple bi-metallic objects uncovered from funerary contexts. Silver and gold were certainly part of the dyadic complexes of these two cultures, as is evidenced by the multiple sets of paired gold and silver objects, such as the sets of *orejeras* found with the Priestess of Chornancap (Wester, 2016). The overwhelming number of gold objects interred with the

Lord of Sipán (male) and the preponderance of silver artifacts interred with the Priestesses of San José de Moro (female) would indicate that gold-silver and male-female were interconnected. Therefore, the existence of bi-metallic objects (which also existed in the chronically understudied Chimú [Fig. 15]) would seem to represent the union, or *yanantin*, of the dyadic complexes.

To further complicate the picture, these dyads were also entangled with the cyclical nature of the *norcosteño* universe. For the Moche, life originated from death and death from life. For the Inka, water rose from the sea along subterranean passages to mountain lakes and flowed down the slope of the Andes back to the sea (Sherbondy, 1992). The sun and moon danced in a heavenly circle and the Andean dead were transformed to life-giving ancestors (Frame, 2001; Klaus et al., 2016; Bourget, 2006; Hill, 1998). These cycles are clearly interconnected with dyads, but also involve elements of inversion, a kind of very Andean dyad-within-a-dyad. The path from one place or state to another is liminal, it is *in between*. Moche iconography depicts future sacrificial victims as a kind of living-dead—they are both, and yet neither. These individuals are often portrayed in the sexual act and it is likely that their special state of being, their liminality, was a source of great fertile power (Bourget, 2006).

Horsewell (1997), using the metaphor of a mirror to explain Andean complementarity, argues that the perfect reflection (the complement) of a male body is not a female body, but rather another male body. However, the *quariwarmi*, the whole of two complements, consists of a male and female. If dyads can exist within dyads, perhaps there are two kinds of nested complements, mirror complements and inverted

complements. Gender could exist as a quadripartite system, where masculine males, feminine males, masculine females, and feminine females all exist as complements to each other. Such quadripartite divisions were not foreign to the Inka—*Tahuantinsuyu* was the land of four *suyus* and a very similar system (*hanan* and *hurin* males and females) may have governed social relations such as marriage and alliances (Rostworowski, 2018).

The existence of such a system of gender is alluded to by a version of the Inka origin myth. In this myth, the five pairs of Ayar siblings strike out from the cave of their origin to found the city of Cuzco. Two of the females, Mama Ocllo and Mama Huaco, seem to represent a feminine female and masculine female, respectively. Mama Huaco is warlike, she wields the (phallic-coded) golden spear, driving it into the ground in order to claim the land which would become Cuzco. Mama Ocllo, on the other hand, is a homemaker. She is associated with agriculture and the raising of children (Rostworowski, 2017). However, these two women are not the complements of one another. Rather, they are the complements of Manco Capac, one of the male Ayar siblings. This seems to indicate, at the very least, the possibility of nesting dyads, though the full quadripartite system (with masculine male and feminine male) seems to be absent in this particular myth.

Though much of this attempt to reconstruct gender ideology is speculative, based on the work of scholars which is based on ethnohistory, which is itself based on memory, it is evident that pre-Hispanic cosmologies and gender ideologies were both intimately linked and highly complex. There is more to Andean cosmology beyond hard binary conceptions of “dualism.”

Identity

What did all this mean for the individual? How were these abstract concepts internalized? The Andean understanding of the self was very different from the Western Cartesian dualist understanding. As mentioned in Chapter 2, modern *Runa* (as Quechua-speakers call themselves) do not conceive of the self as being comprised of a dichotomously opposed body and soul (note: the word *self* is often entangled with the related, but not interchangeable, concepts of *personhood* and *identity*. *Self* as used here is meant to encompass the whole of all identities in which a person may participate, as is differentiated by Sökefeld [1999]). For the modern Quechua, a person has dual selves—the “inside” self and the “outside” self (Carpenter, 1992). A human being is alive and exists in the same way that the *Apu*, the mountain, is alive. Conscious existence is innately tied to the physical—the *alma* for a *Runa* is not the conscious, individual soul of a person, but rather an unconscious, and probably harmful, force (Allen, 1982). Though this belief is admittedly drawn from modern (and *serrano*) ethnographic sources, it does not seem like too great of a leap to imagine that a similar conceptualization of the self existed in the millennia before contact, as such an idea is engrained very deeply in a society and a region, making it perhaps more resistant to external influence. The *Runa* understanding of the self invokes the concept of “dividual” selves, or infinitely partible identities (at least theoretically) whose borders are porous and who are therefore constantly constituted relative to the social environment in which a dividual is embedded (Smith, 2012). Identities shift depending on social context, though a person remains overwhelmingly the same. As such, gender identity is inherently fluid, relying heavily on

a multitude of environmental, as well as inter- and intra-personal, factors in its expression and emphasis.

The existence of the creator being Viracocha, who was sometimes depicted as being androgynous (Steele and Allen, 2004) and who took male or female aspects depending on the context, seems to support the possibility of Andean gender identity which was contextually constituted. Andean gender was likely subject to change over the life course, as argued by Dean (2001). While this author's argument that children were, in a way, genderless until they became old enough to either *act* or *be* gendered seems to conflict with the physicality of the Andean self, it makes more sense if gender was not a monolithic entity but a composite—the expression of nested dyads on an individual level. This is eluded to by a modern ritual practice, called *hampi akllay*, which is meant as a healing rite. In the course of this ritual, a symbolic representation of the whole sick individual is created from eight coca leaves—two sets of two sets of two. Each pair of leaves is called a *warmiqhari* (Allen, 2015). “This little stack of leaves reveals the person... as a nexus of multiple, simultaneous, and gendered dyadic relationships” (Allen, 2015: 314). Which aspect is expressed and experienced, which identity a person is at any given moment, is constituted in regards to an ever-shifting external world.

A Final Case Study—The *Dama de Cao*

The Dama de Cao, a Moche female, was discovered in 2006 in the Huaca Cao Viejo of the El Brujo Complex. This individual was a member of the highest Moche elite stratum, buried with four attendants and many, many burial goods. The entirety of the burial, including the body of the central personage, was in a pristine state of conservation,

with the tattoos on her skin still visible. This individual was estimated to be between 20 and 25 years of age at the time of her death. Many textiles and ceramic vessels surrounded the Dama, as well as metal artifacts. Among these artifacts were a crown or headdress of gold, clubs and atlatls of gold, and a bi-metallic diadem (Franco, 2017).

This individual was biologically female. However, the preponderance of her burial goods were gold and included weaponry, grave goods which were not shared by the Priestesses of San José de Moro (also Moche, also high-status). These goods were, however, very similar to those buried with the Lord of Sipán. The question, then, is: was the Lady of Cao truly a lady? Or was she something else, something between or beyond a binary?

Conclusion

If Andean cultures were a *lliklla*, it surely would be one of the most complex and beautiful ever made. The warp and weft of Andean thought—those dyadic complexes and cyclical quartets—weave in and out of each other in stunning and, quite frankly, overwhelming patterns. The principles of complementarity and inversion nest within each other, resulting in a complexity which is not fully captured by the paltry connotations of the word “dualism.” It was this vibrant tapestry which was torn in two by the invasion of the Spanish, leaving Andean men and women reeling in the face of unprecedented cultural change. While old and new threads were eventually woven into new cloth, the Andean world would never be the same.

8.) TO LIGHT THE NIGHT: FINAL REMARKS AND FUTURE PROSPECTS

Gender is complicated. It is an abstract construct which cannot be directly seen, existing only as a constellation of ideas and actions in the minds of a society. It is a system of meaning founded on natural phenomena, the cultural perceptions of those phenomena, and a cultural reality which exists apart from and interconnected with both these things. As both a fundamental organizational component of society and an integral aspect of individual identity, understanding gender ideology and all the cultural accoutrements which accompany it is vital to the understanding of any culture. This is difficult enough with living societies, as the anthropologist must cast off preconceived and often heavily naturalized understandings of what gender is in order to approach an emic perspective. However, the task becomes Olympian in archaeological cultures who lacked written records. Abstract concepts do not preserve, but the people and things they influenced do. Therefore, a bioarchaeological attempt to reconstruct gender becomes a game of whispers and interpretation. The ground constantly shifts, ready to cast any modicum of understanding tumbling back to where it started. However, regardless of the instability of the terrain, the bioarchaeological reconstruction of gender is still a worthwhile endeavor.

Review

This thesis attempted this difficult feat—the reconstruction of gender ideologies throughout time on the north coast of Peru. It was meant to serve as an initial exploration of the subject, in the hope of encouraging future discussion.

This work drew on many different theoretical approaches in an attempt to craft a nuanced argument. Among these theoretical approaches were embodiment theory (which centers around the physicality of human existence and the manner in which abstract social realities may be made biological), intersectionality theory (which acknowledges the complex interactions between different facets of an individual's identity and the social *milieu* in which they are embedded), queer theory (which approaches the non-normative as valid grounds for study), and performance theory (which holds that the actions of an individual and society are what constitute a gendered reality). These many theoretical influences all stem from a long history of feminist scholarship. This history was summarized in the second chapter, with special emphasis given to the history of gender in the related fields of archaeology, biological anthropology, and bioarchaeology. Unfortunately, gender as a topic of bioarchaeological interest is relatively new to the field, not being explored until the late twentieth and early twenty-first century.

In an effort to provide meta-context for this thesis, the history of archaeology and bioarchaeology in the region was surveyed. Scientific archaeology in Peru originated in the late nineteenth century. For much of the history of the field, it has followed a highly typological paradigm, focusing on the discovery and description of sites, chronology, and cultures. In the mid-twentieth century, heavy influence from both North American

scholars as well as blooming Marxist sentiment began to change the face of the field. However, the old typological approach still lingers on in some areas. Postprocessual thought did not prove as earth-shattering in Peru as it was for North American archaeologists, as Peruvian scholars have long practiced a kind of hybrid and pragmatic archaeology, in which useful theoretical approaches and elements are drawn upon and others are discarded. This tendency lends the field a unique flavor, one which is likely evident in the wide array of approaches and sources included in the creation of this thesis.

A general overview of the cultural history of the region, as well as the natural setting, was also provided, in order to provide context. The north coast of Peru has been inhabited for over 15,000 years. Many different cultures have developed in the river valleys which line the coast, which were made fertile through human intervention in the form of complex irrigation systems. After the long (and relatively understudied) Preceramic Period, a succession of complex societies dominated the area, including the Cupisnique, the mysterious Salinar, the Gallinazo, the Moche, the Sicán, the Chimú, and the Inka, who were conquered by the Spanish in the early sixteenth century. Though states rose and fell, local ethnic groups, such as the Muchik people, persisted in the region. Thus, the region has a long history of resilience and adaptation, as successive peoples conquered the area.

