UNIVERSITY OF CALIFORNIA

Santa Barbara

Religion and Power from a Household Perspective at Cerro Tortolita, an Early Intermediate Period Ceremonial and Residential Center on the South Coast of Peru

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Anthropology

by

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September 2022

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To my kiddos, my husband, and my parents.

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Kerchusky and Matt Biwer have been my go-to people when in need of advice or commiseration from veteran dissertation writers, and I highly recommend having such friends for anyone going through the process, or for just generally going through life. Mallory Melton has also provided sage advice on statistics and other subjects, and been a good friend to have during our graduate years together. I've known Brian Barbier since we were both undergraduates at UC Davis, and have learned a lot on an astonishing array of subjects from him; thanks for sharing your knowledge, high standards, and good humor always. My fellow graduate students at UCSB have had a positive impact on me personally and professionally, in ways both large and small; thank-you.

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ABSTRACT

Religion and Power from a Household Perspective at Cerro Tortolita, an Early Intermediate Period Ceremonial and Residential Center on the South Coast of Peru

by

Alicia J. Gorman

In this dissertation I address the active role of religion in shaping society at Cerro Tortolita, an Early Intermediate Period ceremonial and residential center located in the Upper Ica Valley of the south coast of Peru. I follow recent research in viewing religion in indigenous Andean societies as part of a relational ontology, or worldview; that is, not as a separate aspect of life, secondary to economic and environmental forces in shaping a society, but as something with the potential to permeate all aspects of life, and therefore a prime mover in the development of societies. It is inseparable from more traditionally considered factors such as politics and economics in power dynamics, but also cannot be viewed solely in terms of power, either. The relationship between religion and power is explored here in the context of a single site in a non-state society, whose residents participated in a wider religious phenomenon known as the Nasca cult.

Three main themes are explored: the relationship between religious authority and social differentiation at Cerro Tortolita; community negotiation of social structure; and connections to the wider Nasca religious network, particularly the grand ceremonial center of Cahuachi. These overlapping themes are explored through three studies. The first study tests the hypothesis of pilgrimage from Cerro Tortolita to Cahuachi through Instrumental Neutron

Activation Analysis (INAA) of ceramic pastes. I find no evidence for movement of ceramics from the area of Cahuachi, a hypothesized ceramic distribution center, to Cerro Tortolita, and explore the implications of this finding for religion at Cerro Tortolita. Rather than relying on ties to Cahuachi, the authority of religious specialists at Cerro Tortolita was apparently locally-rooted, emphasizing the importance of centers outside of Cahuachi for shaping the regional Nasca cult. The second study compares ritual activities between the Ceremonial and Primary Residential Zones of Cerro Tortolita. There are many overarching similarities but also some critical differences. I conclude that religious specialists and commoners shared a similar general view of ideology and ritual, but that differences reflect the privileged knowledge and abilities of religious specialists, which may have caused some tension. The third study utilizes foodways to explore community participation in religion and politics, focusing particularly on special commensal events. Commensality was an additional medium through which all members of society at Cerro Tortolita participated in the negotiation and construction of power, as well as an important means of maintaining shared identities and relationships. Differences in foodways between the U-shaped platform mound of the Ceremonial Zone and the Primary Residential Zone are primarily quantitative, rather than qualitative, suggesting that religious specialists did not have a very different diet from that of commoners, though they held special commensal events more often. In each of these studies, the distinctions between religious specialists and commoners are found to be primarily based in religious authority, rather than other forms of politico-economic privilege. The exploration of religion, power, and social structure at Cerro Tortolita across these studies has relevance for broader understandings of the many ways in which religion can shape social differentiation within non-state societies.

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CHAPTER 1

Introduction to the Research Problem

Current paradigms of archaeological research place religion at the forefront of active forces that shape a society, alongside more traditionally considered economic, environmental, and political forces. Furthermore, scholars now recognize the degree to which these different aspects of life are interrelated, and perhaps inseparable. Acknowledgment of these interrelations must be incorporated into research agendas in order to better understand societies of the past, particularly when studying societies with a relational and animistic worldview, wherein there is a more porous boundary between what is animate and inanimate, religious or non-religious, than acknowledged in the Western world today.

The convergence of religion and politics is the particular focus of this study. The focus on transforming relationships in both religion and politics inherently connects the two, and they may coincide in a multitude of ways. Depending on the context, religion may sometimes provide a means of political advancement for a group of people, or constrain it; religious authority may also be marked but not translate into other types of inequality, e.g., political power, or wealth. It is a mistake to think that politico-economic power is the goal of all forms of authority, however. Furthermore, religion and politics are not always synonymous, but often coincide to varying degrees, influencing at times becoming inseparable from one another.

Religion is not the exclusive purview of elites, but an activity that involves the participation of many actors and factions. Even in societies with elite, ritual specialists, commoners can choose how, or if, to participate in ritual ceremonies; they may also maintain

their own religio-ritual knowledge. In this way ritual can be a means of social integration as well as a dialogue between ritual specialists and other social factions, and even the mere expectations of the latter have the power to shape the behavior of the former. For this reason, in order to study religion and politics, it will be most fruitful to study their intersections across archaeological contexts, rather than focusing on simply elite or ceremonial contexts.

I incorporate these approaches into this study of social structure at Cerro Tortolita, a ceremonial site in the Upper Ica Valley during the Early Intermediate Period (~AD 250-450). Cerro Tortolita is approximately 20 hectares in size, consisting of a Ceremonial Zone with monumental architecture and a Primary Residential Zone that housed the general population. Early Nasca style ceramics, a style thought to have originated at the larger ceremonial center of Cahuachi in the Southern Nasca Region (SNR), became ubiquitous throughout the Upper Ica Valley at the time of Cerro Tortolita's occupation. It is possible that Cahuachi's ideology spread in the Upper Ica Valley along with its ceramic iconography, and that this ideology played a role in the construction of Cerro Tortolita physically and socially. Due to the clear ceremonial nature of part of Cerro Tortolita, and its large size for its time, it provides an appropriate case study for recent efforts in archaeology to understand how religion and ritual can play an active role in politics. While the monumental architecture and sizeable population at Cerro Tortolita may suggest inequality at the site, recent research has problematized the automatic association of monumental architecture with certain types of complexity, and found that large-scale ceremonial architecture is not necessarily associated with inequality (Burger and Salazar-Burger 1985, 1991; Moore 2005: 53-122; Vega-Centeno 2007). Therefore, instead of assuming the relationship between monumental architecture,

religion, and politics within any given society, we must investigate them within their culturally- and historically-specific contexts.

In 2018 my co-director Christian Cancho Ruiz and I led excavations in the Primary Residential Zone of Cerro Tortolita with the goal of studying how religion and politics converge (or not) to shape social differentiation at the site. Social differentiation may include distinctions in the degree of power or influence an individual or group has to affect their society and environment, often thought of as political power, as well as specialized roles (e.g., craft production, or religious specialists). Our field season focused on domestic contexts of the Primary Residential Zone with the objective of comparing them with the activities in the Ceremonial Zone, the latter having been excavated by Kevin Vaughn and Michiel Zegarra Zegarra in 2014 (Vaughn et al. 2019). The areas of the Ceremonial Zone emphasized in this comparison include the plaza, a public space; a large U-shaped platform mound, used by religious specialists; and Sector I, a subdivided terraced area adjacent to the platform mound. In this dissertation I specifically investigate how power was presented, created, and maintained at the site, through the lens of the role of religious ritual knowledge and activity. The findings here have implications for understanding life at Cerro Tortolita as well as regional socio-political dynamics, particularly relating to the nature of the relationship between Cahuachi and Cerro Tortolita. This work also provides a case study of the workings of religion and politics in non-state societies, thereby contributing to understanding of the manifold ways in which they may relate.

Theoretical Perspective of the Dissertation

Defining Religion and Ritual

The main questions in this dissertation are driven by anthropological theory regarding the active role that religion can take in the construction of complex societies (e.g., Aldenderfer 2012a; A. Joyce 2018). Most modern definitions of religion by archaeologists include a concern with the divine, "animate essences or other-than-human beings with which living people…interact…based on the assumption that such beings have needs, desires, and intentions" (Barber 2018: 100). However, religion is not just an idea, but takes place at the intersection of belief and practice (R. Joyce 2018: 141; see also Fogelin 2008: 132; Zedeño 2018: 285). It is difficult to give religion a much narrower definition than this; in some ways even attempting to define it raises problems, as it risks imposing a false dichotomy between what is religious and what is not (Alberti and Bray 2009; Alberti et al. 2011; Alberti and Marshall 2009; (Fowles 2013: 6; Insoll 2004: 4-6). While religion cannot be reduced to ritual (Emerson and Pauketat 2008: 168; Fogelin 2008: 132; Insoll 2004: 6; A. Joyce 2018: 6), the fact that religion is a practice, mediated through material objects including those used in rituals, provides a point of access into the study of religion for archaeologists.

Ritual, as a component of religion, can be defined as a set of structured practices in which there is an elevated focus on relationships, particularly between humans and other-than-human beings, that have the goal of influencing or transforming those relationships (Fowles 2013: 103-104; Swenson 2015: 333). Rituals are often stylized, marked, or set apart from daily life in some manner, such as through location, the use of special objects, or use of consciousness-altering substances or practices (e.g., psychotropic drugs, alcohol, music, chants, dance; *sensu* Bell 1992: 74, 1997; or even the energy of a large gathering of people, termed effervescence; *sensu* Durkheim 1965 [1915]: 240, as discussed in Fowles 2013: 145-

148). The repeated, structured deposition of these practices (Bradley 2003) and the use of special objects or other means of marking ritual allows its identification in the archaeological record (Engelke 2010; Joyce 2012: 181-182). However, here our definitions of religion and ritual must turn to the subject of ontology, without which they cannot be fully understood.

Relational Ontologies

Folk classifications of the world are generally ontological, or based on experience, and therefore focused on relationships (similarity, difference, etc.); unlike in scientific taxonomies, which are epistemological, and focused on separation into units (following Zedeño 2009: 407). Within relational ontologies, based as they are on experiences, there are not sharp divides between categories as seen in scientific, ideational, Cartesian epistemologies, including religious/non-religious, sacred/profane, animate/inanimate, past/present (Swenson and Roddick 2018; Walker 2018). (Although the degree to which people operating within a Cartesian epistemology truly practice a separation between these categories has been called into question as well; see Latour 1993). These concepts form a continuum, instead of opposite ends of a pole.

Concepts generally labeled "religious" may permeate all aspects of life. While some activities or objects can be said to be purely "sacred" or "profane," within a relational worldview there is more of a "gradient of consciousness extending from the largely unreflective use of objects in workaday activities to the heightened meditations on the radical interpenetration of things…often referred to by archaeologists as 'religious,'" rather than seeing these two concepts as opposed (Fowles 2013: 176). Furthermore, many activities or objects may not fit neatly within one term or another, perhaps serving a practical earthly

purpose, but also being imbued with symbolism or sacred meaning to some degree. For example, the act of grinding corn can be seen as a purely economic activity, but may be overlaid with ceremonialism and religious concepts (Fowles 2013: 176-177). Similarly, an event may be both religious and political in nature. Polly Wiessner provides an example from the Enga culture of Papua New Giunea, wherein Big Men gained prestige (that could be put to political use) through the organization of sacred feasts (Wiessner 2001: 127-128). Big Men were able to choose feasts from cults that aligned with values that allowed or veiled their self-promotion, thereby influencing social norms, and reception of their political maneuverings. Therefore, instead of asking whether something was ritual, Fowles suggests asking, "to what degree what it a conscious gathering?" (2013: 176). The fact that rituals are carried out for a purposeful end (since people do not tend to do things they view as irrational) also highlights how ritual itself can be seen as work, and the blurring between the two (Hutson et al. 2018: 165).

The concepts of animism and relationality are at the core of understanding religion within a relational ontology. While each religion is unique to its particular culture, concepts of animism and relationality are widespread in the indigenous Americas as well as in the Andes (see Alberti 2016; Bray 2009, 2015, 2015 [ed.]; Weismantel 2013, 2015). Within relational ontologies, objects are capable of animacy, or agency, and therefore able to engage in social relations. Unlike in Cartesian epistemologies, where the categories of animate and inanimate are absolute and unchanging, certain objects may have a potential for animacy, depending on culturally-specific requirements. For example, in the Algonquin and Numic cultures, "raw material, color, workmanship and condition, and shape in human and animal likeness" constitute the "necessary and sufficient conditions for animate-ness," though even

simple, everyday objects may become animate as well (Zedeño 2009: 412). Here, objects are understood to include landforms as well, which are often particularly important in Native cosmologies (Bray 2015 [ed.]; Deloria 2003: 61-76, 121, 271-286). Some objects are inherently animate, such as index objects, and have the potential to animate others (Zedeño 2008, 2009), while others have a latent potential for animacy. Objects become animate through relationships: human interaction with an object as an animate being (Pauketat 2013: 33). The attribution of agency to an object in turn grants it agency, in that the object now has the ability to affect the world around it (Pauketat 2013: 29). Zedeño stresses the power of animate objects, stating that they "can and do establish social relations that parallel those of human social systems; in any in object-human interaction, humans may be variously engaged as equals or even lesser persons" (2009:409).

Ideas of animism and relationships come together in the concept of bundling, which has gained attention as a useful analytical tool (e.g., Pauketat 2013; Zedeño 2008, 2009, 2018). Bundling may refer to objects or concepts. Bundling of special objects is a cross-cultural practice, and a bundle may itself be considered animate. The result of bundling is that a new object is created, greater than the sum of its parts, due to the relationships between the contents of the bundle. Archaeologists have also used the framework of bundling to discuss concepts. For example, Zedeño argues that politics and religion are so intertwined that they should be seen as a bundle, creating a force greater than the sum of its parts (Zedeño 2018: 299). Beliefs or activities may also form bundles, being so associated with one another as to be inseparable. It can be useful to look for this "bundling" in the past, to better understand the practices of a society.

The Political Work of Religion

Of particular importance in this dissertation is how ritual's focus on affecting and transforming relationships can make it a natural means of political action (Swenson 2015: 334, 339). Politics is defined here as "dealing with the creation of relations of inequality in the ability to formulate and carry out a course of action" (R. Joyce 2018: 154-155). Older views of religion's role in politics generally fall into one of two categories: functionalist or Marxian. Functionalist perspectives tend to be applied to simple societies, and interpret religion primarily as a source of social cohesion (Durkheim 2001 [1915]). Marxian perspectives, including the Dominant Ideology Thesis (DIT; Abercrombie et al. 1990, 1980), view religion mainly as a post-hoc means of justifying social inequality (Swenson 2007, 2015). DIT sees religion as arising among elites and being controlled by them, while commoners are "largely unaware of the degree of their mystification and…generally incapable of any sort of self-awareness…" (Lohse 2007: 8). The result is a top-down view of religion that negates the possibility of participation for a majority of the members of a society. Both perspectives see religion as reactionary, or a superstructure, to maintain social structures, rather than an agent capable of fomenting change. This study takes the latter approach.

Ritual's focus on transforming relationships makes it a natural medium for politics. Accordingly, Fowles (2013), following Latour (1993), has detailed the problems that arise when archaeologists separate life in societies practicing relational ontologies into discrete categories like religion, economy, and politics, given that the activities and objects under study so often operate in more than one of these spheres. Recent studies explore religion as an active player in shaping societies, alongside more traditional considerations of change

such as economy and environment. There is an interest in how religion may limit or enable social change, including inequality (e.g., Aldenderfer 2012a; Alt and Pauketat 2018; Barber 2018; R. Joyce 2018; A. Joyce and Barber 2015; Robin 2016; Swenson 2015). Indeed, politics and religion can be so fluid that Fowles cautions that speaking of them separately "is to condition us to forever see two things where there is but one…as if suffering from a kind of double vision" (2013: 52, 67; see also Deloria 2003: 194, 197). This is not to say that the two cannot be separate, but that "The more frequent and the more intimate the couplings, convergences, or parallels [between religious movements and politics], the more religious they were and the more profound their potential historical implications" (Pauketat 2013: 187). A second caution must be made when speaking of religion and politics as well, which is that the goal of religious practitioners is not necessarily their own advancement in political or economic realms. Religious authority may be an end in itself, and exist for no other reason and to no other end (i.e., economic differentiation; Fowles 2013: 58-59, 62-63, 67). However, this does not make religious power any less real or powerful than power deriving from other, more secular sources (Pauketat 2013: 24). Religious knowledge could also be said to be its own form of wealth and means of social stratification. Indeed, Aldenderfer argues that religion is a necessary proximate cause for the emergence of persistent inequality in other arenas of life (2012a: 80).

The Disjunctive Approach

Scholars increasingly are applying a cross-contextual approach to the study of religion to address the role of non-elites in religion, ritual, and ideology (e.g., Barber and Joyce 2018; Douglass 2007; Gonlin 2007; Halperin 2014; McCafferty 2007; Lohse and

Gonlin 2007; Olson 2007), an analytical method that Swenson formalizes by terming it the "disjunctive" approach (2008, 2015; see also Aldenderfer 2012b: 27-28). Throughout this dissertation I will apply a disjunctive approach that compares ritual in ritual specialist and commoner contexts, allowing a comparison of how different groups participated in religion, and therefore shaped their society. Rather than focusing on the agency of elites, studies of religion today are more apt to see religious communities as "communities of practice" (Zedeño 2018: 289, following Wenger 1998: 45). Related to this point, Hutson and colleagues make two observations: first, everyone in a society participates in religion and ritual, even if through non-practice (Hutson et al. 2018: 165-166). Second, ritual is power in that it allows for negotiation and transformation of relationships, the heart of politics. Religion can be a source of social cohesion, but also of conflict. Therefore, to the extent that all members of a society play a role in ritual and religion, they also play a role in politics.

Joyce and colleagues suggest three, potentially overlapping, forms of interaction through which commoners contribute to religious, and by extension political, discourses: engagement, independence (formerly termed "avoidance"), and resistance (Joyce et al. 2001; Joyce and Weller 2007: 146). Though Joyce and colleagues write about these concepts in the context of Mayan states, they may apply to some degree in any society with elite religious specialists. Engagement is the "compromise achieved in a dominant discourse produced through collective engagement of elites and commoners with divergent interests and dispositions (Joyce et al. 2001: 368). It simply means that all members of society participate in ritual and religion, even through non-participation. Sources of commoner power in this negotiation include an audience's knowledge of the "right" way to perform a ritual, based on past experience, which inhibits the ability of religious specialists to simply do whatever they

want (Hutson et al. 2018; Inomata 2006). The power of engagement no doubt plays a role in the tendency for elites to co-opt traditional beliefs and practices into their own ceremonies as well (e.g., Uruñuela and Plunket 2007; Carballo 2018; see also Kertzer 1988, Kus and Raharijoana 2000, and McAnany 1995, as cited in Hutson et al. 2018: 167). Independence is the ability for commoners to maintain their own religio-ritual knowledge and perform their own rituals, separately from elites. These alternative discourses may not directly contest elite discourses, but they "do not contribute significantly to the negotiation or contestation of the dominant ideology" (Joyce et al. 2001: 370). Independence may flourish especially in private spaces, or in areas far from elite centers. It can be seen through the study and comparison of ritual in people's homes. At minimum, conducting rituals at home indicates the empowerment of commoners to do "the religious work necessary to make their lives safe and productive" (Hutson et al. 2018: 183). In addition, it allows commoners to be more sophisticated critics of elite rituals. Resistance is the rejection of elite worldviews, which may be overt or covert. Resistance may be seen by studying "hidden transcripts," or activities in areas less directly under elite control, such as peoples' homes or areas more distant from elite centers (Joyce et al. 2001: 348-349, 370; see chapters in Gonlin and Lohse 2007, Joyce and Barber 2018). It may also be seen in non-participation (e.g., Fowles 2013: 85-100), or the destruction of temples or iconography associated with an ideology after its fall (e.g., Janusek 2004, 2005). For each of these forms of interaction, it is necessary to study commoner as well as elite contexts in order to understand the dynamics at play, and a diachronic approach may be needed for some as well.

The social role of religion is explored in this dissertation through different lenses in each chapter, specifically, commensality, ritual, and regional ceramic production and

consumption. I problematize the assumption that distinctions among individuals in access to ritual indicate other modes of social differentiation, and instead seek to test the relationships between religion, ritual, and other aspects of life (e.g., Fowles 2013: 52-67). In each chapter, a disjunctive approach comparing contexts is applied. INAA of ceramic pastes is used to address how people across contexts at Cerro Tortolita participated in the Cahuachi pilgrimage network, with implications for understanding the construction of regional and local religious authority. Ritual is also compared between the Ceremonial and Primary Residential Zones, to understand the degree to which ritual practices, knowledge, and ideology were shared or differentiated between Zones. Lastly, special commensality, or feasting, is often important for the negotiation of status (including of religious authority), and its social impacts can be magnified when combined with ritual. Through these chapters, the nature of religion and social differentiation at Cerro Tortolita is explored, providing a case study that contributes to broader anthropological discussions of this topic.

Archaeological Context

Geographic Setting and Environment

Cerro Tortolita is situated in the upper Ica Valley, approximately 1 hour's drive on an unpaved road from the city of Ica, amidst the coastal desert environment of the south coast (Figure 1.1). Within the archaeological literature the upper Ica Valley is defined as 500 masl (beginning at Cerro Cordero) to 1200 masl (at Ramadilla; Massey 1986: 18), therefore I will follow this terminology. The Ica River Valley is unique among coastal Peruvian rivers that tend to run east-west, transcribing instead a predominantly north-south route.

Water from the highlands, rather than local rainfall, is the main source of moisture for the Ica Valley. In the highlands at Tambo (3,250 masl) the average precipitation is 250.3 mm/year, while in the lower Ica Valley at the town of Ocucaje (320 masl) the average annual precipitation is a mere .3 mm/year. The location closest to Cerro Tortolita with rainfall data is the city of Ica (410 masl), which receives 2.8 mm precipitation/year (ONERN 1971; all data from 1964-1969).

At first glance, the Ica River hardly seems like a promising source of water to support agricultural activity. It has long had a reputation for a paucity of water relative to its

Figure 1.1 Map of the south coast.

neighboring south coast drainages (see Beresford-Jones 2011: 19-20). The Ica River has a mere average surface flow of 257 million m^3/year, while the Chincha Valley to the north has an average annual surface flow of 567 million m^3 and the Río Grande de Nasca drainages to the south have a collective flow of 764 million m^3/year (in addition to subsurface flow).

However, Beresford-Jones points out the importance of subsurface flow to the area (2011: 21-25). The same geological formation that turns the Ica River's course south, the Tablazo de Ica, is also responsible for creating a dam that prevents water from running into the sea and raises groundwater levels. Beresford-Jones compiles data from various sources to arrive at a conservative estimate of average annual water flow of 630 million m^3, counting surface and subsurface water. The notable exception to this average is of course periodic ENSO events that would have caused flooding and recharged groundwater aquifers (Beresford-Jones and Whaley 2021: 4). Thanks to the pumping of groundwater, Ica is an important contemporary agricultural center in Peru, and the ability to grow crops year-round makes its production among the highest in the world (although at the cost of falling water tables; Beresford-Jones and Whaley 2021: 8).

Recent investigations in the south coast and the neighboring highlands of Ayacucho have provided a local history of climatic change over time. Bertil Mächtle and Bernhard Eitel have looked at the Palpa river drainage to reconstruct changes in aridity and humidity (2013: 65-68). They find that around 2250 BC precipitation decreased in the Nasca region, and the desert margin expanded. A period of stable humidity was sustained between 800 BC and AD 650, coinciding with the growth of the Paracas and Early/Middle Nasca cultures. Between AD 650-770 the region was characterized by arid conditions punctuated by occasional large

river discharges. The aridity largely continued through to Colonial times, interrupted by a short period of relative humidity between AD 1330-1440.

During the time of Cerro Tortolita's occupation, the south coast region would have looked vividly different than today. Deforestation (beginning in the prehistoric era [Beresford-Jones et al. 2009: 319-321]) and the modern agroindustry has transformed the landscape, decimating the native flora and fauna. Early colonist Vázquez de Espinosa describes the area as having huarango (*Prosopis pallida*) forests "impenetrable at many points…with many savage wild animals," stretching for five leagues from Ica to Nasca, "so thick that the highway is the only way to get through them and one sees nothing but woods and sky" (1942 [1629: 485], as quoted in and translated by Beresford-Jones and Whaley 2021: 17). While some huarango can still be found on the south coast, the last remaining woodland environment was destroyed in 2016 by illegal charcoal burning. Huarango once would have been a keystone species, enriching the local environment through several processes, namely 1) hydraulic lift, distributing groundwater to upper soil levels through its roots, 2) reverse hydraulic lift, capturing atmospheric moisture and further contributing to soil moisture, 3) increasing soil fertility by adding nitrogen through the decomposition of its leaves, 4) reducing aeolian soil erosion by acting as a wind break, and 5) reducing temperatures under its canopy, benefitting microorganisms that participate in decomposition and further increasing soil fertility (Beresford-Jones et al. 2009: 321-323). Many plants and animals were able to thrive in the conditions created by the huarango, and its environs supported sufficient life as to attract predators including the Pampas cat and pumas (Beresford-Jones and Whaley 2021:8).

Archaeobotanical data paint a picture of a land of contrasts on the south coast. In addition to the dry river valley plain forests where huarango grow, the people of Cerro Tortolita also would have exploited *lomas* fog oases, matorral scrublands in *quebradas* (generally narrow and steep-walled dry streambeds, given to flooding during ENSO events), riparian oases, *puquios* (upwellings of groundwater), and the nearby coast (Beresford-Jones and Whaley 2021: 4-8). The *lomas*, sustained by coastal fog, provide nourishment for a rich array of animal life, including guanaco (wild ancestors to domesticated camelids), desert foxes, rodents, lizards, birds, insects, and land snails (Beresford-Jones and Whaley 2021: 17). Over 500 floral species in 68 families were present on the south coast in the past, although >65% of flora comes from just six families: composite (Asteraceae), grass (Pocaceae), legume (Fabaceae), nightshade (Solanaceae), mallow (Malvaceae), and cactus (Cactaceae; Beresford-Jones and Whaley 2021: 2). Wild fruits, tubers, and seaweed, among others, were important resources that people continued to gather to supplement their agricultural endeavors during the Nasca period. The iconography of Nasca ceramics and textiles supports the importance of both agriculture and gathered resources to the populace. A further description of the flora and fauna important to the Nasca follows.

The Nasca Culture across Time and Space

The people of the Nasca culture lived on the south coast of Peru from about AD 100 – 650, during the Early Intermediate Period (EIP; Table 1.1). Nasca style pottery is not unusual as far north as Chincha and as far south as Acarí, with some rare exchange pieces found even further afield, but the heartland of the culture is considered to be the Ica and Río Grande de Nasca drainages. At present, most excavations during the Nasca era have taken place in the

Río Grande de Nasca drainages, and most knowledge of the Nasca culture in the Upper Ica Valley has come from Sarah Massey's survey and test excavations that took place in the 1980s (Massey 1986). Carmichael has proposed calling the areas participating in the Nasca culture Northern (Ica), Central (northern Río Grande de Nasca valleys, including the Santa Cruz, Grande, Palpa, Viscas, and Ingenio Rivers), and Southern Nasca (southern Río Grande de Nasca valleys, including the Aja, Tierras Blancas, Taruga, and Las Trancas Rivers), to reflect the unique developments within the different areas (Carmichael 2013, 2016).

The Nasca culture is the successor of the Paracas culture, and the distinction between the two is arbitrarily-set at the innovation of pre-fire pigments for ceramic pots (as opposed to applying pigments post-fire; Carmichael 2020: 140; Proulx 2006: 30-31). There was also a shift in the dominant media used to display iconography, from textiles to pottery. Otherwise, there are strong continuities between both cultures, including in the iconography. The earliest

Period	**Approx. Dates**
Late Horizon	AD 1450-1532
Late Intermediate Period	AD 1000-1450
Middle Horizon	AD 650-1000
Early Intermediate Period (Nasca)	AD 100-650
Formative Period	300 BC-AD 100
Initial Period	1800-800 BC

Table 1.1 Overview of the chronology of the south coast. Following Vaughn and colleagues 2016: Table 1.

geolgyphs date to the Paracas culture, a tradition which continued into Nasca times (Lambers 2006). In the Upper Ica Valley, the Early Horizon period spanning the Paracas culture saw an increase in population. Sites consist of hamlets and small nuclear villages, one of which may have had some regional importance given to the presence of ceremonial architecture; otherwise, there is little architectural diversity (Massey 1986: 168, 171, 206). The Lower Ica Valley on the other hand included impressive ceremonial sites, including Animas Altas and Animas Bajas (Bachir Bacha and Llanos Jacinto 2012; Cook 1999; DeLeonardis 1997; Massey 1986: 274-307). Long-distance exchange of Macaw feathers, obsidian, and turquoise occurred, and the Upper and Lower Ica Valleys seemed to participate in different social networks and socio-political systems based on differing pottery styles (Massey 1986: 297). A large population increase is also documented for the Palpa Valley in the Central Nasca Region (CNR) during the Late Paracas Phase (370-200 BC), although it is unclear if this is due to migration or local population growth (Reindel 2009: 448).

The Late Paracas Phase is also considered the first period of wide-spread, sedentary settlement in the Southern Nasca Region, likely due to migration (SNR; Schreiber and Lancho Rojas 2003: 13; Van Gijseghem 2004a: 58-60, 62-63). People here were farmers and participated in regional trade networks. In the SNR, the sites of La Puntilla, Uchuchuma, and La Tiza were occupied during this time. Van Gijseghem argues that La Puntilla was a village site on the frontier of the settlement of the SNR, and that earlier settlers had greater access to resources, including status and ceremonial spaces (2004a). The occupation of Uchuchuma bridges the Paracas-Nasca transition, but there is a break between the two occupations that demonstrates a lack of continuity in social practices, presumably because inhabitants saw benefit in participating in the Nasca social network; however, some aspects of Paracas-era

practice were continued in Nasca times, connecting the people of Uchuchuma to the past (Bautista 2018). The site of La Tiza continues to be occupied all the way through to the Late Intermediate Period, but some social differentiation is evident between the two sectors of the site occupied at this time (Conlee 2016: 91-93).

The chronology of the Nasca culture is generally divided into periods of Initial, Early, Middle, and Late Nasca, though exact dates for each period and developments vary by sub-region (see Carmichael 2019; Vaughn et al. 2014; Unkel and Kromer 2009; Unkel et al. 2012). Numbered ceramic phases correspond to each phase, although there is also some variation in assignment of phases depending on area (see Table 1.2).

The Initial Nasca period bridges the Paracas and Early Nasca division. The earliest evidence for construction at Cahuachi, a major ceremonial center for the Nasca culture during Early and Middle Nasca, also dates to this period. Numerous Initial Nasca settlements are present in the NNR, CNR, and SNR (Reindel 2009: 450-451; Silverman 2002: 58-99; Schreiber and Lancho Rojas 2013: 14). As a generalization, monumental architecture (aside from Cahuachi) was limited, though present in the form of mounds and plazas, and included *campos barridos* (cleared plaza-like areas). In the Upper Ica Valley settlements mostly consist of small nuclear villages, but with a possible regional center at Cerro Yunque (Massey 1986: 186). In the SNR, La Puntilla, Uchuchuma, and La Tiza continue to be occupied. There seem to be some ethnic, status, or functional differences between La Puntilla and La Tiza, as the former has greater amounts of Paracas fineware, apparently participating in the Paracas culture and the transition to the new paradigm centered in Cahuachi, while the latter mainly has local Tajo style ceramics, suggesting that it did not participate to the same extent in the Paracas culture. The lack of Nasca 1 ceramics at La Tiza also suggests that it

Table 1.2 Chronology of south coast, focusing on the Nasca culture, for each sub-region. Note the overlap in the phases within the NNR, as well as the dates in the SNR. These chronologies require additional data for further refinement, and in some cases previously defined phases seem to overlap. NNR information based on Carmichael (2019). CNR information from Unkel and colleagues (2012), based on the Palpa Valley. SNR dates and phases from Vaughn and colleagues (2014), periods based on Proulx (2006).

Period	**Northern Nasca Region (NNR)**		**Central Nasca Region (CNR)**		**Southern Nasca Region (SNR)**	
	Culture/ Phase	*Dates*	*Culture/ Phase*	*Dates*	*Culture/ Phase*	*Dates*
Middle Horizon	Loro	AD 575 - 700	Loro, Wari, Chakipampa	AD 640 - 790	Loro, Wari	AD 555 - 930
EIP	Late Nasca (Nasca 5-7)	AD 475 - 575	Late Nasca (Nasca 6?[1], 7)	AD 440 - 640	Late Nasca (Nasca 6, 7)[2]	AD 285 - 640
						AD 505
	Middle Nasca (Nasca 3, 4, 5)	AD 375 - 475	Middle Nasca (Nasca 4, 5)	AD 300 - 440	Middle Nasca (Nasca 4, 5)[3]	AD 400 - 500
						AD 330 - 480
	Early Nasca (Nasca 2-3)	AD 100 - 375	Early Nasca (Nasca 2, 3)	AD 80 - 300	Early Nasca (Nasca 2, 3)	50 BC - AD 260
						260 BC - AD 55
	Proto-Nasca (Ocucaje 10, Nasca 1, Nasca 2)	200 BC - 100	Initial Nasca (Ocucaje 10, Nasca 1)	260 BC - AD 80	Proto-Nasca (Nasca 1)	270 BC - AD 75
Early Horizon	Paracas (Ocucaje 1-10)	800 BC - AD 50	Paracas (Ocucaje 3-9)	840 BC - 260	Ocucaje 7-8[4]	815 BC - 400

was not interested in participating in the Nasca cult at this time, possibly forming an "independent and/or competitive state" (Conlee 2016: 92). This was a period of transition from the Paracas to Nasca cultures, with some social differentiation present at certain sites (such as La Puntilla and La Tiza), but not much regional integration.

During Early Nasca divergent patterns take place in each of the three Nasca regions. In the southern Nasca drainages people generally lived in small villages (with some exceptions), and public spaces for ceremonialism at village sites disappeared, seemingly in favor of Cahuachi's hegemony over ceremonial life (Vaughn et al. 2016). The sites of Marcaya, Upanca, Uchuchuma, and La Tiza provide information on this period. Marcaya and Upanca are both small village sites, though some social differentiation is evident at the latter (Vaughn 2009; Vaughn and Grados 2006). Uchuchuma's Early Nasca occupation has already been discussed. La Tiza is larger than the other sites, which Conlee suggests is due to its agriculturally-advantageous location. Its size may have given it advantages in accessing trade, as there is greater access to obsidian than at other sites. There is also greater evidence for social differentiation here in the form of higher quantities of elite vessel forms compared to contemporaneous sites (Conlee 2016: 131-132). Evidence from Marcaya, Upanca, and La Tiza supports that villages were self-sufficient and apparently only loosely integrated through a shared religion (Conlee 2016; Vaughn 2009; Vaughn and Grados 2006). In the CNR, there is more between-site variation, suggesting a complex site hierarchy. Los Molinos is an excavated Early Nasca site in this area, and its excavators argue that it was a regional center for a high-status population, based on its planned architecture, size of habitations, scarcity of domestic waste in most areas, and central food preparation facilities (Reindel 2009: 452-453).

The Upper Ica Valley saw another growth in population during Early Nasca, as well as changes in ceramic styles and settlement patterns. It was during this time period, specifically during Nasca 3, that Nasca style ceramics entered the Upper Ica Valley in full force. Prior to this, one style of ceramic (the Campana sub-style of Topará) was found only in elite contexts, and another (Chongos) in domestic contexts (Massey 1986: 318). Now, everyone was using the same style of ceramics. Massey identifies increased inter-site variation at this time, including hamlets, small nuclear villages, large nuclear villages, segregated elite districts, and what she terms a "secondary regional center," located at Cerro Tortolita (1986: 186-188). Segregated elite districts are defined, following Parsons (1971), as "An isolated residential area, situated in a topographically prominent situation, in which is concentrated a high proportion of ceremonial-civic architecture," with no size limit (Massey 1986: 160).Massey considered Cerro Tortolita a secondary political center to Cahuachi, which she saw as the head of a state, in line with common opinion at the time (though I differ from this opinion; further discussion of the question of Cahuachi's status is in the following section).

Cerro Tortolita is the largest site of its time (~AD 250-450) in the Upper Ica Valley with more monumental architecture than all other contemporaneous sites combined. Some aspects of its architecture, such as the use of dressed stone and painted adobe, are unusual for the area (Massey 1986: 191), and its mounds and plazas and recall Cahuachi. The presence of this important local ceremonial center suggests that sociopolitical developments here differed from those in the SNR and CNR. The coincidence of its rise with the mass spread of Nasca style ceramics suggests a new religious movement was gripping the Upper Ica Valley, and that Cerro Tortolita, as the most prominent ceremonial site, was an important player in these

changes. The fact that Nasca style ceramics are found across elite and domestic contexts suggests that the new movement was accessible to people from different walks of life, which may have been an important component of its success. However, many basic questions, such as how this new religious movement related to the social structure at Cerro Tortolita, and the relationship of peoples at Cerro Tortolita to Cahuachi, remain, with implications for better understanding Nasca sociopolitical dynamics at both the level of the Ica and wider Nasca cultural area.

In Middle Nasca, active construction at Cahuachi waned, although the site continued to be revered and used as a burial ground through until Late Nasca. Massey's survey of the Upper Ica Valley only includes sites through the earlier portion of Middle Nasca, but patterns continue from Early Nasca. In the NNR, La Muña appears as an important center, with social stratification evident from burials (Reindel 2009: 454). In the SNR, the innovation of *puquios*, or human-made underground irrigation systems, allowed the expansion of settlements higher up into valleys (Schreiber and Lancho Rojas 2003).

In Late Nasca, divergent patterns continued in the northern and southern Nasca drainages. Population decreased in the north, while there was an increase in population and possibly complexity in the south. At the site of Cocahuischo in the SNR, a culture in transition is evident, holding on to aspects of earlier Nasca society, but also changing in light of Cahuachi's demise. Public ritual space, formerly restricted to Cahuachi, was reclaimed within this domestic site, and people took on multi-regional identities, as seen in ceramic styles (Whalen 2014). In the CNR, the site of Parasmarca appears to have been a planned settlement, and its excavators interpret as an administrative center (Reindel 2009: 455). In the NNR, considerable intersite variation is present, including the presence of some large

settlements (Menzel 1971, as cited in Whalen 2014: 345). There is increasing influence from highland cultures seen in Late Nasca style ceramics, and the Late Nasca period is followed by the Middle Horizon and the incursion of the Wari empire into the area (Schreiber 1999, 2000; Edwards 2010; Edwards and Schreiber 2014; Conlee 2021; Conlee et al. 2021). Local Nasca culture is known as Loro for this period. It appears that Loro peoples had a mixed relationship with Wari colonizers, including resistance (Kerchusky 2018; Spivak 2015), possibly at times violent, and cooperation, up to and including living together in the same sites and intermarriage (Conlee 2021: 409-412; Conlee et al. 2021; Conlee et al. 2009). While there is variation in the reception of Wari peoples by the Loro, overall there is evidence that peoples from the two cultures became "very enmeshed" (Conlee 2021: 412; see also Conlee et al. 2009, Muro et al. 2023).

Cahuachi, a Regional Ceremonial Center

Cahuachi is the largest ceremonial center associated with the Nasca culture. Once thought to be the birthplace of Nasca style ceramics (now thought to have originated in the lower Ica Valley [Carmichael 2016]), it undoubtedly played an influential role in the Nasca culture and the prestige of its associated ceramics. As mentioned, Cahuachi was founded just prior to the beginning of what is considered the Nasca culture, and continued to be a locale of active construction through Early Nasca. By Middle Nasca, construction had ceased but the site continued to be used as a sacred burial ground until Late Nasca. Its location coincides with the emergence of subterranean waterways to the ground surface, a locale thought to have had potent symbolic value in this society whose ceramics heavily reflect agricultural themes and concern with fertility. Cahuachi is also associated with geolgyphs, or the famous

Nasca lines, on the nearby desert pampa, which are thought to have been used for walking ritual processions (Lambers 2006; Reindel 2009: 452).

Silverman estimates Cahuachi to be about 150 ha (Silverman 1993: 57), while Orefici argues that it spanned as much area as 20-24 km^2 (Orefici 2012: 149). Cahuachi contains impressive monumental architecture, but much of its expanse is covered by smaller mounds made by modifying natural rises, alternated with bounded plazas, or *kanchas* (Silverman and Proulx 2002: 99). Despite its size, it is not thought to have had a large resident population or to have been an urban center, but rather to have supported a small resident population of religious elites (Bachir Bacha 2007). Much of the habitation debris as well as the many smaller mounds are thought to be the result of regular pilgrimages by surrounding villagers, who may have brought back finely decorated Nasca style polychrome pots to their villages as signals of their adherence to a common ideological and value system (for further discussion of the distribution of pots through pilgrimage, see Chapter 2; Kantner and Vaughn 2012; Silverman 1993: 311-317; Silverman and Proulx 2002: 224-226, 244-246; Vaughn 2009; Vaughn et al. 2006; Vaughn and Neff 2000, 2004; Vaughn and Van Gijseghem 2007).