The fifth chapter of this thesis provided more detailed context with a discussion of each of the 33 archaeological sites from which the individuals included in this study were recovered. These sites ranged in time from the Early Formative to the Late Colonial periods. There were 2,048 individuals represented in the dataset, but of these individuals,

sex could only be estimated for 698 individuals, due to the factors of age, state of preservation, and level of completeness of the skeleton. Data collected from these individuals was recorded in accord with the standards laid out by Buikstra and Ubelaker (1994) and Cox and colleagues (2009). The pathobiology of the conditions included in this analysis was explained, with reference to both biological and cultural influence on their development. The conditions included in the statistical analysis were: cribra orbitalia, porotic hyperostosis, enamel hypoplasias, periostosis, other pathological lesions, carious lesions, abscesses, dental calculus, antemortem tooth loss, degenerative joint disease, and trauma.

Chapter 5 also provided an overview of the statistical methods employed in the analysis—common odds ratios and the G-statistic. Both of these statistical tests seek to compare the prevalence of a condition in two different groups. However, odds ratios approach this subject by comparing the odds of exposure to a condition for each sample, while the G-statistic compares the number of observed conditions to the number of expected conditions. The use of both of these statistical tests in bioarchaeological research is well established in the literature, as they are drawn from the related field of epidemiology (Klaus et al., 2014). The results generated by this statistical analysis were presented in both graphical and textual format in chapter 6.

The interpretation of the statistics was illuminated by information gathered from a wide variety of sources, including bioarchaeological, archaeological, ethnohistoric, and historic literature. The results of the statistical analysis confirmed the drastic change in living conditions and gender roles experienced by the indigenous populations of the north

coast upon invasion and colonization by the Spanish. Significant increases in virtually every condition included in the analysis reveal the increased difficulty of life under Spanish rule. In the pre-Hispanic period, the general lack of significant difference in the prevalence of these conditions between the sexes indicates that there were no large differences between the environments and circumstances in which the sexes lived and it was inferred that this evidence supports the notion that males and females occupied complementary positions within society.

Case studies were then discussed in order to illustrate the ways in the lives of individuals may have fit within the larger gender ideologies of their cultures. The Priestesses of San José de Moro were evidence that women played an important role in Moche religion, as these priestesses were confirmed to be the physical representation of Figure C from the Sacrifice Theme. The burials of three Transitional Period craftswomen from San José de Moro indicated that women produced goods for the consumption of the elites, demonstrating that both women and men had access to the relatively high-status of artisans. The Priestess of Chornancap indicates that women continued to wield religious and/or political power into the Sicán period (and beyond). The woman found in the floor of the workshop at Huaca Sialupe indicates the value ascribed to female lives, as she was sacrificed, likely as part of a rite meant to ensure the “fertility” of the kilns.

The case studies of three colonial women were also included, to demonstrate that the women who lived under Spanish patriarchal rule found ways to exercise their agency in spite of the drastic decrease in their status relative to men in some instances while others may have led a much different existence. The story of Martina de Velasco

illustrates that women continued to exercise a modicum of control over their own fortunes even within the confines of marriage. Martina married to increase her own social standing as well as that of her family, with the aid of her mother. Upon the death of her husband, she flaunted convention and remarried far sooner than was considered proper. When her second husband squandered the assets she had inherited upon the death of her first husband, Martina sought a divorce. The story of Francisca de Cárdenas y Lara, the mother of Martina, was included to exemplify one way in which women could participate in a male-dominated economy. In addition, Francisca's shrewd investments in the futures of her children also illustrate the paths by which women could elevate their social status—marriage or religious life. The burial of the Morropena reveals a very different side of colonial life. She was likely a victim of abuse and suffered from chronic stress during both her childhood and adulthood. In general, she led a much harsher life than the women described in the preceding two case studies. All of the case studies discussed in chapter 7 also provide a glimpse of the complex web of intersecting identities which impacted the lives of all of these individuals.

Chapter 7 attempted to reconstruct the place of gender ideology in the various cosmologies which existed in the pre-Hispanic period. Gender was found to exist as part of complex system of complements and inversions, nesting dyads, and cycles. It was suggested that gender in the pre-history of the Andes was not a hard binary, but rather a quadripartite system of nested dyads, consisting of masculine males, feminine males, masculine females, and feminine females. The foundation myth of the Inka was cited as potential evidence of this system, as it contained two figure (Mama Ocllo and Mama

Huaco) who may have represented a feminine female and a masculine female, respectively.

The incorporation of this reconstructed gender ideology into the identity of an individual was explored, utilizing a model of the Andean conceptualization of the self drawn from linguistic studies of modern Quechua speakers. It was argued that this model (a dyad of an “inside” self and an “outside” self) was reflective of the linked anthropological concepts of dividual selves and porous boundaries, meaning that different elements of an individual’s identity are continuously constituted in relation to the environment in which an individual exists. In an Andean context, this means that gender identity may have been fluid, changing over the course of an individual’s life. In addition, ethnographic evidence suggested that an individual was composed of masculine and feminine elements simultaneously, and that the dominance of these elements was determined by context.

Finally, the case study of the *Dama de Cao* was included to provoke thought regarding the many assumptions which bioarchaeologists and archaeologists have made regarding gender in the Andes. While the central personage was biologically female, the burial goods with which they were interred seem to indicate a masculine identity or persona. However, this individual has assumed to be strictly female in spite of this evidence. The argument was not that the *Dama de Cao* was a transgender male, in the Western understanding of gender, but that she/they may have possessed or performed a gender identity which was beyond the Western binary. This case study was intended as a

call to arms for the fields of archaeology and bioarchaeology, in the hope that gender theory may be better incorporated into future research in the region.

Future Research

This thesis was very general in its approach. Many different cultures were grouped together which would be better considered separately. The ideas voiced therein are equally generalized, due to this unfortunate fact. For this reason, a more detailed analysis will be conducted in the future, with groups based on specific cultural affiliation, rather than “pre-Hispanic” versus “postcontact.” In this manner, a more nuanced understanding of the impacts gender may have had on the embodied experiences of individuals within these cultures could be contained, utilizing very similar methods and theoretical approaches to those employed in this thesis.

In addition, this thesis made no thorough attempt to take intersectional identities into account, beyond simply acknowledging that they exist. This level of analysis and interpretation was beyond the scope of this thesis. However, future research into the interactions between gender, status, ethnicity, profession, and affiliation would prove both fruitful and interesting. The people of the north coast interacted with each other and with regions beyond the north coast—the interplay of the many different ideas and beliefs this generated very likely impacted understandings of gender and the place of gendered individuals in society.

Finally, an investigation of the mortuary goods and contexts of the individuals considered in this analysis, paired with the bioarchaeological data, could shed more light on the identities of those individuals. Unfortunately, this research was not able to be

included in this thesis due to time constraints. However, it could prove very valuable—if any of these people possessed nonbinary gender identities, whether those hypothesized in this thesis or otherwise, this kind of analysis could potentially reveal that information. In addition, the inclusion of this contextual information could also shed light on the intersections of identity at play, especially in regards to social status, as all pre-Hispanic north coast social strata are represented in the dataset. The investigation of commoner identities is especially interesting because of the relative paucity knowledge regarding this subject.

In summary, this thesis provokes more questions than it answers. These questions are for future research to attempt to answer.

Conclusion

The research conducted in this thesis is important for a multitude of reasons. The most fundamental of these reasons is simply that it has not been done before. The voices of women and queer individuals have long been silenced by colonized renditions of history. Women have been deemed as unimportant and less human than men, who are perceived as the drivers of history. Queer people are entirely erased from the narrative—their very existence has been deemed offensive to Western sensibilities for hundreds of years. By investigating the topic of gender ideologies in the past and how those ideologies impacted the lives of ancient peoples, these experiences can be reclaimed. The humanity which has been stolen from these people by colonizers can be restored. By illuminating a history concealed by the colonial narrative, scholars can begin the process of decolonizing our understanding of the past.

Women and queer people possess histories which are just as nuanced as those of men. By revealing these histories, the modern existence of women and queer individuals is grounded and further validated. Rewriting history to include the voices of the marginalized sets a place for everyone at the table, establishing that their existence is not just a modern fad which will disappear in time. Knowledge is the greatest weapon in the fight towards equality and safety for millions of people across the world. May this research be both stepping stool and sword.

APPENDIX

G-Statistics

Table 45: G-Stats, Carious lesions, Anterior, All pre-Hispanic individuals v all postcontact individuals.

Carious Lesions, Anterior							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	18/455	3.96	1	36/748	4.81	0.45	0.5
2	10/463	2.16	2	0/61	0	2.45	0.11
3	31/852	3.64	3	12.0/85	14.12	11.79	0.0006
4	37/612	6.05	4	1/149	0.67	9.8	0.002
5	26/414	6.28	5	7.0/49	14.29	2.9	0.09
6	26/291	8.93	6	6.0/80	7.5	0.14	0.71
Summary G	148/3087	4.79		62/1172	5.29	0.4	0.53

Table 46: Carious lesions, Anterior, Pre-Hispanic males v females.

Carious Lesions, Anterior							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/0	0	1	0/0	0	.	.
2	0/0	0	2	0/0	0	.	.
3	17/304	5.59	3	13/393	3.31	1.97	0.16
4	18/361	4.99	4	9.0/163	5.52	0.06	0.81
5	13/225	5.78	5	15/152	9.87	1.86	0.17
6	23/223	10.31	6	3.0/68	4.47	2.2	0.14
Summary G	71/1113	6.38		40/776	5.15	1.12	0.29

Table 47: Carious lesions, Anterior, Postcontact males v females

Cariou Lesions, Anterior							
Post-Contact Males			Post-Contact Females				
Age Class	naffected/Ntot	Crude Prevalence (%)	Age Class	naffected/Ntot	Crude Prevalence (%)	G	p
1	0/0	0	1	0/0	0	.	.
2	0/0	0	2	0/0	0	.	.
3	2.0/53	3.77	3	10.0/32	31.25	9.32	0.002
4	1.0/96	1.04	4	0/33	0	0.59	0.44
5	1.0/20	5	5	6.0/29	20.69	2.09	0.15
6	1.0/44	2.27	6	4.0/31	12.9	2.94	0.09
Summary G	5/213	2.35		20/125	16	18.03	<0.0001

Table 48: Carious lesions, Anterior, Pre-Hispanci v postcontact males.

Cariou Lesions, Anterior							
Pre-Hispanic Males			Post-Contact Males				
Age Class	naffected/Ntot	Crude Prevalence (%)	Age Class	naffected/Ntot	Crude Prevalence (%)	G	p
1	0/0	0	1	0/0	0	.	.
2	0/0	0	2	0/0	0	.	.
3	17/304	5.59	3	2.0/53	3.77	0.29	0.59
4	18/361	4.99	4	1.0/96	1.04	3.66	0.06
5	13/225	5.78	5	1.0/20	5	0.02	0.89
6	23/223	10.31	6	1.0/44	2.27	3.35	0.07
Summary G	71/1113	6.38		5/213	2.35	6	0.01

Table 49: Carious lesions, Anterior, Pre-Hispanic v postcontact females.

Carious Lesions, Anterior							
Pre-Hispanic Females			Post-Contact Females				
Age Class	naffected/Nto	Crude Prevalence (%)	Age Class	naffected/Nto	Crude Prevalence (%)	G	p
1	0/0	0	1	0/0	0	.	.
2	0/0	0	2	0/0	0	.	.
3	13/393	3.31	3	10.0/32	31.25	20.23	0.0001
4	9.0/163	5.52	4	0/33	0	3.24	0.07
5	15/152	9.87	5	6.0/29	20.69	1.84	0.18
6	3.0/68	4.47	6	4.0/31	12.9	1.84	0.18
Summary G	40/776	5.15		20/125	16	13.41	0.0002

Table 50: Carious lesions, Posterior, All pre-Hispanic v postcontact individuals.

Carious Lesions, Posterior							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	naffected/N _{total}	Crude Prevalence (%)	Age Class	naffected/N _{total}	Crude Prevalence (%)	G	p
1	17/462	3.68	1	57/478	11.92	20	<0.0001
2	83/679	12.22	2	11/101	10.89	0.12	0.73
3	266/1429	18.61	3	51/175	29.14	6.35	0.01
4	213/1075	19.81	4	109/226	48.23	39.13	<0.0001
5	154/762	20.21	5	31/112	27.68	1.94	0.16
6	99/412	24.03	6	26/147	17.69	1.69	0.19
Summary G	832/4819	17.26		285/1239	23	13.93	0.0002

Table 51: Carious lesions, Posterior, Pre-Hispanic males v females.

Carious Lesions, Posterior							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	3.0/10	30	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	117/503	23.26	3	111/654	16.97	4.71	0.03
4	113/594	19.02	4	57/331	17.22	0.32	0.57
5	58/360	16.11	5	69/276	25	5.09	0.02
6	68/288	23.61	6	31/124	25	0.06	0.81
Summary G	359/1755	20.46		268/1385	19.35	0.4	0.53

Table 52: Carious lesions, Posterior, Postcontact males v females.

Carious Lesions, Posterior							
Post-Contact Males			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{tot}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{tot}}$	Crude Prevalence (%)	G	p
1	0/0	.	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	30/112	26.79	3	21/63	33.33	0.45	0.5
4	74/120	61.67	4	31/70	44.29	1.63	0.2
5	11.0/55	20	5	20/57	35.09	1.84	0.18
6	9.0/80	11.25	6	11.0/47	23.4	2.29	0.13
Summary G	124/367	33.79		83/237	35.02	0.05	0.83

Table 53: Carious lesions, Posterior, Pre-Hispanic v postcontact males.

Carious Lesions, Posterior							
Pre-Hispanic Males			Post-Contact Males				
Age Class	naffected/Ntot	Crude Prevalence (%)	Age Class	naffected/Ntot	Crude Prevalence (%)	G	p
1	3.0/10	30	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	117/503	23.26	3	30/112	26.79	0.37	0.54
4	113/594	19.02	4	74/120	61.67	41.04	<0.0001
5	58/360	16.11	5	11.0/55	20	0.35	0.55
6	68/288	23.61	6	9.0/80	11.25	4.46	0.03
Summary G	359/1755	20.46		124/367	33.79	16.98	<0.0001

Table 54: Carious lesions, Posterior, Pre-Hispanic v postcontact females.

Carious Lesions, Posterior							
Pre-Hispanic Females			Post-Contact Females				
Age Class	naffected/Ntot	Crude Prevalence (%)	Age Class	naffected/Ntot	Crude Prevalence (%)	G	p
1	0/0	.	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	111/654	16.97	3	21/63	33.33	5.63	0.02
4	57/331	17.22	4	31/70	44.29	12.57	0.0004
5	69/276	25	5	20/57	35.09	1.3	0.25
6	31/124	25	6	11.0/47	23.4	0.03	0.87
Summary G	268/1385	19.35		83/237	35.02	16	<0.0001

Table 55: Abscesses, All pre-Hispanic v postcontact individuals.

Number of Abscesses							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	3/1310	0.23	1	0/0	.	.	.
2	1/1483	0.00007	2	/224	.	.	.
3	18/3127	0.58	3	0/384	0	4.16	0.04
4	27/2175	1.24	4	5/512	9.77	0.25	0.61
5	21/1614	1.3	5	6/288	2.08	0.93	0.34
6	46/1193	3.86	6	8.0/512	1.56	6.61	0.01
Summary							
G	116/10902	1.06		19/1696	1.12	0.04	0.84

Table 56: Abscesses, Pre-Hispanic males v females.

Number of Abscesses							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	2.0/30	6.67	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	6/1019	0.59	3	12/1536	0.78	0.33	0.57
4	15/1182	1.27	4	11.0/685	1.61	0.34	0.56
5	9.0/773	1.16	5	12.0/616	1.95	1.36	0.24
6	46/1193	3.86	6	10.0/311	3.22	0.27	0.6
Summary							
G	78/4197	1.86		45/3148	1.43	1.97	0.16

Table 57: Abscesses, Postcontact males v females.

Number of Abscesses							
Post-Contact Males			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/0	.	1	0/0	.	.	.
2	0/224	0	2	0/0	.	.	.
3	0/256	0	3	0/128	0	0.02	0.88
4	3.0/320	0.94	4	0/128	0	1.38	0.24
5	5.0/128	3.91	5	1.0/160	0.63	3.8	0.05
6	3.0/224	1.34	6	5.0/224	2.23	0.5	0.48
Summary G	11/1152	0.95		6/640	0.94	0.0013	0.97

Table 58: Abscesses, Pre-Hispanic v postcontact males.

Number of Abscesses							
Pre-Hispanic Males			Post-Contact Males				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	2.0/30	6.67	1	0/0	.	.	.
2	0/0	.	2	0/224	0	.	.
3	6/1019	0.59	3	0/256	0	1.98	0.16
4	15/1182	1.27	4	3.0/320	0.94	0.24	0.62
5	9.0/773	1.16	5	5.0/128	3.91	3.94	0.047
6	46/1193	3.86	6	3.0/224	1.34	4.21	0.04
Summary G	78/4197	1.86		11/1152	0.95	4.97	0.03

Table 59: Abscesses, Pre-Hispanic v postcontact females.

Number of Abscesses							
Pre-Hispanic Females			Post-Contact Females				
Age Class	n _{affected} /N _{total}	Crude Prevalence (%)	Age Class	n _{affected} /N _{total}	Crude Prevalence (%)	G	p
1	0/0	.	1	0/0	.	.	.
2	0/0	.	2	0/0	.	.	.
3	12/1536	0.78	3	0/128	0	1.27	0.26
4	11.0/685	1.61	4	0/128	0	2.97	0.08
5	12.0/616	1.95	5	1.0/160	0.63	1.63	0.2
6	10.0/311	3.22	6	5.0/224	2.23	0.45	0.5
Summary G	45/3148	1.43		6/640	0.94	1.04	0.31

Table 60: Calculus, Anterior, All pre-Hispanic v postcontact individuals.

Calculus, Anterior							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	n _{affected} /N _{total}	Crude Prevalence (%)	Age Class	n _{affected} /N _{total}	Crude Prevalence (%)	G	p
1	0/455	0	1	./748	.	.	.
2	46/463	9.94	2	./61	.	.	.
3	118/852	13.85	3	5.0/85	5.88	4.18	0.04
4	185/612	30.29	4	13/149	8.72	22.53	<0.0001
5	142/414	34.3	5	5.0/49	10.2	8.56	0.003
6	69/291	23.71	6	10.0/80	12.5	3.52	0.06
Summary G	560/3087	18.14		33/363	9.09	16.03	<0.0001

Table 61: Calculus, Anterior, Pre-Hispanic males v females.

Calculus, Anterior							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/0	.	1	.	.	.	.
2	0/0	.	2	0/0	.	.	.
3	67/304	22.04	3	30/393	7.63	22.46	<0.0001
4	114/361	31.58	4	41/163	25.15	1.26	0.26
5	85/225	37.78	5	48/152	31.58	0.74	0.39
6	51/291	17.53	6	18/291	6.19	14.77	0.0001
Summary G	317/1181	26.84		137/999	13.71	38.67	<0.0001

Table 62: Calculus, Anterior, Postcontact males v females.

Calculus, Anterior							
Post-Contact Males			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	.	.	2	.	.	.	.
3	4.0/53	7.55	3	1.0/32	3.12	0.69	0.41
4	9.0/96	9.38	4	2.0/33	6.06	0.32	0.57
5	2.0/20	10	5	3.0/29	10.34	0.001	0.97
6	6.0/44	13.64	6	4.0/31	12.9	0.007	0.94
Summary G	21/213	9.86		10/125	8	0.28	0.6

Table 63: Calculus, Anterior, Pre-Hispanic v postcontact males.

Calculus, Anterior							
Pre-Hispanic Males			Post-Contact Males				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/0	.	1	.	.	.	.
2	0/0	.	2	.	.	.	.
3	67/304	22.04	3	4.0/53	7.55	5.2	0.02
4	114/361	31.58	4	9.0/96	9.38	14.4	0.0001
5	85/225	37.78	5	2.0/20	10	4.34	0.04
6	51/291	17.53	6	6.0/44	13.64	0.31	0.58
Summary G	317/1181	26.84		21/213	9.86	22.33	<0.0001

Table 64: Calculus, Anterior, Pre-Hispanic v postcontact females.

Calculus, Anterior							
Pre-Hispanic Females			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	0/0	.	2	.	.	.	.
3	30/393	7.63	3	1.0/32	3.12	0.98	0.32
4	41/163	25.15	4	2.0/33	6.06	5.22	0.02
5	48/152	31.58	5	3.0/29	10.34	4.04	0.04
6	18/291	6.19	6	4.0/31	12.9	1.39	0.24
Summary G	137/999	13.71		10/125	8	2.84	0.09

Table 65: Calculus, Posterior, All pre-Hispanic v postcontact individuals.

Calculus, Posterior							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	2/462	0.43	1	.	.	.	.
2	26/679	3.83	2	.	.	.	.
3	136/1429	1.82	3	5/175	2.86	9.72	0.002
4	219/1075	20.37	4	15/226	6.64	21.89	<0.0001
5	209.3/762	27.47	5	7/112	6.25	20.68	<0.0001
6	92/412	22.33	6	11/147	7.48	13.48	0.0002
Summary							
G	684.3/4819	14.2		38/660	5.76	35.02	<0.0001

Table 66: Calculus, Posterior, Pre-Hispanic males v females.

Calculus, Posterior							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/10	0	1	.	.	.	.
2	0/0	.	2	0/0	.	.	.
3	69/503	13.72	3	32/654	4.89	23.29	<0.0001
4	113/594	19.02	4	55/331	16.62	0.58	0.44
5	127.3/360	35.36	5	65/276	23.55	5.7	0.02
6	92/412	22.33	6	25/124	20.16	0.17	0.68
Summary							
G	401.3/1879	21..36		177/1385	12.78	29.3	<0.0001

Table 67: Calculus, Posterior, Postcontact males v females.