Although once thought to be the head of a Nasca state, opinion is now much more divided. Orefici, a long-time excavator of Cahuachi, contends that Cahuachi was the head of a theocratic state (2012, 2016a, 2016b), and others also argue that there was a state level of socio-political complexity during Early Nasca as well (Bachir Bacha 2007; Bachir Bacha and Llanos Jacinto 2006: 84; Isla and Reindel 2006; Reindel 2009). Others see Cahuachi instead as an important pilgrimage center that provided a common ideology for an otherwise middle-range society, including Silverman, who has also excavated at Cahuachi (Schreiber and Lancho Rojas 2003; Silverman 1993; Silverman and Proulx 2002; Vaughn 2009). Conlee's

work at the site of La Tiza has led her to argue that Nasca society was more centralized than one would expect from a middle-range or chiefdom-type society. She argues that Cahuachi may represent a central power with lesser, but still powerful leaders at other sites including Los Molinos (during Early Nasca) and La Muña (during Middle Nasca) in the Northern Nasca Region; and at the smaller sites of Cantalloq, Jumana, and Pueblo Viejo in the Southern Nasca Region (Conlee 2016: 134). However, while Conlee says that Nasca society may have been developing into a "more statelike" society, she does not believe it ever actually became a state. Within the Cahuachi-as-state model, Cerro Tortolita has previously been proposed as a secondary regional administrative center in the Upper Ica Valley (Massey 1986: 209), but evidence presented in this dissertation will not support this hypothesis.

Subsistence

Nasca people relied on a mixture of agriculture, pastoralism, and hunting/gathering of wild resources. The earliest indications of food production come from Initial Nasca contexts in the lower Ica Valley (although cotton for textiles and fishing nets was grown earlier). Agriculture and its environmental impacts then intensified through Late Nasca (Beresford-Jones et al. 2011). Agriculture probably resembled the *huertas* that can still be found in some areas of the Ica Valley today, consisting of intermixed gardens and orchards alongside woodlands (Beresford-Jones and Whaley 2021: 9). Acquisition of water in an area with low rainfall likely included a range of strategies, including floodwater farming and irrigation via canal systems (for which there is evidence in Palpa Valley by the Early Horizon, and in the lower Ica Valley by the EIP). Native fruit trees include pacay (*Inga feuillei*); "lúcuma (Pouteria lucuma); avocado (palta *Persea americana*); ciruela de fraile (*Bunchosia* sp.);

guayaba or guava (*Psidium guajava*); membrillo (*Cordia lutea*); palillo (*Campomanesia lineatifolia*); molle (*Shinus molle*);…chirimoya (*Annona cherimola*);" huarango (*Prosopis limensis*); and guanabana (*Annona muricata*; Beresford-Jones and Whaley 2021: 8-10, 14). Edible cultivars included varieties of beans and legumes, maize, cucurbits, peanuts, chilis, and tubers including jicama, achira, manioc (or yuca), and potato (Beresford-Jones and Whaley 2021: 12; Piacenza 2016; Vaughn 2009: 465), in addition to utilitarian plants such as cotton. Gathering wild plants such as cactus fruit, tubers, tomatíllos, possibly members of the Amaranth family (Amaranthaceae), and other plants with edible greens or seeds, made a significant contribution to the diet was well (Beresford-Jones and Whaley 2021: 14).

Both domesticated and wild animals contributed to Nasca subsistence. There is evidence for camelid herding at Nasca sites, although it seems that camelid fibers for making textiles likely came from the highlands (Cadwallader et al. 2018; Conlee 2016: 124; Renneberg et al. 2009). Wild guanaco, the ancestor to domesticated camelids, was hunted too. Other animals such as deer (Cervid), small and large birds (Aves), guinea pigs (*cuy*; *Cavia porcellus*), and viscacha (Chinchillidae), are well-documented in Nasca archaeological contexts as well (e.g., Conlee 2016: 14; Vaughn 2009: 129-132). Marine resources including shellfish, fish, and sea mammals also contributed to diet. Land snails from *lomas* environments may have been consumed too, and were recovered at Cerro Tortolita. Some estimate that up to 50% of the Nasca diet originated from wild resources (Beresford-Jones and Whaley 2021: 14; Cadwallader et al. 2012).

Description of the Site

The site of Cerro Tortolita is spread across three quebradas. The Ceremonial Zone occupies the northern-most quebrada, and the Primary Residential Zone occupies the more southerly two (Figure 1.2). Both are approximately 10 hectares in size. The built environment occupies the lower levels of each quebrada, as the ground slope becomes perilously steep as one moves towards the peaks. Indeed, to even occupy the lower levels of the quebradas much terracing was needed in the Primary Residential Zone. It is possible to reach each quebrada by traveling over the bisecting peaks, and there is evidence for human activity, including potential burials, on each of the peaks dividing the site. Narrow, zig-zagging paths guide the way over the peaks, but it is difficult to say if these were prehistoric or modern, and some may be the result of animal travel. During our time working at the site we generally found it easier to traverse different sectors by going down to the modern road, and then walking up the destination quebrada.

Cerro Tortolita has been dated to Early-Middle Nasca, based on the prevalence of Nasca 2-5 ceramics as well as five radiocarbon dates. Exceptions for some areas are noted below. A very limited number of possibly earlier, incised ceramics were identified, as well as some Late Nasca sherds. The latter are very few and restricted to the ground surface or superficial contexts. The potentially earlier sherds are so rare that they may have been heirlooms. Here, I will further describe the Primary Residential and Ceremonial Zones, although I leave an in-depth description of the Ceremonial Zone and the findings of excavations there (led by Kevin Vaughn; Vaughn et al. 2019) for Chapter 3, where it is most relevant.

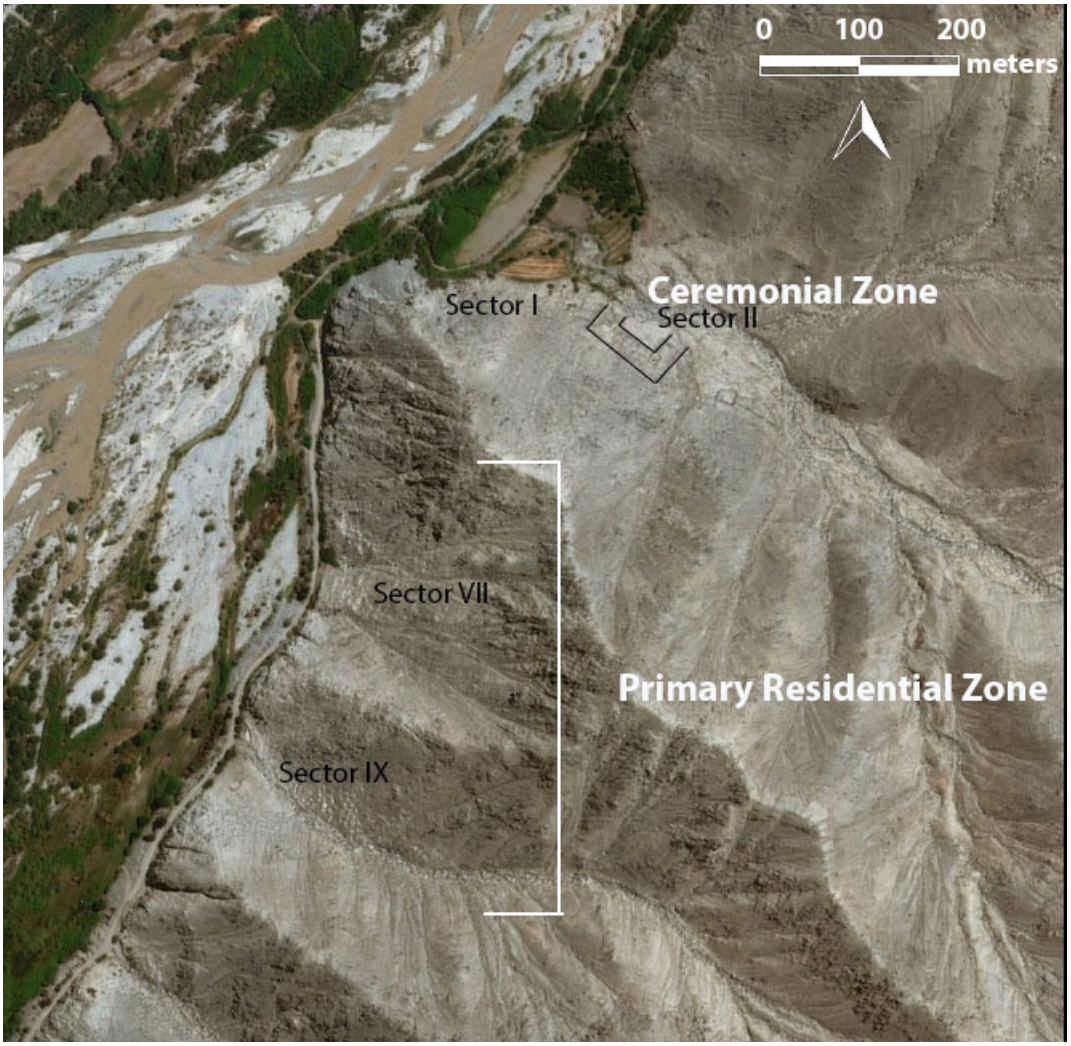

Figure 1.2 Overview of the Ceremonial and Primary Residential Zones of Cerro Tortolita.

The Primary Residential Zone

The Primary Residential Zone contains approximately 150 visible circular or oblong terraces and structures spread over two quebradas (Figures 1.3, 1.4, 1.5). Following Vaughn and colleagues, it is divided into Sector VII (the north-and-east sides of the more northern residential quebrada), Sector VIII (located in the same quebrada as Sector VII, but high upon

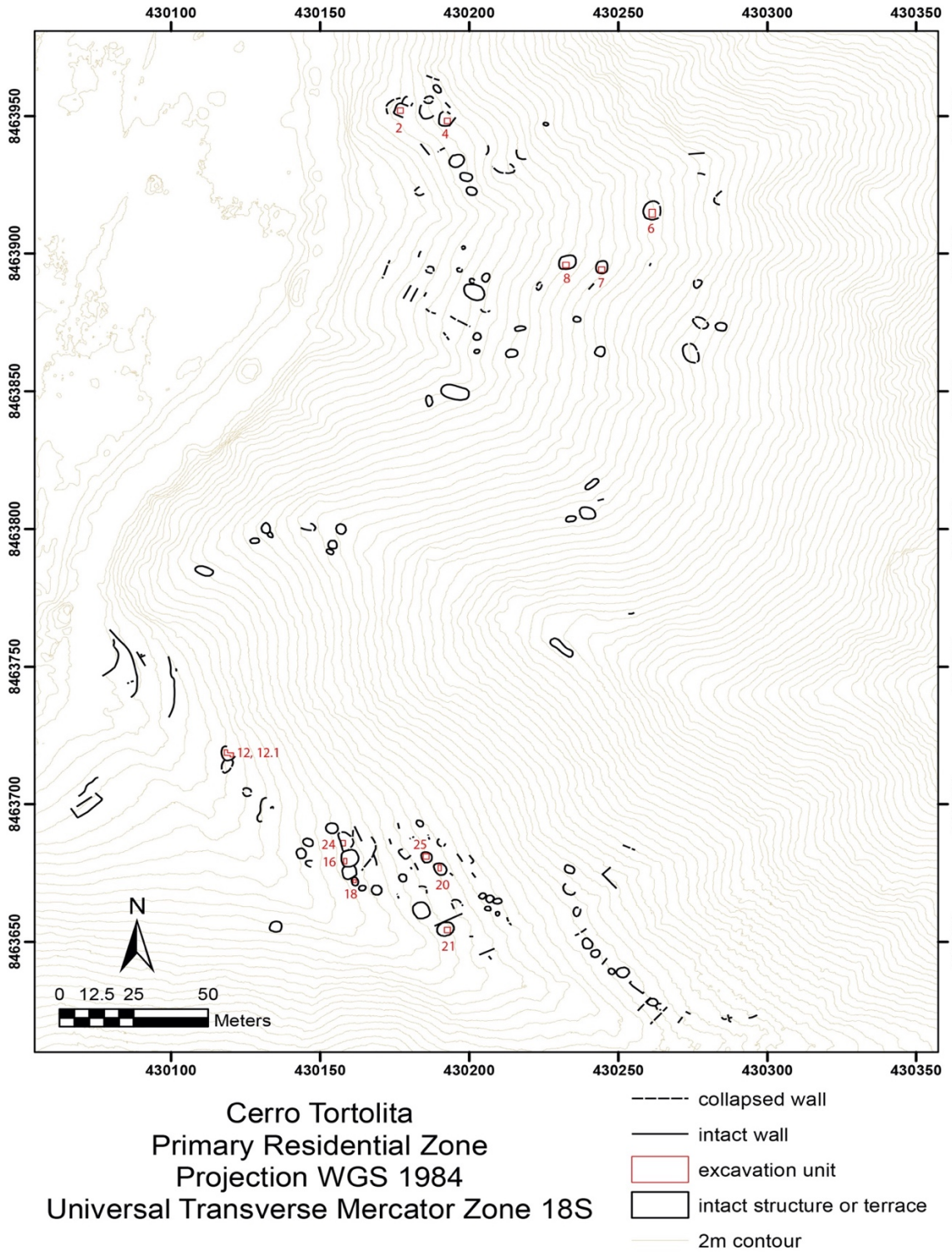

Figure 1.3 Overview of the Primary Residential Zone with units labeled.

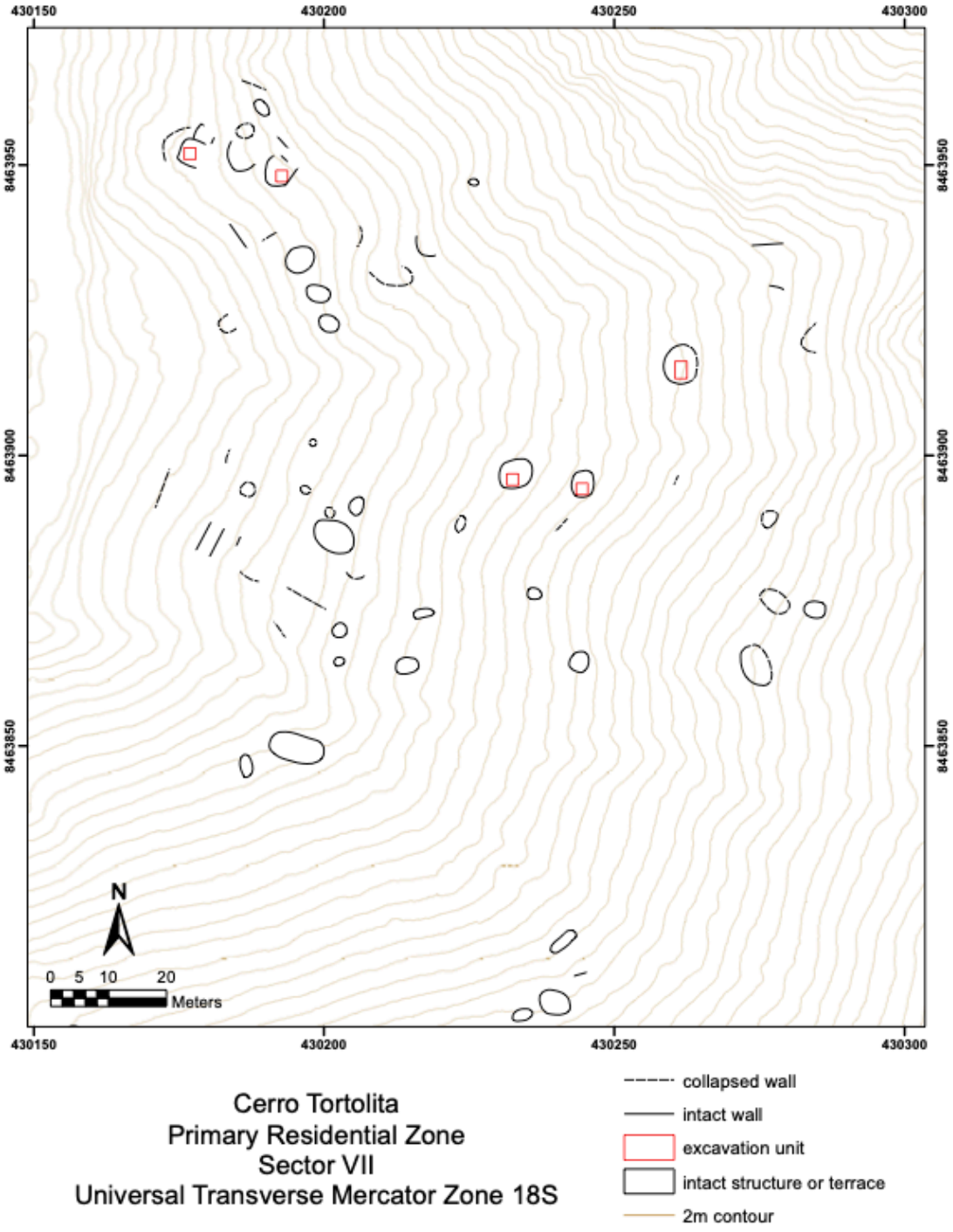

Figure 1.4 Close-up map of Sector VII the Primary Residential Zone.

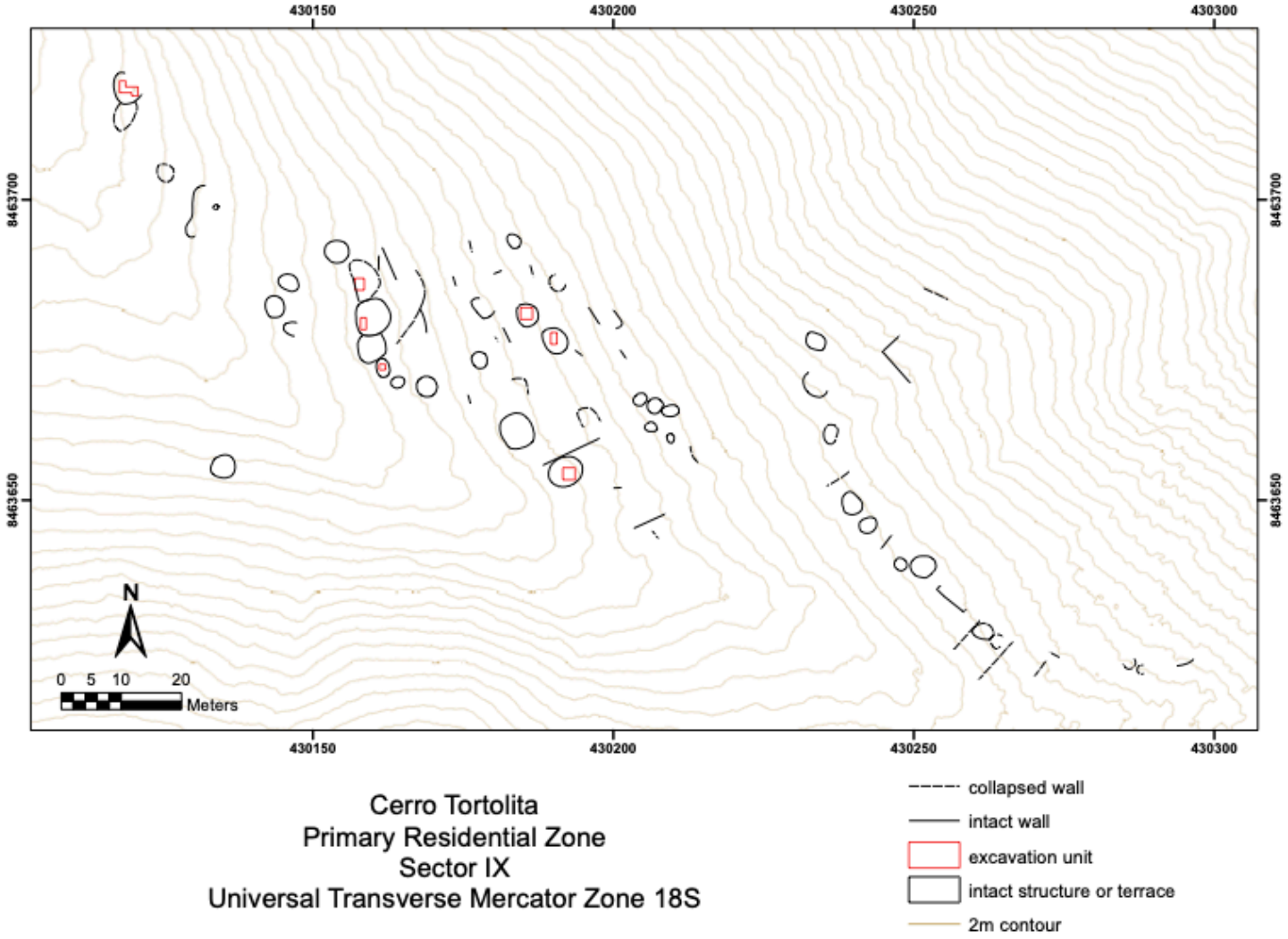

Figure 1.5 Close-up map of Sector IX of the Primary Residential Zone.

the southern side, close to the ridge crest and remote from Sector VII), and Sector IX (the subterranean tombs, topped by large, horizontal, flat stones. Tombs are also located in some of the lower terraces of Sector VII, visible today due to looting. The architecture of the different Primary Residential Zones is similar, and will be described together.

Constructions in the Primary Residential Zone tend to cluster, possibly in areas on which it was easier to build. The terraces range from about 10 - 30 m^2 in size, and are generally about 10 - 20 m in length. Terraces are sometimes subdivided, or perhaps it may be more appropriate to say they are agglutinated. The down-slope side of each terrace is supported by a stone retaining wall, and terraces are generally completely ringed by small stones that range from one to several courses high, sometimes more. Today, terrace walls in many cases are crumbling and ephemeral. Efforts to expose them through excavation were not generally successful, as the wall seemed to only exist on the ground surface. The exception to this is a wall in Unit 24, which was visibly robust above ground, and may have been either a terrace retaining wall, a structure wall, or both at different points in time. Walls for structures located within the terraces are largely not preserved and may have been made of *quincha* (cane and mud). Terrace border walls may also have served as foundations for structure walls. The ground surfaces of the terraces today are sandy areas clear of rocks in an otherwise rocky terrain, and are thus visible in modern aerial photography or on Google Earth. While some terraces are located on both the northern and eastern sides of the Sector VII quebrada, most appear on the northern side of Sector IX, likely due to the steepness of the southern side.

Three anomalous structures were identified in Sector IX of the Primary Residential Zone. At the base of Sector IX, a large, flat, area with two levels is visible. It is semi-circular

in shape, about 25 m long (north-south) and 16.5 m wide (east-west) at its widest spot, although its width is interrupted by the construction of a modern day aqueduct and road. Ceramics on the ground surface fit into Early-Middle Nasca, as they do for the rest of the site, but no excavations were undertaken in this area, thus dating cannot be confirmed. It is possible that ground surface ceramics are the result of erosion or modern human disturbance. If contemporaneous with the main occupation of Cerro Tortolita, this area may have formed a plaza for public rituals, although it is also possible that it served as a terrace for several structures no longer visible, temporary housing for pilgrims to the Ceremonial Zone, a corral for camelids, or other functions. The second anomalous structure is a terrace in Sector IX with a large boulder in its middle, which Vaughn and colleagues interpret as a *huanca* (a sacred, animate rock) in a small, but public, ceremonial space (Vaughn et al. 2019: 18). However, I am less certain that this stone was specially placed, and instead believe its placement may be the result of geological activity. Lastly, a rectangular structure with tall standing walls is located on the southern side of the Sector IX quebrada, in a slightly elevated position; it seems to post-date the site, given the large batán that is incorporated into its western, valley-facing wall. Its location is just south of the semi-circular, plaza-like area.

The Ceremonial Zone

Two-thirds of all ceremonial architecture in the Upper Valley during Early Nasca is located at Cerro Tortolita, making it an important ceremonial site (Massey 1986: 209). The architecture of the Ceremonial Zone is primarily spread east-west on the southern side of the quebrada, with a cemetery of uncertain date occupying the northern side. It is divided into six sectors, which I will describe from east to west (Figure 1.6; Vaughn et al. 2019). Sector I

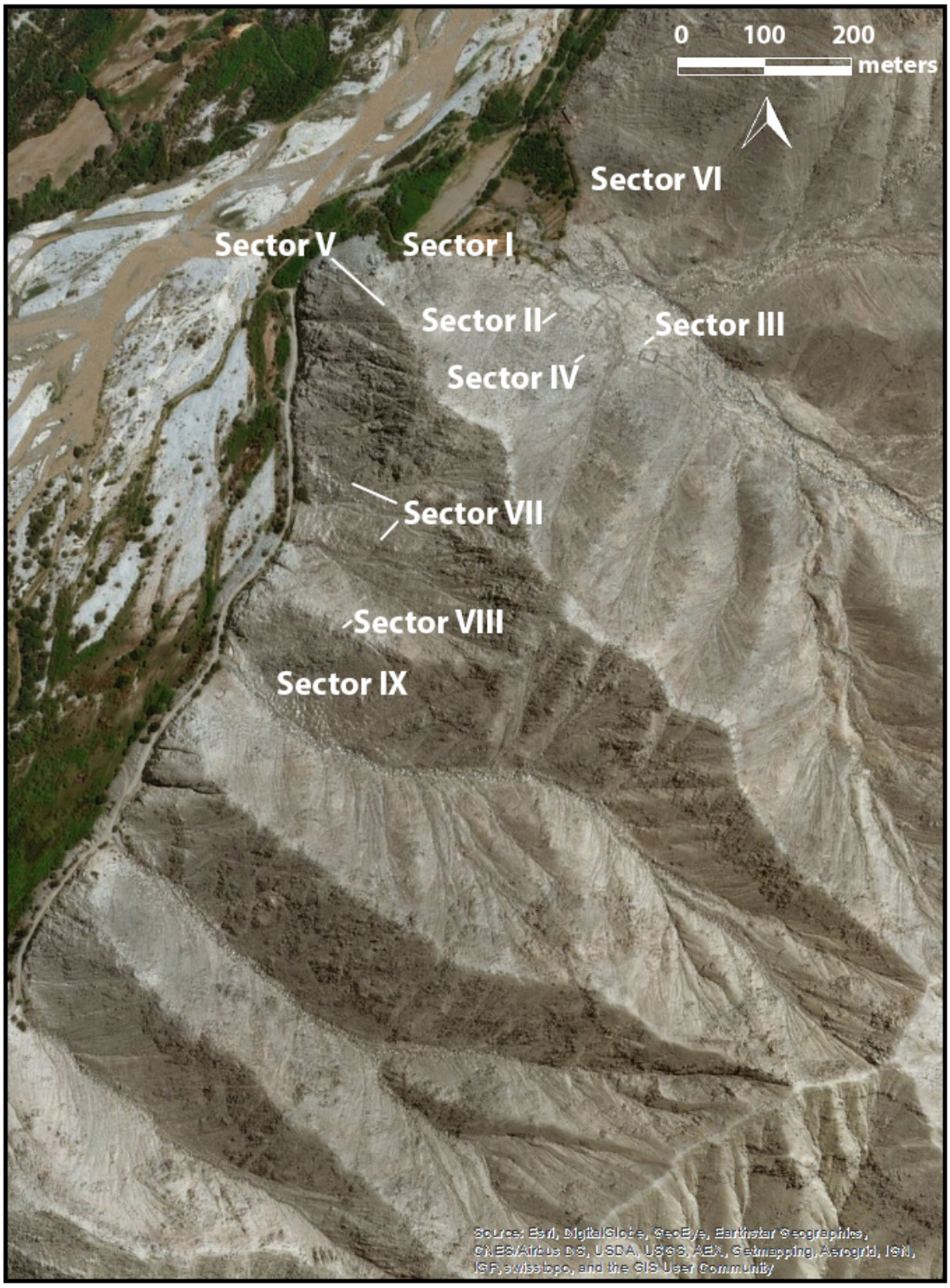

Figure 1.6 Overview of sectors across Cerro Tortolita.

pertains to a series of long, linear terraces subdivided into structures (Figures 1.7, 1.8). It abuts Sector II, the largest example of monumental architecture at the site, to the east.

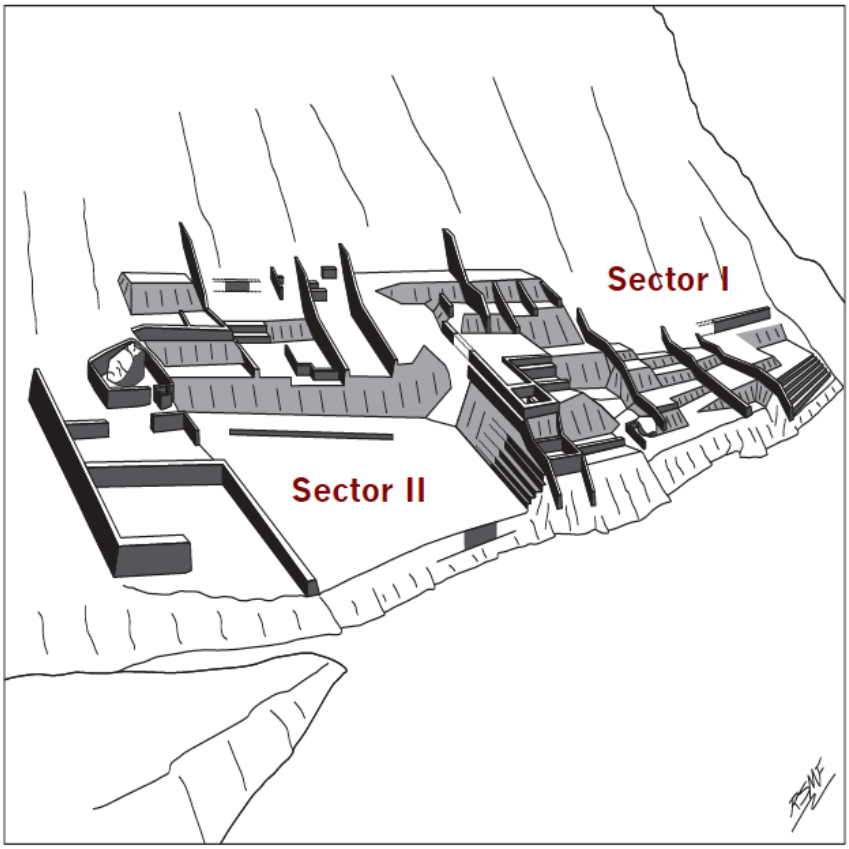

Figure 1.7 Artist's rendering of Sectors I and II, including the U-shaped platform mound and associated plaza (from Vaughn et al. 2019).

Sector II consists of a U-shaped platform mound surrounding a plaza of about 50 x 25 m (Vaughn et al. 2019). The mound was built into the existing hillside and has at least two terraces built above it. Some later ceramics were found in the surface context of the plaza, and are considered to post-date the main occupation. The easternmost arm of the U-shaped

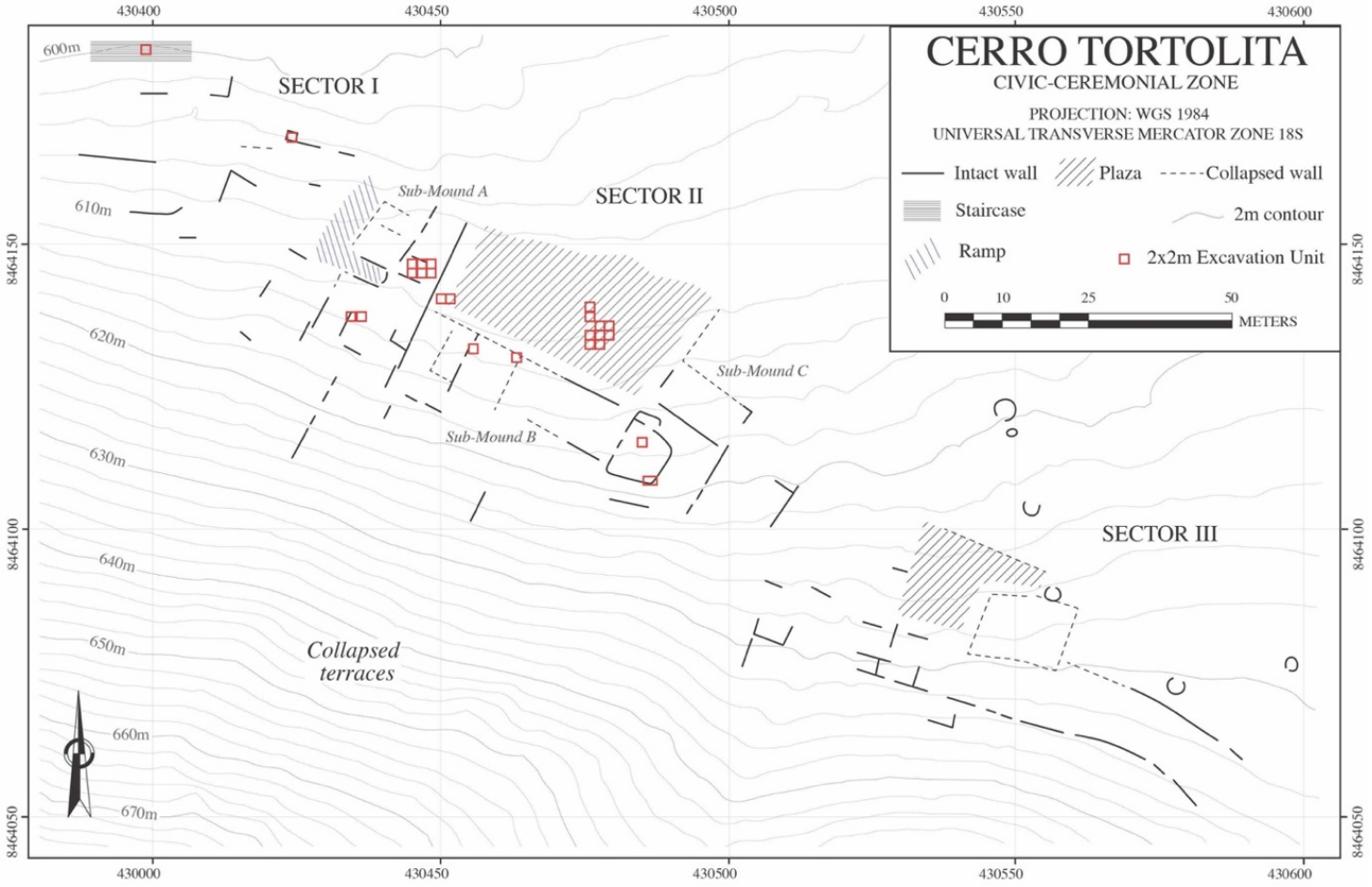

Figure 1.8 Map of Ceremonial Zone showing 2014 excavations led by Kevin Vaughn (from Vaughn et al. 2019).

mound, Sub-Mound C, also contains some later ceramics from the Late Intermediate Period, and its above-ground architecture is incongruous with the rest of the mound. The walls are more roughly built, lacking in plaster, and utilize groundstone from an earlier occupation in their construction. Therefore, Sub-Mound C is considered to have an intrusive LIP element and findings from excavations in this area are generally not discussed throughout. A possible *huanca* in the form of a large boulder stands in the middle of this sub-mound.

To the east is Sector III, a secondary platform mound and plaza, with a restricted mound access point. Small circular structures and at least one tomb are also in this sector. Further east is Sector IV, which consists of terraces in poor condition and some looted tombs. Additional looted tombs are found in Sector V, along the ridge between the Ceremonial and Primary Residential Zones. This area is believed to have been used primarily before and after the main occupation at Cerro Tortolita, however (Vaughn et al. 2019: 17). The aforementioned cemetery on the northern side of the quebrada is named Sector VI, and contains an estimated 60-70 tombs, all badly looted (Vaughn et al. 2019: 18). The dating of this sector is unknown due to a paucity of ceramics on the ground surface, but it may well be associated with the Early-Middle Nasca occupation of the site given its location. Today, modern agriculture has infringed upon Sector I and possibly into Sector II (personal communication, George Chauca via Kevin Vaughn 2021).

Description of Excavations

Methods

A total of 12 units were excavated, or about 8% of the approximately 150 terraces. Units were generally 2 x 2 m in size, with the exception of Unit 18 (1x1 m, placed in a small structure), Unit 20 (1 x 2 m), Unit 6 (2 x 3 m), and Unit 12 (two 1 x 2 m units placed in an L-shape). Excavations proceeded stratigraphically, with special designation for features, which were generally ash lenses. Loci were labeled alphabetically, with no correspondence intended between units (i.e., Capa B in Unit 16 does not correlate with Capa B in Unit 12). Loci were further divided into arbitrary levels if they exceeded 10 cm in depth (e.g., Capa B, Capa B-1, Capa B-2, etc.). Each locus was photographed and hand mapped at the beginning and/or end of its excavation, and unit profiles were drawn to scale upon completion of the unit. All excavated materials were screened, with samples taken of strata of special interest or noted to contain smaller material to screen through a finer mesh. In addition, a 3 L soil sample was taken from each stratum for the purpose of archaeobotanical analysis. Special artifacts or potential radiocarbon samples were labeled "articles" (*artículos*) and hand-mapped in 3-D space, as well as photographed *in situ*. All units were excavated to bedrock or sterile soil, with the exception of Unit 4, which could no longer be meaningfully excavated because the unit was almost entirely blocked by large, immovable rocks uncovered during the course of excavation.

Terraces were mainly chosen for excavation based on their state of preservation, as visible from the ground surface, including the definition of their terrace walls, presence of other walls within the terrace, absence of looters' holes, and a minimal degree of erosion. Unit 2 was chosen for its prominent location on the face of the quebrada, looking over the valley (Figure 1.9). Units were also placed in different sectors (VII and IX) and at different elevations within each sector to capture spatial variation. The location of each unit was

Figure 1.9 View of the location of Unit 2 (pre-excavation), overlooking the Upper Ica Valley.

recorded using a hand-held Garmin GPS unit. In addition to excavations, an aerial map was made of the Primary Residential and part of the Ceremonial Zone by drone that shows the location of each unit.

Description of Stratigraphy

The soil of the Primary Residential Zone is primarily a fine, sandy silt, light brown in color. The many rocks present on the modern ground surface continue upon excavation, at times making excavation a challenge. Rocks often had to be removed from the unit separately from the soil, due to repeated damage to screens. The soil is mostly fairly loose, with some loci presenting more compaction than others. Cultural deposits generally persisted

to a meter in depth, sometimes up to 1.5 m, with the exception of two units where bedrock was reached at a much shallower depth (Units 2 and 7), and one previously mentioned unit whose cultural deposit depth could not be confirmed due to the intrusion of rocks making further excavation untenable (Unit 4). Most units did not include an identifiable floor, prepared or informal. This situation is not necessarily unusual in the south coast region, as a similar situation occurred at the village site of Marcaya in the Río Grande de Nasca drainage, despite the presence of some *in situ* features such as hearths (Vaughn 2009). The fine, sandy soil of the region, combined with both erosion through aeolian/alluvial forces and landslides of variable severity (due to the unstable slopes upon which the Primary Residential Zone is located), may work against the long-term preservation of hard-packed floors.

At least two phases of construction occurred in the Primary Residential Zone. The terrace walls that are plentiful across the surface of the site are interpreted as part of the most recent occupation, and the living surfaces associated with them are likely located close to the current ground surface, given that the terrace retaining walls meet the ground surface. The presence of some large *batanes* projecting from just below the modern ground surface further lends credence to the interpretation that the (most recent) archaeological living surfaces lie at a relatively shallow depth.

The discovery of prepared floors in three units (Units 6, 12.1, and 20), each about a meter below the current ground surface, provides evidence for a second phase of construction, though there may have been intermediate phases as well (Figure 1.10). In all cases sterile soil was reached immediately or shortly beneath the floor level, leading to the interpretation that the floors represent the earliest phase of occupation. Ceramics from Nasca phases 3-5 (and particularly 4-5) were found throughout the stratigraphic sequence, without

Figure 1.10 Intact floors discovered during excavation. A) Unit 6, Capa G; B) Unit 24, Capa O, cut by context in which large olla was buried (Capa N); C) Unit 12.1, Capa Q, the upper floor context; D) Unit 12.1, Capa R, the lower floor context; E-H pertain to Unit 20: E) Unit 20, Capa J; F) Unit 20, Capa J, close-up of orange stains; G) Unit 20, Capa K; H) Unit 20, Capa K, close-up of white spots.

Figure 1.10 Continued.

distinction, suggesting that occupation of the terraces was fairly continuous within a relatively short time span, and this inference is confirmed through radiocarbon dating (Figure 1.11; more information is provided below). The approximately meter-deep deposits between the prepared floors and current ground level are interpreted as primarily the result of intentional fill to build up a level surface for living, and dumping (seen especially in the form of ash lenses in Unit 25), though erosion and aeolian soil deposition may have played a role too. Some contexts had notably more dense cultural material than contexts immediately

Figure 1.11 Example of ceramics from the Primary Residential Zone. Inventory numbers (Bag-sherd number): A. 88-7, B. 165-5, C. 189-1, D. 206-6, E. 207-17, F. 1-4, G. 4-2, H. 4-1, I. 118-5, 118-9, J. 289-1, K. 376-7, L. 209-20, M. 233-12, N. 262-9, O. 57-3, P. 20-1, Q. 20-2, R. 194-1, S. 200-1, T. 291-1.

above or below them, consistent with the movement of fill from different sources.