Calculus, Posterior							
Post-Contact Males			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	.	.	2	.	.	.	.
3	4/112	3.57	3	1.0/63	1.59	0.59	0.44
4	10/120	8.33	4	3.0/70	4.29	1.07	0.3
5	3.0/55	5.45	5	4.0/57	7.02	0.2	0.66
6	6.0/80	7.5	6	5.0/47	10.4	0.3	0.58
Summary							
G	23/367	6.27		13/237	5.49	0.14	0.7

Table 68: Calculus, Posterior, Pre-Hispanic v postcontact males.

Calculus, Posterior							
Pre-Hispanic Males			Post-Contact Males				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/10	0	1	.	.	.	.
2	0/0	.	2	.	.	.	.
3	69/503	13.72	3	4/112	3.57	9.5	0.002
4	113/594	19.02	4	10/120	8.33	6.9	0.009
5	127.3/360	35.36	5	3.0/55	5.45	16.32	<0.0001
6	92/412	22.33	6	6.0/80	7.5	8.04	0.005
Summary							
G	401.3/1879	21..36		23/367	6.27	41.65	<0.0001

Table 69: Calculus, Posterior, Pre-Hispanic v postcontact females.

Calculus, Posterior							
Pre-Hispanic Females			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	0/0	.	2	.	.	.	.
3	32/654	4.89	3	1.0/63	1.59	1.73	0.19
4	55/331	16.62	4	3.0/70	4.29	7.18	0.007
5	65/276	23.55	5	4.0/57	7.02	6.88	0.009
6	25/124	20.16	6	5.0/47	10.4	1.68	0.19
Summary							
G	177/1385	12.78		13/237	5.49	10.12	0.002

Table 70: ATL, All pre-Hispanic v postcontact individuals.

Antemortem Tooth Loss							
All Pre-Hispanic Individuals			All Post-Contact Individuals				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/1310	0	1	1/1460	0.00006	0.76	0.38
2	2/1483	0.13	2	0/224	0	0.16	0.68
3	56/3127	1.79	3	39/384	10.16	54.67	<0.0001
4	272/2175	12.51	4	32/512	6.25	15.04	0.0001
5	140/1614	8.67	5	88/288	30.56	64.09	<0.0001
6	324/1193	27.16	6	199/512	38.87	11.61	0.0007
Summary							
G	794/10902	7.28		359/3380	10.62	30.78	<0.0001

Table 71: ATL, Pre-Hispanic males v females.

Antemortem Tooth Loss							
Pre-Hispanic Males			Pre-Hispanic Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/30	0	1	.	.	.	.
2	0/0	.	2	0/0	0	.	.
3	121/1019	11.87	3	393/1536	25.59	51.75	<0.0001
4	95/1182	8.04	4	158/685	23.07	60.29	<0.0001
5	115/773	14.88	5	36/616	5.84	24.93	<0.0001
6	242/882	27.44	6	255/311	81.99	97.42	<0.0001
Summary G	573/3886	14.75		843/3148	26.78	103.44	<0.0001

Table 72: ATL, postcontact males v females.

Antemortem Tooth Loss							
Post-Contact Males			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	.	.	2	.	.	.	.
3	36/256	14.06	3	3/128	2.34	13.56	0.0002
4	29/320	9.06	4	1/128	7.81	12.66	0.0004
5	52/128	40.63	5	36/160	22.5	5.81	0.02
6	66/224	29.46	6	132/224	58.93	15.67	<0.0001
Summary G	183/928	19.72		172/640	26.88	6.86	0.01

Table 73: ATL, Pre-Hispanic v postcontact males.

Antemortem Tooth Loss							
Pre-Hispanic Males			Post-Contact Males				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	0/30	0	1	.	.	.	.
2	0/0	.	2	.	.	.	.
3	121/1019	11.87	3	36/256	14.06	0.68	0.41
4	95/1182	8.04	4	29/320	9.06	0.29	0.59
5	115/773	14.88	5	52/128	40.63	25.2	<0.0001
6	242/882	27.44	6	66/224	29.46	0.2	0.65
Summary G	573/3886	14.75		183/928	19.72	9.54	0.002

Table 74: ATL, Pre-Hispanic v postcontact females.

Antemortem Tooth Loss							
Pre-Hispanic Females			Post-Contact Females				
Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	Age Class	$n_{\text{affected}}/N_{\text{total}}$	Crude Prevalence (%)	G	p
1	.	.	1	.	.	.	.
2	.	.	2	.	.	.	.
3	393/1536	25.59	3	3/128	2.34	37.57	<0.0001
4	158/685	23.07	4	1/128	7.81	41.01	<0.0001
5	36/616	5.84	5	36/160	22.5	27.36	<0.0001
6	255/311	81.99	6	132/224	58.93	5.74	0.02
Summary G	843/3148	26.78		172/640	26.88	0.001	0.97

REFERENCES

- Agarwal, S. C. and Glencross, B. A. (2011). Building a Social Bioarchaeology. Agarwal, S. C. and Glencross, B. A. (Eds.), *Social Bioarchaeology*. (1-12). Wiley-Blackwell.
- Agarwal, S. C. and Wesp, J. K. (2017). Preface. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (vii-x). Albuquerque: University of New Mexico Press.
- Allen, C. J. (1982). Body and soul in Quechua thought. *Journal of Latin American Lore*. 8(2): 179-196.
- Allen, C. J. (2015). The Sadness of Jars: Separation and Rectification in Andean Understandings of Death. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 304-328.
- Alva Meneses, I. (2013). *Ventarrón y Collud: Origen y Auge de la Civilización en la Costa Norte del Perú*. Lima: Ministerio de Cultura del Perú/ Proyecto Especial Naylamp Lambayeque.
- Alvarez, J. O. (1995). Nutrition, tooth development, and dental caries. *American Journal of Clinical Nutrition*. 61: 410S-416S.
- Alvarez, J. O., Lewis, C. A., Saman, C., Caceda, J., Montalvo, J. Figueroa, M. L., Izquierdo, J., Caravedo, L., and Navia, J. M. (1988). Chronic malnutrition, dental caries, and tooth exfoliation in Peruvian children aged 3-9 years. *American Journal of Clinical Nutrition*. 48 (2): 368-372.
- American Psychiatric Association. (2013). Gender Dysphoria. In *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). <https://doi.org/mutex.gmu.edu/10.1176/appi.books.9780890425596.dsm14>
- Andrews, P. and Bello, S. (2006). Pattern in Human Burial Practice. Gowland, R. and Knüsel, C. (Eds.), *The Social Archaeology of Funerary Remains*. (14-29). Oxbow Books.
- Arias Cuba, Y. (2019). La Vecindad Femenina en las Indias y las Representaciones de Santa Rosa de Santa María. México y Lima, 1668-1737. Rosas Lauro, C. (Ed.), *Género y Mujeres en la Historia del Perú: Del Hogar al Espacio Público*. Lima: Fondo Editorial, Pontificia Universidad Católica del Perú. 151-172.
- Arkush, E. and Tung, T. A. (2013). Patterns of war in the Andes from the Archaic to the Late Horizon: Insights from settlement patterns and cranial trauma. *Journal of Archaeological Research*. 21 (4): 307-369.
- Arnes, U. (1999). Oral health: Diet and other factors. Amsterdam: Elsevier.
- Arriaga, Pablo Joseph de. (1621) [1968]. *The Extirpation of Idolatry in Peru*. Keatin, L. C. (Ed. and Trans.). University of Kentucky Press: Lexington.

- Bartel, B. (1982). A historical review of ethnological and archaeological analyses of mortuary practice. *Journal of Anthropological Archaeology*. 1, 32-58.
- Bastien, J. W. (1985). *Mountain of the Condor: Metaphor and Ritual in an Andean Ayllu*. Prospect Heights, IL: Waveland Press, Inc.
- Beaule, C. D. (2016). Lo andino, duality, and indigenous identities in Prehispanic highland Bolivia. *Social Identities*. 22 (6): 602-618.
- Bennett, W. C. (1939). *Archaeology of the North Coast of Peru: An Account of Exploration and Excavation in Virú and Lambayeque Valleys*. *Anthropological Papers of the American Museum of Natural History*, Vol. 37, Pt. 1. New York: The American Museum of Natural History.
- Benson, E. P. (2001). Why Sacrifice? Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. Austin: University of Texas Press. 1-20.
- Benson, E. P. (2012). *The Worlds of the Moche on the North Coast of Peru*. Austin: University of Texas Press.
- Bentley, S. and Klaus, H. D. (2016). Reconsidering Retainers: Identity, Death, and Sacrifice in High-Status Funerary Contexts on the North Coast of Peru. Klaus, H. D. and Shimada, L. (Eds.) *Ritual Violence in the Ancient Andes: Reconstructing Sacrifice on the North Coast of Peru*. Austin: University of Texas Press. 266-290.
- Billman, B. R. (1997). Population Pressure and the Origins of Warfare in the Moche Valley, Peru. Paine, R. R. (Ed.), *Integrating Archaeological Demography: Multidisciplinary Approaches to Prehistoric Population*. Carbondale: Center for Archaeological Investigations, Southern Illinois University, Carbondale. 285-310.
- Binford, L. R. (1971). Mortuary practices: their study and their potential. *Memoirs of the Society for American Archaeology*. 25, 6-29.
- Blakely, R. L. (1977). Introduction: Changing Strategies for the Biological Anthropologist. Blakely, R. L. (Ed.), *Biocultural Adaptation in Prehistoric America*. (1-9). Athens: The University of Georgia Press.
- Bourget, S. (2001a). Children and Ancestors: Ritual Practices at the Moche Site of Huaca de la Luna, North Coast of Peru. Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. Austin: University of Texas Press. 93-118.
- Bourget, S. (2001b). Rituals of Sacrifice: Its Practice at Huaca de la Luna and Its Representation in Moche Iconography. Pillsbury, J. (Ed.) *Moche Art and Archaeology in Ancient Peru*. New Haven and London: Yale University Press. 89-110.
- Bourget, S. (2005). Who Were the Priests, the Warriors, and the Prisoners? A Peculiar Problem of Identity in Moche Culture and Iconography, North Coast of Peru. Reyecraft, R. M. (Ed.) *Us and Them: Archaeology and Ethnicity in the Andes*. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles. 73-85.
- Bourget, S. (2006). *Sex, Death, and Sacrifice in Moche Religion and Visual Culture*. Austin: University of Texas Press.
- Bourget, S. (2010). Sacrificio Humano, Poder e Ideología en la Cultura Moche. López Luján, L and Olivier, G. (Eds.), *El Sacrificio Humano en la Tradición*