In two cases, the prepared floors were associated with walls (Figure 1.12). In Unit 6, two walls forming a corner were found. The east-west wall extends to the modern ground surface, but the north-south wall it adjoins does not. The latter was likely impacted by, and ultimately buried by, later erosion. The prepared floor in Unit 6 (Capa H) is made of a white clay soil that is smoothly joined with the wall, partially running up it vertically. It is located only on the south side of the east-west wall, and this side is interpreted as belonging to the interior of the structure. Underneath the floor, running the entire 2 m length of the excavated east-south wall, was a dense ash lens, which may be from a foundation ceremony (though the ash could be a result of dumping as well). In Unit 12.1 a floor was also associated with two adjoining walls forming a corner, running east-west and north-south, though neither of these walls were visible on the modern ground surface. A third wall, possibly a bench, projected north from the middle of the east-west wall, though no floor was associated with it. The floor here (Capas Q and R) was hard-packed silt, even, and brown in color, though Capa Q also had some ashy areas. There were two distinct layers to this floor, suggesting the floor was renewed at some point in time.

Unit 20 contained the only floor not found to be directly associated with a wall (although it is possible that a wall existed, but was not present in our excavation unit). The first level of the floor (Capa J) was composed of hard-packed, level silt. It was brown in color with orange stains, possibly from organics, and some white stains, possibly from shell or bone. The second level of the floor (Capa K) was similar but without stains.

Unit 24 has a possible floor as well (Capa O), though this context is less clear than the other floors identified. It is silty, pale brown in color, compact, and more gravelly than the

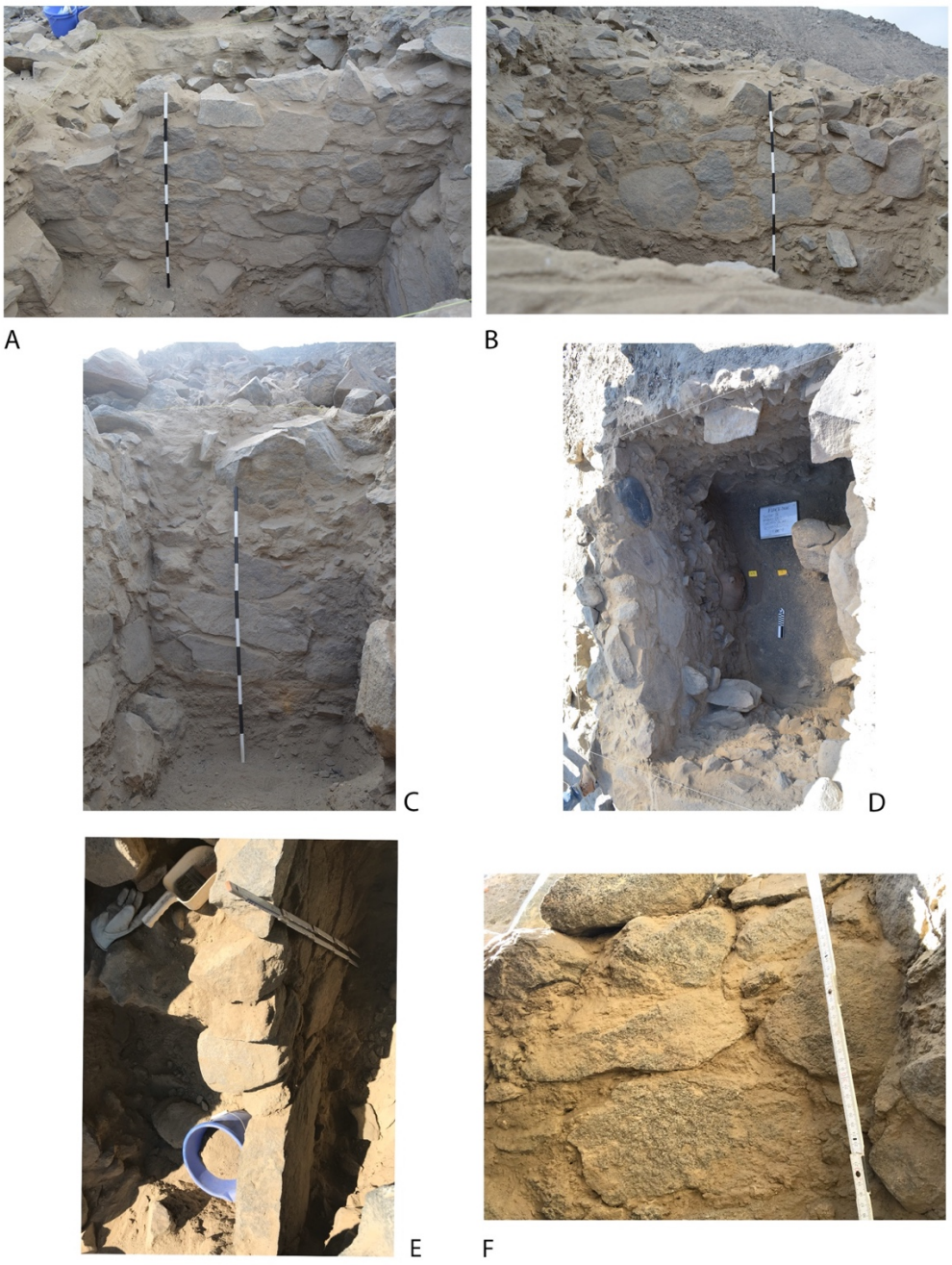

Figure 1.12 Walls located within excavated units. A) Unit 6, east-west wall, looking north; B) Unit 6, east-west wall, looking south; C) Unit 6, north-south wall, looking east; D) Unit 24 wall, not directly associated with an identifiable floor; E-H pertain to Unit 12.1: E) Unit 12.1 east-west wall and intersecting wall to the north; F) close-up of Unit 12.1 east-west wall, looking north; G) Unit 12.1 north-south wall; H) view of all walls in Unit 12.1.


G


H

Figure 1.12 Continued.

other floors. Little cultural material was recovered. Capa O is cut on the west side of the unit by Capa N, which surrounds the second olla found in the unit wall (for more detail see Chapter 3).

Radiocarbon Dating

Five carbon samples from three units were taken from the Primary Residential Zone for AMS radiocarbon dating (Table 1.3, Figure 1.13). All samples except for UCI-237919 (Unit 12) are from floor contexts. Sample UCI-237919 was included to test how much time passed from the deep, prepared floor to the more superficial fill contexts of Unit 12/12.1 (a single unit that was extended). As mentioned, the consistency of the ceramic sherd phases throughout the stratigraphy of the units suggests a continuous occupation, and the dates from Unit 12/12.1 support this, demonstrating that no more than 44 years, and possibly much less

Table 1.3 AMS dates from both the Primary Residential and Ceremonial Zones (PRZ = Primary Residential Zone, CZ = Ceremonial Zone). All sample numbers beginning with "UCI-" were run by Gorman at the UC Irvine Keck Carbon Cycle AMS Facility. All sample numbers beginning with "BA-" were run by Vaughn at Beta Analytic (Vaughn et al. 2019). Regardless of origin, all samples in this table were calibrated using OXcal v4.4.2 (Bronk Ramsey 2009) and the SHCal20 calibration curve (Hogg et al. 2020).

Zone	Sample #	^{14}C age		Calendar Age Range (BC/AD)				Context			Material
		(BP)	±	*From*	*To*	*%*	*Median*	*Area*	*Unit*	*Context Description*	
PRZ	UCI-237918	1845	20	135	328	95.45	225	PRZ	20	floor (Capa J)	maize
	UCI-237916	1745	20	252	411	95.45	344	PRZ	6	floor (Capa H)	maize
	UCI-238334	1745	15	252	411	95.45	346	PRZ	6	floor (Capa H)	wood
	UCI-237917	1705	20	340	425	95.45	389	PRZ	12.1	floor (Capa R)	maize
	UCI-237919	1690	20	342	469	95.45	398	PRZ	12	fill (Capa D)	wood
CZ	BA-388916[1]	3440	30	-1873	-1549	95.45	-1696	CZ, Sector 1	25	floor	wood
	BA-388913	1730	30	252	419	95.45	360	CZ, Sub-Mound A	4	floor assoc'd plastered box	wood
	BA-388914	1700	30	255	521	95.45	391	CZ, Sub-Mound B	22	constructed wall	wood
	BA-388915	1640	30	388	542	95.45	468	CZ, Sector 1	25	floor	wood

[1] This sample is believed to be an example of "old wood," and is not considered reliable.

time, elapsed between the floor (Capa R) and the upper fill (Capa D). Dates from the Ceremonial Zone are included in Table 1.3 and Figure 1.13 to support the contemporaneity of the two Zones.

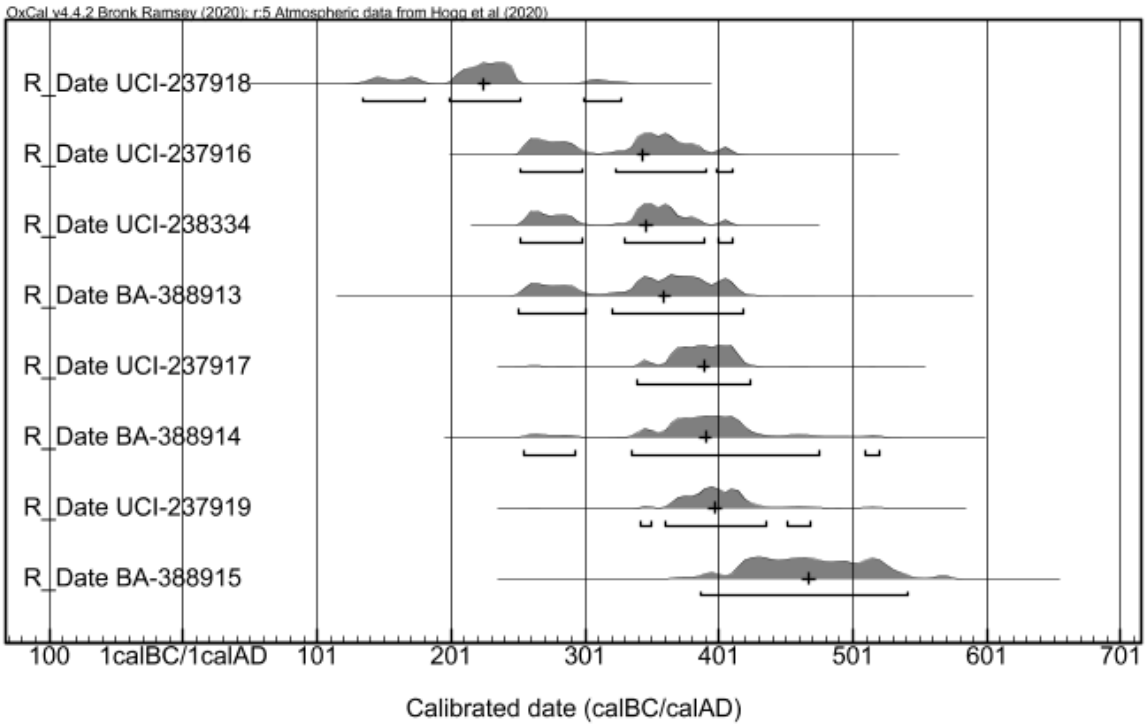

Figure 1.13 Plot of the AMS date probability distributions.

Overview of Chapters

Through three chapters, I seek to define the degree and nature of social differentiation at Cerro Tortolita, highlighting the importance of religious authority in the social construction of the site. The first chapter uses INAA of ceramic pastes to address regional as well as site-level power dynamics. Although the Cahuachi cult was clearly influential at

Cerro Tortolita, it appears that religious specialists at the site were acting largely independently of Cahuachi, at least as far as can be inferred from the movement of ceramics. Power at Cerro Tortolita was therefore "locally grown," relying on local reinterpretations of the Cahuachi cult, and the religious specialists here may have had a distant, cooperative, or even competitive relationship with Cahuachi, or some combination thereof. Part of the power of religious specialists may have come from their ability to produce fineware Nasca style ceramics themselves, in their role as shamanic artisan-chiefs, or something like it. The second chapter studies disjunctures in ritual activities between areas of the site, and finds a widely shared corpus of ritual items and ideology, alongside some differences that underscore the specialized religious knowledge and abilities of Ceremonial Zone religious specialists. Notably however, these distinctions largely do not coincide with expressions of economic power. The third chapter studies the expression of commensality, particularly special commensality, at the site, and concludes that the main distinctions across the site are in terms of the intensity of use of a space for special commensal events, as well as in group size. Socio-political competition is mainly expressed through an exertion of religious authority, rather than socio-economic status. Based on these three studies, I argue that social differentiation at Cerro Tortolita was mainly constructed through religious activity, rather than politico-economic, and that religion provided various means through which all members of society, from religious specialists to commoners, participated in the construction and maintenance of social relations at the site[1].

[1]Some data used in this dissertation is available on The Digital Archaeological Record (tDAR) at tdar.org.

CHAPTER 2

Pots, Pilgrimage, Production, and Power: Investigation of Nasca Style Pottery from the Upper Ica Valley Using Instrumental Neutron Activation Analysis

The relationship between the Río Grande de Nasca drainage in the Southern Nasca Region (SNR) and the Upper Ica Valley during the Early Intermediate Period is still largely unexplored, although they appear to have had close interaction. However, understanding this relationship has repercussions for understanding social structure in both areas. The polychrome Early Nasca style ceramics found in each are remarkably similar, despite a distance of ~160 km, or a 3-4 days' walk, between the Upper Ica Valley and the heart of the Río Grande de Nasca drainage (at the site of Cahuachi, a ceremonial center; Proulx 1968; Figure 1.1). The model for the distribution of Early Nasca style fineware within the Nasca drainage has been that ceramics were centrally produced at the pilgrimage center of Cahuachi and then brought back to villages by pilgrims. Archaeological evidence for ceramic production, INAA, and other compositional work has provided support for this model within the SNR immediately surrounding Cahuachi, although more recent compositional studies present potential complications to previous interpretations (Vaughn et al. 2006; Vaughn et al. 2011; Vaughn and Neff 2000, 2004; Vaughn and Van Gijseghem 2007). Given the large quantity of Early Nasca style ceramics in Upper Ica and its distance from the SNR, local production has been assumed to be responsible for most of the ceramics found there. However, whether movement of pots was occurring between the SNR and the Upper Ica Valley through means such as pilgrimage is still unknown, though highly relevant. Such a

connection through ceramics likely would have had cultural importance due to the religious connotations of Early Nasca style ceramics from the SNR.

The main goal of this study is to investigate whether the people living at Cerro Tortolita had access to Early Nasca style polychrome ceramics manufactured in the SNR. This question has relevance for addressing religious authority at Cerro Tortolita, and how connections to Cahuachi through pilgrimage played a role in social structure. The research goals can be further defined as three objectives: 1) Test whether locally produced ceramics have a distinct chemical signature from SNR-produced ceramics, 2) identify whether or not SNR-produced ceramics are present at Cerro Tortolita, and 3) if SNR-made ceramics are identified at Cerro Tortolita, to test whether they are a restricted-access good only found in the Ceremonial Zone, where ritual specialists lived and/or worked, or if they are present in the Primary Residential Zone, where most of the population resided (Figure 1.2). Identifying who had access to SNR-produced ceramics, if anyone, will help us better understand relationships centering around religious authority within Cerro Tortolita, as well as the relationship between the SNR and Ica.

Nasca Ceramics and Previous Studies of Production

Origins

The Nasca style of ceramic decoration has its roots in Paracas ceramics. Paracas and Nasca iconography are quite similar, and the break between the two is not based on discontinuity in style but rather a technological innovation, that is, the use of pre-fire slip paints for decorating pots (Proulx 2006: 13-14). Paracas ceramics were decorated using

incised lines and resin paints that were applied after the ceramics were fired, giving the colors a generally darker and muddier appearance. The innovation of paints that could be applied before the pot was fired allowed for harder (and hardier) paints and clearer colors. Archaeologists generally consider the medium of choice for iconography and design in the Paracas culture to have been textiles rather than pottery, but this preference shifted in favor of pottery during the Nasca culture (Proulx 2006: 30-31). Paracas designs can be found along the south coast, but the origins of what is now called the Nasca style seem to be at Cahuachi, with immediate precedents in the Ocucaje Basin of the Ica River (Carmichael 2016: 58, 66, 75-77). Carmichael argues that people from Ocucaje moved to the SNR, and notes the coincidence of the origins of the main deity of Nasca iconography, the Masked Being, with the construction of the first large temples at Cahuachi (Orefici 1996, 2012, as cited in Carmichael 2016: 77; for more on this migration see also Silverman 1993: 367; Soßna 2015: 265; Van Gijseghem 2004a, 2004b, 2006: 436).

Production, Distribution, and Society

A solid corpus of compositional research has been done on Nasca style ceramics to date, although not on ceramics recovered from the Ica Valley. Several studies have established the homogeneity of ceramic paste compositions during the Early Intermediate Period in the SNR (Poirier 2014; Vaughn et al. 2006; Vaughn and Neff 2000, 2004; Vaughn and Van Gijseghem 2007). A clay survey led by Kevin Vaughn concluded that there was sufficient heterogeneity in the clays of the SNR that distinct clay source zones should be identifiable through chemical analysis, as well as identifying a likely source for the predominant paste used in Early Nasca style ceramics near Cahuachi (Vaughn's "Group 1,"

referred to for the rest of this text as “SNR Group 1” to differentiate it from the groups identified at Cerro Tortolita). Although the exact clay source was not found, an adobe brick from the site proved a good match for the SNR Group 1 clays, suggesting the clay source was nearby.

The above information dovetails nicely with the finding that most evidence for ceramic production in the SNR thus far has come from Cahuachi (see overview in Carmichael 2020: 145), rather than any of the habitation sites (with the exception of isolated finds of tools that could have been used for pottery production, none of which are associated with firing pits and are not considered as evidence for on-site production; detailed in Carmichael 2020: 137, 142-147 and Silverman and Proulx 2002: 60). Cahuachi has provided plentiful evidence of craft production activities such as ceramic manufacture, metallurgy, textile production, and the making of shell beads (Bachir Bacha 2007). Bachir Bacha interprets these crafts as taking place under the control of priests at the site, though they may also have produced goods such as ceramics themselves. Based on these data, Vaughn suggests that Early Nasca style ceramics with SNR Group 1 pastes were manufactured at Cahuachi and distributed to the surrounding villages through pilgrimage. In this model, pilgrims would carry the highly decorated pots back to their homes “costly signals” that they were invested in a belief system shared by their neighbors (Kantner and Vaughn 2012).

The homogeneity of pastes, limited evidence for production, and quality of Early Nasca style ceramics (also referred to as fineware) together imply a degree of specialization. The paste generally consists of thin walls and small, sparce inclusions, and the polychrome designs range from geometric shapes to plants, animals, humans, and supernatural beings. While some argue for full-time specialists, most archaeologists feel the sum of the evidence

points to production by part-time specialists, who may have been shamanic-artisan chiefs (Carmichael 2020: 138-139, 155; Carmichael 1998: 214-215; Silverman and Proulx 2002: 59-61; Vaughn and Neff 2000: 88).

Despite the fine nature of Nasca fineware ceramics and their likely somewhat restricted production, their use was not restricted; they are widely distributed both between and within sites (for survey data see Schreiber and Lancho Rojas 2003; for excavation see Vaughn 2004, 2009; Vaughn and Linares Grados 2006; see also Vaughn and Neff 2000: 77 for an overview of earlier work). Every known habitation site in the SNR has them, and households tend to have approximately equal, and abundant, access. Decorated Early Nasca style ceramics generally comprise approximately 60% of habitation site assemblages, which would be considered quite high for many cultures but seems to be the rule in this region (e.g., Vaughn 2009; Vaughn and Linares Grados 2006). Therefore, fineware ceramics are not a restricted access or prestige good, but something to which everyone apparently had access.

Continued work on ceramics from the SNR has cast some doubt onto the distribution-through-pilgrimage model, and some now perceive it as less likely that the SNR Group 1 paste reflects a single source exploited primarily by potters at Cahuachi. Several studies have found that SNR Group 1 pastes continued to be used throughout the Nasca sequence, even after Cahuachi ceased to be used as first a ceremonial center and then a burial ground (Conlee et al. 2019; Vaughn et al. 2006; Vaughn et al. 2011). Furthermore, Wari style ceramics from the SNR (during the Middle Horizon) are also found to be made of SNR Group 1 paste (Boulanger and Glascock 2012; Kerchusky 2018: 350-351). If one assumes that SNR Group 1 reflects a single clay source, then these studies collectively imply that the same clay source was used over a span of 1000 years, as well as by a foreign ethnic group.

This longevity seems improbable, though certainly not impossible, particularly if a clay source carried ideological importance. Nasca ideology was apparently admired by the Wari, as reflected in their borrowing of Nasca iconography, so it is possible that Wari potters also used the same clay source (see Conlee 2021: 409-412 and Conlee et al. 2021 for more on Wari-Nasca interaction).

However, the balance of the data lead Vaughn and colleagues (2011) to suggest alternative explanations for the predominance of SNR Group 1 pastes during Early Nasca. Besides the (almost) sole production and distribution of Early Nasca style ceramics at Cahuachi, two additional, not necessarily mutually exclusive, scenarios might explain these findings: 1) Perhaps there is more homogeneity in SNR clays than identified in the clay survey (see Vaughn and Neff 2004); 2) the SNR Group 1 clay is more widely distributed than previously thought; or 3) pastes may have a similar composition due to shared clay processing practices, such as mixing clays or sieving inclusions. These practices may have been passed down over time and learned cross-culturally by the Wari, again particularly if they carried ideological importance (Vaughn et al. 2011: 3565-3566). Vaughn and colleagues (2011) found the last explanation most likely, while Conlee and colleagues (2019) lean more towards the continuity of the use of a discretely distributed clay with a source near Cahuachi, arguing that "it would not be unusual for people to use a clay source for hundreds of years or to travel long distances to obtain raw materials" (Conlee et al. 2019: 123).

Nasca Ceramics Outside of the SNR

Less compositional work has been done on Early Nasca style ceramics outside of the SNR. In the Central Nasca Region (CNR), specifically the Palpa Valley, Hecht (2013)

conducted both X-ray diffraction (XRF) and Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) on a sample of 27 sherds covering a time span of about 700 years, including Initial/Early/Middle/Late Nasca styles and Loro style pottery (from the Middle Horizon), and found their pastes to be homogenous. He interprets this finding as suggesting that the clay itself is homogeneous throughout the Palpa area. These results cannot be directly compared to the INAA studies done in the SNR to see if any CNR pastes match the SNR ceramics, and no clay surveys have been done to date in Palpa to confirm the conclusion regarding clay homogeneity in Palpa.

No work has been done on ceramic pastes from this time period in the Upper Ica Valley. However, an area of possible ceramic production was found at Cerro Tortolita in an excavated structure in the agglutinated terrace structures of Sector I. At the present it is unclear whether fineware, plainware, or both might have been produced in this area, but the association with ceremonial areas suggests that fineware, with its meaningful iconography, is a likely candidate.

The description from Vaughn and colleagues (2019) states:

> "Artifacts recovered from excavations in Sector I included large amounts of broken plainware that were burnt on both sides, as well as polychrome ceramics, yet little to no botanical or faunal material (i.e., food) aside from a small quantity of malacological remains…The polychrome ceramics include Nasca 3-5 sherds…Sector I excavations also revealed some evidence for ceramic production. Some polychrome images have "ghost" images—usually the result of stacking pots during the firing process—a practice known for the Nasca culture (Carmichael 1998: 222) and

documented in Ica (Proulx 1968: 27). Furthermore, the large burnt plainware sherds may have been used to divide ceramics during firing to redistribute heat. This was a well-known technique used by indigenous potters to protect pottery from direct contact with fuel if a uniform color of pottery was needed in an oxidizing environment (Shepard 1956: 76). Additionally, several fragments of *Choromytilus chorus* from the malacological assemblage are worked and have striations consistent with scraping and wiping of pottery (Figure 9)" (Vaughn et al. 2019: 6-9).

Other artifacts from both Sectors I and II that may be associated with pottery production include a lump of partly fired clay, a bone spatula, ceramic *alisadores* (smoothers), and chunks of pigment as well as shells containing pigment, and unfired sherds (in construction fill; Vaughn et al. 2019: Figure 9; 11, 13). It is significant that evidence for these activities was only uncovered in the Ceremonial Zone, on the U-shaped platform mound and the adjacent terraces of Sector I. The location supports that these activities may have been carried out by religious specialists themselves, or in close association with them, possibly under their control, as in the SNR.

The Power of Objects and Craft Production

As physical objects, Early Nasca style ceramics and their attendant religious iconography would have been at once pragmatic and religious objects (Joyce 2018: 657). The pots and their iconography may have been viewed as embodiments of the beings, things, and powers they depicted, manifesting their presence. At the very least, the iconography would have reminded people of religious themes and influenced their mindset while using or

viewing them. The presence of this iconography would have imbued the act of eating and drinking with religious significance, physically bringing the sacred into an otherwise mundane activity.

The production of such objects may have had social significance as well. In a relational view of the world, any activity can potentially have a ritual component (though not all rituals are visible in the archaeological record), or be a ritual itself—for example, the act of sowing corn is traditionally seen as having an economic, "functional" purpose, but may also carry layers of religious meaning and become a ritualized act (Fowles 2013: 103, 105). Craft production and control of associated esoteric knowledge in particular has the potential to be infused with religious significance.

There are many cross-cultural examples of this. For example, in the Maya region, elite craft production and control of associated esoteric knowledge is thought to have been an important source of power (e.g., Halperin and Foias 2010; Inomata 2001, 2007). Among the Chumash of North America, the knowledge of how to make a *tomol*, or plank canoe, was kept by elite members of the Brotherhood of the Tomol, who "restricted access to materials, knowledge, ritual paraphernalia, and esoteric information necessary" for their construction (Hollimon 2000: 184). Furthermore, only those who knew how to make a *tomol* owned one, due to the great expertise and expense involved in building them. Possession of a *tomol* provided advantages in fishing and exchange, and its history is argued to be related to the development of sociopolitical complexity among the Chumash (Arnold 2007:205-207; Gamble 2002: 304-305, 312-313; Hollimon 2000:183-184). Carmichael has developed a hypothesis of shamanic artisan-chiefs on the south coast in his treatment of ceramic

production (2020). He draws on ethnographic accounts to argue that the production of high quality polychrome ceramics,

> "demonstrates the potter's ability to work in harmony with the elemental forces, and be favored by the featured supernatural. A perfectly crafted pot is a tangible and durable exhibition of the maker's special relationship with unseen forces and cannot help but translate into social power" (Carmichael 2020: 152).

It should be noted briefly that that a variety of skill levels and care can be seen in Nasca pots; not all manage to be "a perfectly crafted pot," as Carmichael also acknowledges. As mentioned, Nasca ceramics are generally thought to have been produced by part-time specialists (Carmichael 2020:139), and this variation in quality may be due to several factors, such as different production centers, different levels of dedication among artisans, or varying amounts of experience (i.e., masters and apprentices). Notwithstanding, the production of Early Nasca style pots likely held religious significance, in addition to the significance of the pots themselves. The power derived from fulfilling the role of a shamanic artisan-chief would apply to both ritual specialists at Cahuachi and Cerro Tortolita if ceramics were produced in both places.

A third aspect of the significance of Early Nasca style pots could have derived from their place of origin: the presence of SNR-produced ceramics in Ica would have carried additional meaning and associations with the heartland of the Nasca cult, Cahuachi. One potential benefit of possessing an SNR-produced pot could have been as a "costly signal," the act of pilgrimage being the "cost" and adherence to a common religion and values the

content “signaled,” which would have helped foster good relations with one’s neighbors (Kantner and Vaughn 2012). An alternative means of distributing SNR pots to Cerro Tortolita residents could have been redistribution by the pilgrim or procurer. If this was the case, those lucky enough to possess SNR-produced pots would have been reminded of their relationship with, and their debt to, the person who gave them the pot (possibly a religious specialist), and may have enjoyed some prestige due to their possession as well.

As emblems of a journey to an important religious site, SNR-produced pots could also have shared some attributes usually associated with exotic goods, even though the SNR and Ica are geographically close and considered part of the same culture. Exotic goods can symbolize access to other worlds, both physical and metaphysical, invoking relationships with other places, people, and other-than-human forces (Helms 1993: 9). Similarly, access to the pots could have been a means of differentiating one’s ritual knowledge, ability to perform certain rituals and, by extension, religious authority, particularly for religious specialists.

Beyond providing pilgrims with an emblem of their journey, embarking on a pilgrimage to Cahuachi or maintaining ties to the SNR could have gained pilgrims additional religious knowledge, including how to perform certain rituals, thereby empowering them in various ways. This knowledge acquisition could have been through formal training for religious specialists, or simple observation of how things were done at Cahuachi. For commoners, connections with the SNR and first-hand experience of the rituals and cult maintained there could have allowed them to critique religious specialists’ public practices, holding them accountable to their own knowledge of the ‘proper’ way to do things. This scenario calls to mind recent studies that demonstrate how religion can be a site of tension,

contestation, and negotiation (for example, see studies in Gonlin and Lohse 2007; Hutson 2018; Joyce 2018; Joyce et al. 2001).

The multiple potential meanings and uses of SNR produced pots underscores the usefulness of a "disjunctive approach" (sensu Swenson 2008; see also Aldenderfer 2012b: 27-28) that compares presence/absence of SNR produced pottery in special-use religious and residential contexts at Cerro Tortolita with the ultimate goal of understanding the religio-political importance of these objects and their production. As part of this approach, it is relevant to ask whether accessing SNR-produced ceramics was integral for maintaining ties to the homeland of the Early Nasca style and the Cahuachi cult associated with it, which may have been a source of religious authority, and whether the general population in the Primary Residential Zone had access to these ties. Regardless of whether SNR-made ceramics are present at Cerro Tortolita though, their possible production at Cerro Tortolita would have contributed to the religious authority of ritual specialists there.

Research Questions and Hypotheses

The goals of this research are to answer basic questions about ceramic production and consumption in Ica, as well as to investigate possible connections to the SNR through SNR-made ceramics. The research questions can be summarized as: 1) Are ceramics produced in the Upper Ica Valley chemically distinct from those in the SNR? 2) Were connections to the SNR maintained by bringing SNR-made ceramics to Cerro Tortolita? Finally, 3) Are there differences in access to SNR-produced ceramics between the two Zones, suggesting that some groups (religious specialists, for example) had more or different interactions with

people in the SNR than others? To address these questions, I test two sets of hypotheses and null hypotheses (Table 2.1).

Hypothesis 1: Locally manufactured ceramics are sufficiently chemically distinct from SNR-produced ceramics (due to different geology in the two drainages and/or different ceramic production practices) that they will fall into a different compositional group. *Material Correlates:* Plainware ceramics will be used as a proxy to test this hypothesis, as they are considered more likely to be locally made than fineware. They are not associated with prestige, high status, ritual, or other features that might make them an attractive trade item. Their weight, size, and fragile nature make them a difficult-to-transport good that would make plainware less attractive to move over distances. In addition, the sheer quantity of plainware recovered from Cerro Tortolita also suggests that it has a local manufacturing source (the same can also be said for fineware). Although there are documented cases of travelling pot makers who bring their own clay, this is considerably less common in the ethnographic record than making pots from locally available clays (see Arnold's work showing potters prefer sources within 3-4 km [Arnold 1993: 200-202, 1985: 32-60; Arnold et al. 2000: 313]and Druc's study [1996] showing Ancash potters travel 5-12 km for clays). As ceramics (both plainware and fineware) in the neighboring SNR were made of locally available clay, it seems most likely that a similar practice occurred in the Ica Valley. If travelling potters produced the pots at Cerro Tortolita, we might see great heterogeneity in the compositional groups.

However, if all plainware falls into a compositional group or groups distinct from those defined for the SNR, the hypothesis will be considered supported. While acknowledging possible caveats, distinct compositional groups generally reflect potting

Table 2.1 Summary of hypotheses and material correlates.

Hypothesis	Description	Material Correlates
1	Locally manufactured ceramics are chemically distinct from SNR-produced ceramics and will fall into a different compositional group.	As plainware ceramics are more likely to be locally produced than fineware, they are used as a proxy for local production. Plainware ceramics from Cerro Tortolita will not match any SNR compositional groups.
Null 1	Locally produced ceramics are not sufficiently chemically distinct from those made in the SNR as to fall into different compositional groups.	Some or all plainware ceramics will match compositional groups previously identified in the SNR.
2	At least some SNR fineware ceramics were brought to Cerro Tortolita as part of an on-going relationship between residents of Cerro Tortolita and the SNR. SNR-produced ceramics may be found in the Ceremonial Zone, the Primary Residential Zone, or both, with different implications for who was maintaining a close relationship with the SNR.	At least some fineware ceremics recovered from Cerro Tortolita will fit into compositional groups identified for the SNR. SNR ceramics may be found in the Ceremonial Zone, Primary Residential Zone, or both, indicating who had close(st) ties with the SNR.
Null 2	No SNR ceramics were brought to Cerro Tortolita through pilgrimage or other means. It is possible that such ties were not important for local roles or power structures at Cerro Tortolita, and that Cahuachi/the SNR were not as central to the so-called Cahuachi cult as previously thought, at least at Cerro Tortolita. It is also possible that close ties were maintained but simply were not manifested in the transport of fineware ceramics.	No fineware ceramics fitting into SNR compositional groups will be identified at Cerro Tortolita.

communities who either employ different clay processing practices, exploit different clay sources, or both. Local manufacture would be the simplest explanation for these distinct groups.

Null Hypothesis 1: Locally produced ceramics are not sufficiently chemically distinct from those made in the SNR as to fall into different compositional groups. This finding may be the result of two, not necessarily mutually exclusive explanations. First, the geology of the Ica River and Río Grande de Nasca (in the SNR) drainages may not be sufficiently distinct as to produce distinct compositional groups in ceramics made from their clays. Second, potting production practices may cause ceramic clay pastes to appear chemically similar.

Material correlates for Null Hypothesis 1: If any plainware ceramics are a match for SNR compositional groups, the null hypothesis would be supported. Further investigation through collection and chemical analysis of clay samples in the Ica Valley would be needed to address the above possible explanations.

Hypothesis 2: At least some SNR fineware ceramics were brought to Cerro Tortolita as part of an on-going relationship between residents of Cerro Tortolita and the SNR. Cahuachi was the center of a regional religion in which residents of Cerro Tortolita were active participants, and pilgrimage through the SNR to Cahuachi was physically manifested in ceramic pots brought back by pilgrims from throughout the region.

SNR-produced ceramics may be found in the Ceremonial Zone, the Primary Residential Zone, or both. If SNR ceramics are identified only in the Ceremonial Zone, this would suggest that not everyone at the site maintained direct ties to the SNR and Cahuachi. Ritual specialists of the Ceremonial Zone may have cultivated connections with the SNR in order to grow their own knowledge and status, perhaps even receiving special religious

instruction at Cahuachi. SNR pots may also have been used preferentially in activities taking place in the Ceremonial Zone due to the special significance of their origin, despite religious specialists living in the Primary Residential Zone (it is at present unclear whether they lived in the Ceremonial Zone or not). It is also possible that ritual specialists produced ceramics at Cerro Tortolita, analogous to the craft production at Cahuachi (Orefici 2012), and that potters brought back SNR-produced ceramics they made while training in the SNR or as part of a body of work to draw inspiration from.

It seems less likely that SNR-produced ceramics would only be found in the Primary Residential Zone, but if so this might suggest that commoners/non-ritual specialists found ties to the SNR and Cahuachi more important than ritual specialists, possibly supporting slight differences in interpretations of the Cahuachi ideology, including the importance of visiting Cahuachi. If ceramics from the SNR are found in both Zones, this would suggest that maintaining a relationship with the SNR was important to people site-wide, and that access to SNR ceramics alone was not necessarily a means of status differentiation for ritual specialists performing in the Ceremonial Zone. (It is also possible that religious specialists did not actually live in the Ceremonial Zone, but in the Primary Residential Zone, and brought SNR pots to both areas).

The interpretations detailed above would be the most probable explanations for patterns in the data in the context of a "Nasca ceramic distribution through pilgrimage" model. If subsequent research in the SNR does not support the distribution-through-pilgrimage model, the presence/absence of SNR ceramics at Cerro Tortolita and the association of SNR ceramics with people living in different parts of the site are still relevant questions, as Cahuachi would still be considered an important religious and pilgrimage

center. Prior to any ceramic composition studies, Silverman proposed based on her own work at Cahuachi that it was likely a pilgrimage center without a large permanent occupation, due to its size and relative lack of habitation debris (Silverman 1988, 1993, 1994; Silverman and Proulx 2002: 243-249). Bachir Bacha (2007) agrees with the interpretation of Cahuachi as a pilgrimage center, but argues based on her own subsequent work that there was a small permanent occupation. Based on evidence from Cahuachi itself then, it seems likely to have served as a pilgrimage center, regardless of the state of ceramic composition data. People may still have made pilgrimages to Cahuachi and brought back pots produced there or elsewhere in the SNR, as part of their travels. SNR pots would still provide archaeological evidence of ongoing interaction with the heartland of the Cahuachi cult.

In addition, alternative types of interactions with the SNR, either through trade or migration of a few families or individuals, could still map on to differences in religious authority and power, and would not necessarily change interpretations significantly. For example, either religious specialists or commoners could have been more involved with trade networks and thereby obtained more SNR-produced ceramics. It is also possible that religious specialists or some commoners could have had origins in the SNR and migrated to Cerro Tortolita, bringing their knowledge and their pots with them, along with an elevated degree of religious authority. Of the two alternatives, the latter seems more likely.

Material Correlates for Hypothesis 2: At least some fineware ceramics recovered from Cerro Tortolita and tested through INAA will fall into previously-identified compositional groups for ceramics from the SNR. The provenience of any such matches will inform regarding who at the site had/maintained ties to the SNR. The sample of fineware ceramics focuses on sherds from the Nasca 3 sub-phase, as this is the phase that is considered

to coincide with the height of Cahuachi's occupation and use as a pilgrimage center, after which there is mainly evidence of use for the site as a cemetery, although other activities may have continued to a lesser degree than previously (Bachir Bacha 2007; Bachir Bacha and Llanos 2006; Orefici 2012; Orefici and Drusini 2003; Silverman and Proulx 2002: 243-251; Vaughn et al. 2014). Therefore, if there were links between Cerro Tortolita and Cahuachi, this connection may be most likely to be represented through pottery during the height of Cahuachi's influence. Since SNR Group 1 ceramics persist through the Nasca sequence however, some sherds from slightly earlier and later in the sequence are relevant to this hypothesis as well (Appendix 1, Table 2.2).

Null Hypothesis 2: No SNR ceramics were brought to Cerro Tortolita through pilgrimage or other means. It is possible that such ties were not important for local roles or power structures at Cerro Tortolita, and that Cahuachi and the SNR were not as central to the so-called Cahuachi cult as previously thought, at least at Cerro Tortolita. It is also possible that close ties were maintained but simply were not manifested in the transport of fineware ceramics, although this would be difficult to test archaeologically.

Material Correlates for Null Hypothesis 2: No ceramics analyzed from Cerro Tortolita will fall into compositional groups identified for the SNR.

Sample and Methods

The research questions are addressed through conducting INAA on a sample of 192 ceramic sherds, 96 from the Primary Residential Zone and 96 from the Ceremonial Zone. The Primary Residential Zone sample is further broken into two groups, plainware (undecorated wares used for cooking and storage) (n=36) and fineware (decorated

Table 2.2 INAA sample by compositional group and phase.

Phase	Group 1	Group 2	Group 3	Outlier	TOTAL
Nasca 1	1	0	0	1	2
Nasca 2	1	0	0	0	1
Nasca 2 or 3	1	0	0	0	1
Nasca 3	61	19	5	1	86
Early Nasca	2	1	0	0	3
Nasca 3 or 4	3	1	0	0	4
Nasca 4	15	5	1	1	22
Nasca 4 or 5	2	2	0	2	6
Nasca 5	6	3	0	0	9
Nasca 5 or 6	3	0	0	0	3
Nasca 6	1	0	0	0	1
Nasca	9	2	0	0	11
EIP	2	0	0	0	2
plainware	28	6	0	2	36
uncertain	4	0	0	1	5
TOTAL	139	39	6	8	192

servingware) (n=60), for reasons previously discussed. The Primary Residential Zone sherds come from nine excavated units in seven different residential terraces of Sectors VII and IX (Figure 1.3). The Ceremonial Zone sherds are all fineware from excavated contexts in the main U-shaped platform mound (n=84) and plaza (n=5) of Sector II, as well as from the possible ceramic production area in Sector I (n=8; Figure 1.8).

The Nasca 3 subphase of the Nasca ceramic sequence is the most well-represented in the sample (Table 2.2). All fineware chosen for analysis from the Primary Residential Zone is Nasca 3, and many sherds from the Ceremonial Zone are as well, although the sample from

the latter area includes other time periods too. Samples from each Zone were chosen independently by the author (Primary Residential) and Kevin Vaughn (Ceremonial), as part of different projects with different purposes. However, as discussed in the material correlates section for the hypotheses, these two sub-samples complement each other well for the purposes of this study.

INAA was chosen for this study because of its accuracy and because of the extensive research on SNR ceramics that has already been done using this method, allowing the best comparison of compositional groups identified in this study with previous work (Stoner and Glascock 2012; Vaughn et al. 2011: 3562-3564). Procedures for the preparation and running of the INAA followed standard methods used at MURR and other NAA laboratories, which have previously been described in detail (Glascock 1992; Neff 1992, 2000, 2019). Likewise, the interpretation of INAA results followed methods and guidelines previously established in publications (e.g., Baxter and Buck 2000; Bieber et al. 1976; Bishop and Neff 1989; Glascock 1992; Harbottle 1976; Neff 2000). The statistical interpretation of the raw INAA data presented here, identifying chemical groups and comparing them with SNR groups, is the work of Dr. Brandi MacDonald at MURR, based on the report she provided (MacDonald 2020).

Results

Results Describing the Cerro Tortolita Sample

INAA results were evaluated for compositional groups via Hierachical Cluster Analysis, Principal Components Analysis, element biplots, and Mahalanobis Distance scores.

All values were converted to $\log^{10}$ values before beginning statistical analysis. INAA compositional data was first run through Hierarchical Cluster Analysis (HCA) by Euclidian Distance (ED), a method which begins by assuming each sample is a separate cluster, and joins clusters based on similarity. HCA is useful as an initial means of identifying groups when other grouping variables (e.g., time period or region) are not relevant, though it requires follow-up with more robust statistical methods. Three compositional groups were identified through HCA, named Groups 1, 2, and 3 (Appendix 2). A small number of outlier sherds (n=8) did not fit into any compositional group (Table 2.3). Group 1 is the largest (n=139, 72% of sample), followed by Group 2 (n=39, 20%), Group 3 (n=6, 3%), then a small number of sherds unassigned to any group, or outliers (n=8, 4%). ED scores and the branching pattern of the dendrogram indicate that Groups 1 and 2 are similar, and more closely related to one another than Group 3.

The three groups identified by HCA were then run through Principal Components Analysis (PCA), using 32 elements (Ni is excluded from this analysis due to values below the limit of detection in >70% of samples). The first ten principal components account for 85.6% of variance (Table 2.4). When PC 1 is plotted against PC 2, the similarity of the groups is evident (Figure 2.1). Element pair scatterplots also underscore the homogeneity of the sample (Figure 2.2), particularly of Groups 1 and 2 (Figures 2.3, 2.4).

The similarity of Groups 1 and 2 is also illustrated by the running of group membership probabilities using Mahalanobis Distance (MD; Appendix 3). This method of analysis calculates the distance of each sample from the group centroid, working similarly to standard deviation but for multivariate groups. The resulting MD scores indicate how close a sample is to a given group's centroid. Appendix 3 divides all samples and their MD scores

Table 2.3 Compositional group totals; plainware and fineware by compositional group.

	Compositional Group		**Plainware**		**Fineware**	
Group	*Count*	*Frequency (%)*	*Count*	*Frequency (%)*	*Count*	*Frequency (%)*
1	139	72	28	78	111	71
2	39	20	6	17	33	21
3	6	3	0	0	6	4
unassigned	8	4	2	6	6	4
TOTAL	192	100	36	100	156	100

Table 2.4 Percentage variation and cumulative percentage variation for the first ten principal components.

PC	**% Variation**	**% Cumulative**
PC1	22.86	22.86
PC2	18.07	40.93
PC3	13.49	54.42
PC4	9.76	64.18
PC5	6.93	71.11
PC6	4.04	75.15
PC7	3.58	78.73
PC8	3.11	81.84
PC9	2.80	84.63
PC10	1.93	86.56

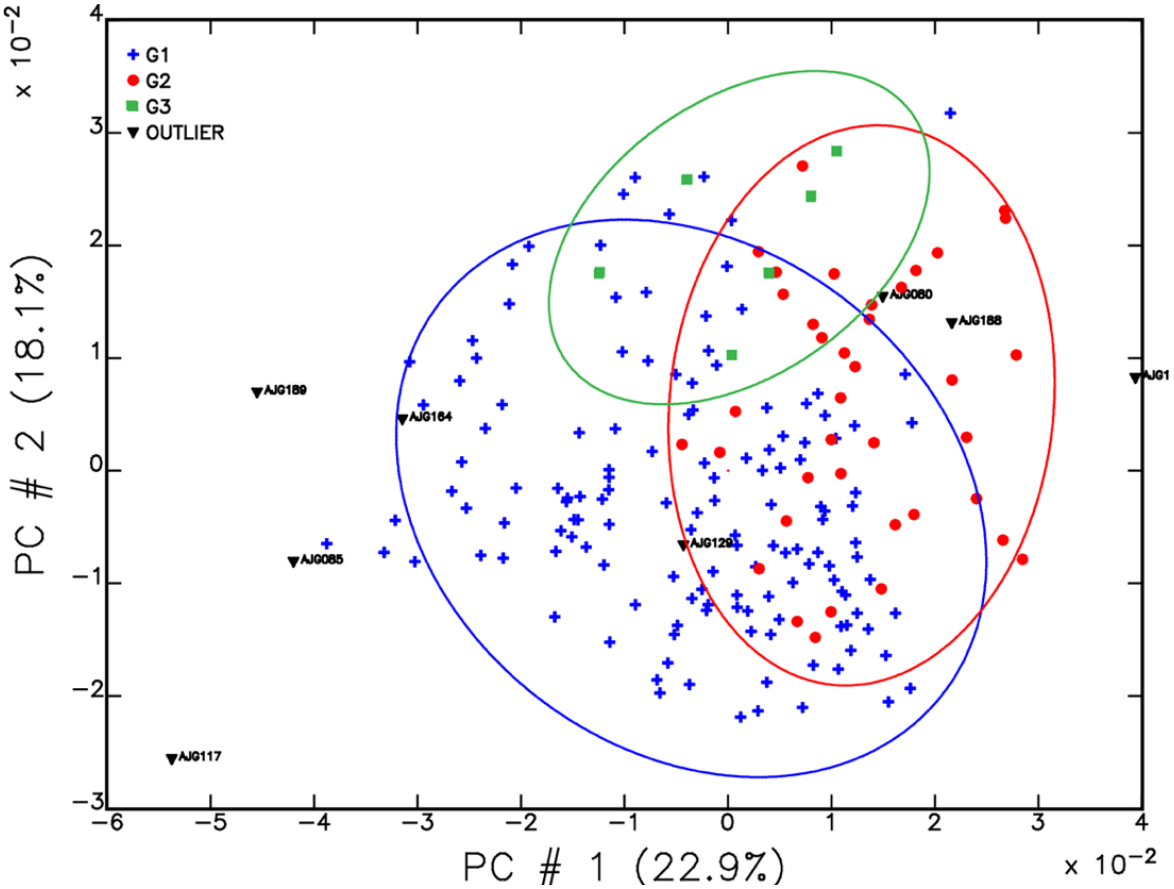

Figure 2.1 Scatterplot of PC1 (22.9%) versus PC2 (18.1%). Ellipses are drawn at 90% confidence. Outlier samples are individually labelled. All axes are log-scaled.

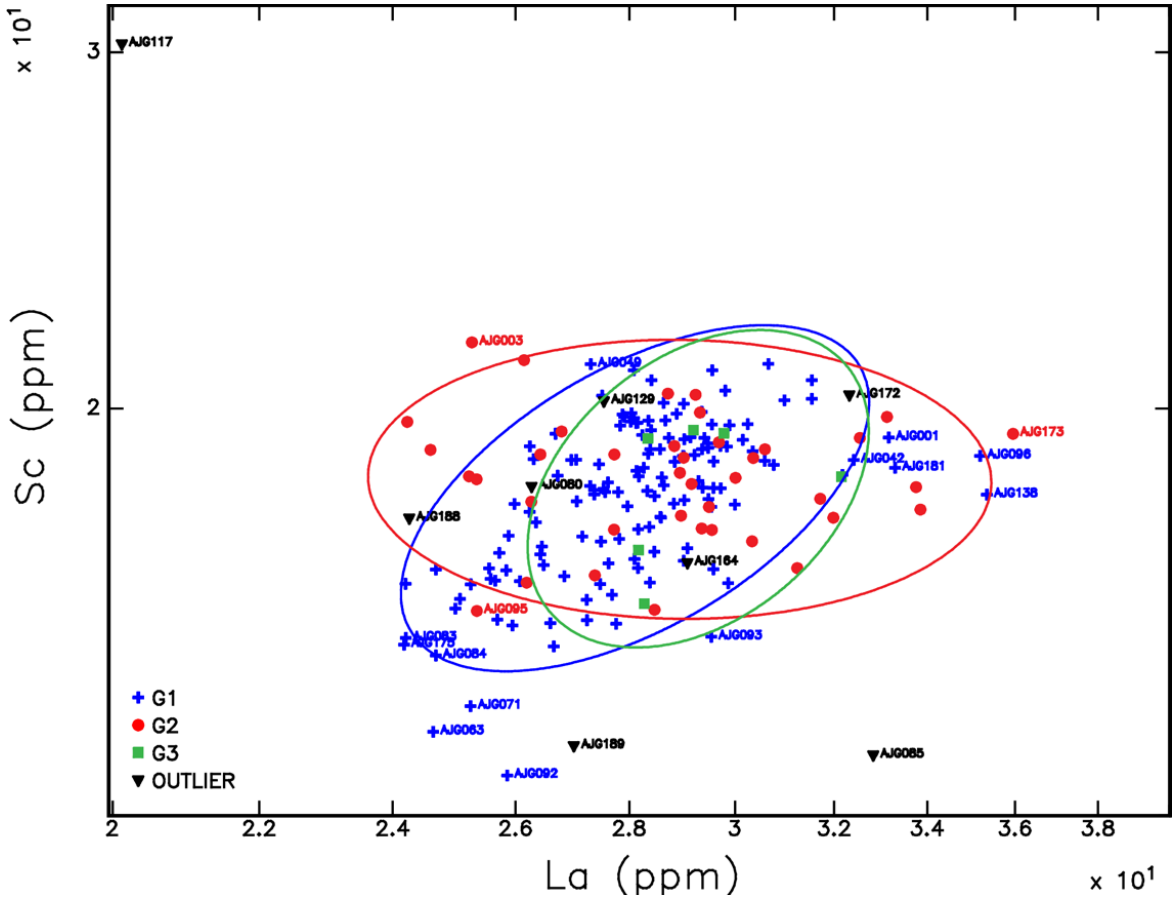

Figure 2.2 Scatterplot of lanthanum versus scandium concentrations. Ellipses are drawn at 90% confidence. Samples plotted outside of ellipses are individually labelled. All axes are log-scaled.

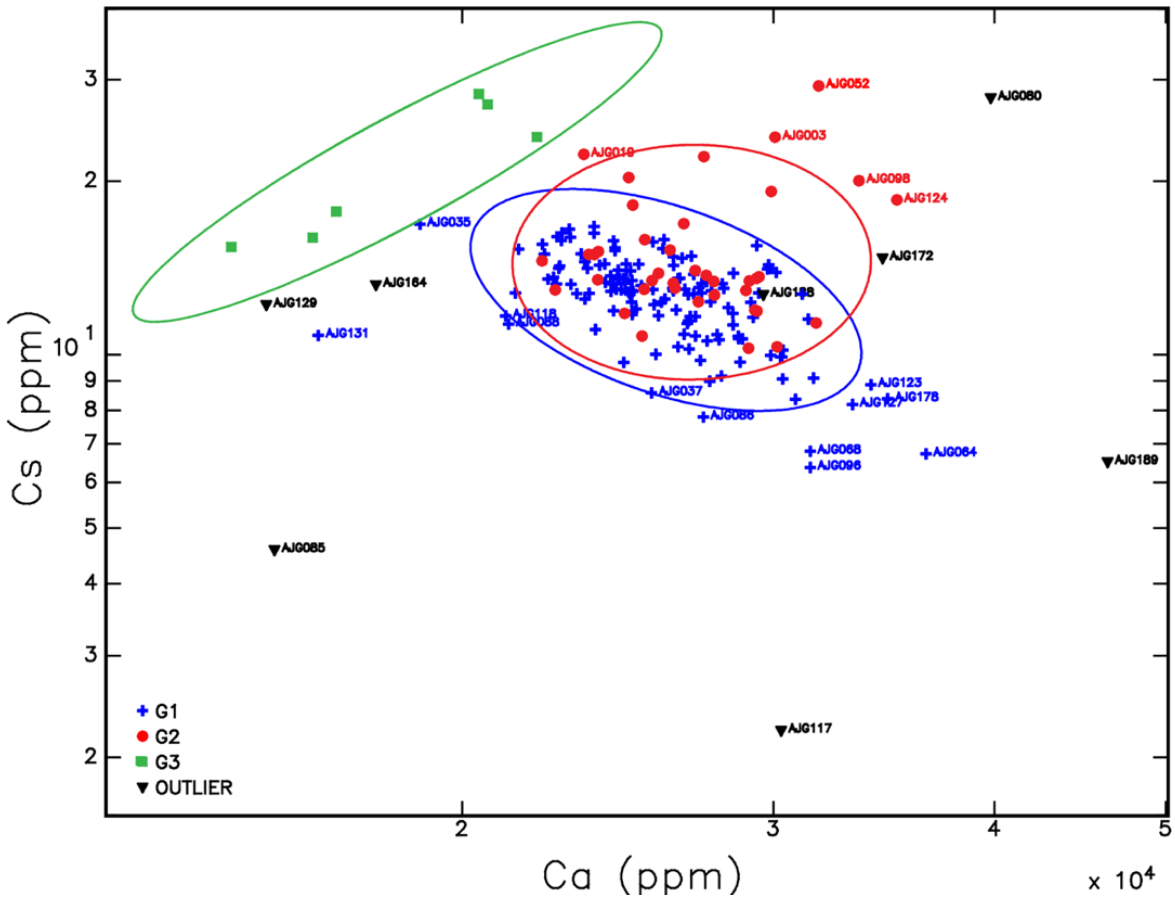

Figure 2.3 Scatterplot of calcium versus cesium concentrations. Ellipses are drawn at 90% confidence. Samples plotted outside of the ellipses for each group are individually labelled. All axes are log-scaled.

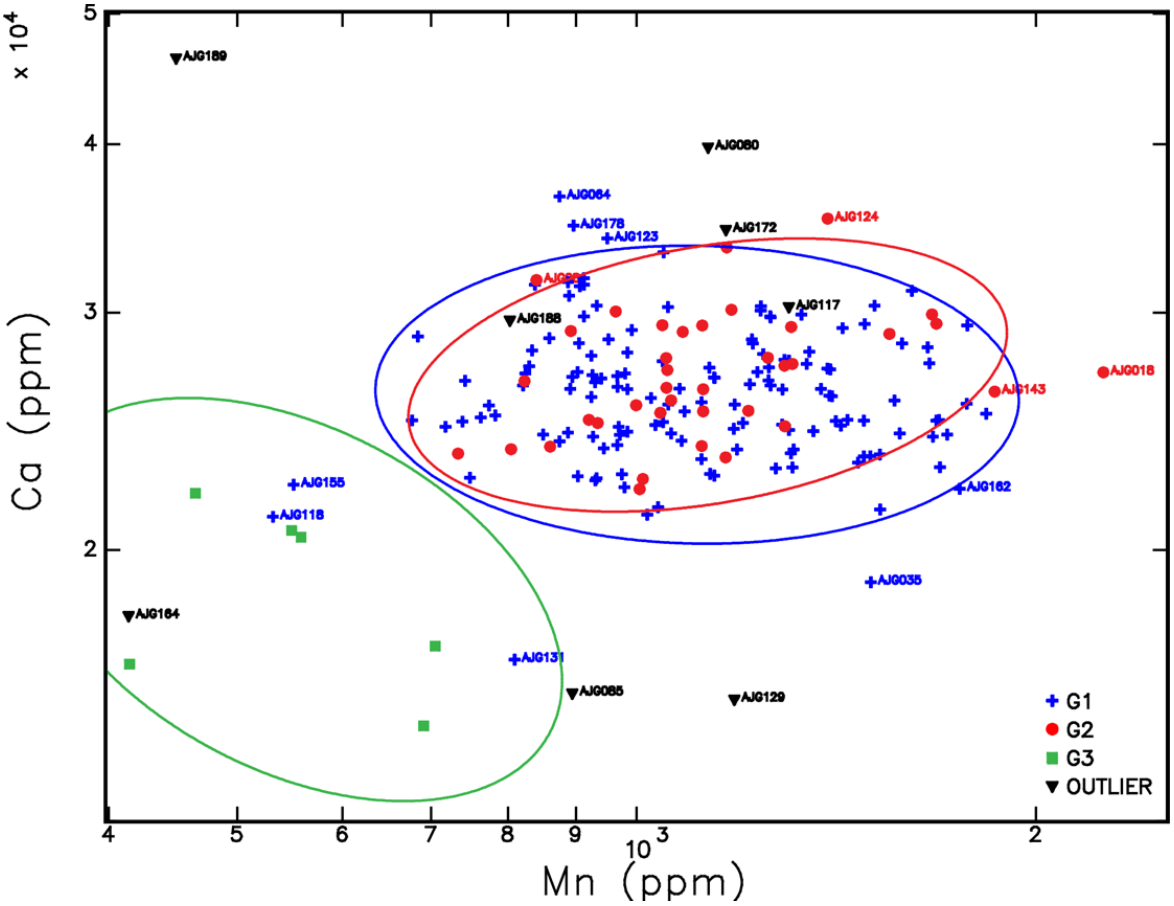

Figure 2.4 Scatterplot of manganese versus calcium concentrations. Ellipses are drawn at 90% confidence. Samples plotted outside of ellipses are individually labelled. All axes are log-scaled.

into four sub-tables (Appendix 3 Tables A-D) according to their best group assignment (Groups 1-3, with an additional sub-table for outliers). As can be seen, many of the samples assigned to Groups 1 and 2 have weak scores (<50%) behind this assignment, or have similar scores for both groups (Appendix 3 Tables A, B), which occurs when compositional groups are similar. Samples assigned to Group 3 generally have strong scores (>50%; Appendix 3 Table C), while outliers have weak scores for all groups (Appendix 3 Table D). Overall, there is a low amount of compositional variability present in the sample, particularly between

Groups 1 and 2. Groups 1 and 2 are interpreted as reflecting variation within a single group, and possible reasons for their distinction will be discussed in the following section. Group 3 is more differentiated from the other groups, but it is also limited by its small size.

Results Comparing the Cerro Tortolita Sample to Compositional Groups from the SNR

After compositional groups within the Cerro Tortolita sample were identified, they were compared to SNR groups previously reported in a series of studies by Vaughn and colleagues (see Vaughn and Neff 2000 or Vaughn et al. 2006 for a summary of the SNR groups).The groups reported by Vaughn and colleagues are named in their publications as Groups 1, 2, 3, and 4, following convention, and will hereafter be referred to as "SNR Group" 1, 2, 3, or 4 to distinguish them from the compositional groups identified at Cerro Tortolita. SNR Group 1 is comprised mostly of Early Nasca style fineware with a small amount of plainware and sherds from other time periods; SNR Group 2 is mostly plainware, and may in fact reflect variation within SNR Group 1 caused by the greater presence of inclusions in plainware; SNR Group 3 contains both fine and plainware; and SNR Group 4 is the most heterogeneous, with a mix of ceramics from various time periods. SNR Group 4 also has the smallest sample size, and it is possible that with a larger sample the constituent sherds would either form additional groups or be considered outliers.

Analysis of the data by element-pair scatterplots (Figures 2.5-8), PCA (Table 2.5, Figure 2.9), and group membership probabilities (MD scores; Appendix 4) demonstrates that the SNR compositional groups are distinct from those identified at Cerro Tortolita. In the PCA, it was found that the first seven principal components account for 85.56% of the variance. Note that in Figure 2.9 three Cerro Tortolita outlier sherds seem to plot with SNR

Group 1, but group membership probabilities calculations show this grouping to be unlikely. Group membership probabilities show a low probability of correlation between any Cerro Tortolita samples and SNR groups (Appendix 4). Therefore, no SNR sherds are present in the INAA sample from Cerro Tortolita.

Further Interpretation of Groups 1 and 2

As previously discussed, Groups 1 and 2 are best interpreted as variation within a compositional group. Based on this result, I hypothesized that inclusion size and/or frequency might explain the distinction between the two groups in some statistical analyses. Inclusion characteristics can be influenced by variation within a clay source zone or differing clay preparation methods among makers (e.g., sieving, or addition of temper), and can have an outsized influence on results in bulk analysis methods such as INAA due to pure chance (i.e., specific inclusions being included or not in the ceramic fragment selected for analysis).

As a first pass at testing this hypothesis, I looked at the relationship between type of ware and compositional groups, since Nasca style fineware generally has fewer and smaller inclusions than plainware. No one compositional group is dominated by plainware, unlike SNR Group 2 (Table 2.6). The unassigned sherds, while not forming an actual compositional group, have the highest proportion of plainware sherds in their "group" at 25%; since plainware is only 19% of the sample, this number suggests that plainware is over-represented in the unassigned sherds (and may even be causing them to be unable to be assigned to a compositional group). When looking at the distribution of plainware across groups, plainware falls primarily into Group 1 (78% of plainware sampled), followed by Group 2 (17%; Table 2.3), and no plainware was assigned to Group 3. Unlike in the SNR then,

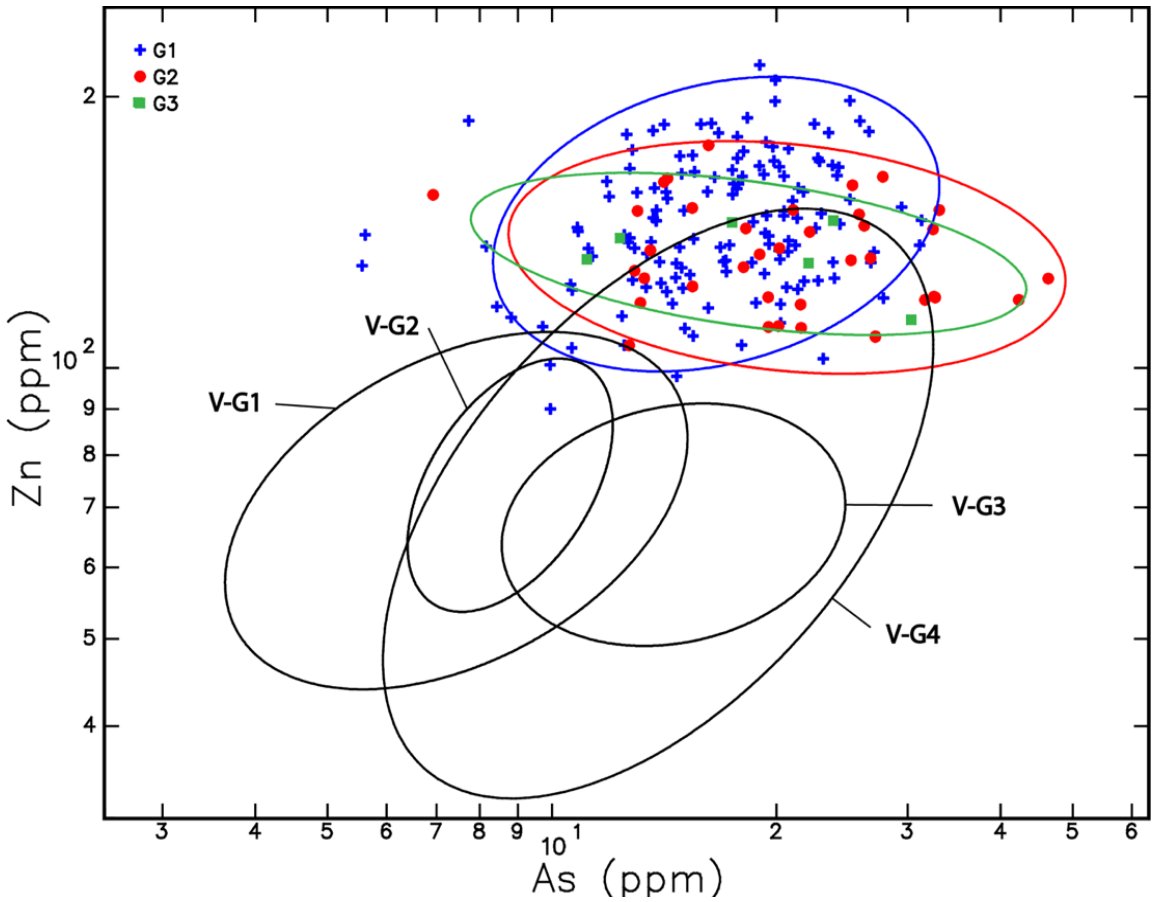

Figure 2.5 Scatterplot of arsenic versus zinc concentrations. All ellipses are drawn at 90% confidence. Groups reported in Vaughn are plotted as ellipses only. All axes are log-scaled.

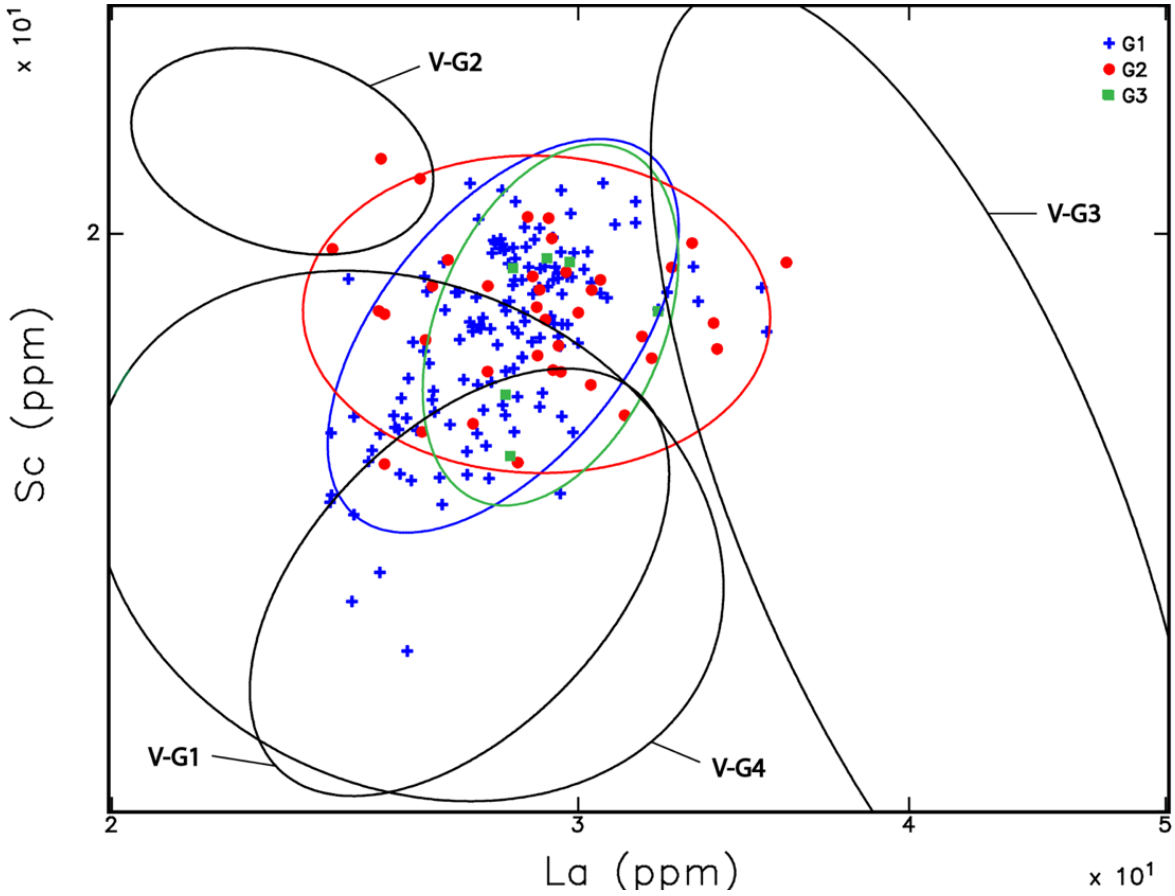

Figure 2.6 Scatterplot of lanthanum versus scandium concentration. Ellipses are drawn at 90% confidence. Groups reported in Vaughn et al (2006) are plotted as ellipses only. All axes are log-scaled.

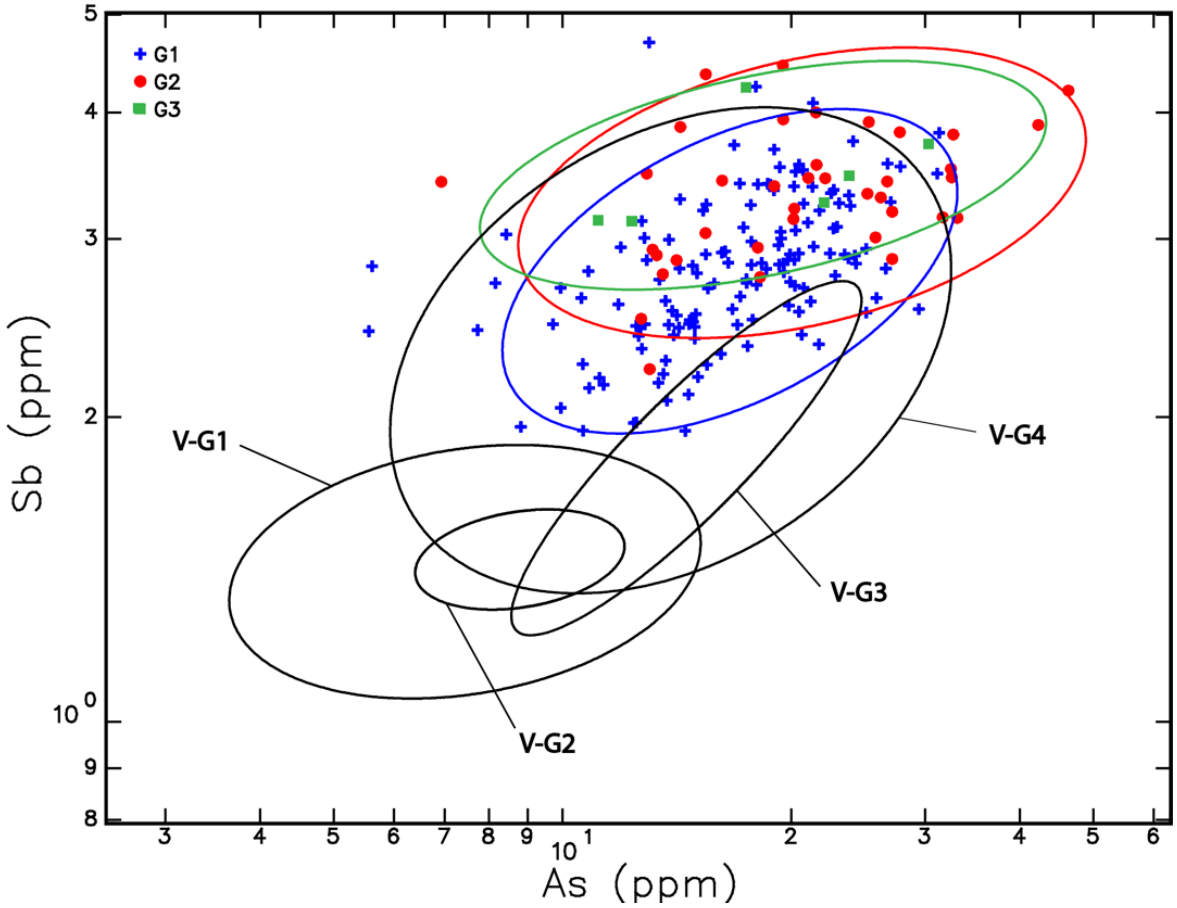

Figure 2.7 Scatterplot of arsenic versus antimony concentration. Ellipses are drawn at 90% confidence. Groups reported in Vaughn et al (2006) are plotted as ellipses only. All axes are log-scaled.

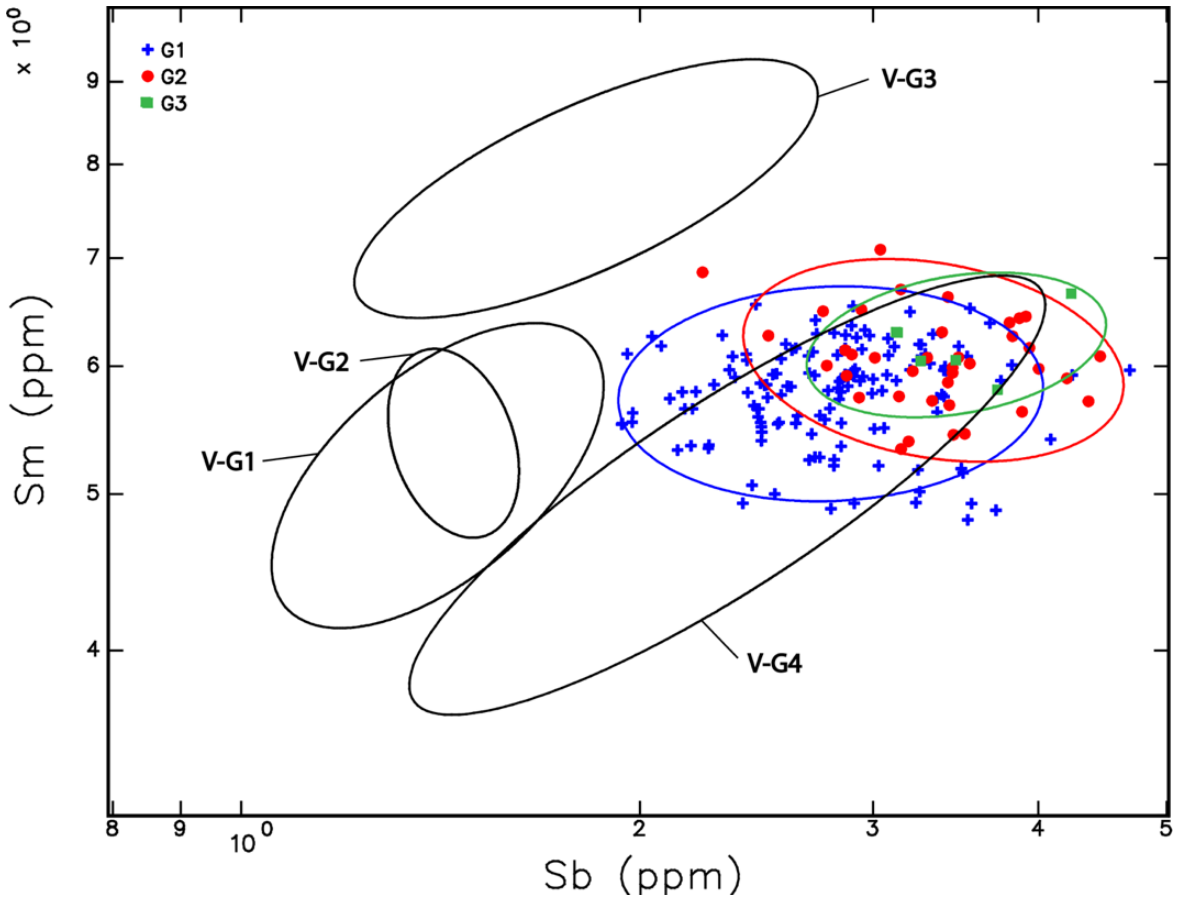

Figure 2.8 Scatterplot of antimony versus samarium concentration. Ellipses are drawn at 90% confidence. Groups reported in Vaughn et al (2006) are plotted as ellipses only. All axes are log-scaled.

Table 2.5 Percentage variation and cumulative percentage variation for first seven principal components.

PC	% Variation	% Cumulative
PC1	54.19	54.19
PC2	10.51	64.70
PC3	6.56	71.26
PC4	4.71	75.97
PC5	3.97	79.94
PC6	3.10	83.04
PC7	2.51	85.56

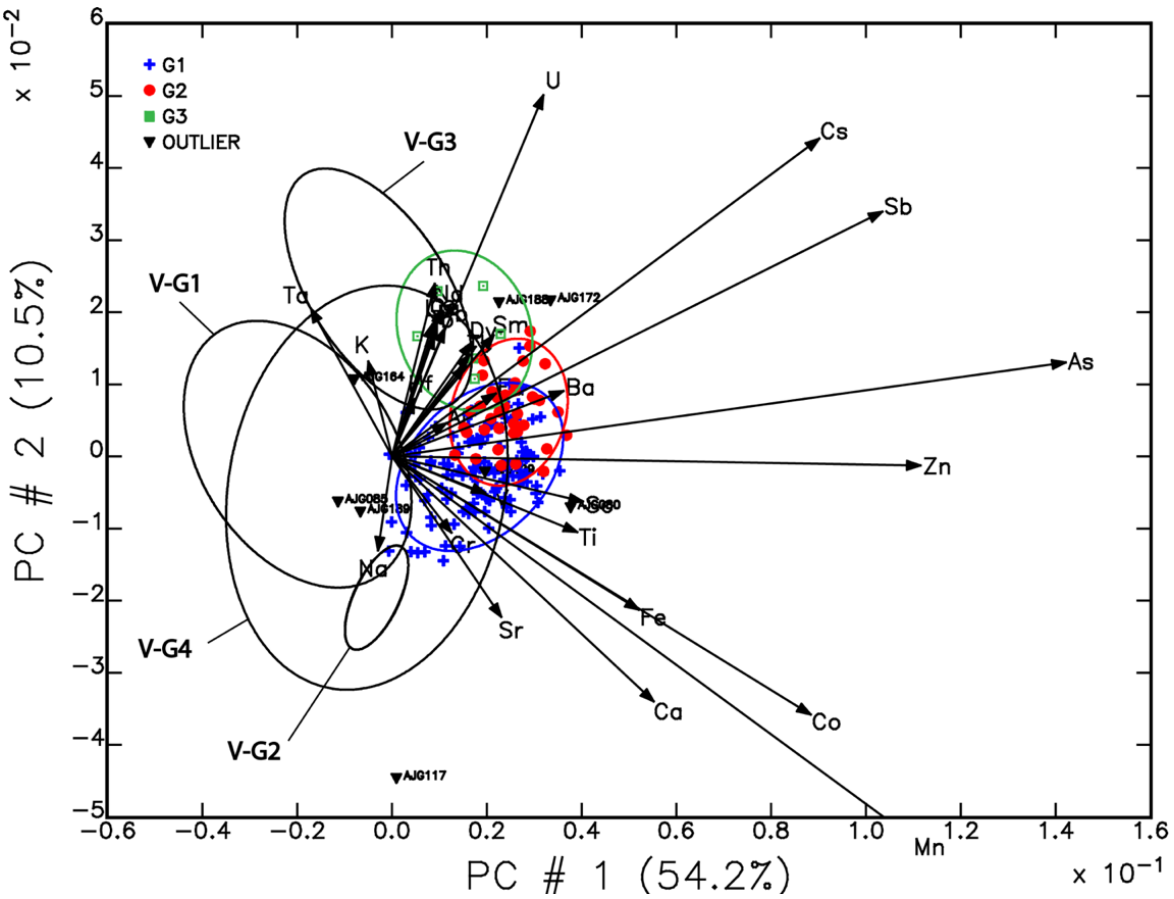

Figure 2.9 Biplot of PC1 versus PC2, showing Cerro Tortolita groups projected against reference groups from Vaughn and colleagues (2006). Ellipses are drawn at 90% confidence. Outliers are individually labelled. All axes are log-scaled. Elemental loading vectors are plotted and labelled.

Table 2.6 Percent of plainware and fineware within each compositional group.

Group	Plainware (%)	Fineware (%)	Total
1	20	80	100
2	15	85	100
3	0	100	100
Unassigned	25	75	100

plainware does not appear to be more diverse than fineware (see Vaughn and Neff 2000: 87). These findings suggest that inclusions may be affecting the assignment of sherds to either Group 1 or 2. However, in order to address whether this is also true for fineware, and to better understand variation in plainware group assignments, it is necessary to investigate at the level of inclusion size and frequency.

Paste inclusion characteristics of inclusion size and frequency were scored with the aid of a 10x magnification jeweler's loupe, although in some cases magnified photos from a Dinolite digital microscope were used. A fresh break on each sherd was made to provide a clear, clean view of the paste. Temper size was categorized as not visible, silt (1/16 mm), very fine sand (1/16-1/8 mm), fine sand (1/8-1/4 mm), medium sand (1/4-1/2 mm), coarse sand (1/2 – 1 mm), very coarse (1-2 mm), or other, with a sand grain size chart used as a reference. Within the INAA sample, temper size ranged from not visible to very coarse sand. Variation within this range is related to type of ware, as fineware generally has fine-to-medium sand, and plainware medium-to-very coarse (Table 2.7). The few samples with temper coded as "not visible" are fineware; in these cases, inclusions are either too fine or too sparse to be visible in the break. Temper percent of paste was scored as "not visible," 5%, 10%, 20%, 30%, or other. Within the INAA sample, temper frequency ranged from not visible to 30%, although this measure is also related to type of ware. Fineware almost always received a score of 5% or 10% (66% and 25% of fineware fell into these categories, respectively), and rarely 20% or 30% (4% and 3% of fineware; Table 2.8). The same three fineware samples that scored "not visible" for inclusion size are also coded "not visible" for inclusion frequency. On the other hand, the most common inclusion frequency score for

Table 2.7 Inclusion size for fineware and plainware.

	Count		Frequency (%)	
Size	*Fineware*	*Plainware*	*Fineware*	*Plainware*
not visible	3	0	2	0
silt (1/16 mm)	0	0	0	0
very fine sand (1/16-1/8 mm)	0	0	0	0
fine sand (1/8-1/4 mm)	42	0	27	0
medium sand (1/4-1/2 mm)	87	12	56	33
coarse sand (1/2-1 mm)	24	13	15	36
very coarse sand (1-2 mm)	0	11	0	31
other (>2 mm)	0	0	0	0
TOTAL	156	36	100	100

Table 2.8 Inclusion frequency for fineware and plainware.