- Mesoamericana*. Mexico City: Instituto Nacional de Antropología e Historia. 577-597.
- Bourget, S. (2016). *Sacrifice, Violence, and Ideology among the Moche: The Rise of Social Complexity in Ancient Peru*. Austin: University of Texas Press.
- Bracamonte Lévano, E. (2015). *Huaca Santa Rosa de Pucallá y La Organización Territorial del Valle de Lambayeque*. Chiclayo: Unidad Ejecutora 005 Naylamp Lambayeque.
- Brickley, M. B. (2018). *Cribra orbitalia* and porotic hyperostosis: A biological approach to diagnosis. *American Journal of Physical Anthropology*. 167: 896-902.
- Brown, J. A. (2007). Mortuary Practices for the Third Millennium: 1966-2006. N. Laneri (Ed.), *Performing Death: Social Analyses of Funerary Traditions in the Ancient Near East and Mediterranean*. (299-308). Chicago: The University of Chicago
- Brush, S. B. (1982). The natural and human environment of the central Andes. *Mountain Research and Development*. 2 (1): 19-38.
- Buikstra, J. E. (1977). Biocultural Dimensions of Archeological Study: A Regional Perspective. Blakely, R. L. (Ed.), *Biocultural Adaptation in Prehistoric America*. (67-84). Athens: The University of Georgia Press.
- Buikstra, J. E. and Ubelaker, D. (1994). *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archeological Survey No. 44.
- Burger, R. L. (1989). An overview of Peruvian archaeology (1976-1986). *Ann. Rev. Anthropol.* 18: 37-69.
- Burger, R. L. (2009). *The Life and Writings of Julio C. Tello*. Iowa City: University of Iowa Press.
- Butler, J. (1988). Performative acts and gender constitution: an essay in phenomenology and feminist theory. *Theatre Journal*. 40 (4): 519-531.
- Byers, S. N. (2011). *Introduction to Forensic Anthropology, Fourth Edition*. London and New York: Routledge.
- Cabello Balboa, M. (1586) [1951]. *Miscelánea Antártica: Una Historia del Perú Antiguo*. Lima: Instituto de Etnología, Universidad Nacional Mayor de San Marcos.
- Carastathis, A. (2016). *Intersectionality: Origins, Contestations, Horizons*. Lincoln and London: University of Nebraska Press.
- Carpenter, L. K. (1992). Inside/Outside, Which Side Counts? Duality-of-Self and Bipartization in Quechua. Dover, R. V. H., Seibold, K. E., and McDowell, J. H. (Eds.) *Andean Cosmologies through Time*. (115-135). Bloomington, Indianapolis: Indiana University Press.
- Castillo Butters, L. J. (2009). Gallinazo, Vicús, and Moche in the Development of Complex Societies Along the North Coast of Peru. Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Cotsen Institute of Archaeology Press: Los Angeles. 223-232.
- Castillo Butters, L. J. and Rengifo Chunga, C. E. (2008). Identidades Funerarias Femeninas y Poder Ideológico en las Sociedades Mochicas. Makowski, K. (Ed.), *Los Señores de los Reinos de la Luna*. Lima: Colección de Arte y Tesoros del Perú, Banco de Crédito del Perú. 2-34.

- Chapdelaine, C. (2001). The Growing Power of a Moche Urban Class. Pillsbury, J. (Ed.) *Moche Art and Archaeology in Ancient Peru*. New Haven and London: Yale University Press. 69-87.
- Chapman, R. W. and Randsborg, K. (1981). Approaches to the Archaeology of Death. Chapman, R., Kinnes, I., and Randsborg, K. (Eds.), *The Archaeology of Death*. (1-24). Cambridge: Cambridge University Press.
- Charles, D. K. (2005). The Archaeology of Death as Anthropology. Rakita, G. F. M., Buikstra, E. J., Beck, L. A., and Williams, S. R. (Eds.), *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millenium*. (15-24). Gainesville/Tallahassee/Tampa/Boca Raton/Pensacola/Orlando/Miami/Jacksonville/Ft. Myers: University Press of Florida.
- Chauchat, C. (2006) [1992]. *Prehistoria de la Costa Norte del Peru: El Paijanense de Cupisnique*. Patronato Huacas del Valle de Moche: Trujillo.
- Cobb, H. (2005). Straight down the line? A queer consideration of hunter-gatherer studies in north-west Europe. *World Archaeology*. 73: 630-636.
- Conkey, M. W. and Spector, J. D. (1984). Archaeology and the Study of Gender. *Advances in Archaeological Method and Theory*, Vol. 7. (1-38). Academic Press, Inc.
- Conrad, G. W. (1982). The Burial Platforms of Chan Chan: Some Social and Political Implications. In Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. Albuquerque: University of New Mexico Press. 87-118.
- Cordy-Collins, A. (2001a). Blood and the Moon Priestesses: Spondylus Shells in Moche Ceremony. Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. University of Texas Press: Austin. 55-92.
- Cordy-Collins, A. (2001b). Decapitation in Cupisnique and Early Moche Societies. Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. University of Texas Press: Austin. 21-34.
- Cordy-Collins, A. (2001c). Labretted Ladies: Foreign Women in Northern Moche and Lambayeque Art. In Pillsbury, J. (Ed.) *Moche Art and Archaeology in Ancient Peru*. New Haven and London: Yale University Press. 247-258.
- Cox, M., Flavel, A., and Hanson, I. (2009). *The Scientific Investigation of Mass Graves: Towards Protocols and Standard Operating Procedures*. Cambridge: Cambridge University Press.
- Crass, B. A. (2000). Gender in Inuit Burial Practices. Rautman, A. E. (Ed.), *Reading the Body: Representations and Remains in the Archaeological Record*. (68-76). Philadelphia: University of Pennsylvania Press.
- Crass, B. A. (2001). Gender and Mortuary Analysis: What Can Grave Goods Really Tell Us? Arnold, B. and Wicker, N. L. (Eds.), *Gender and the Archaeology of Death*. (105-118). Walnut Creek: AltaMira Press.
- Crawford, M. and Unger, R. (2000). *Women and Gender: A Feminist Psychology*. Boston: McGraw Hill.
- Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*. 43 (6): 1241-1299.

- Day, K. C. (1982). Ciudadelas: Their Form and Function. Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. University of New Mexico Press: Albuquerque. 55-66.
- Dean, C. (2001). Andean Androgyny and the Making of Men. Klein, C. F. and Quilter, J. (Eds.), *Gender in Pre-Hispanic America*. Washington, DC: Dumbarton Oaks.
- Dillehay, T. D. (2017). *Where the Land Meets the Sea: Fourteen Millennia of Human History at Huaca Prieta, Peru*. Austin: University of Texas Press.
- Dillehay, T. D., Ocampo, C., Saavedra, J., Sawakuchi, A. O., Vega, R. M., Pino, M., Collins, M. B., Cummings, L. S., Arregui, I., Villagran, X. S., Hartmann, G. A., Mella, M., González, A., and Dix, G. (2015). New archaeological evidence for an early human presence at Monte Verde, Chile. *Plos ONE*. 10 (11): e0141923. doi:10.1371/journal.pone.0141923.
- Donnan, C. B. (1995). Moche Funerary Practice. Dillehay, T. D. (Ed.) *Tombs for the Living: Andean Mortuary Practices, A Symposium at Dumbarton Oaks, 12th and 13 October 1991*. Dumbarton Oaks Research Library and Collection: Washington, D. C. 111-160.
- Donnan, C. B. (2007). *Moche Tombs at Dos Cabezas*. Los Angeles: Cotsen Institute of Archaeology at UCLA Monograph 59.
- Donnan, C. B. (2009). The Gallinazo Illusion. In Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Cotsen Institute of Archaeology Press: Los Angeles. 17-32.
- Donnan, C. B. and Castillo Butters, L. J. (1994). Excavaciones de Tumbas de Sacerdotisas Moche en San José de Moro, Jequetepeque. In Uceda, S. and Mujica, E. (Eds.), *Moche: Propuestas y Perspectivas*. Lima: Universidad Nacional de La Libertad- IFEA-Asociación Peruana para el Fomento de las Ciencias Sociales. 415-424.
- Elera, C. G. (1993). El Complejo Cultural Cupisnique: Antecedentes y desarrollo de su ideología religiosa. *Senri Ethnological Studies*. 37: 229-257.
- Elera, C. G. (1998). *The Puémapa Site and the Cupisnique Culture: A Case Study on the Origins and Development of Complex Society in the Central Andes, Perú*. (Unpublished dissertation. University of Calgary: Calgary, Canada.
- Erickson, P. A. and Murphy, L. D. (2017). *A History of Anthropological Theory*. Toronto: University of Toronto Press.
- Femenías, B. (2005). *Gender and the Boundaries of Dress in Contemporary Peru*. Austin: University of Texas Press.
- Frame, M. (2001). Blood, Fertility, and Transformation: Interwoven Themes in the Paracas Necropolis Embroideries. Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. Austin: University of Texas Press. 55-92.
- Franco, R. (2017). La Señora de Cao: Poder y liderazgo en la sociedad Mochica de la costa norte del Perú. *Arkinka*. 255: 84-95.
- Franco Jordán, R. G. and Gálvez Mora, C. A. (2009). Gallinazo-Style Ceramics in Early Moche Contexts at the El Brujo Complex, Chicama Valley. Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Los Angeles: Cotsen Institute of Archaeology Press. 91-104.

- Gayoso-Rullier, H. and Uceda-Castillo, S. (2015). When the Dead Speak in Moche: Funerary Customs in an Architectural Complex Associated with the Huaca del Sol and the Huaca de la Luna. Eeckhout, P. and Owens, L. S. (Eds.) *Funerary Practices and Models in the Ancient Andes: The Return of the Living Dead*. New York: Cambridge University Press. 87-116.
- Geller, P. L. (2009). Identity and difference: complicating gender in archaeology. *Annual Review of Anthropology*. 38: 65-81.
- Gero, J. M. and Scattolin, M. C. (2002). Beyond Complementarity and Hierarchy: New Definitions for Archaeological Gender Relations. In Nelson, S. M. and Rosen-Ayalon, M. (Eds.), *In Pursuit of Gender: Worldwide Archaeological Approaches*. (155-172). Walnut Creek: AltaMira Press.
- Gillin, P. (1947). *Moche: A Peruvian Coastal Community*. Washington, DC: US Government Printing Office.
- Goldstein, L. (2006). Mortuary Analysis and Bioarchaeology. Buikstra, J. E. and Beck, L. A. (Eds.), *Bioarchaeology: The Contextual Analysis of Human Remains*. (375-388). Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, Tokyo: Academic Press.
- Golte, J. (2008). Formas Básicas y Formas Combinadas en la Cerámica Mochica. In *Túpac Yawri, Revista Andina de Estudios Tradicionales*. 2: 85-108.
- Goodman, A. H. (2013). Bringing culture into human biology and biology back into anthropology. *American Anthropologist*. 115 (3): 359-373.
- Goodman, A. H. and Leatherman, T. L. (1998). Transversing the Chasm between Biology and Culture: An Introduction. Goodman, A. H. and Leatherman, T. L. (Eds.), *Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology*. (3-42). University of Michigan Press.
- Gowland, R. and Thompson, T. (2013). *Human Identity and Identification*. Cambridge: Cambridge University Press.
- Grauer, A. L. (2019a). Circulatory, Reticuloendothelial, and Hematopoietic Disorders. Buikstra, J. E. (Ed.), *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. Academic Press: London. 91-167.
- Grauer, A. L. (2019b). Paleopathology: From Bones to Social Behavior. Katzenberg, M. A. and Grauer, A. L. (Eds.), *Biological Anthropology of the Human Skeleton*. (447-466). Wiley Blackwell.
- Heckman, A. M. (2005). Cultural Communication of Ethnicity through Clothing: The Qocha-Lake Symbol in Contemporary Textiles from Ausangate, Peru. Reycraft, R. M. (Ed.), *Us and Them: Archaeology and Ethnicity in the Andes*. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles. 104-114.
- Heyerdahl, T., Sandwiess, D., and Narvaéz, A. (1995). *Pyramids of Túcume: The Quest for Peru's Forgotten City*. London: Thames and Hudson.
- Hill, E. (1998). Death as a rite of passage: The iconography of the Moche Burial Theme. *Antiquity*. 72 (277): 528-538.
- Hillson, S. W. (2008). The current state of dental decay. In Irish, J. D. and Nelson, G. C. (Eds.) *Technique and Application in Dental Anthropology*. Cambridge: Cambridge University Press. 111-135.