	Count		Frequency (%)	
% of Paste	*Fineware*	*Plainware*	*Fineware*	*Plainware*
not visible	3	0	2	0
5	103	0	66	0
10	39	6	25	17
20	7	17	4	47
30	4	12	3	33
other (>30)	0	1	0	3
TOTAL	156	36	100	100

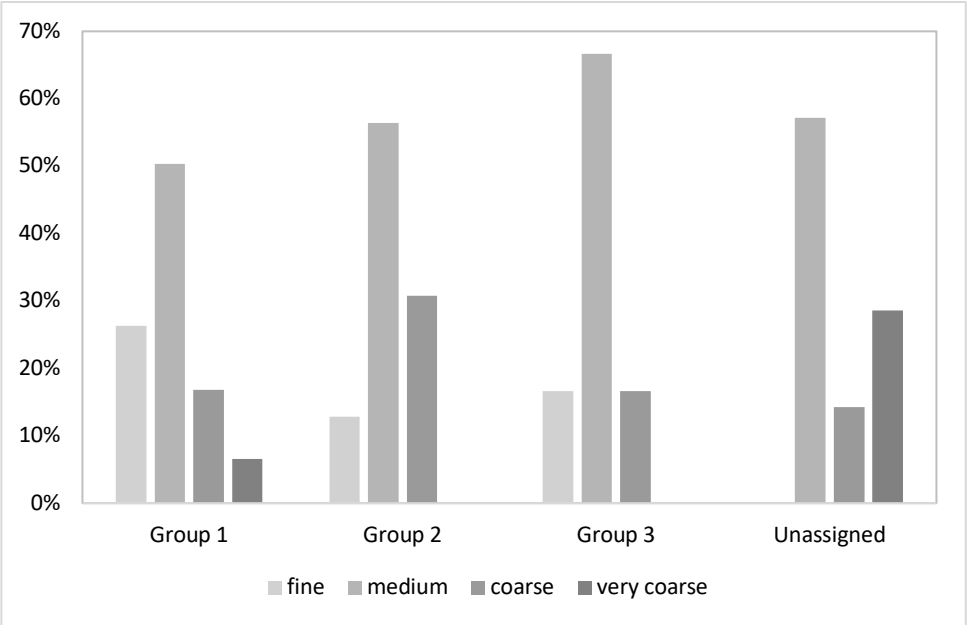

Figure 2.10 Frequency of inclusion sand size categories across compositional groups.

plainware was 20% (47% of plainware), followed by 30% (33% of plainware) and 10% (17%); no plainware received a score of 5% or not visible. Group 1 has the highest frequency of "fine sand" and the lowest frequency of "medium" sand (Figure 2.10). It has a low frequency of "very coarse" sand temper, which is not present in Groups 2 and 3, though this could partly be a result of the low frequency of this temper size category overall combined with the smaller sample size of these latter two groups. Outlier sherds have the highest frequency of "very coarse" sand temper as a group, supporting the possibility that the presence of unusually large inclusions is what kept these sherds from being placed into one of the other compositional groups.

A chi-square test was applied to inclusion size scores ranging from fine sand to very coarse sand for Groups 1 and 2, and it was found that the difference in temper size was

statistically significant when looking at fine and plainware (χ^2=8.112, df=3, p=.044). Difference in temper size is also statistically significant when looking only at fineware and the size categories of fine to coarse sand (very coarse sand was removed from calculations because no fineware received this score; χ^2=6.691, df=2, =.035). These results mean that we can have high confidence that the difference in temper sizes between Groups 1 and 2 reflects real differences in the samples, even when looking only at fineware. Group 3 could not be included in a chi-square analysis as its sample size is too small, and the expected values generated for the chi-square test were not sufficiently large to be considered reliable (following guidelines in Drennan 2010: 192). The sample size is also too small to look at distinctions within the sub-sample of plainware in Groups 1 and 2. Unassigned sherds were not included in a chi-square analysis either, because they are not an actual compositional group.

Group 1 also has the highest frequency among the identified compositional groups of inclusions covering ~5% of the clean break surface (Figure 2.11). It has the lowest frequency of inclusion frequency rated at 10%, 20%, and 30% (and this is despite Group 1 having slightly more plainware as a relative proportion of the group than the other two assigned groups). Overall then, Group 1 has what could be considered the finest paste, with the smallest and least frequent inclusions. Again Groups 1 and 2 were compared to see if they could be differentiated using a chi-square test, using the most populous categories of 5, 10, 20, and 30%. Although the results of the chi-square test do not reach the level of statistical significance, they do indicate that the two groups are not *likely* to be the same (χ^2=5.022, df=3, p=.171; Note that the expected values are on the borderline of acceptable, according to Drennan's guidelines that "no expected value be <1 and no more than 20% of expected

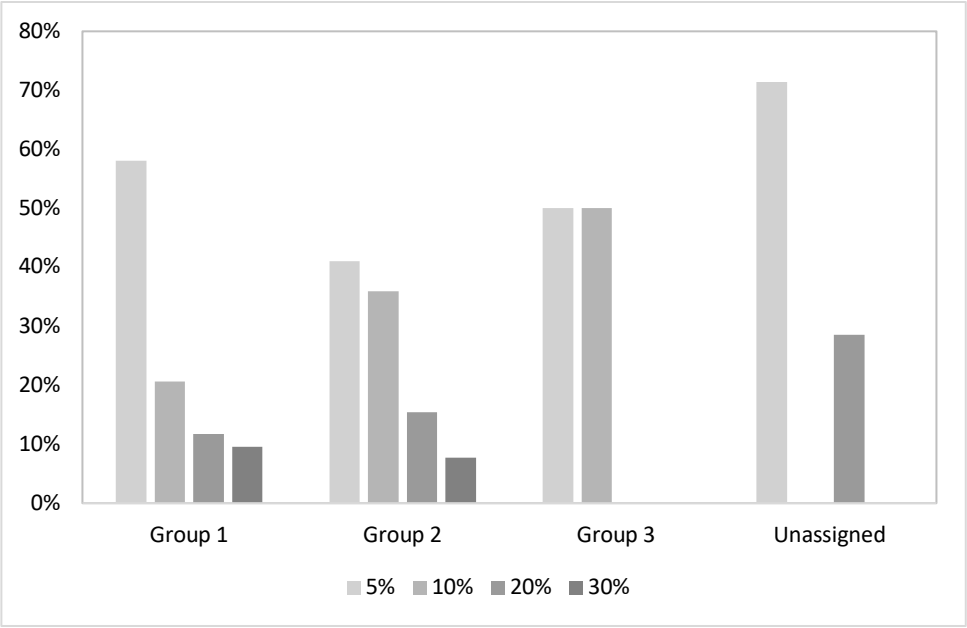

Figure 2.11 Distribution of inclusion frequency categories across compositional groups.

values <5" [2010: 192], as two expected values, or 25%, are <5. As one of these values is 4.9, I include the chi-square results here but with this note of caution). A chi-square test could not be run for fineware only, or including Group 3, due again to issues of small sample size resulting in excessively small expected values.

In sum, when looked at together, temper size and frequency suggest that there may be some real differences in inclusion attributes between Groups 1 and 2, which could be a driving factor in the differentiation of Groups 1 and 2 within a larger compositional group. Although these differences may be real, they are far from absolute. That is, both groups contain the full range of inclusion sizes and frequencies, meaning that these characteristics cannot be confidently used to identify the compositional group that a sherd belongs to by eye (or loupe). Group 3 is too small to make any substantial statements regarding its paste

inclusion characteristics. A similar conclusion regarding inclusions as a driving factor in distinguishing compositional groups was reached by Vaughn for SNR Groups 1 and 2, suggesting that perhaps for the broader south coast region a given potter used a single clay source zone for both fine and plainware production, but prepared it differently depending on its intended function (Vaughn 2000).

As a final note, compositional Groups 1-3 do not seem to be associated with different time periods, areas of the site, or paste colors. For the purpose of comparison, phases were collapsed into proto-Nasca (Nasca 1), "Early Nasca" (Nasca 2 and 3), "Middle Nasca" (Nasca 4 and 5), and "Late Nasca" (Nasca 6, the latest phase present in the sample; Table 2.9). The grouping of Nasca stylistic phases into time periods follows recent chronological studies that show that some phases overlapped partially or completely, and reflect different sub-styles rather than different time periods (Carmichael 2019, 2020; Vaughn et al. 2014). Nevertheless, only Early and Middle Nasca are sufficiently represented in the sample to be confident in the results, and it should be noted that the Early Nasca sample is dominated by Nasca 3 and the Middle Nasca sample is dominated by Nasca 4. The Middle Nasca sample has more outliers than the Early Nasca sample, suggesting that there may be slightly more variation during Middle Nasca than in Early.

Regarding the distribution of compositional groups across the site, if one excludes the Plaza and Sector I due to small sample sizes, there is <10% variation in the frequency of Groups 1, 2, and 3 in different aeras (Table 2.10). The highest frequency of Group 1 occurs in Sub-Mound A, but with the current sample size we must exercise caution.

Paste color similarly presents no correlation with compositional group (Table 2.11). Pastes coded as "light red" (see Table 2.12 for Munsell reference) comprise about two-thirds

Table 2.9 Compositional groups by broader Nasca phases.

Broader phase	Phases Included	Group 1	Group 2	Group 3	Outlier	*n*
Proto-Nasca	Nasca 1	50%	0%	0%	50%	2
Early Nasca	Nasca 2, 3, "Early Nasca"	71%	22%	5%	1%	91
Middle Nasca	Nasca 4, 5	62%	27%	3%	8%	37
Late Nasca	Nasca 5 or 6, 6	100%	0%	0%	0%	4

Table 2.10 Frequency of compositional groups within different areas of the site.

Zone	Sector	Group 1 (%)	Group 2 (%)	Group 3 (%)	Outlier (%)	*n*
Primary Residential Zone	Sector 7	72	19	3	6	36
	Sector 9	72	22	7	0	60
Ceremonial Zone	Sub-Mound A	81	15	4	0	26
	Sub-Mound B	74	16	0	9	43
	Sub-Mound C	71	29	0	0	14
	Plaza	40	40	0	20	5
	Sector 1	63	25	0	13	8

Table 2.11 Frequency of paste colors within compositional groups.

Paste color	Group 1	Group 2	Group 3	Outlier	Total Percentage of Sample	*n*
light red	65%	67%	67%	50%	65%	125
light brown	4%	3%	17%	0%	4%	7
light red to light brown	2%	0%	0%	0%	2%	3
light red to dark brown	0%	3%	0%	0%	1%	1
yellowish	16%	13%	17%	25%	16%	30
light red to yellowish	4%	5%	0%	0%	4%	8
cannot tell (reduced)	1%	0%	0%	13%	2%	3
dark brown	4%	5%	0%	13%	5%	9
light red to tan	0%	3%	0%	0%	1%	1
light red? (reduced)	1%	3%	0%	0%	1%	2
light red to 7.5YR 5/4.3	1%	0%	0%	0%	1%	1
light brown? (reduced)	1%	0%	0%	0%	1%	1
tan	1%	0%	0%	0%	1%	1

Table 2.12 Munsell colors and codes.

Color	Code
light red	reference color and 1 step around 10R 5/6
yellowish	reference color and 1 step around 5YR 6/6
light grey	reference color and 1 step around 5YR 5/2
light brown	reference color and 1 step around 7.5YR 6/3
dark brown	reference color and 1 step around 7.5YR 4/4
tan	reference color and 1 step around 10YR 6/3

of Groups 1-3, followed distantly by "yellowish," which makes up 13-17% of Groups 1-3. All other paste shades are present in quantities <5% for Groups 1-3. The unassigned samples show more variation in their paste colors, particularly the presence of brown. Thus, the compositional groups are not explainable by change over time or area of site, and paste color is not a variable that could be used as a practical method of identifying compositional groups by eye.

Summary of Results

The Cerro Tortolita sample can be classified into three compositional groups, with a small number of outliers. Groups 1 and 2 likely reflect variation within a single compositional group. Paste inclusions seem at least partially responsible for driving this variation, as Group 1 sherds have a generally finer paste with fewer and smaller inclusions than Group 2.

No SNR-produced ceramics, either plainware or fineware, were identified through INAA. Hypothesis 1, stating that locally produced (plainware) ceramics are sufficiently chemically distinct from those produced in the SNR as to fall into different compositional groups, is therefore supported. Null Hypothesis 2, that no SNR fineware ceramics were brought to Cerro Tortolita through pilgrimage or other means, is also supported.

Discussion

The main finding from this analysis is that SNR-produced ceramics are not in the ceramic sample from Cerro Tortolita. Hypothesis 2 postulates that if at least some SNR ceramics were present at Cerro Tortolita, this would support a close, on-going relationship

between people living at this site and in the SNR, possibly through pilgrimage. Maintaining a connection to the SNR may have had implications for one's ritual knowledge and status for residents of Cerro Tortolita (particularly for religious specialists). The null hypothesis envisages approximately the opposite situation—that if no SNR ceramics are identified at Cerro Tortolita, this would at minimum mean that the ceramic-distribution-through-pilgrimage model did not apply to residents at Cerro Tortolita. It might further mean that maintaining close ties to the SNR, and Cahuachi, simply was not that important for ritual life or status at Cerro Tortolita. The null hypothesis is clearly supported by the data: there is no evidence for pilgrimage by residents of Cerro Tortolita to the SNR.

Although no connection to the SNR in the form of ceramics was identified at Cerro Tortolita, this does not mean that people in these two areas were unconnected. The stylistic similarity of ceramics used in the two areas alone supports ongoing dialogue between peoples of the two areas. It is also possible that pots from the SNR are simply very rare, and were not included in the INAA sample, but this is an issue inherent in any archaeological investigation, and the sample was geared towards including the most likely candidates to have origins in the SNR. It is also possible that connections to the SNR were important to people at Cerro Tortolita, including in terms of acquiring specialized roles (such as religious specialists) and status, but were not physically manifested in the form of transporting ceramic pots. However, this explanation would be difficult to support archaeologically in the absence of physical movement of goods.

The lack of any SNR-produced ceramics at Cerro Tortolita highlights the importance of ceramic production (of both fine and plainware ceramics) locally, possibly at the site itself. Similarly to the SNR, at Cerro Tortolita there is evidence for ceramic production in

ceremonial areas (the Ceremonial Zone) but not at the household level in residential areas (the Primary Residential Zone). If part-time specialists, possibly shamanic-artisan chiefs, made the Nasca style ceramics present in the SNR, the same may be true for the ceramics in the Upper Ica Valley. It makes some sense that, in a society generally without specialization, ritual specialists at ceremonial sites might have been the people with the time and means to produce fine ceramics (*á la* Spielmann 1998). Furthermore, the ability to produce such goods could have been another means of demonstrating one's special (ritual) knowledge and status (Ames 1995; Carmichael 2020). However, there has been less excavation of Nasca occupations in the Upper Ica Valley than in the SNR to date, so it is premature to suggest that no evidence of ceramic production *will* be found in residential sites, or sites with a smaller ceremonial component (unlike in the SNR for this time period, many sites have some ceremonial or special use architecture, though none matching the extent of that at Cerro Tortolita; see Massey 1986; see also Conlee 2014, 2016 on the site of La Tiza for an exception to the generalization of a lack of ceremonial architecture at residential sites during this period in the SNR).

The results of this study also add to the growing body of evidence that does not support Cahuachi's centrality across river drainages, or at least in the NNR, while acknowledging its importance as an early epicenter of the Nasca religion (Carmichael 2016: 58-59) and the most impressive ceremonial site of its time in the Nasca region. Rather than being the sole center of ceramic production and innovation, imitated by those in other valleys, perhaps potters in the SNR and at Cahuachi were merely one set of participants. Instead of a top-down model wherein potters in the SNR and/or Cahuachi set the standard for ceramics, maybe there were communities of potters across several valleys, including in the

CNR and the Upper Ica Valley, who contributed to innovations in the Nasca style, imitating, learning from, and building on the work of one another. In this model, Cahuachi and other ceremonial centers all drew on traditional iconography and ideology as sources of legitimacy, and Cahuachi is not necessarily a central power. This model does not undermine the interpretation of Cahuachi as a pilgrimage center, but emphasizes the role of other centers that may have been cooperating, competing, or merely co-existing with Cahuachi to varying degrees. Carmichael (2016: 77) comes to a similar conclusion based on his study of the iconography of the Masked Being. This alternate model also provides a means of building ritual authority outside of Cahuachi, through craft production.

Conclusions

Although SNR-produced ceramics were not found to be associated with any area of the site, ceramics likely still played an important role in social differentiation. The location of the (indirect) evidence for ceramic production in Sector I and Sub-Mound B of the Ceremonial Zone at Cerro Tortolita supports a connection between ritual specialists and ceramic production. Controlling the knowledge and skills required for the production of ceramics could have been a source of influence and power for shamanic artisan-chiefs, demonstrating their ability to communicate with and control natural elements and forces, such as clay and fire, seen as living, embodied forces (Carmichael 2020: 152). The ability to reproduce (or embody?) supernatural beings and symbols in decorations on pottery would have added to this power as well. In addition, potters would have had control over the distribution of pots once made. Pots could have been traded, redistributed as gifts, or given in return for labor, food, or other goods needed for subsistence. Although there is still much to

learn about Early Nasca style ceramics and the social structure of the Upper Ica Valley, pottery was certainly an important part of creating that society, particularly at Cerro Tortolita.

At a regional level, a few points can also be made regarding the relationship of Cerro Tortolita residents with the SNR and Cahuachi. While certainly there was a flow of information (as indicated by shared ceramic style) and people between the two areas, this flow does not appear to have been in the form of pots themselves. The lack of SNR imports identified at Cerro Tortolita suggests that Cahuachi and the surrounding SNR may not have been as central to the ongoing Nasca culture as previously thought. As a major center associated with the earliest phases of the Nasca stylistic sequence, Cahuachi was surely a place that Cerro Tortolita inhabitants were aware of and may have visited; however, as we adjust our understanding of the production of Early Nasca style ceramics as a good that was produced at multiple centers, we should also consider that these other centers likely played a role in shaping Nasca style and culture as well. There is still debate about whether Nasca was a state or a religious and cultural phenomenon (see Conlee 2016: 105-107; Conlee 2014: 237-238; or Carmichael 2016: 77 for overviews), and this most recent data, while far from settling the debate, demonstrates the limitations of the direct reach of leaders at Cahuachi. People in different areas participated in, engaged with, and understood the Nasca ideological and iconographic tradition in a locally specific manner. In line with Carmichael's (2013: 218) conclusions, this study supports that Nasca ceramic production was not completely controlled by religious specialists at Cahuachi. Likewise, power and religious authority had local roots as well, rather than flowing or deriving from close contact with Cahuachi.

Cerro Tortolita itself may have functioned as a local pilgrimage center, distributing its own pottery, its relationship with Cahuachi defined to varying degrees by competition, cooperation, or imitation. It may also have simply been an important local center that did not support pilgrimage. Ultimately however, the residents of Cerro Tortolita drew on a common corpus of iconography and, presumably, ideology, to construct their own, locally-rooted religion and structures of authority. The case of Cerro Tortolita demonstrates how religious authority and craft production operated within a loosely affiliated religious network on the south coast.

CHAPTER 3

Ritual Practices at Cerro Tortolita: A Disjunctive Approach

This chapter focuses on variation in ritual and religion between domestic- and ceremonial-focused areas of Cerro Tortolita. I ask how access to and participation in ritual was similar or different for those living and/or performing rituals in the Primary Residential and Ceremonial Zones, with the ultimate goal of understanding how ritual reflected religion, and how the practice of both constructed society at Cerro Tortolita (Figure 1.2).

Recent work increasingly highlights the importance of investigating ritual outside of explicitly ceremonial contexts, as well as the rich information that can be gained by *comparing* ritual between different types of contexts (e.g., Blackmore 2011; Feinman et al. 2008; Fernandini and Ruales 2017; Gámez Díaz 2013; Gonlin and Lohse 2007; Joyce and Weller 2007; Lucero 2010; Marcus 2018; Plunket 2002; Robin 2016; Robin et al. 2014; Swenson 2008). Grand ceremonial contexts, such as monumental architecture, tend to receive more scrutiny as to their "rituality" than residential contexts. As a result, ritual is under-identified and until recently has been under-theorized for residential contexts, although this situation is fast changing. Through comparison of ritual in different contexts, one can ask questions such as how religious beliefs and values were shared or contested, as well as how religious authority was vested—essential questions for understanding how a society works (or why it did not). In this study, I presuppose that ritual did occur in the Primary Residential Zone, even if it is not always identifiable archaeologically (although I will endeavor to identify at least some types of ritual activity here). Therefore, investigation of ritual only in the Ceremonial Zone would not give a complete picture of this important aspect of life at

Cerro Tortolita. It would also miss the opportunity to represent the perspective of people living in the Primary Residential Zone. By comparing ritual activity between the two Zones, we can understand how people participated in ritual in each Zone, and from this information we can learn about how people shared or contested religious beliefs and narratives about the world, as well as how they constructed their society via ritual and religion.

Ritual Specialists and Ritual Ephemera in Nasca Culture

Previous work at Cerro Tortolita suggests that ritual specialists resided in the Ceremonial Zone, given the enclosed, monumental architecture found atop the U-shaped platform mound, indicating restricted access and a small number of participants in activities taking place there (Vaughn et al. 2019). Those who participated in such exclusive ceremonies likely were differentiated from society at large on the basis of their knowledge of ritual and religion, and possibly by other means as well. In the broader literature on Nasca society, the interpretation of ritual specialists and their degree of specialization/power has generally been related to the individual scholar's view of Nasca cultural complexity. Conlee notes that interpretations of Nasca socio-political complexity are often influenced by *where* a researcher works, with those who work at Cahuachi and in the northern Río Grande de Nasca drainages viewing Nasca as more state-like, and those working in the Southern Nasca Region (SNR) generally viewing the social structure as more middle-range (2016: 107; Figure 1.1). A notable exception to this generalization is Conlee's recent work at La Tiza, located in the SNR, which is more in alignment with a view of Nasca society as centralized and hierarchical, though not quite state-like (2016: 134).

Those who view the Nasca as a "middle range" or chiefdom-like society also generally view ritual specialists in this culture as shamans rather than priests (Proulx 2006: 198-204; Silverman and Proulx 2002: 196-204). Proulx describes shamans as performing their special role on a part-time, rather than full time basis, and their authority as coming from their personal charisma and a direct mystic experience, rather than from an institutionalized role (2006: 199). In Proulx's description, shamans act as intermediaries between worlds, and may use hallucinogenic drugs or other means to induce visions or a trance state. Those who view Nasca society as more hierarchical interpret ritual practitioners as having a more institutionalized, priest-like role (Lasaponara et al. 2016). Orefici (2012) prefers the term "theocratic state" in describing Nasca society, highlighting the importance of religion as well as the political dimensions of ritual specialists in his perspective. Perhaps the one aspect of Nasca religion that researchers do generally agree on is that agricultural themes and fertility were important, based on the prevalence of such themes in Nasca iconography.

Iconography on ceramics depicting ritual scenes can also be helpful in identifying archaeological items with ritual relevance. Proulx describes a recurring ritual scene that includes "the association of images of cacti, large storage containers holding some type of beverage, and ceremonial participants drinking from small cups (fig 1.6; pl. 8)" (2006: 201). A further scene depicts a musician playing a panpipe and drum, sometimes with clay trumpets sticking out of his ears (2006: 201). Several details, including the depiction of a cactus on the musician's shirt, small cups and other vessels, and the accompaniment of other figures (possibly farmers), suggest that a ritual involving the ingestion of hallucinogens is occurring. The uniformity of depictions of this theme leads Proulx to argue that a specific ritual is being shown. Yet another image of an agricultural ceremony shows people with

multicolored dots on their faces wearing conical hats associated with farmers (2006: 202). Regarding clothing and personal adornment, Proulx also notes representations of "…males dressed with various elements of ritual attire: animal-skin capes, gold mouth masks and forehead ornaments, gold bangles or hair ornaments, *Spondylus* shell jewelry, and human trophy heads (fig. 5.13)" (2006: 201-202). Examples of most of the goods depicted in these scenes have come from archaeological contexts as well, although many are lamentably lacking in secure documentation due to looting. A textile bundle of small sculptures interpreted as a shaman's kit has also been found archaeologically and provides another example of ritual objects from the Nasca culture (now in the Malcolm K. Whyte Collection in the Milwaukee Public Museum; Proulx 2006: 201).

There has been some debate as to whether or not the supernatural beings in Nasca iconography represent (human) ritual specialists dressed as supernatural beings, or are more straight-forward depictions of supernatural beings. Proulx believes that most, if not all, images fall into the latter camp, and do not show "masked impersonators or ritual performers," though he acknowledges that two or three variations of the Anthropomorphic Mythical Being may be humans in ritual attire (2006: 200). Some of the objects and goods depicted in iconography and recovered archaeologically may also be useful for identifying ritual at Cerro Tortolita.

Current Perspectives on Religion, Ritual, and Relationality

Studies in recent years have broken with decades of archaeological tradition separating and downplaying the role of religion in creating societies. A more complete discussion of this topic is provided in the Introduction (Chapter 1), but a short synthesis is provided here.

While traditionally religion has been viewed as a mere post-hoc means of justification for inequalities, the focus is now on the active role that religion and ritual play in constructing societies. Unsurprisingly, archaeologists and anthropologists have found a wide range of possibilities. Some studies have turned the traditional perspective of politics and ecology as determining religion on its head. Examples include studies showing how differential participation in religious activities was a precursor to political inequalities (Alt and Pauketat 2018; Barber 2018; R. Joyce 2018); how religion limited the ability of later leaders to centralize power elsewhere (A. Joyce and Barber 2015); how religious practices shaped ecological adaptations (Swenson 2007); how peasant ideology shaped incipient elite ideology, as a critique of the Dominant Ideology Thesis and "false consciousness" among commoners (Robin 2016); or how marked distinctions in religious authority and ability to perform rituals does *not* necessarily equate to politico-economic differences between individuals (e.g., Fowles 2013; Gruner 2018).

Many studies view religion as a site of tension, contestation, and negotiation in the formation of political complexity. Joyce and colleagues (2001) conceptualize three, potentially overlapping, modes of commoner participation in ritual, still often cited directly or indirectly today: engagement, independence, and resistance. Engagement describes the negotiation between religious elites and commoners, through commoners' participation and even non-participation in communal ritual life; independence refers to commoners' ability to maintain their own religious knowledge and conduct their own rituals, which do not contribute significantly to the ideology supported by elites, but neither do they necessarily contradict it; resistance may be passive, through non-participation, or active, such as the destruction of monuments. Recent research has emphasized topics such as differences in

religious beliefs and practices across the social spectrum (which may fall into any of the above categories) and how the expectations of non-elites may act as a check on elite ritual activities and ambitions (or engagement; for examples, see Douglass 2007; Gonlin 2007; Hutson et al. 2018; A. Joyce 2018: 4; A. Joyce et al. 2001; A. Joyce and Weller 2007; McCafferty 2007; Olson 2007).

Anthropologists are also revisiting our basic definitions of religion, due to greater awareness of a relational and animistic view of the world now understood to have deep roots in many Indigenous cultures, including in the Andes. A relational and animistic worldview go hand in hand. In this understanding of the world, non-human entities such as objects or features on the landscape have the potential to be animate, and be recognized as social persons with whom a relationship can be established. There is a recognition of the reciprocal relations of all social beings, human, animal, object, or landscape, though it should be noted that just because an object can be animate does not mean it necessarily will be, or is at all times, depending on the cultural context (Zedeño 2009: 407). In a relational worldview religion and ritual have the potential to permeate all aspects of life, including what anthropologists would traditionally consider the "profane," or the "mundane," such as economic and political activities (see examples above). Though looking at the modern Western world, Latour has argued that the division of the sacred and the profane has never truly been as complete as they are popularly perceived to be in the West, either (Latour 1993). Once the potential for essentially any activity to take place within a religious framework is recognized, it becomes critically important to study ritual and religion, rather than writing it off.

When the potential pervasiveness of religion is acknowledged, it complicates any effort to establish a narrow, universal definition of religion. By trying to define and separate religion from other activities, we are already misleading ourselves. However, labels such as "religious," "economic," etc., are inescapably useful in order to discuss phenomena, even when those labels are acknowledged to be imperfect. Therefore, here I use these terms as necessary and also borrow Fowles' definition of religion as "doings," which he defines in regards to Pueblo society: "Doings are simultaneously social, economic, political, cosmological, technological, and so on, as are most human practices. They are not, in other words, a separate species of Pueblo behavior. But *they are distinguished from other practices by the extent to which they mark and make explicit the mutual entanglement of people, things, and cosmos*" (2013: 104; emphasis added). With this baseline definition of religion, ritual can be defined as any practice undertaken with an especially heightened awareness of relationality and interconnectedness, with the goal of influencing or transforming relationships (Fowles 2013: 103-104; Swenson 2015: 333). Fortunately for archaeologists, ritual activities are often 'marked,' 'framed,' or 'mediated' through location, architecture, use of special objects, or ingestion of special substances, allowing them to be more identifiable archaeologically (Bell 1997: 160-161).

The concept of relationality is critical to understanding ritual, as it carries the potential for creating something more than the sum of its parts by positioning, combining, or removing things to achieve a particular goal (Zedeño 2008, 2009). In accordance with ritual's focus on relationships, apparently disparate materials may be found "bundled" (Pauketat 2013: 27-42, 185-187; Zedeño 2008), or cached, in order to invoke or transform a relationship between humans and other-than-human powers. The relational nature of ritual

can make it a valuable tool for creating change (particularly political change) in a society, as it allows performers to rearrange and renegotiate relationships. Given the importance of relationships and context in ritual (e.g., objects bundled together or cached; a cooking pot buried as a foundational offering), one challenge in identifying ritual in the past can be a lack of secure, *in situ* contexts. Nonetheless, it is important to reconstruct as much as we can of ritual in the past, given how pervasive we now understand it to be, along with the agency that religion has in shaping societies—just as much or more than more traditionally considered economic, political, or ecological factors, depending on the context. Although there are not many *in situ* contexts to aid the study of ritual at Cerro Tortolita, fortunately the materiality of ritual means that there are still several lines of evidence that can be used to construct a comparison of ritual activities in each Zone.

Three lines of evidence will be examined for this study: 1) architectural settings of the two Zones, 2) the distribution of special goods with a ritual use (both exotic and locally produced), and 3) the distribution of different types of ceramic iconography. Each of the above lines of evidence will be introduced here from a theoretical perspective, and then used to build a hypothesis and null hypothesis in the following section.

Architectural Setting

Architectural form and size are informative of the uses of different spaces. Form is shaped by intended function, and size affects how many people may be in a given space (which is also related to function). In the Andes, as elsewhere, platform mounds and plazas are forms associated with ritual activities. The small surface area of the top of platform mounds often allows only small groups, especially if structures are built here that further

restrict group size, while the greater area of plazas accommodates large groups. Domestic dwellings can vary in size, but in this region at this type are typically relatively small, and accommodate a relatively small number of people. Many activities would have taken place on narrow patios outside of houses. Thus, a basic description of the architecture of the different Zones will provide insights into the use of space in different areas.

Distribution of Special Goods

Though materials used in rituals need not be rare or exotic, exclusive access to such goods may be a means of differentiating one's access to ritual knowledge, ability to perform certain rituals, and religious authority. Exotic goods symbolize relationships to the 'outside' world, both physical and metaphysical (Helms 1993: 9), and come with their own object biographies that imbue them with innate qualities that set them apart from other goods. Exotic goods may function in more than one "sphere" and have economic value as well, existing on "an inalienable-commodity continuum, and representing diverse systems of valence" (Zedeño 2018: 298). The multifaceted value of *Spondylus* in the Andes has been discussed in this manner by Moore (2018), and is also an example of an exotic good that may be found at Cerro Tortolita. Other exotic goods known in this region from archaeological contexts could be present as well, such as parts of non-native animals like Amazonian parrots (particularly their feathers, used in textile decoration), jaguars, or monkeys (Proulx 2006: 208). Coca also carries religious significance throughout the Andes, and is generally a highland crop (though it may also have been locally grown, given the suitability of the south coast environment for its growth) [Beresford-Jones et al. 2011: 286]).

However, goods used in ritual need not be exotic, nor limited to use in ritual. They may be locally produced as well, such as special feasting vessels, musical instruments, or figurines. Servingware bearing religious iconography could have been used in ritual feasts as well as in daily meals, imbuing both with a heightened awareness of relationality. Of course, in some cases ritual does not require goods that are "special" in any way at all but may be marked in the archaeological record through repetition, context, and relations with other objects and/or activities.

Ceramic Iconography

The differential distribution of ceramic iconography can likewise provide a window into the nature of ritual activities and, to an extent, beliefs and preferences, in each Zone. Several studies comparing symbolism and imagery between different types of contexts provide excellent examples of the rich results such studies can provide. In one, Halperin (2014) compares Aztec figurines from household contexts with state symbolism, in order to study how households incorporated or challenged state ideologies, how the Aztec state represented its ideology to different groups of people, and how commoners influenced the way in which the state built its power. Brumfiel (1998) also compares how the Aztec state presented its ideology to different groups of people (elite warriors and commoners), as well as how the ubiquitous figurines found in commoner household contexts changed during Aztec domination. Through this analysis, she finds that "commoners were not preoccupied with the state's definitions of social roles and status" (Brumfiel 1998:7). One last example is Forde's (2016) study of iconography on polychrome ceramics from commoner households in Tututepec, a Late Postclassic center in Oaxaca, in which he finds that "the salient themes of

ideology expressed in this pottery were compatible with those of the Tututepec state," leading him to conclude "that this is suggestive of an inclusive ideology that crosscut social status…" (400). Just as these studies draw on comparison of symbolism in different types of contexts, a comparison of the types and frequency of designs between Zones may be informative of differences or similarities in the aspects of religion that people found most salient or had access to. If differences are found they would suggest an inherent tension, possibly similar to Joyce and colleagues' (2001) independence or resistance, in the interests and beliefs of religious specialists and commoners. On the other hand, similar frequency of iconographic themes would suggest uniformity and shared beliefs and values, or engagement, at least as accessible at the level of ceramic iconography.

Interpreting differences in the distribution of iconography between the two Zones of Cerro Tortolita also requires taking into account the manner in which people acquired pots. Namely, the extent to which people had agency in determining the iconography on the pots they used, and therefore if the pots in their homes reflect their preferences. A marketplace would be an ideal indicator of free choice, and additionally suggest the consumer's ability to influence production of different iconographic themes through the force of demand, but as yet no physical marketplaces have been identified archaeologically in the Andes, making it more likely that pots were obtained through direct access or down-the-line exchange (Mader 2019: 34-38). They may have been produced by ritual specialists, or under their supervision, at ceremonial centers, and distributed through pilgrimage (the model argued for the SNR, with production centering at Cahuachi; Vaughn et al. 2011); or at more decentralized workshops, decoupled from religious specialists. A mixture of these scenarios is possible as well. Regardless of how pots were produced and obtained, people likely had some degree of

choice in the pots and themes they took home, reflecting their beliefs, preferences, and priorities. In addition, in any of these scenarios producers may have catered to an extent to the themes that resonated most with consumers, even if those producers were also ritual specialists. If there were multiple, decentralized production centers, producers may have felt pressure to produce pots with themes that were in demand, especially if consumers had access to different, competing production centers (though they may not have had such access). If producers were ritual specialists at a ceremonial center, they might have faced additional pressure to produce themes that resonated with people, in order to attract and maintain support. The issue of whether or not people had a choice in the pots they used is further addressed in the hypotheses.

The Hypotheses

Two primary scenarios, or a hypothesis and a null hypothesis, will be tested using the above lines of evidence. The hypothesis is that there are distinctions in ritual practices between the different architectural settings of each Zone, reflecting different knowledge, means, priorities, and/or perspectives on religion as a whole. Religious specialists performing rituals in the Ceremonial Zone monopolize a certain knowledge set that they put to use on the behalf of residents of the site and possibly beyond (e.g., Fowles 2013: 52-67). Their different economic means, spiritual authority, and/or ritual capabilities should be reflected in access to certain goods (especially exotic) that those in the Primary Residential Zone do not have. Those performing rituals in the Primary Residential Zone may also utilize types of objects that are not used in the Ceremonial Zone, reflecting use of what is available to them,

different types/scales of rituals, and/or possibly challenges to official narratives of proper ritual procedure.

The null hypothesis is that there were no distinctions in ritual material culture between the two Zones, apart from the architectural context in which items are found (i.e., households versus a platform mound and plaza). Some people in the Primary Residential Zone may have had access to more difficult-to-obtain exotic goods than others, or potentially no one in either Zone had access to such goods. The null hypothesis reflects minimal distinctions in status between those performing rituals in each Zone, aside from the ritual specialization of those in the Ceremonial Zone, and fairly widespread agreement about the proper way to do things along with a similar worldview.

Due to a paucity of clear *in situ* contexts, I refrain from investigating differences *between* households in the Primary Residential Zone in terms of ritual activity as there is not enough data at present to support such a discussion. It is possible that very rare objects were not accessible or owned by all households, but it is also possible that each household only had only a few such objects. At present that is all that can be said, due to contexts that are mostly the result of discard or fill, and largely unidentifiable floors. In both hypotheses, there is assumed to be ritual activity that took place in the Primary Residential Zone (whether it is visible archaeologically or not), and the question under investigation regards how the items used in ritual were different or similar between Zones, reflecting differences in practices and, potentially, beliefs. However, there may well have been variation in ritual and views of religion within the Primary Residential Zone as well.

Testing the Hypotheses

Three lines of evidence will be employed for comparison between Zones. These are 1) architectural setting, 2) distribution of special goods, both exotic and locally produced, and 3) relative consumption of different categories of ceramic iconography. The first and second lines of evidence provide material markers that can indicate a special ritual context. The affordances and restrictions on ritual activities imposed by the architecture in each Zone will be discussed and compared in relation to the hypotheses. If the hypothesis of strong distinctions in ritual practice between the two Zones is supported, I expect differences in the distribution of special goods. Certain goods, most likely exotic, will only be in the Ceremonial Zone. If the null hypothesis of minimal differences in ritual between Zones is supported, I would expect similar relative quantities of any special ritual goods, exotic or locally made.

The third line of evidence, iconography of decorated fineware ceramics, is found on pots used both in daily and special ritual contexts. Identifying the distribution of themes has the potential to inform us about the concerns and values of people using the pots in each Zone, or the themes to which people had access. If the different theme categories do not vary in frequency between Zones, this pattern would indicate that people were more or less in agreement about what themes were most important to them to have on their pots, and that there was no distinction in ability to access different themes, supporting the null hypothesis. It is also possible that the categorical distinctions made in this study have no emic relevance, though this would not invalidate the previous conclusion. If there are differences in iconography category frequencies between Zones however, it may suggest different concerns and values, disagreements over the most important aspects of the Nasca cosmology, or different abilities to access pots depicting certain themes, supporting the hypothesis.

Results

Architectural Setting

Context is critical for the interpretation of any of the above lines of evidence. The architecture in each Zone both supports and constrains the different primary functions for each space. The Primary Residential Zone contains approximately 150 terraces spread over two steep quebradas. The terraces range from about 10-30 sq m in size, and are typically about 10-20 m in length, though sometimes several are joined together in a row (Figure 1.3). Fill was used in the construction of stable, flat surfaces on which to live. Terrace retainer walls are the primary form of architecture still visible on the surface. These walls do not make use of cut stone, are not very substantial, and are generally in crumbling condition today. People likely lived in *quincha* (wattle and daub) structures within the terraces, and used the remainder of the terrace area for outdoor activities. A limited number of terraces contained more substantial stone walls that were part of structures (3/12 units, including Units 6, 12.1, and 24). A more complete description of the Primary Residential Zone is available in Chapter 1.

Ritual activity is assumed to have taken place in dwellings within the Primary Residential Zone. Potential foundation offerings including two *ollas* buried in the same area at different elevations, one directly below a wall and one partially underneath the same wall (Unit 24; and a layer of ash found along a wall, directly underneath a prepared floor (Unit 6), may provide evidence of ritual activities, although alternative explanations are possible in both cases as well (Figure 3.1). Regardless of whether these specific examples are the result of

ritual intent, the previous discussion of the pervasiveness of religion and rituality means that both should be expected to be present in people's living areas. Activities taking place on terraces and within structures would have had a limited number of people in attendance. Given the steep surface of the site, it would be difficult to conduct a large, contiguous outdoor event; people would be divided between different levels of the site, restricted to indoor and outdoor spaces on artificially leveled terraces. This is not to say that feasts and/or ritual activities could not have taken place in this manner, only that the Primary Residential Zone layout is not conducive to a large-scale, shared experience. However, people surely conducted household or even smaller-scale private rituals in the spaces of their own terraces, whether indoor or outdoor. These events would have been exclusive (i.e., smaller in size), but likely mostly replicating similar activities of neighbors, whereas private activities postulated to have taken place within the structures on the U-shaped platform mound (discussion forthcoming), would have been distinguished at the very least by their monumental location.

The Ceremonial Zone contains monumental architecture that is both closed and open, and which would have been used for ritual and feasting events (Figure 1.8). It is approximately 10 hectares with two platform mounds and two plazas, and includes terraces with enclosures. Structure architecture consists of stone walls, in some cases covered with plaster. Sector I consists of terraces to the southwest of the main U-shaped platform mound and plaza complex, subdivided into structures. Sector II comprises the largest monumental architecture at the site, the primary U-shaped platform mound and plaza, with at least two terraces built into the hillside above and behind the mound (Figure 1.2). The three sides of the "U" are named Sub-mound A (the southwest arm), Sub-mound B (the base, or

Figure 3.1 Top: Olla buried close to the outer terrace wall, slightly below the level of the base of the intact wall (Inventory No. [IN] 2839). This olla was buried in soil distinct from that around it, and contained fill. It was recovered almost in its entirety. Bottom: Second olla from the same unit (24), buried directly underneath the wall (visible at top of image) and at a depth below the first one. This olla was not removed during excavations.

southernmost section), and Sub-Mound C (the northeast arm). Vaughn and colleagues (2019) describe Sub-mound A as,

> "…an artificial mound, approximately 3 meters in height…[It] has a ramp beginning in the northern corner of Sector II (see Figure 3) that turns to the southeast leading to an internal enclosure, and a small platform with a commanding view of the valley to the north and of the central plaza to the east. Above this small platform are at least two terraces constructed into the hillside divided by walls running perpendicular to the hillside slope (roughly southwest to northeast). These walls provide demarcation of internal spaces on the terraces within Sub-mound A" (Vaughn et al. 2019: 10-11).

Excavations within an enclosure on Sub-mound A uncovered painted, plastered walls and complex architecture built in at least two phases. The restricted access and high labor investment of the plaster walls leads Vaughn and colleagues to interpret Sub-mound A as an elite ritual area.

Sub-mound B consists of three internally divided terraces. Here ritual activities involving craft production (ceramic, textile) and objects like figurines took place, alongside food preparation and consumption. A large olla was found buried at a level below a wall, containing fill that included camelid remains; it is interpreted as storage for either grain or liquids (Vaughn et al. 2019: 13). At least two phases of construction were identified here as well.

Sub-mound C differs from the other two Sub-mounds in that the visible above-ground architecture appears to have been built at a later date. Its walls are less finely made and lack

plaster, and it appears that groundstone from the site was re-used in their construction. The standing walls surround a large boulder, interpreted as a possible *huanca* (Kevin Vaughn, personal communication, 2014). This sub-mound has a small room attached to the north (off of the U-shaped mound) that would have acted as a means of restricting entrance.

The entire U-shaped mound surrounds a rectangular plaza that Vaughn and colleagues estimate to be about 50 x 25 m in size (2019: 14). A low interior wall forms the edge of a shallow, sunken area of the plaza, about 30 cm in depth, at the bottom of which an ephemeral floor was identified in excavations.

To the northeast of the primary U-shaped mound and plaza is a smaller platform mound and plaza (Sector III), possibly with a restricted access point to the platform (Figure 1.8). Several circular structures are nearby, including at least one tomb (Vaughn et al. 2019: 16-17). Beyond this secondary mound-plaza complex are deteriorating terraces that include a small number of looted tombs (Sector IV; Figure 1.6). On the ridge between the Ceremonial and Primary Residential Zones sit several looted tombs (Sector V), though Vaughn and colleagues conclude based on surface ceramics that this area was used mostly before and after the main occupation of Cerro Tortolita (2019: 17). Across from the primary mound-plaza complex and in the same quebrada sits a cemetery (Sector VI) with "approximately 60-70 badly looted tombs. Very few ceramics were found on the surface, so the dating of this sector is unknown. Nevertheless, due to its proximity to the Civic-Ceremonial Zone, it was recorded as part of the site" (Vaughn et al. 2019: 18).

Excavations led by Vaughn focused on the largest, primary U-shaped platform mound (including excavations in all three sub-mounds) in Sector II, its associated plaza, and a structure in the terraces of Sector I. Ceramics and radiocarbon dates recovered confirm an

earlier Early Intermediate Period occupation of the site (Table 1.2). Ceramics are primarily Nasca 2-5. Surface ceramics from other sectors of the site are generally in accordance, with the aforementioned exceptions of Sub-mound C, the tombs of Sector V, the superficial stratum of excavations in the plaza (which included EIP 7 and LIP), and the uncertain dating of the cemetery in Sector VI.

Comparison here will likewise focus on the excavated spaces. The smaller, restricted access space of the structures on the top of the U-shaped platform mound suggests a limited number of select people participated in activities here. The plaza is large enough to welcome large groups of people and it is likely that public rituals were conducted here, or that public rituals taking place on the exterior of the mound buildings were viewed from here. Public rituals may have been accompanied by feasting and other complementary activities. Participation in these public events may have been only or primarily by residents of Cerro Tortolita, or may have included people from neighboring sites, or even the highlands.

Based on this description, people were conducting and participating in rituals within different architectural spaces with distinct primary functions and levels of exclusivity. The architecture of the Ceremonial Zone is quantitatively and qualitatively different, in terms of form, size, quality, materials, from the terraces and houses in the Primary Residential Zone. The distinctions in architecture between the Zones imposed different restrictions (e.g., on group size) and provided different opportunities (e.g., the special ritual-focused space of the Ceremonial Zone mound and plaza) for ritual activities in each, which would have affected the type of rituals that took place.

Distribution of Special Goods

Special goods found at Cerro Tortolita include coca leaves, *Spondylus* shells, special feasting vessels, panpipes, and figurines, therefore the distribution of these items will be compared across the site. Spondylus, special feasting vessels (small cups), and panpipes are all associated with religious themes or ritual in Nasca iconography (see discussion of Proulx's work above), as well as archaeological contexts. Coca leaves and *Spondylus* shells were found to be restricted to the Ceremonial Zone ( ). A total of 23 fragments of coca leaves was recovered from two units in Sub-Mound B of the platform mound (Locus 2105 in Unit 22; Locus 2203 in Unit 23). None was identified in the plaza or Sector I. Although not a restricted-access good in Inca times, the restriction of coca to the U-shaped platform mound suggests it may have been restricted in this time and place (Silverman and Proulx 2002: 54). Associated ceramics support an Early-to-Middle Nasca date for both contexts.

Only a single piece of *Spondylus* was identified in a context securely associated with the main occupation of the site—the floor of the plaza (Table 3.1). *Spondylus* shells would have been imported from Ecuador and therefore are a form of exotic material that played an important role in signifying connections to other worlds (physical or metaphysical), as well as potentially signaling economic status through ability to conduct long-distance trade. *Spondylus* itself therefore embodies the interconnectedness between these two traditional types of power. While not from contexts that were able to be securely associated with the main occupation, some additional *Spondylus* pieces were also found: two in the most superficial context of the plaza, including one bead; and 43 in Sub-Mound C, including some worked pieces and beads. If the LIP intrusion is limited to being superficially imposed atop the original EIP construction of the mound, it is possible that some of the *Spondylus* from deeper in Sub-Mound C come from the early EIP.

Table 3.1 Distribution of special goods across Zones, shown both as a count and as a ratio with ceramic fragments from the same Zone.

	Ceremonial Zone		**Primary Residential Zone**		**Notes**
	No. Pieces	*Ceramic Ratio*	*No. Pieces*	*Ceramic Ratio*	
panpipes	26	0.00212	6	0.00030	in CZ, all from Sub-Mound A
human figurine	3	0.00025	1	0.00005	PRZ includes one more leg from surface, and one item that looks like modeled, applique body from superficial context; neither counted here
Spondylus shell	1	0.00008	-	-	see text for notes on add'l *Spondylus* in Sub-Mound C
Coca leaf	23	0.00188	-	-	
Total ceramic count	12,243		20,019		

Special feasting vessels, panpipes, and figurines, all with the potential to be manufactured locally, are relatively rare throughout the site but present in both the

Ceremonial and Primary Residential Zones. INAA results confirm that special feasting vessels and fragments of two separate panpipes fit within local clay compositional groups and are therefore likely made locally (see Chapter 2; panpipe samples are AJG059 and AJG109). While figurines have not been analyzed chemically, there is no obvious barrier to their local production, in terms of both skill and availability of raw materials. The presence of special feasting vessels, including head jars, cup bowls, collared jars, and likely double-spout bottles in both Zones supports the ability of commoners and religious specialists alike to participate in feasts associated with rituals (though head jars are limited to the Primary Residential Zone; Table 4.1). These special feasting vessels are all suitable for drinking or pouring of libations, and several fit the description of "small cups" in Proulx's previously described ritual scenes (2006: 201).

Fragments of panpipes or partially complete panpipes were found in the plaza and U-shaped mound areas of the Ceremonial Zone, as well as in seven out of twelve excavated units of the Primary Residential Zone (Table 3.1; Figure 3.2). Here I restrict my discussion to panpipe fragments from non-superficial, excavated contexts associated with the main occupation of the site (so, excluding Sub-Mound C). Panpipe fragments were also found in a special, plastered box built into Sub-Mound A and filled with sterile sand (Vaughn et al. 2019). All are made of clay (although reed panpipes are known later in the EIP for this region as well; it is possible that reed panpipes were present but did not preserve). Since it is difficult to create a count of the minimum number of figurines or panpipes present, they are shown in Table 3.1 as number of fragments and as a ratio with the total count of ceramic fragments recovered from each zone (not including superficial contexts or, in the case of the Ceremonial Zone, Sub-Mound C). Ceramic fragments were chosen for comparison because they are the most

Figure 3.2 Front and back of a nearly complete panpipe from Unit 12.1. Many of the panpipe fragments recovered also were painted red (IN 332).

plentiful artifact type at the site. The sample size on which these ratios are based is quite small, but there are approximately seven times the amount of panpipe fragments in the Ceremonial Zone than the Primary Residential Zone. It is possible that taphonomic or other factors, such as ritual smashing, skew these results. In the case of ritual smashing of figurines, the discrepancy in panpipe fragment counts would still reflect important differences in ritual activity, however.

Anthropomorphic figurines were found both on the U-shaped platform mound of the Ceremonial Zone as well as in the Primary Residential Zone (Table 3.1; Figure 3.3). Three partial figurines were found in Sub-Mounds A (Unit 18, Locus 1705) and B (Unit 23, Loci 2211 and 2217) in the Ceremonial Zone, while one leg from a figurine was recovered from an excavated, non-surface context (Unit 25.2, Capa C-2) of the Primary Residential Zone.

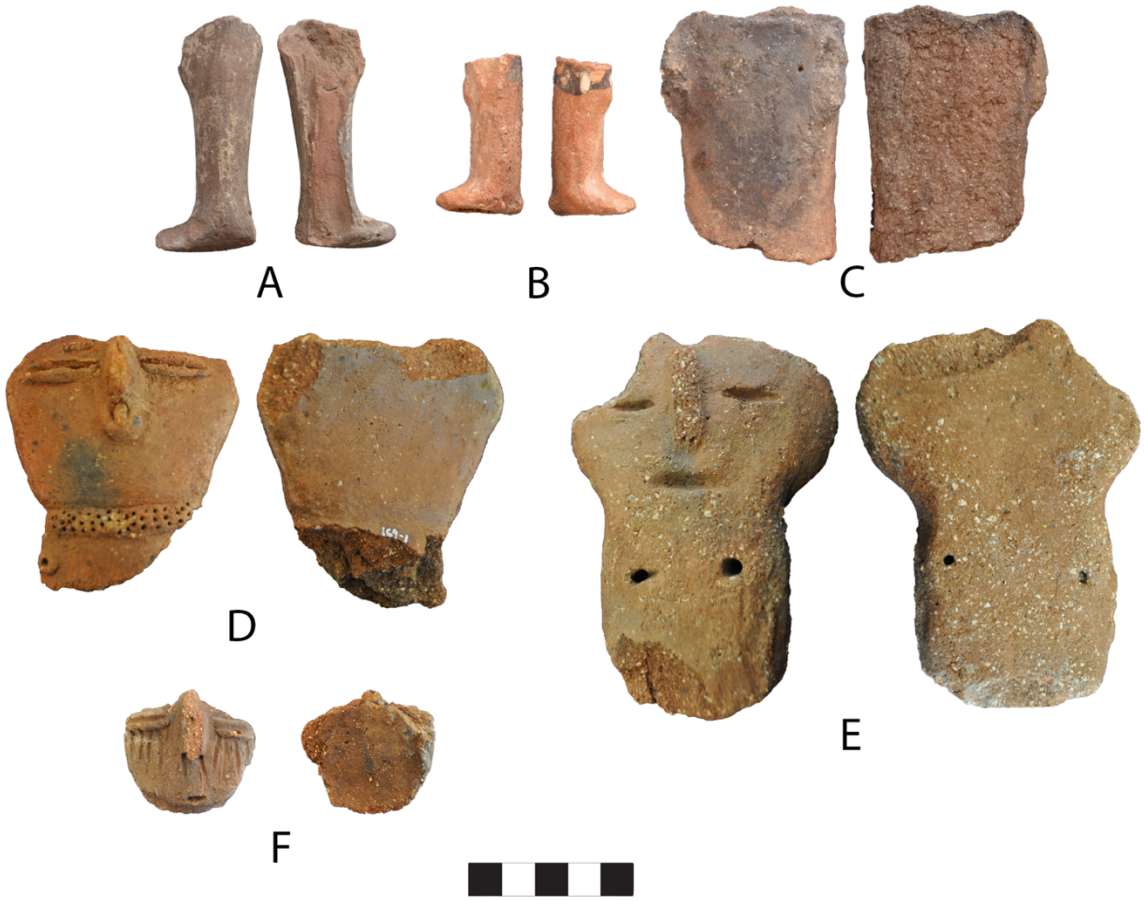

Figure 3.3 Fragments of figurines, front and back image shown for each. A-C from Primary Residential Zone (Proyecto de Investigación Arqueológica Cerro Tortolita [PIACT]), D-F from Ceremonial Zone (Proyecto de Investigación Arqueológica Ica Valle Medio [PIAIVM]). Of the Primary Residential Zone figurines, only A came from a non-superficial context and is included in the count of figurines. IN: A: 222, B: 402, C: 258-51, D: 1129, E: 1130, F: 1128.

The function of the figurines is unknown, but they likely had connection to ritual activity as well. Figurines are about five times more common in the Ceremonial Zone relative to the Primary Residential Zone, but again this is based on quite a small actual number of pieces. The broken state of each of the figurines, despite their thickness, suggests they may have been subject to ritual smashing or dismemberment, possibly affecting these counts too.

Overall, some classes of material related to ritual were only found in the Ceremonial Zone, namely coca leaves and Spondylus shells, supporting differentiation of ritual across the site. However, three important types of ritual paraphernalia were found in the Ceremonial as well as the Primary Residential Zones, specifically special feasting vessels, panpipes, and figurines, supporting that not all ritual authority and activity was limited to the former. Several fragments of metal were also found in the Ceremonial Zone. However, all were located in Sub-Mound C (the location of the LIP intrusion) or in the superficial-most locus of the plaza. Given the insecure nature of these contexts, metal will not be discussed further.

Access to Iconographic Themes

Nasca iconography has traditionally been broken down into broad categories of sacred and profane, although this categorization has been criticized as both overly simplistic and a product of Western European ethnocentrism (Proulx 2006: 18). Motifs considered to be sacred include themes such as mythical creatures, as well as elements such as trophy heads and blood. Themes considered to be profane or secular include depictions of animals (such as birds, fish, llamas, and foxes), plants (such as ají peppers, beans, and corn), objects (such as spears), and humans (such as farmers and fishermen) (following Proulx 2006: 18). I attempt a slightly more descriptive break down based on content that avoids assumptions of sacred/profane in this iconographic study by dividing designs into categories of naturalistic (animal, plant, object, and human motifs; see Figure 3.4 for the most common designs at Cerro Tortolita within this category), supernatural (motifs with a mythical aspect, or often associated with depictions of mythical beings; Figure 3.5), and geometric (such as triangles, diamonds, bowties, lines, and steps; Figure 3.6, Table 3.2). The categories and themes

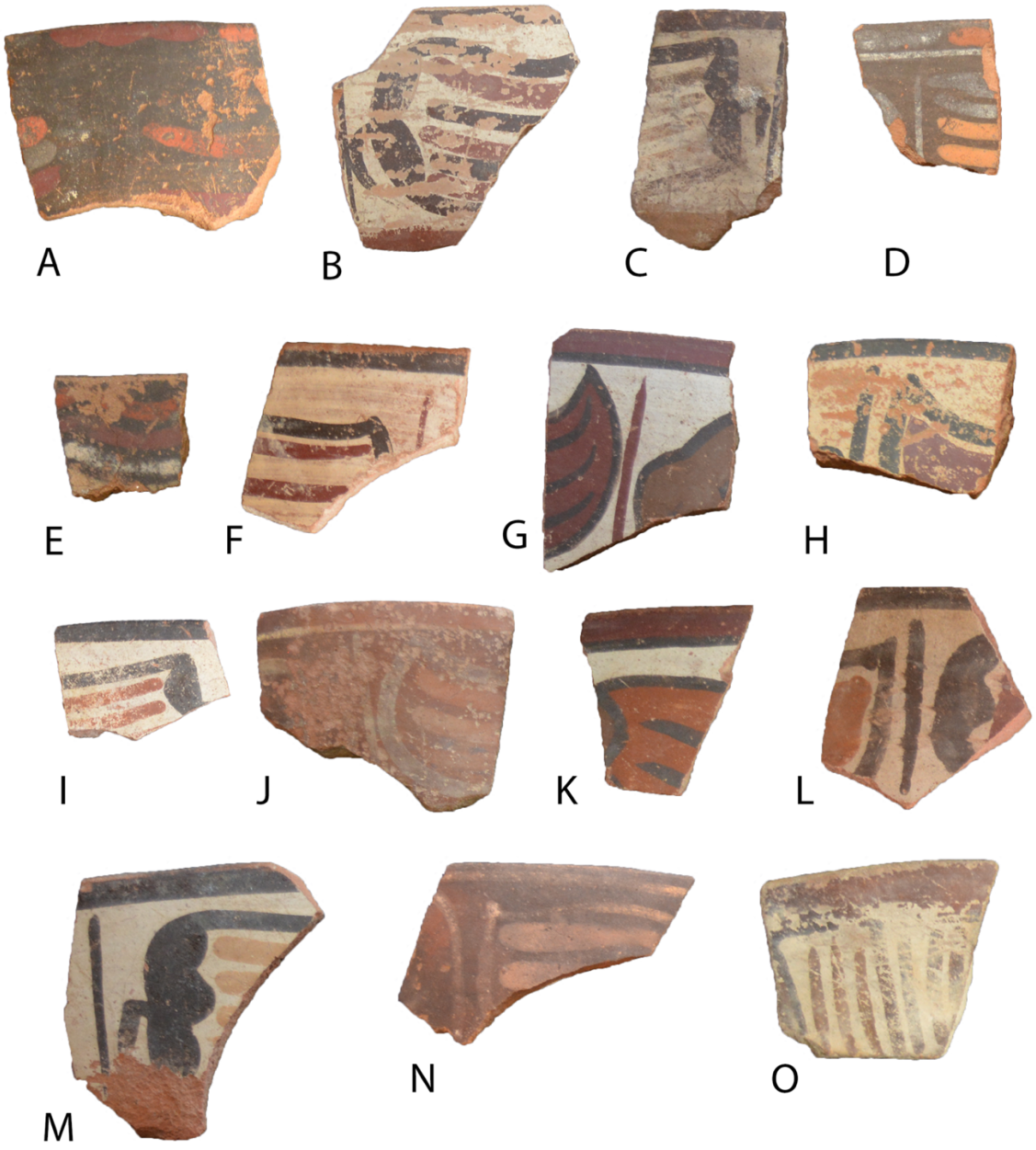

Figure 3.4 Examples of the most common iconographic themes at Cerro Tortolita within the "natural" theme category. Versions of the same designs from different Nasca phases are shown together in some cases. This figure is intended to give an idea of the variation within each category and of the iconography at Cerro Tortolita, but not as an exhaustive typology. Any body (non-rim) sherds shown were not included in the analysis, but are included here for illustration purposes. All sherds are from the Primary Residential Zone. A-O: ají; P-U: bean; V-X bird (V is actually in the sub-category "swift," but included here due to its unusual depiction); Y-Z: unidentified creature; AA-EE maize; FF-GG owl; HH-LL snake. IN: A: 200-2, B: 376-7, C: 372-1, D: 426-1, E: 360-1, F: 244-1, G: 273-1, H: 300-2, I: 222-3, J: 284-1, L: 249-1, M: 299-1, O: 289-1, P: 230-3, Q: 233-5, R: 234-3, S: 212-2, T: 113-3, U: 99-1, V: 67-1, 26-22, 26-3, W: 165-3, X: 4-2.

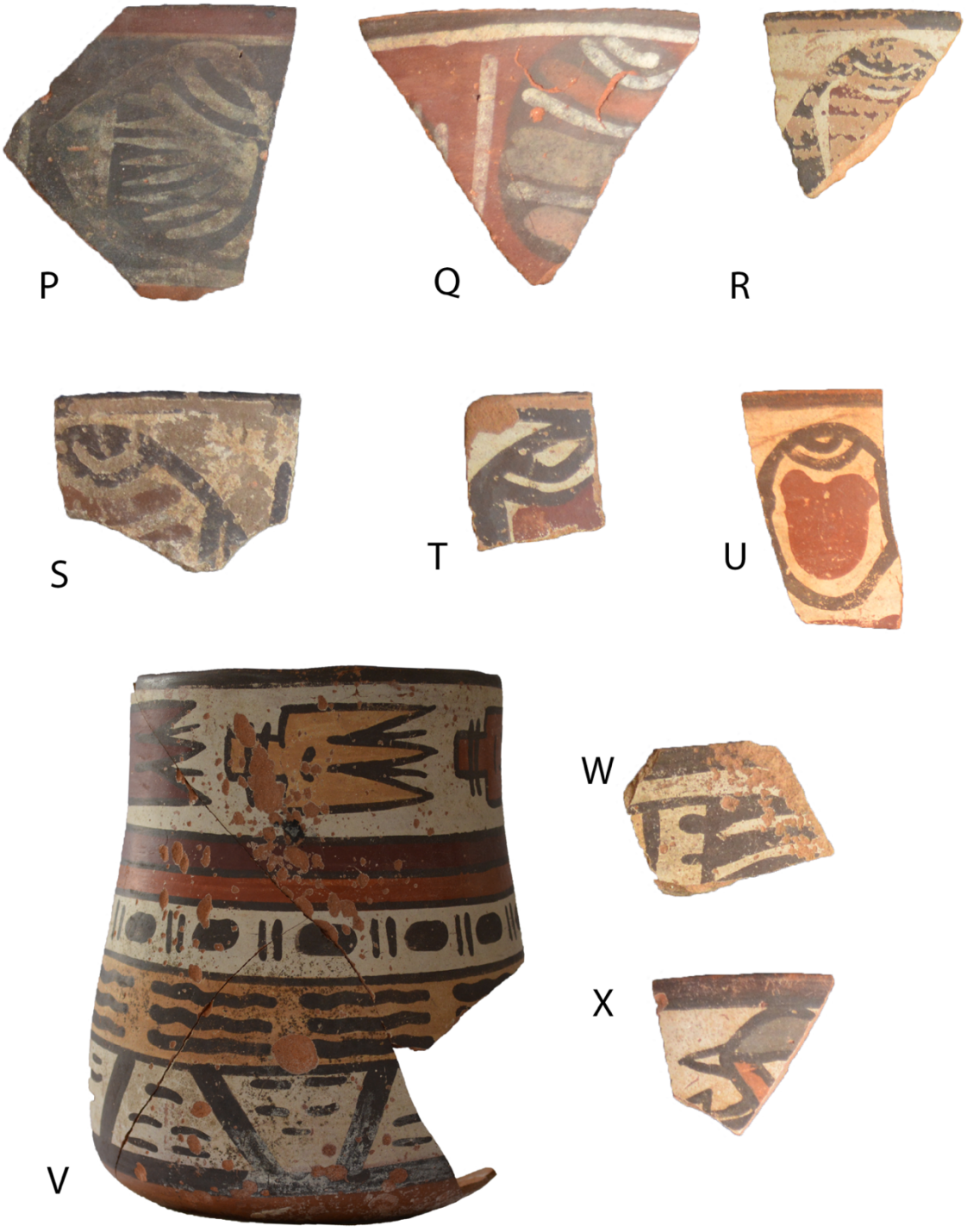

Figure 3.4 Continued.

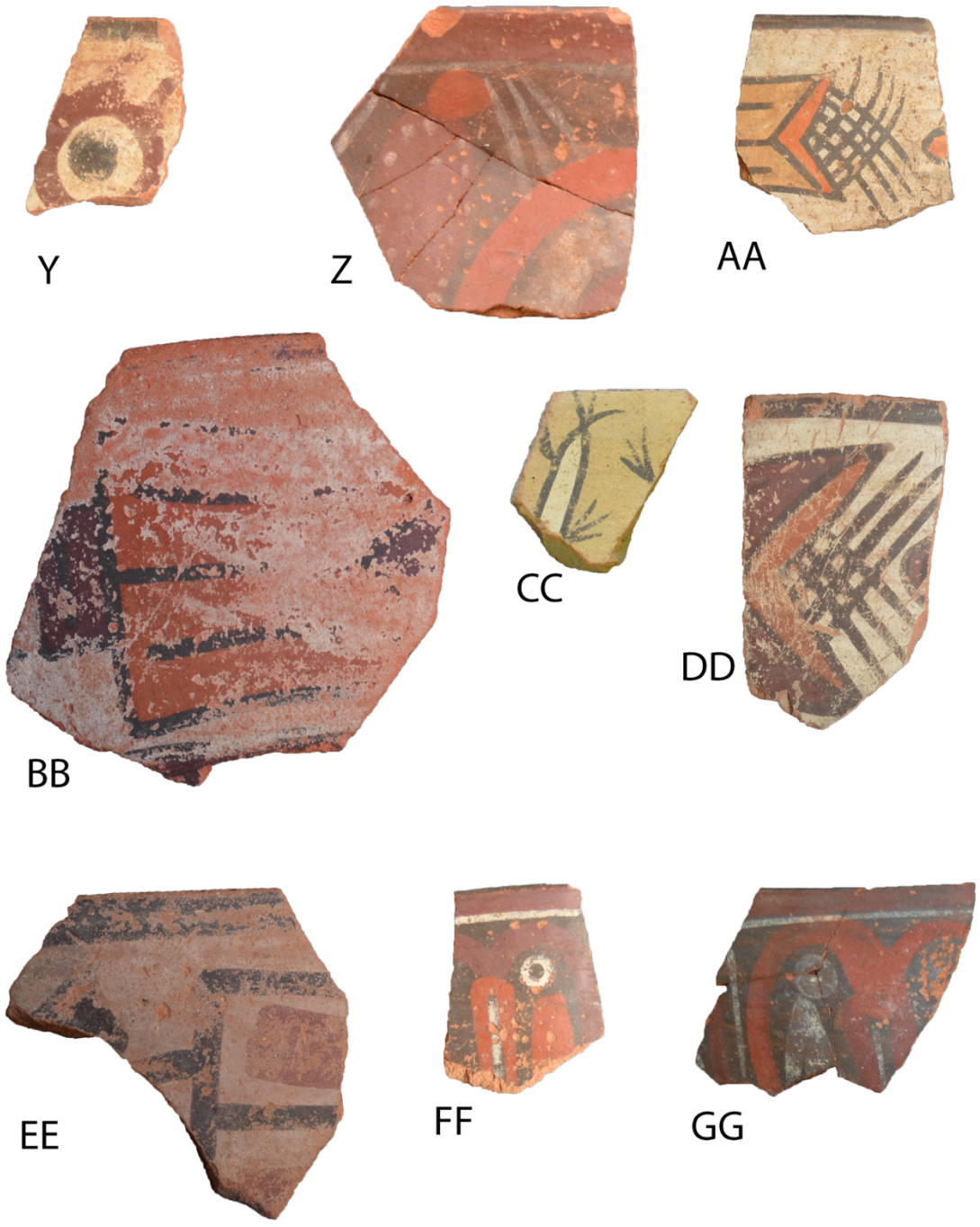

Figure 3.4 Continued.

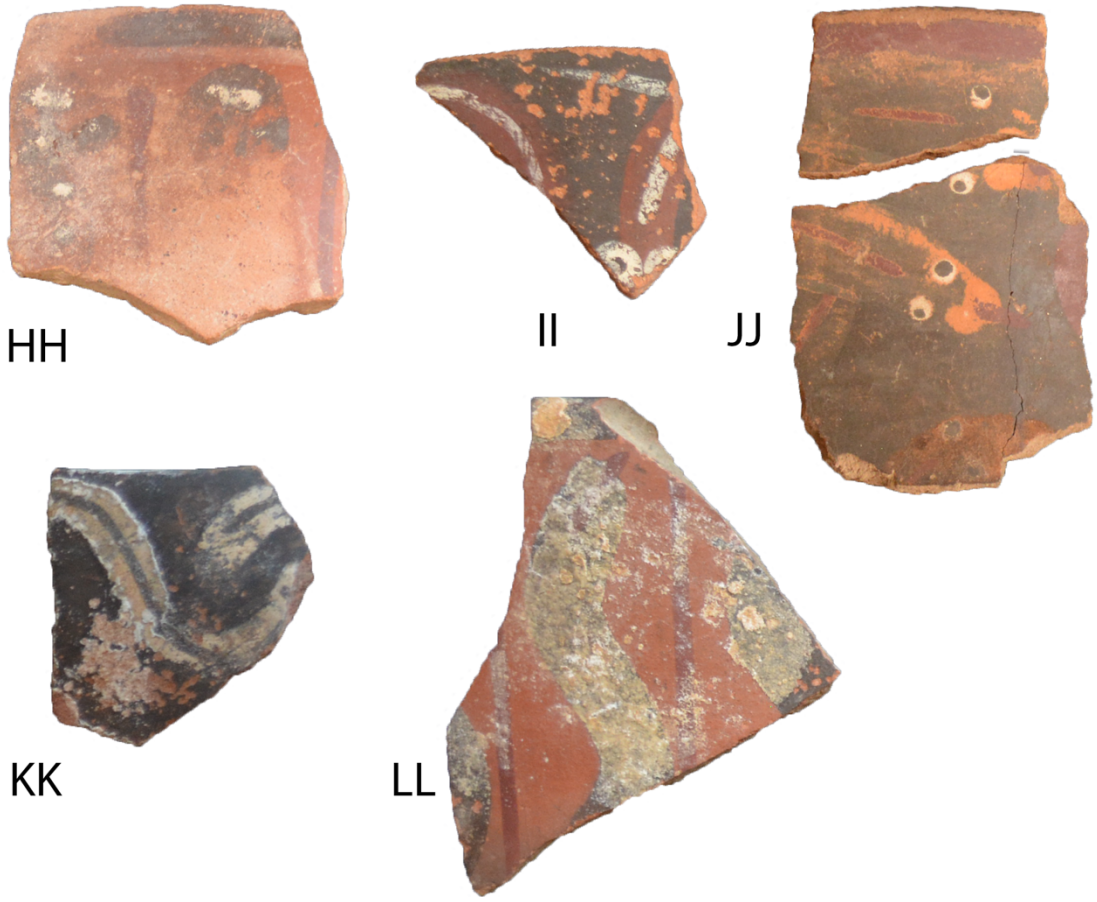

Figure 3.4 Continued.

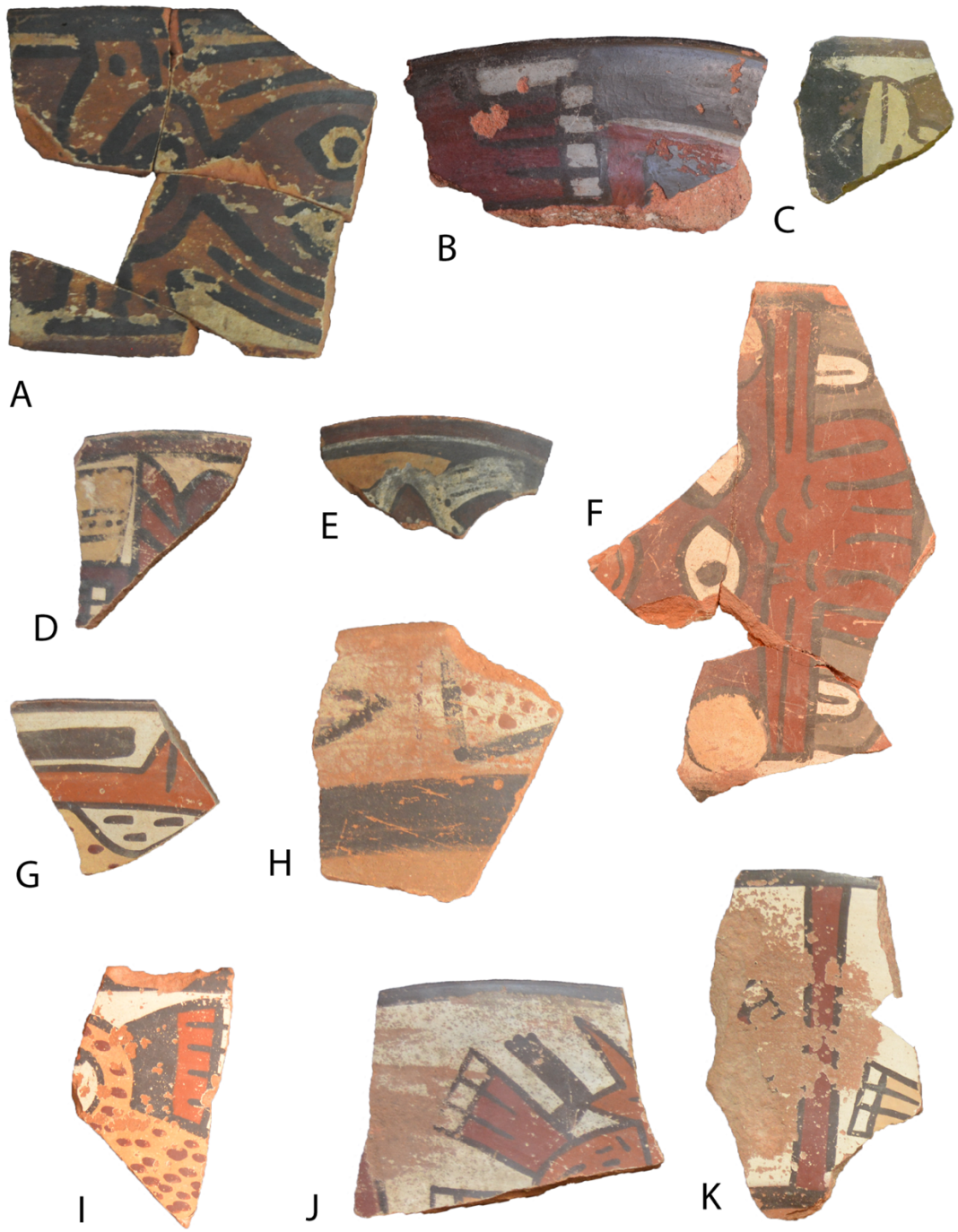

Figure 3.5 Examples of the most common iconographic themes at Cerro Tortolita within the "supernatural" theme category. Versions of the same designs from different Nasca phases are shown together in some cases. This figure is intended to give an idea of the variation within each category and of the iconography at Cerro Tortolita, but not as an exhaustive typology. Any body (non-rim) sherds shown were not included in the analysis, but are included here for illustration purposes. A-F: Anthropomorphic Mythical Being; G-I: red dots (blood); J-K: serpentine creature. IN: A: 140-31, B: 45-2, C: 157-47, D: 376-1, E: 66-19, F: 489-1, G: 456-1, H: 57-1, I: 136-1, J: 262-1, K: 433-1.

Figure 3.6 Examples of the most common iconographic themes at Cerro Tortolita within the "geometric" theme category. Versions of the same designs from different Nasca phases are shown together in some cases. This figure is intended to give an idea of the variation within each category and of the iconography at Cerro Tortolita, but not as an exhaustive typology. Any body (non-rim) sherds shown were not included in the analysis, but are included here for illustration purposes. All sherds are from the Primary Residential Zone. A-C: bowtie; D-E: diamond; F: nesting triangles; G-M: triangles. IN: A: 433-4, B: 2096-20, C: 355-9, D: 134-28, E: 461-1, F: 222-2, G: 228-1, H: 462-6, I: 306-2, J: 210-1, K: 22-1, L: 208-2, M: 103-5, N: 200-1, O: 190-3, P: 206-5, Q: 190-1, R: 458-13, S: 192-2, T: 263-2, U: 271-4, V: 113-1, W: 457-6, X: 355-4, Y: 464-2, Z: 464-3, AA: 208-2, BB: 222-1, CC: 433-4, DD: 464-13.

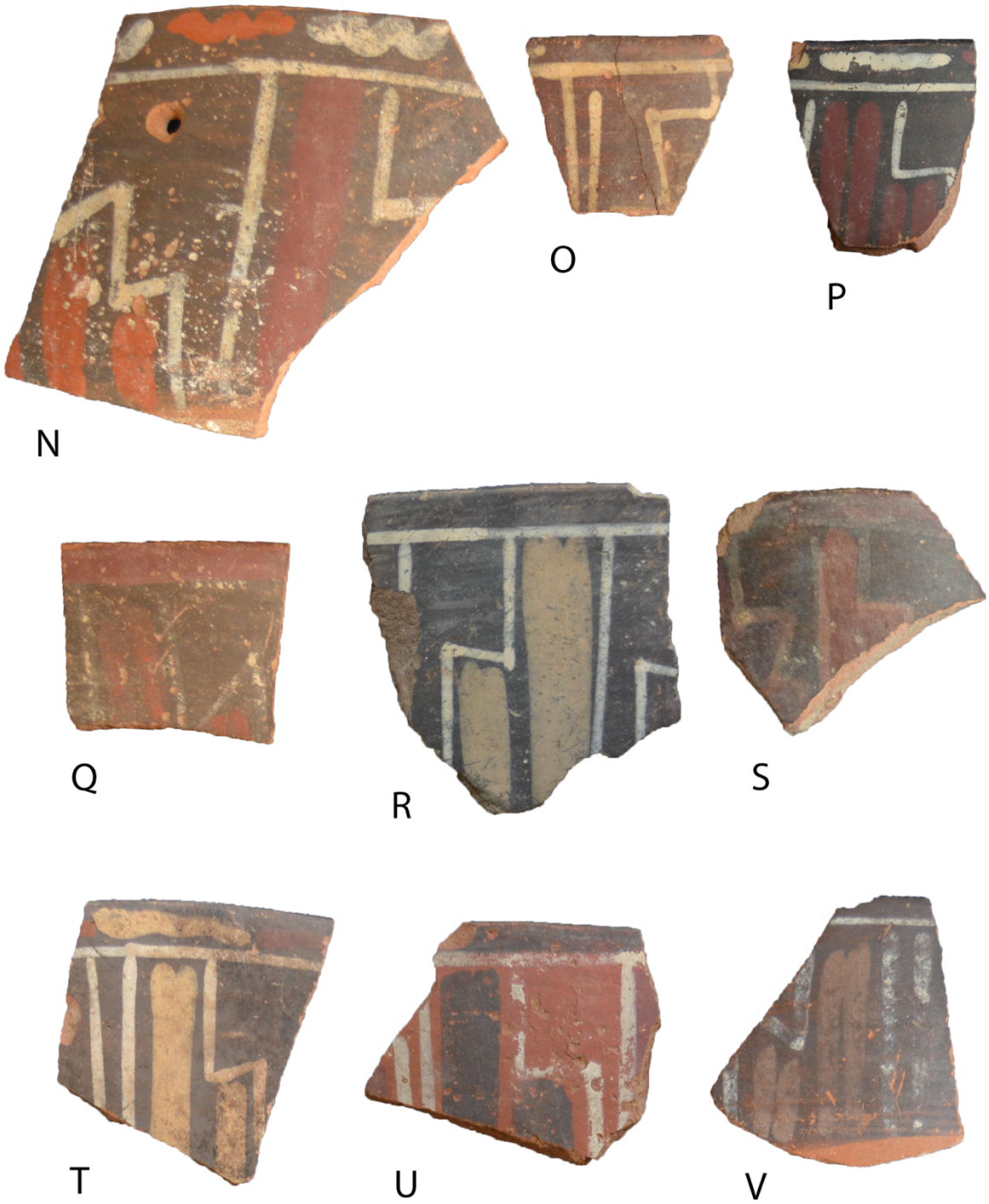

Figure 3.6 Continued.

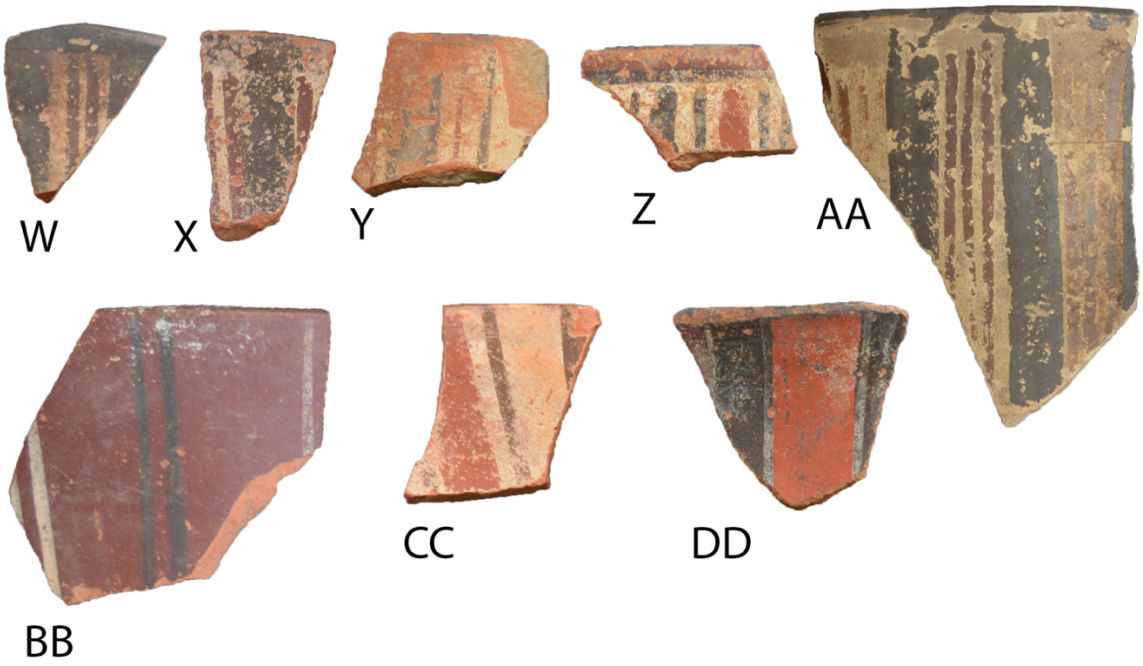

Figure 3.6 Continued.