- Hollimon, S. E. (2011). Sex and Gender in Bioarchaeological Research: Theory, Method, and Interpretation. Agarwal, S. C. and Glencross, B. A. (Eds.), *Social Bioarchaeology*. (149-182). Wiley-Blackwell.
- Hollimon, S. E. (2017). Bioarchaeological Approaches to Nonbinary Genders: Case Studies from Native North America. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (51-70). Albuquerque: University of New Mexico Press.
- Horsewell, M. J. (1997). *Third Gender, Tropes of Sexuality, and Transculturation in Colonial Andean Historiography*. (Unpublished dissertation). The University of Maryland at College Park: College Park, MD.
- Hrdlička, A. (1911). Some results of recent anthropological exploration in Peru. *Smithsonian Miscellaneous Collections*. (96) 16: 1-16.
- Hrdlička A. (1918). Physical anthropology: Its scope and aims; Its history and present status in America. *Am J Phys Anthropol* 1 (1): 3-23.
- Jones, K. L. (2010). *Cupisnique Culture: The Development of Ideology in the Ancient Andes*. (Unpublished dissertation). The University of Texas at Austin: Austin, TX.
- Joyce, R. A. (2017). Sex, Gender, and Anthropology: Moving Bioarchaeology Outside the Subdiscipline. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (1-14). Albuquerque: University of New Mexico Press.
- Judd, M. A. and Redfern, R. (2012). Trauma. Grauer, A. L. (Ed.), *A Companion to Paleopathology, First Edition*. Blackwell Publishing. 359-379.
- Kaulicke, P. (2015). Death and the Dead in Formative Perú. Eeckhout, P. and Owens, L. S. (Eds.) *Funerary Practices and Models in the Ancient Andes: The Return of the Living Dead*. New York: Cambridge University Press. 12-23.
- Keatinge, R. W. (1982). The Chimú Empire in Regional Perspective. In Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. Albuquerque: University of New Mexico Press. 197-224.
- Kinaston, R., Willis, A., Miskiewicz, J. J., Tromp, M., and Oxenham, M. F. (2019). The Dentition: Development, Disturbances, Disease, Diet, and Chemistry. In Buikstra, J. E. (Ed.), *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. London: Academic Press. 749-798.
- Klaus, H. D. (2008). *Out of Light Came Darkness: Bioarchaeology of Mortuary Ritual, Health, and Ethnogenesis in the Lambayeque Valley Complex, North Coast of Peru (AD 900-1750)*. (Unpublished dissertation). The Ohio State University: Columbus, OH.
- Klaus, H. D. (2012). The Bioarchaeology of Structural Violence: A Theoretical Model and a Case Study. In Martin, D. L. and Harrod, R. P. (Eds.), *The Bioarchaeology of Violence*. Gainesville: University Press of Florida. 29-62.
- Klaus, H. D. (2014a). Frontiers in the bioarchaeology of stress and disease: Cross-disciplinary perspectives from pathophysiology, human biology, and epidemiology. *American Journal of Physical Anthropology*. 155: 294-308.
- Klaus, H. D. (2014b). A History of Violence in the Lambayeque Valley: Conflict and Death from the Late Pre-Hispanic Apogee to European Colonization of Peru

- (A.D. 900–1750). Knüsel, C. J. and Smith, M. J. (Eds.), *The Routledge Handbook of the Bioarchaeology of Human Conflict*. Routledge: New York. 389–414.
- Klaus, H. D. (2014, September 10). The Skeletons of Olmos: Uncovering a Mystery of Ancient Peru. *National Geographic News Room*.
<https://blog.nationalgeographic.org/2014/09/10/the-skeletons-of-olmos-uncovering-a-mystery-of-ancient-peru/>.
- Klaus, H. D. (2017). Paleopathological rigor and differential diagnosis: Case studies involving terminology, description, and diagnostic frameworks for scurvy in skeletal remains. *International Journal of Paleopathology*. 19: 96-110.
- Klaus, H. D. (2019). Metabolic diseases in Andean paleopathology: Retrospect and prospect. *International Journal of Paleopathology*.
<https://doi.org/10.1016/j.ijpp.2019.06.008>
- Klaus, H. D., Alva, W., Bourget, S., and Chero, L. (2018). Biological distance patterns among the northern Moche lords: Dental phenotypes and political organization in ancient Peru. *Latin American Antiquity*. 29 (4): 696-717.
- Klaus, H. D. and Alvarez-Calderón, R. (2017). Escaping Conquest? A First Look at Regional Cultural and Biological Variation in Postcontact Eten, Peru. Murphy, M. S. and Klaus, H. D. (Eds.), *Colonized Bodies, Worlds Transformed: Toward a Global Bioarchaeology of Contact and Colonialism*. Tallahassee: University Press of Florida.
- Klaus, H. D., Centurión, J., and Curo, M. (2010). Bioarchaeology of human sacrifice: Violence, identity, and the evolution of ritual killing at Cerro Cerrillos, Peru. *Antiquity*. 84 (2010): 1102-1122.
- Klaus, H. D., Larsen, C. S., and Tam, M. E. (2009). Economic intensification and degenerative joint disease: Life and labor on the postcontact north coast of Peru. *American Journal of Physical Anthropology*. 139 (2): 204-22.
- Klaus, H. D. and Lynnerup, N. (2019). Abnormal Bone: Considerations for Documentation, Disease Process Identification, and Differential Diagnosis. Buikstra, J. E. (Ed.) *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. Academic Press: London. 59-90.
- Klaus, H. D. and Shimada, I. (2016). Bodies and Blood: Middle Sicán Human Sacrifice in the Lambayeque Valley Complex (AD 900-1100). Klaus, H. D. and Toyne, J. M. (Eds.) *Ritual Violence in the Ancient Andes: Reconstructing Sacrifice on the North Coast of Peru*. Austin: University of Texas Press. 120-149.
- Klaus, H. D., Shimada, I., Shinoda, K., and Munro, S. (2017). Middle Sicán Mortuary Archaeology, Skeletal Biology, and Genetic Structures in Late Pre-Hispanic South America. Klaus, H. D., Harvey, A. R., and Cohen, M. N. (Eds.) *Bones of Complexity: Bioarchaeological Case Studies of Social Organization and Skeletal Biology*. University Press of Florida: Gainesville. 408-449.
- Klaus, H. D. and Tam, M. E. (2009). Contact in the Andes: Bioarchaeology of systemic stress in Colonial Mórrope, Peru. *American Journal of Physical Anthropology*. 138: 356-368.

- Klaus, H. D. and Tam, M. E. (2010). Oral health and the postcontact adaptive transition: A contextual reconstruction of diet in Mórrope, Peru. *American Journal of Physical Anthropology*. 141: 594-609.
- Klaus, H. D. and Tam, M. E. (2015). *Requiem Aeternam?* Archaeothanatology of Mortuary Ritual in Colonial Mórrope, North Coast of Peru. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 267-303.
- Klaus, H. D. and Toyne, J. M. (2016). Ritual Violence on the North Coast of Peru: Perspectives and Prospects in the Archaeology of Ancient Andean Sacrifice. Klaus, H. D. and Toyne, J. M. (Eds.) *Ritual Violence in the Ancient Andes: Reconstructing Sacrifice on the North Coast of Peru*. Austin: University of Texas Press. 1-24.
- Klaus, H. D., Turner, B. L., Saldaña, F., Castillo, S., and Wester, C. (2016). Human Sacrifice at the Chotuna-Chornancap Archaeological Complex. Klaus, H. D. and Toyne, J. M. (Eds.) *Ritual Violence in the Ancient Andes: Reconstructing Sacrifice on the North Coast of Peru*. Austin: University of Texas Press. 178-210.
- Kleinman, A. (1988). The Meaning of Symptom and Disorders. In *The Illness Narratives: Suffering, Healing, and the Human Condition*. New York: Basic Books, Inc. 3-30.
- Knüsel, C. J. (2009). Bioarchaeology: a synthetic approach. *Bull Mém Soc Anthropol Paris*. 22: 62-73.
- Kroeber, A. L. (1930). *Archaeological Explorations in Peru, Part II: The Northern Coast*. Chicago: Field Museum of Natural History.
- Kvam, K. E., Schearing, L. S., and Ziegler, V. H. (1999). *Eve and Adam: Jewish, Christian, and Muslim Readings on Genesis and Gender*. Bloomington and Indianapolis: Indiana University Press.
- Laneri, N. (2007). An Archaeology of Funerary Rituals. N. Laneri (Ed.), *Performing Death: Social Analyses of Funerary Traditions in the Ancient Near East and Mediterranean*. (1-14). Chicago: The University of Chicago.
- Larco Hoyle, R. (1939). *Los Mochicas*. Lima: "La Cronica" y "Variedades" S. A. Ltda.
- Larco Hoyle, R. (1941). *Los Cupisniques*. Lima: "La Cronica" y "Variedades" S. A. Ltda.
- Larco Hoyle, R. (1944). *Cultura Salinar: Sintesis Monografica*. Buenos Aires: Sociedad Geografica Americana.
- Larco Hoyle, R. (1945). *Cultura Virú*. Buenos Aires: Sociedad Geografica Americana.
- Larco Hoyle, R. (1966). *Peru*. Cleveland and New York: The World Publishing Company.
- Larsen, C. S. (1998). Gender, Health, and Activity in Foragers and Farmers in the American Southeast: Implications for Social Organization in the Georgia Bight. Grauer, A. L. and Stuart-Macadam, P. (Eds.), *Sex and Gender in Paleopathological Perspective*. Cambridge: Cambridge University Press.
- Larsen, C. S. (2015). *Bioarchaeology: Interpreting Behavior from the Human Skeleton*. Cambridge: Cambridge University Press.
- Lau, G. F. (2016). Different Kinds of Dead: Presencing Andean Expired Beings. Renfrew, C., Boyd, M. J., and Morley, I. (Eds.), *Death Rituals and Social Order*

- in the Ancient World: Death Shall Have No Dominion*. Cambridge: Cambridge University Press. 168-186.
- Lindquist, S. C. M. (2012). Gender. *Studies in Iconography*. 33: 113-130.
- Livingstone, F. (1958). Anthropological implications of sickle cell gene distribution in West Africa. *American Anthropologist*. 60: 533-562.
- Lock, M. and Nguyen, V. (2018). The Right Population. *An Anthropology of Biomedicine*. Wiley and Sons. 127-157.
- Lovejoy, C. O. (1981). The origin of man. *New Science*. 211(4480): 341-350.
- Lozada, M. C. (2014). The Emergence of Bioarchaeology in Peru: Origins and Modern Approaches. O'Donnabhain, B. and Lozada, M. C. (Eds.) *Archaeological Human Remains: Global Perspectives*. Springer. 177-188.
- Lukacs, J. R. (2017). Bioarchaeology of Oral Health: Sex and Gender Differences in Dental Disease. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (263-290). Albuquerque: University of New Mexico Press.
- Lukacs, J. R. and Largaespada, L. (2006). Explaining sex differences in dental caries prevalence: Saliva, hormones, and life-history etiologies. *American Journal of Human Biology*. 18: 540-555.
- Lukacs, J. R. and Thompson, L.M. (2008). Dental caries prevalence by sex in prehistory: Magnitude and meaning. Irish, J. D. and Nelson, G. C. (Eds.), *Technique and Application in Dental Anthropology*. Cambridge: Cambridge University Press. 136-177.
- Lynnerup, N. and Klaus, H. D. (2019). Fundamentals of Human Bone and Dental Biology: Structure, Function, and Development. Buikstra, J. E. (Ed.), *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. London: Academic Press. 35-58.
- Mackenzie, C. (2009). Bodily Limits to Autonomy: Emotion, Attitude, and Self-Defense. Campbell, S., Meynell, L., and Sherwin, S. (Eds.), *Embodiment and Agency*. (126-142). University Park: The Pennsylvania State University Press.
- Makowski, K. (2009). Virú- Moche Relations: Technological Identity, Stylistic Preferences, and the Ethnic Identity of Ceramic Manufacturers and Users. Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Los Angeles: Cotsen Institute of Archaeology Press. 33-60.
- Martin, D. L., Harrod, R. P., and Pérez, V. R. (2013). An Ethos for Bioarchaeologists. Martin, D. L., Harrod, R. P., and Pérez, V. R. (Eds.) *Bioarchaeology: An Integrated Approach to Working with Human Remains*. Springer. 23-55.
- Mascia-Lees, F. E. and Black, N. J. (2000). *Gender and Anthropology*. Prospect Heights: Waveland Press, Inc.
- Maurer Trinkhaus, K. (1984). Mortuary ritual and mortuary remains. *Current Anthropology*. 25 (5), 674-679.
- McHugh, F. (1999). *Theoretical and Quantitative Approaches to the Study of Mortuary Practice*. Oxford: Archaeopress.
- Mead, M. (1982). *Coming of Age in Samoa*. New York: William Morrow and Company.

- Meskel, L. M. (2000). Writing the Body in Archaeology. Rautman, A. E. (Ed.), *Reading the Body: Representations and Remains in the Archaeological Record*. (13-24). Philadelphia: University of Pennsylvania Press.
- Meynell, L. (2009). Introduction: Minding Bodies. Campbell, S., Meynell, L., and Sherwin, S. (Eds.), *Embodiment and Agency*. (1-21). University Park: The Pennsylvania State University Press.
- Milner, G. R., Humpfu, D. A., and Harpending, H. C. (1989). Pattern matching of age-at-death distributions in paleiodemographic analysis. *American Journal of Physical Anthropology*. 80: 49-58.
- Morton, S. G. (1839). The Ancient Peruvians. *Crania Americana*. Philadelphia: J. Dobson. 24-112.
- Moseley, M. E. (1982). Introduction: Human Exploitation and Organization. In Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. Albuquerque: University of New Mexico Press. 1-24.
- Moseley, M. E. and Cordy-Collins, A. (1990). *The Northern Dynasties Kingship and Statecraft in Chimor*. Dumbarton Oaks Research Library and Collection: Washington, DC.
- Moseley, M. E. and Day, K. C. (1982). *Chan Chan: Andean Desert City*. Albuquerque: University of New Mexico Press.
- Murphy, M. S., Goycohea, E., and Cock, G. (2011). Resistance, Persistence, and Accommodation at Puruchuco-Huaquerones, Peru. Liebmann, M. and Murph, M. S. (Eds.), *Enduring Conquests: Rethinking the Archaeology of Resistance to Spanish Colonialism in the Americas*. Santa Fe: School for Advanced Research press. 57-76.
- Najarro, M. (2019). Descanso Eterno y Salvación: Las Circunstancias de Dos Mujeres Cusqueñas en el Siglo XVII. Rosas Lauro, C. (Ed.), *Género y Mujeres en la Historia del Perú: Del Hogar al Espacio Público*. Lima: Fondo Editorial, Pontificia Universidad Católica del Perú. 129-150.
- Nelson, S. M. (2002a). Gender Ideology. Nelson, S. M. and Rosen-Ayalon, M. (Eds.), *In Pursuit of Gender: Worldwide Archaeological Approaches*. (9-14). Walnut Creek: AltaMira Press.
- Nelson, S. M. (2002b). Gender Roles. Nelson, S. M. and Rosen-Ayalon, M. (Eds.), *In Pursuit of Gender: Worldwide Archaeological Approaches*. (119-124). Walnut Creek: AltaMira Press.
- Novak, S. A. (2017). On the Stories of Men and the Substance of Women: Interrogating Gender through Violence. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (129-164). Albuquerque: University of New Mexico Press.
- Ortner, S. B. (1972). Is female to male as nature is to culture? *Feminist Studies*. 1(2): 5-31.
- Paine, R. R. (1989). Model life table fitting by maximum likelihood estimation: A procedure to reconstruct paleodemographic characteristics from skeletal age distributions. *American Journal of Physical Anthropology*. 79: 51-62.

- Parker Pearson, M. (2000). *The Archaeology of Death and Burial*. College Station: Texas A&M University Press.
- Pilcher, J. and Whelehan, I. (2017). *Key Concepts in Gender Studies, 2nd Ed.* Los Angeles, London, New Delhi, Singapore, Washington DC, Melbourne: Sage Publications.
- Politis, G. G. (2003). The theoretical landscape and the methodological development of archaeology in Latin America. *American Antiquity*. 68 (2): 245-272.
- Pozorski, S. G. (1982). Subsistence Systems in the Chimú State. Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. Albuquerque: University of New Mexico Press. 177-196.
- Pulgar Vidal, J. (1987). *Geografía del Perú: Las Ochos Regiones Naturales del Perú*. Lima: Editorial Universario S. A.
- Prieto, G., Verano, J. W., Goepfert, N., Kennett, D., Quilter, J., LeBlanc, S., Fehren-Schmitz, L., Forst, J., Lund, M., Dement, B., Dufour, E., Tombret, O., Calmon, M., and Gadison, D. (2019). A mass sacrifice of children and camelids at the Huanchaquito-Las Llamas site, Moche Valley, Peru. *PLOS One*. 14(3): e0211691. [https://doi.org/ 10.1371/journal.pone.0211691](https://doi.org/10.1371/journal.pone.0211691)
- Quilter, J. (1989). *Life and Death at Paloma*. Iowa City: University of Iowa Press.
- Quilter, J. (2014). Backgrounds. *The Ancient Central Andes*. London and New York: Routledge. 1-22.
- Rautman, A. E. and Talalay, L. E. (2000). Introduction: Diverse Approaches to the Study of Gender in Archaeology. Rautman, A. E. (Ed.), *Reading the Body: Representations and Remains in the Archaeological Record*. (1-12). Philadelphia: University of Pennsylvania Press.
- Redfern, R. and Roberts, C. A. (2019). Trauma. Buikstra, J. E. (Ed.) *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. London: Academic Press. 211-284.
- Reid, D. J. and Dean, M. C. (2006). Variation in modern human enamel formation times. *Journal of Human Evolution*. 50(3): 329-346.
- Reinhard, J. and Ceruti, C. (2005). Sacred mountains, ceremonial sites, and human sacrifice among the Incas. *Archaeoastronomy*. 19: 1-43.
- Rengifo Chunga, C. and Castillo Butters, L. J. (2015). The Construction of Social Identity: Tombs of Specialists at San José de Moro, Jequetepeque Valley, Perú. Eeckhout, P. and Owens, L. S. (Eds.) *Funerary Practices and Models in the Ancient Andes: The Return of the Living Dead*. New York: Cambridge University Press. 117-136.
- Reycraft, R. M. (2005). Introduction. Reycraft, R. M. (Ed.) *Us and Them: Archaeology and Ethnicity in the Andes*. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles. 1-11.
- Robbins, L. M. (1977). The Story of Life Revealed by the Dead. Blakely, R. L. (Ed.), *Biocultural Adaptation in Prehistoric America*. (10-26). Athens: The University of Georgia Press.
- Rodman, A. O. and Fernandez Lopez, G. A. (2005). North Coast Style after Moche: Clothing and Identity at El Brujo, Chicama Valley, Peru. Reycraft, R. M. (Ed.) *Us*

- and Them: Archaeology and Ethnicity in the Andes*. Los Angeles: Cotsen Institute of Archaeology, University of California, Los Angeles. 115-133.
- Rosas Lauro, C. (2019). *Género y Mujeres en la Historia del Perú: Del Hogar al Espacio Público*. Fondo Editorial del Pontificia Universidad Católica del Perú: Lima.
- Rostworowski, M. (2015). *Mujer y Poder en los Andes Coloniales*. Instituto de Estudios Peruanos: Lima.
- Rostworowski, M. (2017). *Aproximación psicoantropológica a los mitos andinos*. Lima: Instituto de Estudios Peruanos.
- Rostworowski, M. (2018) [1998]. La mujer en el Perú prehispánico. *Ensayos de Historia Andina II: Pampas de Nasca, Género, Hechicería*. Instituto de Estudios Peruanos: Lima.
- Rostworowski, M. (2018) [1983]. *Estructuras andinas del poder: Ideología religiosa y política*. Instituto de Estudios Peruanos: Lima.
- Rowe, J. H. (1948). The kingdom of Chimor. *Acta Americana*. 6: 26-59.
- Sakai, M. (1998). *Reyes, Estrellas, y Cerros en Chimor: El Proceso de Cambio de la Organización Especial y Temporal en Chan Chan*. Editorial Horizonte: Lima.
- Salomon, F. (1995). "The Beautiful Grandparents": Andean Ancestor Shrines and Mortuary Ritual as Seen Through Colonial Records. Dillehay, T. D. (Ed.) *Tombs for the Living: Andean Mortuary Practices: A Symposium at Dumbarton Oaks, 12th and 13 October 1991*. Washington, D. C.: Dumbarton Oaks Research Library and Collection. 315-354.
- Seibold, K. E. (1992). Textiles and Cosmology in Choquecancha, Cuzco. Dover, R.V. H., Seibold, K. E., and McDowell, J. H. (Eds.), *Andean Cosmologies Through Time: Persistence and Emergence*. Bloomington: Indiana University Press. 166-201.
- Sherbondy, J. E. (1992). Water Ideology in Inka Ethnogenesis. Dover, R. V. H., Seibold, K. E., and McDowell, J. H. (Eds.) *Andean Cosmologies through Time: Persistence and Emergence*. Bloomington, Indianapolis: Indiana University Press. 46-66.
- Shimada, I. (1981). The Batán Grande-La Leche Archaeological Project: The first two seasons. *Journal of Field Archaeology*. 8 (4): 405-446.
- Shimada, I. (1994). *Pampa Grande and Mochica Culture*. University of Texas Press: Austin.
- Shimada, I. (2000). The Late Prehispanic Coastal States. Minelli, L. L., (Ed.) *The Inca World: The Development of Pre-Columbian Peru A.D. 1000-1543*. Norman: University of Oklahoma Press. 49-110.
- Shimada, I. (2001). Late Moche Urban Craft Production: A First Approximation. Pillsbury, J. (Ed.) *Moche Art and Archaeology in Ancient Peru*. New Haven and London: Yale University Press. 177-205.
- Shimada, I. and Fitzsimmons, J. L. (2015). Introduction. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 3-49.
- Shimada, I., Griffin, J. A., and Gordus, A. (2000). The Technology, Iconography, and Social Significance of Metals: A Multi-Dimensional Analysis of Middle Sicán