Table 3.2 Count and frequency of individual ceramic iconography motifs across areas of the site.

	Primary Residential Zone Total		**Sub-Mounds A and B**		**Sub-Mound C**		**Plaza**		**Sector 1**		**Ceremonial Zone Total**	
motifs by category	#	%	#	%	#	%	#	%	#	%	#	%
geometric												
steps	35	9	9	5	5	8	0	0	2	15	16	7
diamonds	1	0	5	3	0	0	0	0	0	0	5	2
diamond with cross-hatch fill	1	0	2	1	0	0	0	0	0	0	2	1
triangle	12	3	2	1	2	3	0	0	0	0	4	2
nested triangles	1	0	2	1	0	0	0	0	0	0	2	1
triangle or diamond	14	4	7	4	3	5	0	0	0	0	10	4
bowties	16	4	3	2	1	2	0	0	1	8	5	2
zigzags	1	0	0	0	0	0	0	0	0	0	0	0
rectangles	2	1	2	1	0	0	0	0	0	0	2	1
nested rectangles	1	0	1	1	1	2	0	0	0	0	2	1
circle and dot	4	1	3	2	1	2	0	0	0	0	4	2
vertical stripes	28	7	3	2	2	3	0	0	1	8	6	2
star	8	2	0	0	0	0	0	0	1	8	1	0
diagonal stripes	9	2	2	1	0	0	0	0	0	0	2	1
splotchy stripes	1	0	1	1	0	0	0	0	0	0	1	0
wavy washed lines	5	1	0	0	2	3	0	0	0	0	2	1
oval/almond	4	1	2	1	2	3	0	0	0	0	4	2
vertical squiggles	4	1	3	2	1	2	0	0	1	8	5	2
fringed line/comb by rim; fringed half circle	1	0	2	1	0	0	0	0	0	0	2	1
curved lines	0	0	1	1	0	0	0	0	0	0	1	0
horizontal bands	1	0	2	1	0	0	0	0	0	0	2	1
horizontal stripes	0	0	0	0	2	3	0	0	0	0	2	1

Table 3.2 Continued.

spider web/half-circles/curved line	6	2	5	3	4	7	0	0	0	0	9	4
viscera	4	1	1	1	0	0	1	33	0	0	2	1
spiral	3	1	0	0	0	0	0	0	0	0	0	0
other	25	6	6	4	4	7	0	0	1	8	11	4
cross-hatches	1	0	0	0	0	0	0	0	0	0	0	0
balls	1	0	0	0	0	0	0	0	0	0	0	0
checks	1	0	0	0	0	0	0	0	0	0	0	0
recurved step fret	2	1	0	0	0	0	0	0	0	0	0	0
vertical stripes and dots	1	0	0	0	0	0	0	0	0	0	0	0
vertical lines and bands	1	0	0	0	0	0	0	0	0	0	0	0
horizontal bands and stripes	1	0	0	0	0	0	0	0	0	0	0	0
natural or supernatural												
bird feathers	2	1	3	2	0	0	0	0	0	0	3	1
foot or paw	4	1	1	1	1	2	0	0	1	8	3	1
bird tail	0	0	0	0	1	2	0	0	0	0	1	0
eye	0	0	1	1	0	0	0	0	0	0	1	0
reflected foot/paw	2	1	0	0	0	0	0	0	0	0	0	0
other	5	1	4	2	1	2	0	0	1	8	6	2
supernatural												
serpentine creature	5	1	1	1	0	0	0	0	0	0	1	0
trophy head	16	4	16	9	5	8	1	33	0	0	22	9
AMB	5	1	3	2	2	3	0	0	0	0	5	2
cleft spike	5	1	0	0	0	0	1	33	0	0	1	0
spike	2	1	0	0	1	2	0	0	0	0	1	0
traingle streamer spike	5	1	9	5	1	2	0	0	0	0	10	4

Table 3.2 Continued.

scalloped streamer	3	1	3	2	1	2	0	0	0	0	4	2
dot or dash face trophy head	12	3	5	3	2	3	0	0	0	0	7	3
streamer	7	2	3	2	0	0	0	0	0	0	3	1
horrible bird?	1	0	0	0	0	0	0	0	0	0	0	0
volute rays	2	1	0	0	0	0	0	0	0	0	0	0
hair hank	2	1	3	2	0	0	0	0	1	8	4	2
curvy hooks	0	0	2	1	0	0	0	0	0	0	2	1
red dots	4	1	2	1	1	2	0	0	0	0	3	1
blood	0	0	0	0	0	0	0	0	1	8	1	0
natural, objects												
ají	31	8	12	7	5	8	0	0	1	8	18	7
lúcuma	6	2	2	1	1	2	0	0	0	0	3	1
worm	2	1	1	1	0	0	0	0	0	0	1	0
maize	6	2	5	3	0	0	0	0	0	0	5	2
owl	5	1	4	2	1	2	0	0	0	0	5	2
bean	27	7	8	5	2	3	0	0	0	0	10	4
bird	7	2	1	1	1	2	0	0	0	0	2	1
hummingbird	0	0	0	0	1	2	0	0	0	0	1	0
llama	0	0	2	1	0	0	0	0	0	0	2	1
snake	5	1	3	2	0	0	0	0	0	0	3	1
bean pod	1	0	2	1	0	0	0	0	0	0	2	1
creature	3	1	3	2	0	0	0	0	0	0	3	1
killer whale	0	0	5	3	0	0	0	0	0	0	5	2
rodent	2	1	0	0	0	0	0	0	0	0	0	0
swift	1	0	0	0	0	0	0	0	0	0	0	0
human	2	1	0	0	0	0	0	0	0	0	0	0
fish	2	1	0	0	0	0	0	0	0	0	0	0
spear/dart	11	3	2	1	2	3	0	0	1	8	5	2
tadpole?	1	0	0	0	0	0	0	0	0	0	0	0
fox	3	1	0	0	0	0	0	0	0	0	0	0
girl face	1	0	0	0	0	0	0	0	0	0	0	0
fruit/veg	2	1	1	1	0	0	0	0	0	0	1	0
spider	1	0	0	0	0	0	0	0	0	0	0	0

Table 3.2 Continued.

toad/lizard	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL	397		171		59		3		13		246	

defined here follow Proulx (2006), although Proulx himself notes that there are motifs that could be considered sacred or profane based on their context (18, 61). When dealing with small, broken sherds from excavated contexts, as in this case, much of the context of a design is lost. Therefore, the categorization in this study is acknowledged to be imperfect, and the definition of supernatural will be biased towards the most overtly supernatural themes.

Of course, it is entirely possible that naturalistic and geometric designs carried connotations to the Nasca people that could be considered supernatural. Indeed, there has been some debate in the literature over whether naturalistic designs should generally be considered as simple celebratory depictions of nature or as carrying supernatural significance, with Proulx (2006:18) arguing for the former and Carmichael (1992: 187) for the latter. These views are not necessarily mutually exclusive, either. Geometric designs, while not assumed to be supernatural here, could also carry symbolic meaning; for example, spiral and zig zag Nasca geoglyphs have been argued to represent conches (associated with water) and rivers/canals/lightning/furrows, respectively (Masini et al. 2016: 266-268).

Emic views of iconography are to a degree testable. If design categories are distributed unevenly between Zones, this would support that they have some emic validity, as well as the hypothesis of differences between Zones. In that case, I would expect more access to/use of pots with supernatural designs on Sub-Mounds A and B of the Ceremonial Zone

than in Sector I or the Primary Residential Zone[2]. Differential distribution may be due to control by producers or consumer choice, as discussed above. If design categories have a random distribution, however, then they may or may not have emic validity. This finding would also support the null hypothesis of no differences between Zones.

To test the hypotheses, all identifiable designs were counted on rim sherds from non-surface contexts in both Zones (n=643). Adjoining sherds were identified whenever possible and counted as one instance of a design. The resulting count is for total identifiable designs, rather than total sherds. However, in the vast majority of cases only one design was identified per sherd. In the few cases in which more than one design was identified on a single sherd, both designs were usually of the same category (e.g., two geometric designs). The major exception to this generalization is horizontal lines or squiggles near the rim, which were removed from the calculations presented here so as not to over-represent geometric designs. These rim decorations are most often found on pots with geometric primary designs, but can appear on pots with naturalistic designs (e.g., an owl, or a bean) as well.

The analytical results show a slightly higher proportion of supernatural designs on the platform mound than in Sector I and the Primary Residential Zone; an inverse relationship is observed with geometric designs, which were disproportionately identified in Sector 1 and the Primary Residential Zone (Table 3.3a). Within the supernatural category, depictions of trophy heads and triangle streamer spikes in particular seem over-represented on the platform mound. Within the geometric category, steps and vertical stripes are the most over-represented in the Primary Residential Zone. The difference in the distribution of

[2]The plaza is removed from consideration due to the small number of samples, which would make the statistical results unreliable.

Table 3.3 Count and frequency of design categories across the site, as well as comparison with other contemporaneous sites. Marcaya design themes reported in Vaughn 2009: Table 6.4; Cahuachi design themes from Silverman 1993: Table 16.8.

Table 3.3a

	Sub-Mounds A, B		Sector I		Primary Res. Zone		TOTAL
	#	%	#	%	#	%	#
geometric	64	37%	7	54%	195	49%	297
natural/ supernatural	9	5%	2	15%	13	3%	27
supernatural	47	27%	2	15%	69	17%	133
natural/ object	51	30%	2	15%	120	30%	186
TOTAL	171	100%	13	100%	397	100%	643

Table 3.3b

	Sub-Mounds A, B		Sector I		Primary Res. Zone		Marcaya		Cahuachi	
	#	%	#	%	#	%	#	%	#	%
geometric	64	40%	7	64%	195	51%	72	49%	132	39%
supernatural	47	29%	2	18%	69	18%	7	5%	75	22%
natural/obj	51	31%	2	18%	120	31%	68	46%	133	39%
TOTAL	162	100%	11	100%	384	100%	147	100%	340	100%

iconographic categories is statistically significant according to a chi-square test, both when an "indeterminate natural/supernatural" category is included (χ^2=16.036, df=6, p =.013) and not included (χ^2=10.836, df=4, p=.028; Table 3.3b).

In sum, apparently everyone had access to supernatural designs and their attendant religious-ritual connotations, but they were not represented to the same extent in all areas of the site. The implications of this finding will be further discussed below.

Discussion

I now turn to the discussion of the findings and the significance of each line of evidence used to explore differences in ritual in each Zone. The platform mound and plaza of the Ceremonial Zone indicate their special ritual use; while ritual surely occurred in the dwellings of the Primary Residential Zone, other activities played a large role here as well. In addition, different sizes of groups could be accommodated in the structures of the platform mound, plaza, and dwellings of the Primary Residential Zone. The structures on top of the platform mound only allowed small groups, demonstrating the exclusivity of ritual activities carried out here, likely involving only religious specialists. The large space of the plaza, on the other hand, welcomed large groups of people from the community living at Cerro Tortolita, and possibly from elsewhere. Ritual carried out in peoples' homes in the Primary Residential Zone would have involved small numbers of people. The special architecture of the Ceremonial Zone was intended for and conducive to certain types of rituals that could not be performed in the Primary Residential Zone, or these rituals may have had additional effectiveness due to their special setting.

Turning to the distribution of special goods, some, namely coca and *Spondylus* shell, were only found in the Ceremonial Zone. As a generalization in the Andes, neither of these items are considered to be restricted to elites. However, I found limited evidence in the literature for coca use in this region prior to Late Nasca. A single reference mentions coca at the Paracas site of Cavernas (Towle 1961: 59-60, as cited in Silverman and Proulx 2002: 222), and it is not mentioned at all in Mader's preliminary botanical work from minor Paracas coastal sites (Mader 2019: 137). There is only a single reference to coca from an early Nasca context, by way of "coca leaves…adhering to a loose adobe" on the surface of an

Early Nasca site in the Grande Valley of the SNR (Silverman and Proulx 2002: 55). Coca is not mentioned in publications on excavations in Early Nasca residential contexts in the SNR, specifically at La Tiza (Conlee 2016: 123) and Marcaya (Vaughn 2009). Even at Cahuachi, the presence of coca seems limited and later in date. Orefici notes bags of coca leaves found in Middle and Late Nasca tombs (2012: 303), and Silverman's findings of coca leaves were restricted to contexts from the Middle Horizon (Silverman and Proulx 2002: 55). Notably, mention of coca is only mentioned abstractly in Lasaponara and colleagues' most recent edited volume on Cahuachi, suggesting that it was rare indeed (2016: 290; see especially Piacenza 2016 on plants in the same volume). References to coca, in terms of both physical remains or as ceramic iconography, seem to increase during Late Nasca (Beresford-Jones and Whaley 2021:12; Proulx 2006: 176, 208; Silverman and Proulx 2002: 55), and become fairly common during the Middle Horizon (Beresford-Jones et al. 2011: 286). The limited distribution of coca at Cerro Tortolita and a review of the literature suggests that coca may have been a difficult-to-access, exotic good from the highlands, rather than a locally-grown plant, during Cerro Tortolita's occupation. This finding highlights the importance of ground-truthing generalizations at specific places and times. An additional psychotropic drug that *may* have been in use at Cerro Tortolita is the San Pedro cactus (*Echinopsis pachanoi*). Its use is supported for the south coast region at this time based on its depictions in Nasca ceramic iconography, as discussed earlier. Residue analysis may be a promising future avenue for testing its presence.

Spondylus is not very common in Nasca contexts either and is restricted to ceremonial and high-status locales, despite its unrestricted distribution elsewhere in the Andes (Moore 2018; Reindel et al. 2006: 106). Its use in the Nasca culture appears to have been limited to a

few elites or religious specialists, likely for use in special ceremonial contexts. Vaughn did not identify any *Spondylus* at Marcaya (2009: 128), and Conlee does not note its presence at the Nasca occupation of La Tiza (2016). However, offerings of *Spondylus* are found in ritually charged Nasca-affiliated places such as geoglyphs (Lambers 2006: 119, 153; Reindel et al. 2006: Figure 14, 89) and at the ceremonial centers of Cahuachi and La Muña, particularly in burials (Isla and Reindel 2006: 390; Orefici 2012:324; Silverman and Proulx 2002: 66-67). *Spondylus* was also found in the hematite mine of Mina Primavera in the SNR, although it is unclear whether it was associated with Early-Middle Nasca use of the mine (Vaughn et al. 2007: 17). The interpretation of the single piece of *Spondylus* recovered from the public plaza at Cerro Tortolita does pose some challenges. The open, public nature of the plaza raises the question of whether it belonged to religious specialists or a member of the public. It is possible that the *Spondylus* piece was associated with the costume of a religious specialist conducting a ceremony within the plaza, but it could also have belonged to and or/been worn by a high-status, non-religious specialist participating in events in this space. Regardless, it is significant that the only *Spondylus* recovered from the site is from the Ceremonial Zone, suggesting it was important for certain types of place-based rituals.

Other special goods, specifically locally produced goods such as special feasting vessels, panpipes, and figurines, are present in both Zones, clearly supporting the conduct of ritual ceremonies in both areas. Panpipes are not uncommon on the south coast during this time period, but nonetheless maintain an association with ceremonialism and status. Carmichael (2015) provides a useful recent overview of the current state of knowledge on Nasca panpipes (*antaras*). He notes that a shift in panpipe technology and usage took place in the transition from the Paracas to Nasca cultural traditions: a “new level of technical and

artistic sophistication" emerged in the Nasca culture, and panpipes went from widespread production and use to a more restricted distribution (2015: 131). Excavations at the Early Nasca residential site of Marcaya found that panpipes had a restricted distribution across patio groups and the highest frequency of panpipes was found in high status patio groups (Vaughn 2009: Table 5.2, 127, 158-159). Panpipes have also been also found in La Tiza, in both domestic and Nasca 5 tomb contexts (Conlee 2016: 130). There are numerous examples in the literature of panpipes as offerings (Reindel and Isla 2001: 254, as cited in Carmichael 2015: 131), including in caches at Cahuachi (Silverman 1993: 241; Orefici 2012: 204-205, Figure 21, 219, 365, 471-472; Gruszczynska-Ziólkowska 2000, 2009; as cited in Carmichael 2015: 132).

Of the special vessel forms found at Cerro Tortolita, only head jars and cup bowls are present at Marcaya; head jars are restricted to the two patio groups designated to be high status, and two out of three cup bowls come from these same patio groups (Vaughn 2009: 155-158). Vaughn found 52 fragments of panpipes total, restricted to four patio groups (2009: 127, 158-159). Of these four patio groups, the highest concentration of panpipes was again in the two high-status patio groups. At La Tiza, cup bowls, headjars, and double spout bottles (called stirrup spout vessels) are also present in low frequencies; Noell (2014) notes that most elite vessel forms are found in Sector II (Table 9, Figure 18, 59), interpreted as an elite sector (Conlee 2016: 91-93). It is difficult to say if special feasting vessels and panpipes are restricted in a similar manner in the Primary Residential Zone, although given their rarity they may have been.

Figurines likely played a role in ritual as well, and their presence in the U-shaped platform mound seems to support this interpretation over others (i.e., that they were toys).

The differences in form and paste among figurines found in both Zones may relate to differences in function or type of ritual, or simply a lack of uniformity in figurines (Figure 3.3). Specifically, the more finely formed legs recovered from the Primary Residential Zone seem distinct from the roughly shaped torso and heads of the Ceremonial Zone (they also are not securely associated with the main occupation of the site, however). The single figurine recovered from an excavated context in the Primary Residential Zone suggests that this was not a common item in this area, and that figurines may have had a restricted distribution. Figurines seem more typical for ceremonies that took place in the Ceremonial Zone.

The next line of evidence, access to iconographic themes, provides further evidence for distinctions in ritual and religious practice between the Ceremonial and Primary Residential Zones. Although no design category was restricted to one Zone or another, the higher frequency of supernatural themes in the Ceremonial Zone is statistically significant, supporting the validity of this category and leading to several possible interpretations. If religious specialists were living on the U-shaped platform mound, then the increase in pots with supernatural designs may be a result of their greater ability to access such pots. However, the fact that supernatural designs *are* present in the Primary Residential Zone, and not rare, supports that everyone had access to and interest in this iconography. The plentiful access to supernatural designs further suggests that people had a degree of choice in the iconography they consumed, thereby supporting the interpretation that iconography is a reflection of people's tastes and preferences, beliefs and concerns, at least here.

While all design categories, including supernatural, are found in residential contexts at other sites, the frequency of supernatural themes at Cerro Tortolita is higher than at

Marcaya or La Tiza[3], and more comparable to that at Cahuachi, even within the Primary Residential Zone (Table 3.3b). It is possible that people in the Primary Residential Zone had greater access to supernatural themes than people at other residential sites due to their proximity to a ceremonial center, where these goods might have been produced; that different norms and preferences existed between the SNR and Cerro Tortolita; that people here were more religious here than at other sites, embracing overt supernatural themes more; or that a mixture of greater access and choice was at play.

An additional possible explanation for the disproportionate frequencies of iconographic categories, compatible with the first interpretation, is that ceramics with supernatural themes were preferred or required for use in ceremonial/feasting contexts. Therefore, supernatural motifs would be more common in an area of intense rituality and feasting such as the Ceremonial Zone (see Chapter 4). Further, it is possible that pots with supernatural designs carried a special responsibility related to their possession and use, or were even considered animate, analogous to bundles among the Blackfoot of North America. As Zedeño describes it: "[t]he presence of a bundle in a household is quite literally like the presence of a delightful but rather demanding human guest. Bundle holders and their families must observe strict rules of behavior around the bundle, lest it becomes angry and brings harm to the family" (Lokensgard 1996, 2001, as cited in Zedeño 2008: 373). I do not suggest that the same precise situation applies at Cerro Tortolita, but cite this example as one of many types of relationships people may have had with items of religious significance in a society with an animistic worldview. If pots depicting certain themes (e.g., Anthropomorphic

[3]Reporting for this study does not provide exact numbers or percents, therefore numbers are not included in Table 3.3b (Noell 2014: Figure 16).

Mythical Beings) were considered animate or otherwise to place obligations on their owners, one would be careful in obtaining such pots, and avoid acquiring more of them than necessary. Ceremonialism might have been heightened in the Primary Residential Zone of Cerro Tortolita compared to other residential sites, explaining the greater proportion of supernatural iconography here.

Finally, it bears repeating that geometric and naturalistic designs may well have carried religious significance too. I agree with Carmichael in finding it more likely than not that naturalistic designs did carry some supernatural significance, particularly if the iconography is viewed from a relational and/or animistic perspective. The pots with naturalistic (and possibly geometric) designs used for daily life and feasting in the Primary Residential Zone would have carried religious connotations, but a subset of the corpus of iconography seems to have been preferred, perhaps even reserved, for use during special occasions. This finding adds some nuance to our previous understanding of Nasca style ceramics and, by extension, views of Nasca religion.

Conclusions

The balance of evidence supports the hypothesis of differences in ritual practices between the two Zones, reflecting differences in religious knowledge and perspectives. The monumental architecture that ritual specialists operated within supports their unique ritual role. The construction of said architecture may also reflect an ability to direct labor and resources based on their religious authority, although given the ritual focus of the constructions this likely was seen as for the good of the community, rather than simply benefitting individual religious specialists. The differences in ritual practices between ritual

specialists and commoners must be viewed in context however; the amount of exotic goods in the Ceremonial Zone is limited, especially when compared to other centers such as Cahuachi or La Muña, or depictions of ritual scenes in some iconography (Orefici 2012; Proulx 2006: 201-202; Isla and Reindel 2006). The strongest distinction between the two Zones, based on the available evidence, is in possession of knowledge and authority for undertaking specialized ritual activities.

The differences in knowledge and religious-ritual activities between the Zones would have resulted in different perspectives between religious specialists and commoners, as reflected in the scope and scale of their activities. Those in the Ceremonial Zone would have been performing rituals on behalf of the community, while those in the Primary Residential Zone would have been performing rituals pertaining to smaller units such as the family or the individual. Individuals residing in the Primary Residential Zone had a degree of independence (*a la* Joyce et al. 2001): the authority, knowledge, and ability to carry out at least certain kinds of rituals in the contexts of their own homes. These differences in ritual suggest disjunctures in religious knowledge, concerns, and focus between the two Zones, which may have been complementary and at times may have clashed.

As a result of different bodies of knowledge, ritual activities, and priorities, there may have been a tension between the authority wielded by religious specialists and that held by commoners as they maintained their own religious knowledge and conducted their own rituals.-The similarity of iconography between Zones supports engagement by commoners and *general* agreement and cohesion on ideology; there are not sharp disjunctions in the presence and absence of certain themes in one Zone or another, which might support resistance, or strong distinctions in authority, worldviews, beliefs, or objectives (e.g., Forde

2016). Commoners shared a common religious framework with ritual specialists (although the latter would also have possessed more specialized knowledge) and would therefore have had the capacity to act as a check to an extent, on religious specialists, holding them accountable to their own knowledge and interpretations of religious-ritual knowledge (engagement). However, distinctions in iconography and ritual activities do exist and may have resulted in or reflected tension between religious specialists and commoners, even if simply in terms of their interests. Some commoners may also have been more interested in participating in ritual life, than others (e.g., Fowles 2013: 70-75), and some may have resisted religion as espoused by religious specialists to varying degrees; even simple self-exclusion from ritual life could be seen as a form of passive resistance. After all, ceremonial and residential activity at Cerro Tortolita did eventually cease, suggesting that tensions or disjunctions, possibly long-simmering, eventually came to such a point that people left the community. Participation in religious life at Cerro Tortolita was always contingent on constant negotiation between religious specialists and other members of society. In this manner ritual activity at Cerro Tortolita can be said to be a medium of power negotiation between residents of the Ceremonial and Primary Residential Zones, and an architect of social relationships and society at Tortolita.

CHAPTER 4

Commensality, Ritual, and Society at Cerro Tortolita

This study addresses the role of commensality, particularly special commensal events accompanied by ritual, in constructing social roles at Cerro Tortolita. I describe and compare evidence for commensalism in different areas of the site, namely the Primary Residential Zone, the U-shaped mound and plaza, and Sector I, with the goal of understanding the motivations and outcomes of commensal activity in each area. The ability of food to bring people together as well as mark (or even create) social distinctions makes it a powerful tool for the study of social change. As Dietler and Hayden note, "…the interest of the feast is not simply that it enables the accumulation of wealth or material goods, but that it is a remarkably supple ritual practice that allows the strategic reciprocal conversion of economic and symbolic capital toward a wide variety of culturally appropriate political goals" (2001: 13). The combination of feasting and ritual is a common cross-cultural phenomenon and can magnify the display of symbolic capital. This potent combination is particularly relevant to discussion of the construction of the social roles of religious specialists performing rituals in the Ceremonial Zone.

To address these issues, I apply criteria based on cross-cultural studies to aid in comparison of areas of the site. Comparison of commensality is made along two axes: group size and sociopolitical competition, which capture important dimensions of variation in commensalism and allow for a more specific interpretation of social outcomes (Kassabaum 2019). Domestic foodways are included as a necessary baseline for comparison with potential special commensal events, and the importance of domestic commensalism it its own

right is also discussed (Twiss 2012: 364; VanDerwarker et al. 2007). The study of "everyday" commensality includes commoners in the discussion of social construction via food, rather than focusing solely on elites. Evidence for foodways is drawn from ceramic, botanic, and, to a more limited extent, zooarchaeological data, as multiple data sets are more reliable for reconstructing foodways than a single line of data (Nelson et al. 2020; Twiss 2008; Twiss 2012: 378; VanDerwarker 2006; VanDerwarker and Peres 2010). Through these lines of evidence, the active role of commensalism and ritual in the construction of social differentiation at Cerro Tortolita will be addressed, with an emphasis on the roles played by all members of society.

Commensality from the Every Day to Special Events: Theoretical Perspective

It is helpful to define terms at the outset. Here, I use "commensality" throughout to mean the consumption of food and/or drink shared between two or more people, in both ordinary and special contexts. Bray stresses the relationality of commensalism, stating that all commensality has as its goal or results in "the construction of specific relations of sociality" (2021: 63). Commensal events deviating from the everyday will be referenced as "special" or "extraordinary" commensal events, or simply feasts. Twiss provides a broad, flexible definition of special commensal events as "occasions consciously distinguished from everyday meals, often by a greater number of participants and more food and drink" (2008: 419). Bray argues that an important distinction of everyday versus ritual commensalism are the people involved; whereas quotidian commensalism generally affects relations on a smaller scale, such as the family, ritual commensalism generally includes "extra-familial" others, including perhaps non-human others, who are constituted as social beings and brought

into social relations through these events (though the two are best seen as two ends of a spectrum rather than a dichotomy, and ritual can certainly be incorporated into quotidian commensalism; Bray 2021: 63; Bray 2012). Feasts may be additionally distinguished from the everyday by many potential means, including location, foods consumed, the preparation or quantity of food, the vessels used for serving, the coupling with a religious ritual or other performance, or the combination of people, to name just a few. It can be difficult to identify individual feasts in the archaeological record, but it is probably more common to be able to identify cumulative feasting occasions, as is the goal in this study (Dietler and Hayden 2001: 7-10; Rosenswig 2007: 6).

Archaeologists have conceptualized special commensal events as having two main motivations and outcomes: to serve as a vehicle of communal feeling and shared identity, and/or social competition and status garnering (Chicoine 2011; Dietler 1996, 2001; Gero 1992; Gumerman 1997; Hayden 1996, 2001; VanDerwarker et al. 2007; for examples, see Balossi 2015; Bray 2003; Cook and Glowacki 2003; Dietler and Hayden [editors] 2001; Hastorf 2003; Hayden 2014: 245-295, 300-346; Lau 2002; Mickleburg and Pagán Jiménez 2016; Mills 2007; Nash 2010; Pluckhahn et al. 2006; Potter 2000; Potter and Ortman 2004; Swenson 2006; VanDerwarker 1999; VanDerwarker et al. 2007; Van der Veen 2003; Vega-Centeno 2007). Thus, special commensal events have the ability to reinforce or even change social structure. These two aspects of commensality are not mutually exclusive and often coincide at least to some extent. Positive feelings of interpersonal connection encouraged by the act of eating together can promote a sense of community and shared interests. At the same time, larger or more elaborate feasts may require much management and organization, as well as contributions in the form of food or labor from others who are indebted or obliged

to the host, and thereby can demonstrate physical resources as well as social capital and influence.

Combining the symbolism of rituals with feasting can be particularly powerful for political or religious ends (Swenson 2006). Ritual can be a potent way to re-arrange relationships and create social change (Aldenderfer 2012a; Alt and Pauketat 2018; Barber 2018; R. Joyce 2018; Swenson 2007). It may include a wide variety of activities, including practical ones that do not appear obviously "sacred" from a Eurocentric perspective, and thus requires a broad definition. Ritual can be defined as activities "distinguished from other practices by the extent to which they mark and make explicit the mutual entanglement of people, things, and cosmos," or, more simply, "a heightened awareness of interconnectedness and the relations between things" (Fowles 2013: 104, 103). While Fowles's definition pertains to Puebloan "doings," it fits well with current definitions that other researchers have arrived at (see Swenson 2015: 333). It also fits well with recent investigations into Andean ontologies that recognize the need to dispense with the Eurocentric opposition between sacred/profane, and acknowledge that in the worldview of indigenous Andean societies the line between these two categories is highly porous—and that a given activity can contain aspects of both at once. For example, a ritual may take place in a home but be set apart from daily life through the use of special materials (Bell 1997: 160-161; Engelke 2010; Zedeño 2018). Feasts are considered to be "strongly associated" with ritual, playing "important roles in processes of economic, ecological, political, and ideological change" (Twiss 2012: 364; for example see Bray 2012; Dietler 2001; Brown 2001; DeBoer 2001; Gamble 2017; Jennings and Bowser 2009; Pauketat et al. 2002; Swenson 2018: 223-228; Wiessner 2001: 128). Feasts held as part of religious rituals can be advantageous for hosts, likely religious

specialists, allowing them to display both control over resources as well as their possession of religious knowledge and capital (Dietler and Hayden 2001; Swenson 2006; Twiss 2012: 375).

Whether or not religious ritual is incorporated, the ability to host a feast results in the accretion of social, and sometimes economic capital; this outcome may be a conscious goal of the hosts, depending on the society and the type of feast, or it may not (Bray 2003; Dietler 1996; Dietler and Hayden 2001: 13; Pauketat 2000). In societies where overt status-seeking behavior is not considered acceptable, hosting feasts may nonetheless be an acceptable means of doing increasing one's status, disguised as it is in a gesture of hospitality and giving (Dietler 2000: 73; Mauss 1969). The language of hospitality makes commensality a powerful potential tool for affecting social structure, allowing hosts to "reaffirm or introduce new concepts, new values, and to manipulate people's emotions in a way that favour hosts' political and economic interests" (Hayden 2009b: 37). Notably, even in the most humbly conceived feast, hosts still accrue symbolic capital, or status (although temporary economic impoverishment through expenditure of resources can be an outcome as well). Status is a multi-faceted attribute, and can refer to "prestige, economic advantage, [or] political leverage," or a combination thereof (Twiss 2012: 368). Archaeologists are increasingly recognizing world views in which these three "realms" of power overlap and intersect to the point where separating them can be misleading, although most would probably argue that these terms still carry heuristic utility and are therefore worth retaining (see Fowles 2013). In that spirit, I attempt to disentangle the resulting "type" of prestige resulting from commensality in different areas of Cerro Tortolita, in order to be as specific as possible as to the social impact of feasts. Although the political ramifications of feasting are discussed here,

it should be emphasized that in any given society there will be other routes to prestige in addition to feasting; feasting is one of many tools. It is also important to note that the purpose of feasting is never simply prestige, and this may not even be a conscious goal of the organizers.

In recent years, there has been a recognition that most of the archaeological literature focuses on larger-scale, or otherwise grandiose, feasts, mainly because these are the types of feasts that are most readily identifiable in the archaeological record (Twiss 2015). While household feasts seem to be a common cross-cultural phenomenon, the food, vessels, and discard practices for such feasts are often similar if not identical to daily commensality, often rendering such events indistinguishable (or at the very least, difficult to distinguish) from daily household refuse in the archaeological record (Pluckhahn et al. 2006: 263-264; VanDerwarker et al. 2007; Wallis and Blessing 2015: 2-4). Sometimes clues such as special discard practices or special feasting vessels may allow smaller household feasts to be identified, but in many cases commoner feasting leaves a much less archaeologically discernable imprint (Hayden 2001: 50-51).

This bias results in smaller, commoner-hosted, and household feasts being under-discussed and under-theorized (Kassabaum 2019; Plukhahn et al. 2006; Pollock 2015: 12-13; Twiss 2012: 378-9). Yet, commoner household-level feasts have important implications for the micro-politics of a society as well. Far from being the exclusive purview of elites, even an average family will likely hold feasts to mark lifecycle events, such as births, marriages, funerals, or coming-of-age ceremonies (e.g., Dietler 2001: 96; Hayden 2009; Hendon 2003). Daily, domestic commensality tends to get short shrift as well. Although ordinary commensality takes place on a smaller scale, its repetition and intimacy means that it does

have a very real social impact (Otto 2015; Pollock 2015). The act of eating a simple meal together is a way of creating and reinforcing the shared identity and relationships of participants on a regular basis, as household members, kin, friends, neighbors, community members, etc., in addition to potentially increasing the hosts' status. Furthermore, status may also be on display or negotiated via commensality in such contexts, by means such as who is served first, who gets what servingware, how much food each person gets, and who gets the choicest pieces of food (Nell 2015). As a side note, cross-culturally it is often women who prepare and/or allocate food in these contexts, thereby playing a crucial role in status negotiations (Hastorf 2017: 183; Nell 2015: 70-71; Pollock 2015: 13). Beyond the importance of ordinary commensality in shaping a society, investigation of ordinary commensality is necessary in order to be able to identify potential special commensality, as well as to contextualize the socioeconomic dynamics of special commensal events (Halstead 2015; Kellner et al. 2020; Peres 2017; Pollock 2015: 13; Twiss 2015).

Special commensal events, or feasting, vary widely in terms of practice, motivation, and outcome, and there has recently been a re-thinking of how best to characterize different types of feasts (Dietler 2001; Hayden 2014). In order to address the significance of commensality in a society, it is critical to be as specific as possible in describing the commensal activity and its social impact. Unfortunately, it has become clear over the years that many of the types of special commensality described in wonderful detail by ethnographers are rarely, if ever, identified archaeologically, due to the limits of the archaeological record.

Twiss's definition of commensality, referenced at the beginning of this section, attempts to acknowledge this reality within archaeology. It places all eating events on a

spectrum, from the everyday to the exceptional, an innovation that links everyday consumption to more exceptional events and allows the exploration of their interconnections and overlaps, the virtues of which have been discussed above (see also Hastorf and Weismantel 2007). Kassabaum elaborates upon this definition, noting that the spectrum model is useful but limited in its "ability to productively differentiate middle-ground cases, which combine attributes of domestic consumption and feasting and therefore share material and social consequences" (2019: 614; see also Nelson et al. 2020: 29).

To address these issues, Kassabaum synthesizes studies of commensality to propose a model with two intersecting axes, resulting in four quadrants. The first axis is group size, and the second is level of sociopolitical competition; these can be combined as high group size, low sociopolitical competition, or "large-scale, egalitarian communal events" (also called inclusive (LeCount 2001), solidarity (Hayden 2001: Figure 2.1), centripetal feasts (Chicoine 2011), or empowering feasts (Dietler 2001; though Dietler stresses the covert presence of competition in empowering feasts, even if in the form of "keeping up" with one's neighbors in terms of status. Empowering feasts can also vary in size.); high group size, high sociopolitical competition, or "large-scale, competitive events;" low group size, high sociopolitical competition, or "competitive events with limited attendance" (what others have called diacritical [Dietler 2001: 85-88], competitive [Hastorf 2017: 203-204], or centrifugal feasts [Chicoine 2011]); and low group size, low sociopolitical competition, "small meals and snacks" (or daily meals; Kassabaum 2019: 614-616). Examples of material correlates draw upon syntheses by Twiss (2008: Table 1) and Peres (2017: Table 2), as well as other studies; for group size material correlates include quantity of food (here, being able to determine whether deposition occurred as a one-time event or slowly over time is key) and

vessel capacity (Blitz 1993; Hayden 2001; Pluckhahn et al. 2006; Wallis and Blessing 2015), while correlates for sociopolitical competition include rare or labor intensive foods, unusual cooking styles (as compared to daily eating events), and special or high quality vessels (Beehr and Ambrose 2007; Hastorf 2003, 2015; Mills 2007; van der Veen 2003) . In addition to these two axes, further axes could be added to the model as contextually relevant. While cross-cultural examples are used to illustrate the axes, the attributes defining each axis can be customized to rely on culture-specific context relevant to the case study. I will adapt Kassabaum's framework, based on her synthesis of the literature, and its material correlates as a means of stream-lining comparison and meaningful interpretation of commensality and its outcomes in different areas of Cerro Tortolita.

Material Expectations for Group Size and Sociopolitical Competition in Commensality

Defining expectations for exceptional commensality, or feasting, requires a "baseline" data set for everyday commensality. In this case, the baseline data will be provided by the Primary Residential Zone. While feasting likely did occur in this area, it is not expected to leave a significant mark archaeologically. Indeed, no contexts that were obviously the result of feasting were recovered (e.g., exceptionally dense eating-related debris, deposited quickly). The detritus of household feasts, as exceptional events, would have been swamped by the more plentiful remains of commonplace, daily meals. While this approach is not perfect, as ideally we would be able to distinguish those small household feasts as well, it is suitable to the contexts available. And, as will be seen in the discussion, there is still some potential evidence for participation in feasting by those living in the Primary Residential Zone. Kassabaum's axes are adapted according to the lines of evidence

available from Cerro Tortolita to organize expectations for different types of special commensality, including their motivations and social effects. Expectations for exceptional commensality, namely large group size and/or high sociopolitical competition, will be tested in the monumental setting of the U-shaped platform mound and plaza.

Small Versus Large Group Size

Evidence for small group size may include commonplace vessel size, everyday locations, and an absence of monumental architecture (Hayden 2001: 50; though small groups may also feast within a monumental architecture setting [e.g., VanDerwarker 1999], including in the case of diacritical feasts [Dietler 2001], as will be discussed shortly). All three criteria describe the Primary Residential Zone. Evidence for large group size includes large vessels, large and open locations, monumental architecture, and large servings of food (Clarke 2001: 157-160 and Hayden 2001:47-49, as cited in Twiss 2008: Table 1; Boudreaux 2010, Claassen 2010, VanDerwarker 1999, as cited in Peres 2017: Figure 2; see also Blitz 1993; Mills 2007; Potter 2000: 478-479, 486; Rosenswig 2007). For large vessels, the size of vessels used for storage, preparation, and serving of food will be compared. On a similar note, the location of larger, extra-household facilities for preparing food, in this case grinding stones, will be discussed as well.

The plaza would fit the description of "large and open locations," as well as "monumental architecture," suggesting it is suitable for a large group size. The restricted access and limited interior space of the U-shaped platform mound suggests that, though it is an example of monumental architecture, it hosted smaller groups.

Low versus High Sociopolitical Competition

Evidence for low sociopolitical competition includes an absence of rare, exotic, or recreational foods; commonplace vessel types; everyday locations; no monumental architecture; and no markers of prestige or elite status (Hayden 2001: 50; Nelson et al. 2020: 41). Evidence for high sociopolitical competition are the inverse: presence of rare, exotic, or recreational foods, as well as culturally-specific luxury foods (Adams 2005, Clarke 2001: 151, Dietler 2001: 89, 95, Hayden 2003: 460, Kirch 2001, and Leach 2003, as cited in Twiss 2008: Table 2; see also Biwer et al. 2022; Hastorf 2003; Peres et al. 2010; van der Veen 2003); exceptional locations (Adams 2005, Clarke 2001, Kirch 2001: 175, and Brown 2001: 382, as cited in Twiss 2008: Table 2; see also Bray 2012); presence of monumental architecture (Cutright 2013; Pauketat 2002; VanDerwarker 1999; Rosenswig 2007; and markers of prestige or status (Junker 2001: 277, Leach 2003: Figure 2, Perodie 2001, DeBoer 2001, Wiessner 2001: Table 4.1, as cited in Twiss 2008: Table 2; Rosenswig 2007). These material expectations will be discussed further as they are relevant to Cerro Tortolita here.

Rare and exotic foods will be defined in this context based on findings in the Primary Residential Zone, as the best baseline for everyday meals (although, as acknowledged, some feasting likely occurred here too), and comparison with contemporaneous sites. The Nasca had a mixed agricultural, pastoralist, and hunter-gatherer food economy. Cultivated foods include beans and legumes, maize, cucurbits, peanuts, chilis, and tubers including jicama, achira, manioc (or yuca), and potato (Beresford-Jones and Whaley 2021: 12; Piacenza 2016; Vaughn 2009: 465). Wild plants consumed include fruit from native trees, cactus fruit, tubers, tomatíllos, members of the Amaranthacea family, and other edible greens or seeds (Beresford-Jones and Whaley 2021: 14). Animal resources used by the Nasca people

included domesticated camelids, guanaco, deer, birds, guinea pigs (*cuy*), and vizcascha, as well as marine resources such as shellfish, fish, and sea mammals (e.g., Conlee 2016: 14; Vaughn 2009: 129-132). Such foods might be found in either Zone, though they may differ in frequency, potentially indicating special commensality.