- Objects. McEwan, C. (Ed.) *Precolumbian Gold: Technology, Style, and Iconography*. British Museum Press: London. 28-61.
- Shimada, I., Klaus, H. D., Segura, R. A., and Matsumoto, G. (2015). Living with the Dead: Conception and Treatment of the Dead on the Peruvian Coast. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 101-172.
- Shimada, I., Shinoda, K., Farnum, J., Corruccini, R., and Watanabe, H. (2004). An integrated analysis of pre-Hispanic mortuary practices: A Middle Sicán case study. *Current Anthropology*. 45 (3): 369-402.
- Shimada, I. and Vega-Centeno, R. (2011). Peruvian Archaeology: Its Growth, Characteristics, Practice, and Challenge. Lozny, L. R. (Ed.) *Comparative Archaeologies: A Sociological View of the Science of the Past*. Springer Science and Business Media, LLC. 569-612.
- Shimada, I. and Wagner, U. (2001). Peruvian black pottery production and metalworking: A Middle Sicán craft workshop at Huaca Sialupe. *MRS Bulletin*. 26 (1): 25-30.
- Sillar, B. (1994). Playing with God: Cultural Perceptions of Children, Play, and Miniatures in the Andes. *Archaeological Review from Cambridge*. 13 (2): 47-63.
- Silverblatt, I. (1987). *Moon, Sun, and Witches: Gender Ideologies and Class in Inka and Colonial Peru*. Princeton: Princeton University Press.
- Smith, K. (2012). From dividual and individual selves to porous subjects. *The Australian Journal of Anthropology*. 23: 50-64.
- Smith, R. (2019, December). *Job Talk*. Presentation given at George Mason University.
- Sofaer, J. R. (2006). Gender, Bioarchaeology, and Human Ontogeny. Gowland, R. and Knüsel, C. (Eds.), *The Social Archaeology of Funerary Remains*. (155-167). Oxbow Books.
- Sökefeld, M. (1999). Debating self, identity, and culture in anthropology. *Current Anthropology*. 40: 417-47.
- Sperduti, A., Giuliani, M. R., Guida, G., Petrone, P. P., Rossi, P. F., Vaccaro, S., Frayer, D. W., and Bondioli, L. (2018). Tooth grooves, occlusal striations, dental calculus, and evidence for fiber processing in an Italian eneolithic/bronze age cemetery. *American Journal of Physical Anthropology*. 167 (2).
<https://doi.org/10.1002/ajpa.23619>
- Steele, P. R. and Allen, C. J. (2004). *Handbook of Inca Mythology*. Santa Barbara, Denver, and Oxford: ABC CLIO.
- Sutter, R. C. (2009). Biological Origins and Relations among Cerro Oreja and Other Prehistoric Northern Andean Mortuary Populations Using Epigenetic Dental Traits. Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Cotsen Institute of Archaeology Press: Los Angeles. 125-148.
- Tantaleán, H. (2014). *Peruvian Archaeology: A Critical History*. Stanish, C. (Trans.). Walnut Creek, CA: Left Coast Press, Inc.
- Tello, J. C. (1912) [2009]. Prehistoric Trephining among the Yauyos of Peru. Burger, R. L. (Ed.) *The Life and Writings of Julio C. Tello*. Iowa City: University of Iowa Press. 112-124.

- Tello, J. C. (1923) [2009]. The Feline God and Its Transformation in Chavín Art. Burger, R. L. (Ed.) *The Life and Writings of Julio C. Tello*. Iowa City: University of Iowa Press. 165-234.
- Temple, D. H. (2016). Caries: The Ancient Scourge. Irish, J. D. and Scott, G. R. (Eds.), *A Companion to Dental Anthropology*. John Wiley and Sons. 433-449.
- Temple, D. H. (2018). Bioarchaeological evidence for adaptive plasticity and constraint: Exploring life-history trade-offs in the human past.
- Topic, J. R. Jr. (1982). Lower-Class Social and Economic Organization at Chan Chan. Moseley, M. E. and Day, K. C. (Eds.) *Chan Chan: Andean Desert City*. University of New Mexico Press: Albuquerque. 145-176.
- Toyne, J. M. (2008). *Offering Their Hearts and Their Heads: A Bioarchaeological Analysis of Ancient Human Sacrifice on the Northern Coast of Peru*. (Unpublished dissertation). Tulane University: New Orleans, LA.
- Toyne, J. M. (2011). Interpretations of pre-hispanic ritual violence at Túcume, Peru, from cut mark analysis. *Latin American Antiquity*. 22 (4): 505-523.
- Toyne, J. M. (2015). Ritual Violence and Human Offerings at the Temple of the Sacred Stone, Túcume, Peru. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 173-199.
- Turner, B. and Klaus, H. D. (2016). Biocultural Perspectives in Bioarchaeology. Zuckerman, M. K. and Martin, D. L. (Eds.), *New Directions in Biocultural Anthropology*. doi:[10.1002/9781118962954.ch21](https://doi.org/10.1002/9781118962954.ch21).
- Uceda Castillo, S., Gayoso Rullier, H., and Gammara Carranza, N. (2009). The Gallinazo at Huacas de Moche: Style of Culture? Millaire, J. and Morlion, M. (Eds.) *Gallinazo: An Early Cultural Tradition on the Peruvian North Coast*. Cotsen Institute of Archaeology Press: Los Angeles. 105-124.
- Van Gennep, A. (1909). *Les Rites de Passage*. Paris: Émile Nourry.
- Verano, J. W. (1995). Where Do They Rest? The Treatment of Human Offerings and Trophies in Ancient Peru. Dillehay, T. D. (Ed.) *Tombs for the Livings: Andean Mortuary Practices: A Symposium at Dumbarton Oaks, 12th and 13th October 1991*. Dumbarton Oaks research Library and Collection: Washington, D. C. 189-228.
- Verano, J. W. (1997). Advances in the paleopathology of Andean South America. *Journal of World Prehistory*. 11 (2): 237-268.
- Verano, J. W. (2001a). The Physical Evidence of Human Sacrifice in Ancient Peru. Benson, E. P. and Cook, A. G. (Eds.) *Ritual Sacrifice in Ancient Peru*. University of Texas Press: Austin. 165-184.
- Verano, J. W. (2001b). War and Death in the Moche World: Osteological Evidence and Visual Discourse. Pillsbury, J. (Ed.) *Moche Art and Archaeology in Ancient Peru*. New Haven and London: Yale University Press. 111-126.
- Villavicencio, M. (2017). *Mujer: Poder y Alimentación en el Antiguo Perú*. Lima: Fondo Editorial de la Universidad de San Martín de Porres.
- Waldron, T. (1994). Counting the dead: The epidemiology of skeletal populations. Chichester, UK: Wiley.

- Waldron, T. (2019). Joint Disease. In Buikstra, J. E. (Ed.), *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*. London: Academic Press. 719-748.
- Walker, P. L., Bathurst, R. R., Richman, R., and Gjerdrum, T. (2009). The causes of porotic hyperostosis and cribra orbitalia: A reappraisal of the iron-deficiency-anemia hypothesis. *American Journal of Physical Anthropology*. 139: 109-125.
- Waller, M. (2018). Exploring potential archaeological expressions of nonbinary gender in pre-contact Inuit contexts. *Inuit Studies*. 42(1): 269-289.
- Wapler, U., Crubézy, E., and Schultz, M. (2004). Is cribra orbitalia synonymous with anemia? Analysis and interpretation of cranial pathology in Sudan. *American Journal of Physical Anthropology*. 3: 333-339.
- Weismantel, M. (2015). Many Heads are Better than One: Mortuary Practice and Ceramic Art in Moche Society. Shimada, I. and Fitzsimmons, J. L. (Eds.) *Living with the Dead in the Andes*. Tucson: The University of Arizona Press. 76-100.
- Weiss-Krejci, E. (2011). The Formation of Mortuary Deposits: Implications for Understanding Mortuary Behavior of Past Populations. Agarwal, S. C. and Glencross, B. A. (Eds.), *Social Bioarchaeology*. (68-106). Wiley-Blackwell.
- Wesp, J. K. (2017). Embodying Sex/Gender Systems in Bioarchaeological Research. Agarwal, S. C. and Wesp, J. K. (Eds.), *Exploring Sex and Gender in Bioarchaeology*. (99-128). Albuquerque: University of New Mexico Press.
- Wester La Torre, C. (2016). *Chornancap: Palacio de Una Gobernante y Sacerdotisa de la Cultura Lambayeque*. Lima: Ministerio de Cultura de Perú.
- Wester La Torre, C. (2018). *Personajes de Élite en Chornancap: Una Nueva Visión de la Cultura Lambayeque*. Lima: Ministerio de Cultura de Perú.
- Wheeler, S. M., Williams, L., Beauchesne, and Dupras, T. L. (2013). Shattered lives and broken childhoods: Evidence of physical child abuse in ancient Egypt. *International Journal of Paleopathology*. 3: 71-82.
- White, T. D., Black, M.T., and Folkens, P. A. (2012). *Human Osteology, Third Edition*. Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, and Tokyo: Academic Press.
- Wolpoff, M and Caspari, R. (2007). Polygenism, Racism, and the Rise of Anthropology. *Race and Human Evolution*. New York: Simon and Schuster. 57-76.
- Wright, R. P. (1996). Introduction: Gendered Ways of Knowing in Archaeology. Wright, R. P. (Ed.), *Gender and Archaeology*. (1-22). Philadelphia: University of Pennsylvania Press.
- Wylie, A. (1993). Gender Theory and the Archaeological Record: Why Is There No Archaeology of Gender? Gero, J. M. and Conkey, M. W. (Eds.), *Engendering Archaeology: Women and Prehistory*. (31-54). Oxford and Cambridge: Blackwell.
- Zuckerman, M. K. and Armelagos, G. J. (2011). The Origins of Biocultural Dimensions in Bioarchaeology. Agarwal, S. C. and Glencross, B. A. (Eds.), *Social Bioarchaeology*. (15-43). Wiley-Blackwell.

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