Recreational foods known in this region include San Pedro cactus (*Tricherocereus pachanoi*; a hallucinogen), *coca* (*Erythroxylum*; a stimulant), and *chicha* beer. Such foods are sometimes not included in discussions of foodways, as they are seen as non-nutritive; however, their ingestion clearly was of cultural importance and should therefore be considered in discussions of commensality, not least because they can signal special commensal events (e.g., see Biwer et al. 2022; Jennings and Bowser 2009). Botanic and limited zooarchaeological evidence will be used to address everyday versus exceptional foods.

For markers of prestige or elite status, the use of the Primary Residential Zone as a baseline is less straightforward, as some such markers may be present there as well. In Vaughn's study of Marcaya, a small Early Nasca village in the Southern Nasca Region (SNR), he identified two households as high status based on the density of special goods, including panpipes and cup bowls (2009). Noell likewise found a low frequency and limited distribution of some special vessel forms at La Tiza, a large residential site with an Early-Middle Nasca component in the SNR (2014). Certain vessel forms (and panpipes) were identified as high-status in Carmichael's (1988) study of burial goods, as well. High-status households may occur at Cerro Tortolita too, although I do not attempt to make quantitative comparisons to identify high-status households individually here due to the extensive use of fill to create terraces, and the difficulty in distinguishing fill and post-use trash dumping from

in-situ floors (the latter being present only in 3/12 excavated units). If such goods are found in the Primary Residential Zone, they would suggest that at least some households enjoyed an elevated status, and that therefore some level of sociopolitical competition was present in this area. If found in the Ceremonial Zone, these goods would also suggest sociopolitical competition. These and other rare or exotic goods may be found exclusively or disproportionately in the Ceremonial Zone, as well (see further discussion in Chapter 3).

Other Lines of Evidence

Some lines of evidence can be relevant for group size *and* sociopolitical competition, depending on further context. One such case is monumental architecture, present at Cerro Tortolita in the form of the plaza and U-shaped platform mound in the Ceremonial Zone. The plaza is interpreted as an area where large groups could gather, as detailed above. Kassabaum notes that monumental constructions are "often interpreted as signs of hierarchy—and thus the competitive and self-aggrandizing behaviors commonly associated with this type of organization," despite evidence that such constructions are sometimes undertaken without the presence (or with only minimal levels) of hierarchy or evidence for competition (Kassabaum 2019: 615; Moore 2005:52-124; Vega-Centeno 2007). However, monumental architecture can also be "social places used for public rituals aimed at emphasizing inclusiveness and shared interests" (Kassabaum 2019: 615). I refrain from interpreting the plaza as evidence for sociopolitical competition until further discussion later in this chapter. Whether there were status distinctions made between participants in plaza activities, including perhaps the participation of religious specialists visible from atop the U-shaped mound, is a matter that requires additional lines of evidence beyond architecture to address. On the other hand, the

smaller, restricted access space of the U-shaped platform mound suggests this would have been a setting suitable for both small groups and sociopolitical competition, allowing select participants to set themselves apart from the non-participant masses.

Similarly, the ratio of ceramic servingware (fineware) to vessels used for storage and preparation of food (plainware) can indicate an area unusually focused on food consumption, storage, or preparation, but whether this evidence supports large groups or high sociopolitical competition depends on the situation. The two may not always be possible to disentangle, depending on the data available, although further cultural context may aid interpretation. An elevated amount of fineware would suggest an area focused on the serving and consumption of food, potentially with food being prepared elsewhere (Blitz 1993; Boudreaux 2010; Bray 2003; Junker 2001: 289-295; LeCount 2001: 945; Potter 2000; Pluckhahn et al. 2006: 276; Rosenswig 2007; Turkon 2004; Twiss 2008). Food may have been centrally prepared and organized by the hosts (suggesting sociopolitical competition) or brought by participants pot-luck style (making sociopolitical competition less likely, though still possible). If the area of elevated fineware is large (i.e., the plaza), there may or may not be an element of sociopolitical competition; however, if the area of elevated fineware is small and exclusive (i.e., the U-shaped platform mound), then some level of sociopolitical competition is more likely. On the other hand, an elevated amount of cooking and storage wares would indicate an area dedicated either to food preparation or storage, with food being consumed elsewhere (Potter 2000; Twiss 2008). If this concentration of cooking and storage vessels deviates from the norm, then this line of evidence could potentially indicate large group sizes (requiring extraordinary preparation) or high sociopolitical competition through unusual preparation of food, separate from its area of consumption. However, archaeologists must also be sensitive

to the possibility of communal household food processing as well, especially if found in an otherwise residential context, which would not support either large group size or sociopolitical competition. The ratio of serving and cooking/storage ware from the Primary Residential Zone will be used as a baseline to test for special commensality in the Ceremonial Zone.

Evidence for ritual activity, while not direct evidence for special commensality, can also be an indicator of an area where it has a higher probability of occurring. Special commensalism (of various types) and ritual are widely acknowledged to be closely intertwined, often occurring together. Therefore, evidence for ritual can be cautiously viewed as increasing the likelihood of feasting occurring in an area.

Evidence from Ceramic, Botanic, and Faunal Data

Several lines of evidence will be used to address the above expectations for group size and sociopolitical competition, including ceramic, botanic, and zooarchaeological data. First, ceramic vessels used for storage and cooking will be discussed to address differences in food production across the site. Then, all three lines of evidence are utilized to address variations in consumption, or the actual act of commensality.

Ceramic Data: Introduction

All ceramic wares are divided into one of two categories, fineware and plainware (following the use of these terms in south coast archaeology). Plainware will be used to address food preparation, and fineware to address consumption. Plainware is comprised of vessels used to store or cook food, and includes vessel forms termed ollas and jars (Figure

4.1). No servingware forms, such as bowls, plates, or cups, are present within the plainware category. Fineware, despite its name, was used as everyday servingware by all members of society (in addition to acting as servingware for special occasions). Vessel forms in this category include bowls, plates, insloping vessels, incurving vessels, collared and collarless jars, cup bowls, vases, vessels with spouts (possibly double-spout-and-bridge), and headjars (Figure 4.1). Some fineware vessel forms are considered markers of status, and likely would have been used in special commensal events, as will be discussed further. Plainware as a rule has thicker walls than fineware, with larger and more frequent inclusions in the paste, to help withstand the stress of heating and cooling during cooking. It is almost always undecorated, although occasionally plainware was identified that had simple red or white wavy lines.

Fineware is more finely made, hence its name. Its walls are thin with small and generally sparse inclusions. Surfaces are burnished or polished and have polychrome painted decoration. Fineware at the site is typically decorated in the Nasca style, although Estrella and possibly some Carmen style ceramics are also present. Middle Nasca style ceramics (Nasca phases 4 and 5) are the most common, but a small amount of earlier (Nasca 2 and especially 3) and later (Nasca 6 and possibly 7) styles are present as well, the latter generally in superficial contexts or on the ground surface. As mentioned, a small amount of LIP ceramics were also found in Sub-Mound C on or near the ground surface. All styles were analyzed together for the purposes of this study.

Food Preparation (Plainware)

Food preparation is mainly addressed through a consideration of pottery, specifically differences in frequency and size of pots used for cooking and storage. There is some

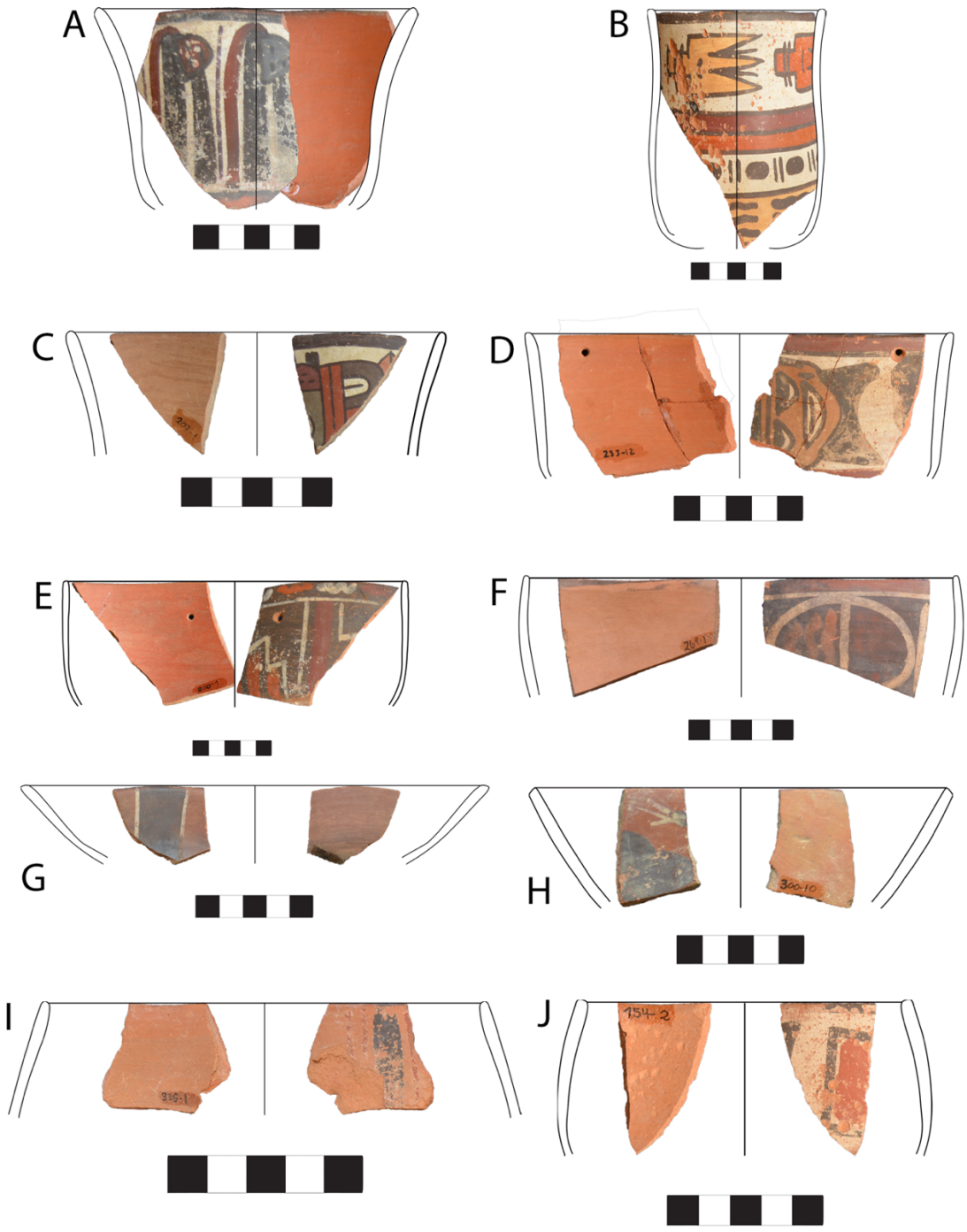

Figure 4.1 Major vessel forms from top left: A) cup bowl, B) vase, C) flaring bowl with straight walls, D) flaring bowl with concave walls, E) bowl with straight vertical walls, F) convex bowl, G) plate with straight walls, H) plate with convex walls, I) insloping vessel, J) incurving vessel. Note that vases, in particular, can have much variation in their form (see Hecht 2013: Plates I-39 through I-53 for more vases and similar forms; and Proulx 2006: Figure 2.2). Inventory numbers (IN): A: 30-1, B: 67-2/26/22/23, C: 207-1, D: 233-2, E: 200-1, F: 269-1, G: 320-2, H: 300-10, I: 355-1, J: 154-2.

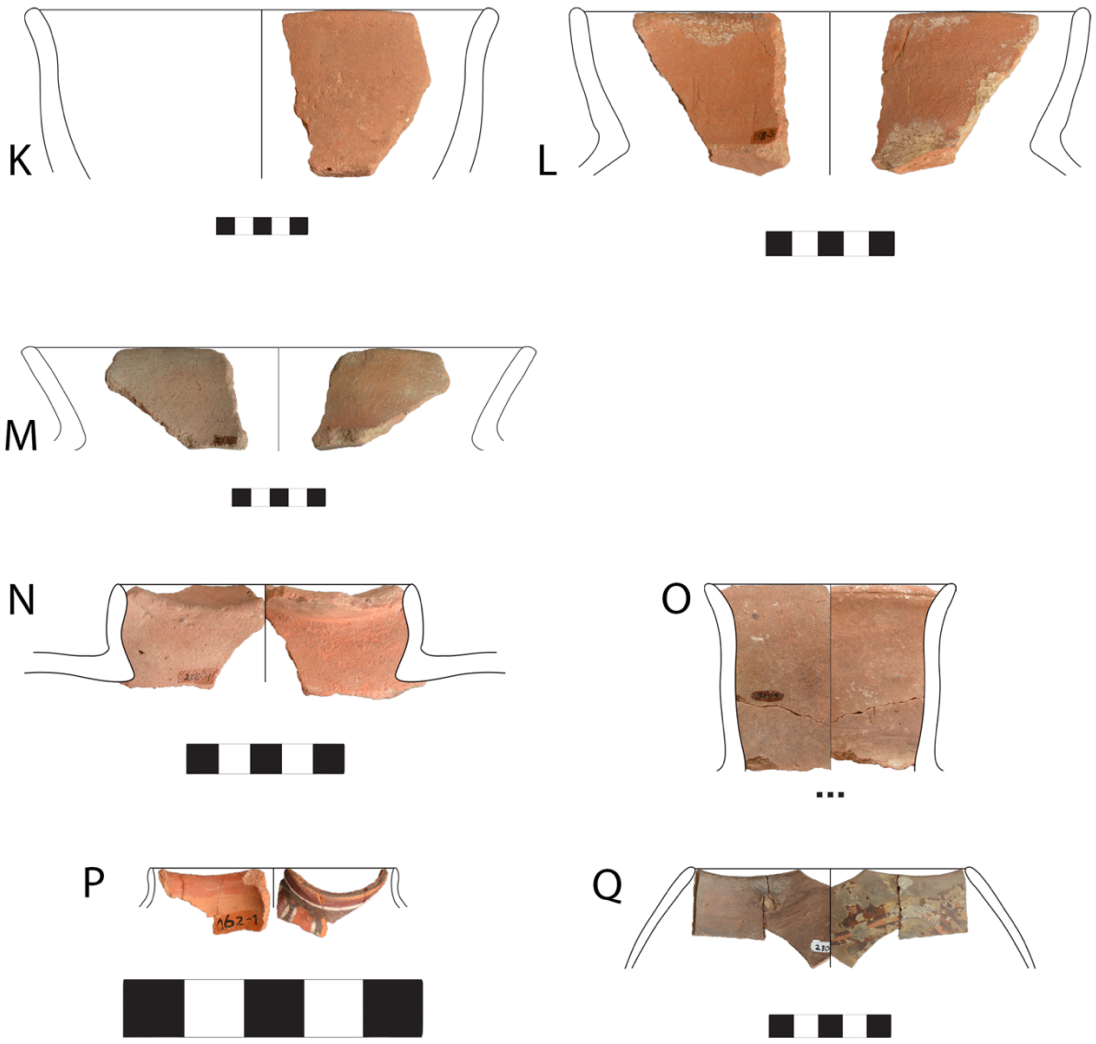

Figure 4.1 Continued. Major vessel forms from top left: K-M) olla, N-O) plainware collared jars, P) fineware collared jar, Q) fineware collarless jar. Multiple ollas and plainware collared jars are shown to give an idea of variation within these categories, however this is not an exhaustive example (see Hecht 2013: Plates II-1 through II-10 for more). IN: K: 160-3, L: 188-5, M: 201-30, N: 228-4, O: 264-9, P: 162-1, Q: 230-7.

difficulty in distinguishing between jars and ollas, which may have had different functions, based on rim sherds alone, so this issue is addressed first. Massey's (1986) surface analysis of grinding tools is discussed as well due to its relevance to the discussion of centralized plant processing.

Storage versus Cooking

A brief discussion of the identification of the two plainware forms identified in this study, jars and ollas, must be made before proceeding with a discussion of storage and cooking. The original distinction between jars and ollas in south coast ceramic typologies is based on height-width ratios that rely on complete vessels (Menzel et al. 1964). DeLeonardis has previously noted the difficulty with applying this typology to archaeological assemblages dominated by fragmentary sherds, and chooses instead to combine the two categories (1997: 230-231). For this study, I attempted to retain a distinction between jars and ollas, despite having to rely on rim sherds for their identification. Jars are defined as having more restricted openings than ollas, due to having vertical or sometimes even insloping collars. Jar collars are often, but not always, short. Ollas have everted collars, which are sometimes quite large. One possible collarless olla was identified. These definitions draw upon Vaughn's typology from the Nasca site of Marcaya (2000). These distinctions also make some functional sense, in that one would expect that vessels used for cooking would have more accessible openings to allow for tending the cooking food within, then distributing it (ollas); while vessels used for storage would have more restricted openings to protect contents (jars). (However, it is possible that jars and ollas were used for more than one function, as well.) An analysis of the distribution of soot on rim sherds supports this functional distinction. A slight tendency for

collared ollas to have more sooting at the rim than jars (6.5% of ollas (n=641) versus 1.1% (n= 90) of jars) was identified, and this difference is statistically significant (χ^2=4.22, df=1, p=.039). More sooting would be expected lower on the pots, but a lack of complete vessels in this study precluded further analysis. A small number of rim sherds could not be positively identified as belonging to either a collared olla or a collared jar, according to the criteria set out here (n=13). A more complete use wear analysis of plainware sherds in the future, including the analysis of body and base sherds, may allow more confident distinctions to be made.

If this distinction between jars and ollas based on vessel openings reflects real differences in use (ollas for cooking and jars for storage), then differences in frequency of collared jars and ollas in different areas of the site are of interest. Collared ollas are most frequent in Sector I and the Primary Residential Zone (Figure 4.2). Collared jars are most frequent in Sector I alone. These data suggest that more food preparation (relative to consumption) took place in Sector I and the Primary Residential Zone than in the U-shaped platform mound, and that more food storage took place in Sector I than in either of the other two areas. This pattern is part of a broader trend showing the ratio of plainware to fineware is highest in Sector I, then in the Primary Residential Zone, and lowest in the U-shaped platform mound (Figure 4.3). The frequency of plainware is also quite low in the plaza, however the sample size of ceramics from the plaza is very low (n=24; plainware n=3). When collared ollas and jars are considered as a proportion *within* the category of plainware, the frequency of collared ollas is similar across areas (with the exception of the plaza; Figure 4.4). However, there are still more collared jars in Sector I, supporting that this area was

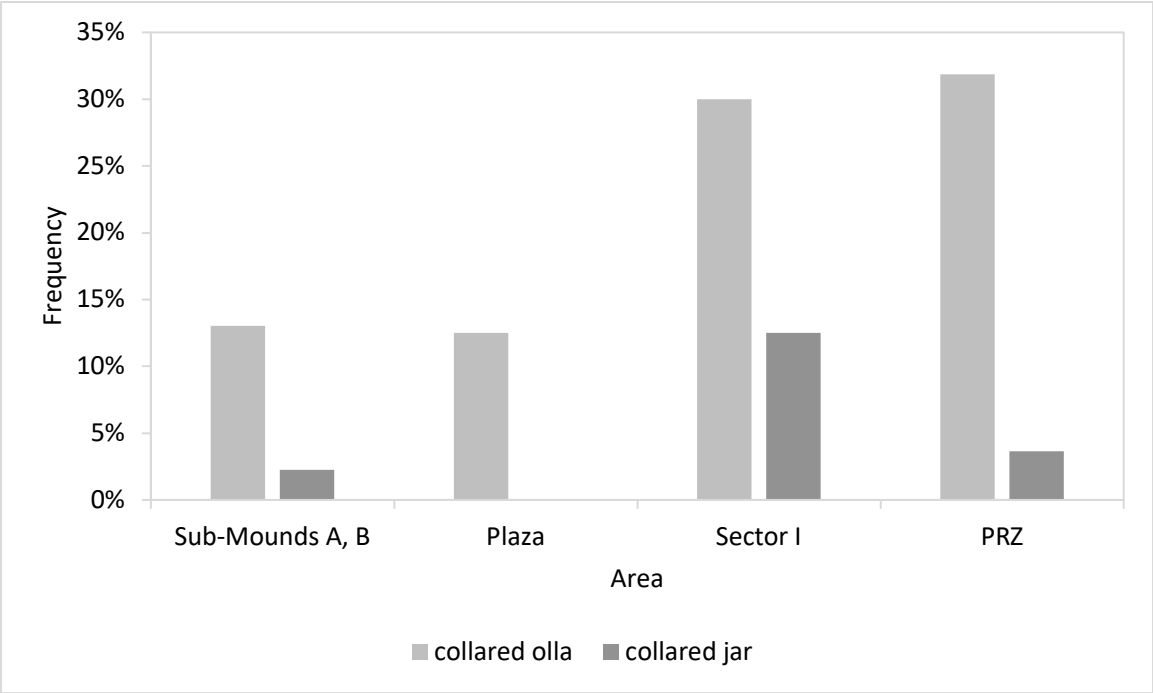

Figure 4.2 Frequency of collared ollas and jars within ceramic assemblage (fine- and plainware).

Figure 4.3 Frequency of fine- and plainware in different areas of the site.

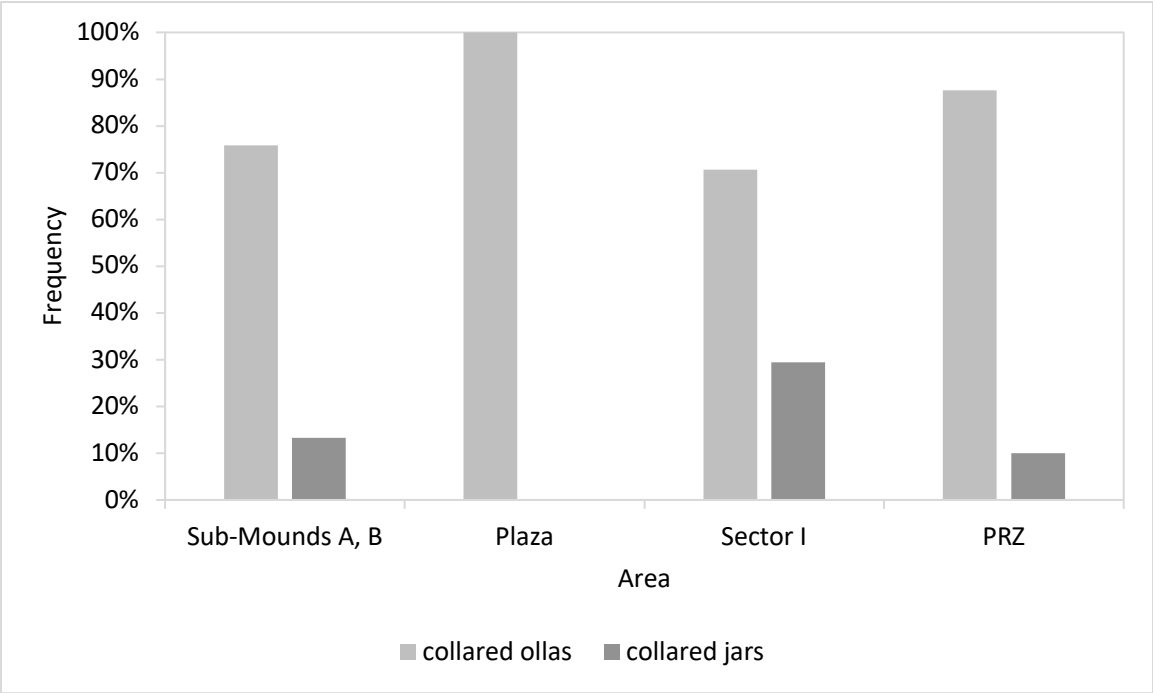

Figure 4.4 Collared ollas and jars as a percent of plainware.

more focused on cooking and storage relative to consumption than other areas, *and* more focused on storage relative to cooking.

Plainware Vessel Size

Data regarding vessel size also support the prominent role Sector I in food storage and cooking. Collared jars and ollas are significantly larger, based on aperture at rim, here than in other areas of the site (Figure 4.5). It should be noted that in the plaza collared ollas are also large (even larger than in Sector I, with diameters of 27 and 42 cm, compared to a median diameter of 20 cm for all ollas, and a standard deviation ranging from 16-26 cm; see Figure 4.6), although there is only a small sample size of plainware here (n=3) and the

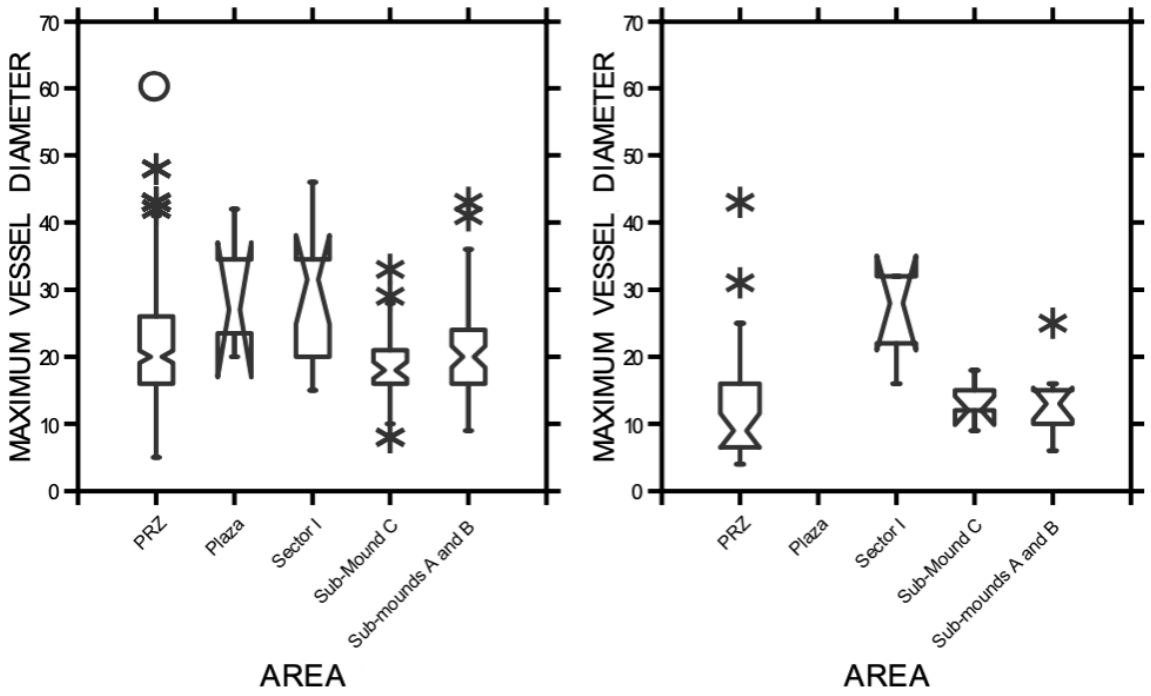

Figure 4.5 Sizes of collared ollas (left) and jars (right).

Figure 4.6 Distribution of olla sizes for entire site based on aperture at rim (excluding Sub-Mound C).

difference is not statistically significant. On the other hand, the size of collared jars and ollas are comparable between Sub-Mounds A and B and the Primary Residential Zone, suggesting that food was being prepared for a similar (smaller) number of people at a time in both locations.

In sum, Sector I contains more plainware relative to fineware than other areas of the site, and the platform mound has the least. There are also differences in the distribution of vessel sizes in different areas of the site. Namely, Sector I has more and larger plainware than other areas. Based on the frequency and size of plainware in Sector I, this area is interpreted as an area of centralized food preparation and/or storage.

Complementary Data for Food Preparation: Grinding Tools

Data from Sarah Massey's (1986) surface analysis of the distribution of grinding tools at Cerro Tortolita also supports the interpretation of Sector I as an area of centralized food storage and/or preparation. Massey observes an unusual density of grinding tools, "up to twenty grinding implements and manos per fifteen meter radius in the far west side," of the Ceremonial Zone, the area referred to here as Sector I (1986: 199). She also notes that during her surface survey she found a high frequency of large plainware jars in this area, in agreement with excavation results (1986: 199). Some communal plant processing may have occurred in the Primary Residential Zone as well (Massey 1986: 198), though it is difficult to identify for certain the areas that Massey refers to in the text as "Strata 1 and 4," and the

output of this processing may have been used for either household or community consumption.

Massey also records the presence of a grinding slab in the plaza of the large U-shape platform mound, just to the east of Sector I (still in the same location in 2018). She comments that this grinding slab may not be in its original location; however, given its large size and the difficulty involved in moving it, it seems quite possible that it is. This grinding slab is complemented by the presence of the two large excavated ollas mentioned earlier, which also support large-scale food preparation here.

Based on my ceramic analysis and Massey's surface analysis of the distribution of grinding tools, I conclude that Sector I was an area used for the centralized storage and grinding of plant materials, and that these activities likely supported ceremonial activities taking place in the nearby plaza and/or platform mound. The high frequency and large size of plainware vessels in Sector I, relative to the Primary Residential Zone, supports the inference that more food preparation and storage was taking place relative to food consumption in this area than in other areas. Central food processing would have saved the effort of transport as well as providing a communal and social setting for labor-intensive plant processing activities (e.g., VanDerwarker and Detwiler 2001). This interpretation broadly agrees with Massey's, who also suggests that the west side of the Ceremonial Zone was used for centralized plant processing, possibly to support activities conducted in the ceremonial architecture. The relative dearth of plainware on the U-shaped platform mound also supports that food preparation and/or storage was less intense here than elsewhere on the site, relative to the amount of food being consumed (since there is a higher frequency of fineware).

Food Consumption: Fineware Ceramics, Botanics, and Faunal Data

Differences in food consumption will now be addressed through ceramic, botanic, and faunal data. For ceramics, the characteristics of servingware vessel size, ratio of fineware to plainware, and the distribution of special vessel forms, are compared across areas of the site. Botanic remains are identified and compared between areas in both Zones, with special attention to differences in frequency and presence/absence of certain taxa. While identification of faunal material is only partial, the density of animal and shellfish remains is also compared between different areas. Together, these lines of evidence across the two Zones paint a picture of daily and special commensality at Cerro Tortolita.

Fineware Ceramics

Fineware Vessel Size

Bigger serving vessels are associated with feasts, in order to serve multiple people at once, to serve greater quantities to individuals, or to have a larger design more visible to an audience (e.g., Blitz 1993; Mills 2007). However, this expectation was not borne out in this case. Of the fineware vessel forms identified at the site, only bowls, plates, and vases have a large enough sample size to warrant comparison of the vessel sizes between areas. Bowls are slightly larger on the U-shaped platform mound than elsewhere, but this result is not statistically significant. Sizes are similar for bowls, plates, and vases across all areas of the site that were compared.

Frequency of Fineware

There are some differences in the presence/absence and frequency of certain high-status or rare vessel forms between the Ceremonial and Primary Residential Zones that might reflect differences in sociopolitical competition levels, which will be discussed shortly, although due to the low frequencies of these forms it is difficult to draw major conclusions. A consideration of presence/absence of these forms across contexts is probably more meaningful in this case than a comparison of numbers due to their low frequency and small sample size. The strongest difference between the different areas of Cerro Tortolita was found in the frequency of fineware relative to plainware, a topic discussed earlier but that will be expanded upon further here.

There are important differences in the frequency of fineware relative to plainware in different parts of the site. The implications of this difference have already been discussed for Sector I, which is interpreted as an area of food storage and/or preparation for suprahousehold events. Now I turn to discuss the importance of this ratio for the U-shaped platform mound and the Primary Residential Zone (Figure 4.7).

The ratio of fineware (63%) to plainware (37%) in the Primary Residential Zone is slightly elevated above that at Marcaya (a contemporaneous residential site) and La Tiza (a residential site with a contemporaneous component), both located in the SNR (Noell 2014: Table 10; Vaughn 2000:106; Figure 4.7). The Nasca practice of eating daily food from finely decorated fineware, with iconography of religious importance, emphasizes that food consumption was a ritualized activity even in everyday commensality in this culture. Although food consumption in the context of special ceremonial architecture or large-scale feasts usually gets more attention for its sacred valence, daily food consumption in common

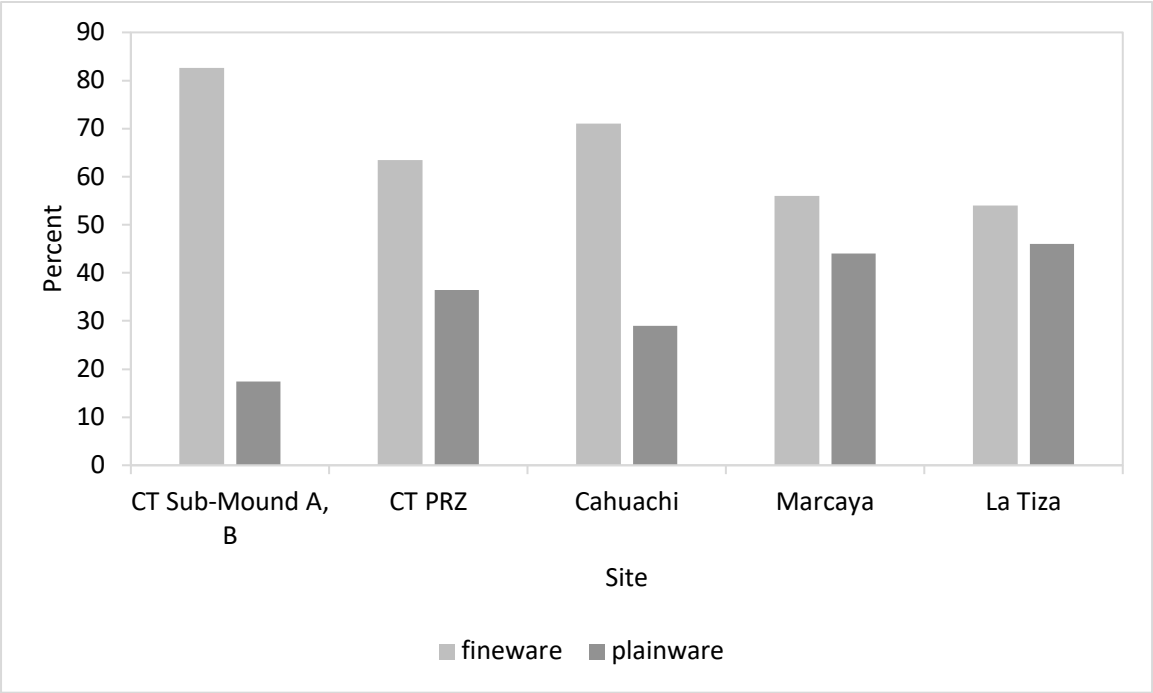

Figure 4.7 Ratio of fine- and plainware in Cerro Tortolita (CT) and at other contemporaneous south coast sites: Cahuachi (a major civic-ceremonial center), Marcaya (a small residential site in the Southern Nasca Region; Vaughn 2000: 106), and La Tiza (a larger residential site with an Early-Middle Nasca component; Noell 2014: Table 10).

domestic contexts must be acknowledged to have had a sacred component as well, blurring the line between sacred and profane consumption.

However, as high as the ratio of fineware to plainware is in the Primary Residential Zone, it is highest in the area of the U-shaped platform mound and its associated plaza (Figure 4.3). Accordingly, these areas are interpreted as focused on food consumption, rather than production. The architecture of the plaza alone suggests that this area was used for public ceremonial events, which might have included viewing ceremonial activities taking place outside of buildings on top of the U-shaped platform mound. The ceramic data additionally suggest that feasting was a component of these events. As mentioned, the

plainware rims found in the plaza are among the largest found at the site, and support the idea that large amounts of food was also prepared here.

After the plaza, the U-shaped platform mound has the next highest ratio of fineware to plainware. The ratio is closest to the Primary Residential Zone, indicating that food was prepared here. However, more intensive consumption relative to food production took place here than in the Primary Residential Zone. This observation raises the question of whether some food consumed in the Ceremonial Zone was stored and prepared in a different area, such as Sector I. The high frequency of fineware ceramics could also be explained by the breaking of fineware vessels as part of ceremonial events, higher breakage rates at special events than in the course of daily use, or simply maintaining and using a larger amount of fineware at a time, even though vessel size remained similar to elsewhere.

Special Vessel Forms

Rare fineware ceramic vessel forms that are considered high status on the south coast may have been used in special commensal events, and can serve as another line of ceramic evidence for such activities, especially in domestic contexts where it may be difficult to distinguish every day and special consumption (e.g., Hendon 2003). In this region vessel forms thought to indicate status include head jars, cup bowls, collared jars, and double-spout bottles (see Proulx 2006: Figure 2.2), all of which would have been suitable as drinking vessels (Vaughn 2000: 510-511). (Discussion of other special objects made from ceramic, such as panpipes or figurines, takes place in Chapter 3). Chicha is a fermented, alcoholic drink consumed in special commensal events important to the construction of power relations in the Andes, as has been well-documented for cultures later in time, such as Wari,

Tiwanaku, and Inca (e.g., Biwer et al. 2022; Biwer and VanDerwarker 2015; Dietler 2006; Jennings and Bowser 2009; Sayre et al. 2012; Sayre and Whitehead 2017; Somerville et al. 2015; Staller 2020; Williams and Nash 2021). Strong arguments for chicha production earlier in time have proven more difficult due to issues of equifinality in the archaeological data, and to my knowledge no positive identification of chicha brewing has yet been made for the Nasca culture. Beresford-Jones and Whaley do note the presence of *chicha de huarango* on the modern day south coast, although it is unclear if this beverage dates to prehistoric times (2021). Yet, there has been suggestion that certain vessel forms may indicate brewing as far back as three thousand years (Weismantel 2009, as cited in Dozier and Jennings 2021). Therefore, I tentatively suggest that these high status drinking vessels may have been used for consuming chicha, or another beverage with important functions in feasting and abilty to affect power structures.

Vaughn notes the similarity between Nasca style head jars and Tiwanaku kero vessels, "used for serving libations, for display, and in offerings in prestige building ceremonies" (2000: 511). There may also be similarities in use between Nasca head jars and Wari faceneck jars, which Andrea Vazquez de Arthur (2020) interprets as active participants in rituals, serving as the embodiments of ancestors and receiving offerings in the Wari context. Only two head jar fragments were recovered from secure excavated contexts in the Primary Residential Zone (although one was from a minor instance of unit "wall collapse;" a third fragment was recovered from the ground surface), and none were identified in the Ceremonial Zone (Table 4.1a). They are reported here as a count rather than as a percent of fineware rims because they are body (non-rim) sherds. Perhaps these vessels were favored by people living in the Primary Residential Zone, or perhaps they simply did not show up in the

Table 4.1 Count and frequency of special vessel forms across Cerro Tortolita.

a.

	Ceremonial Zone (platform mound)		Primary Residential Zone		
	No. of pieces	**No. Units Present**	**No. of pieces**	**No. Units Present**	**Notes**
spout	1	1	5	4	Plus one possible spout "hole" for PRZ, and one spout from Sub-Mound C.
head jar	-	-	2	2	PRZ: one is from a clean-up of some wall fall.

b.

	MNV	**Frequency**	**MNV**	**Frequency**	
cup bowl	4	1%	17	3%	
collared jar	2	1%	4	1%	

Ceremonial Zone due to their very low frequency. Only one head jar was found in Silverman's excavations at Cahuachi (.255% of fineware assemblage), suggesting together with the Cerro Tortolita distribution that they might have been used to display a more secular type of status (Silverman 1993: Table 16.7). Head jars are rare and restricted to higher status contexts at both Marcaya (3% of fineware; Vaughn 2009: Table 6.1, 157) and La Tiza (2% of fineware; Noell 2014: Figure 18, 59). They are also known in burials in the Nasca region (Vaughn 2000: 511).

Silverman and Proulx interpret cup bowls as another form of ritual drinking vessel (2002: 132). The low frequency of cup bowls in the Primary Residential Zone is in keeping with other studies (Table 4.1b). At Marcaya, Vaughn found that cup bowls are present in very small quantities and mostly limited to high-status patio groups (no data is provided for

percentage of assemblage; 2009: 157; 2000:509-510). Noell also identified a similar pattern of low cup bowl frequency (3% of fineware assemblage), and a tendency to be in high-status areas at La Tiza (2014: Figure 18, 59). Lastly, Carmichael's study of burial goods found that cup bowls are mostly present in high- to mid-status graves, although they are present to a lesser degree in low status graves as well (it should be noted that Carmichael interprets this finding as reflecting the rarity of this vessel form, rather than its association with status; 1988:313). Cup bowl frequency is not available for Cahuachi, as this vessel form is grouped into a broader category of "other" (Silverman 1993: Table 16.7).

At Cerro Tortolita, cup bowls were found in the U-shaped mound/plaza complex of the Ceremonial Zone, and in 2/3 of the excavated households in the Primary Residential Zone (Table 4.1b). However, in keeping with their designation as special vessels, their frequency is relatively low (2.8%; Figure 4.8). I choose to focus on the frequency of cup bowls within fineware ceramics, rather than the assemblage as a whole, because different areas have different frequencies of fineware, and the question here is not how much fineware each contains but of that fineware, how many "special" ceramic forms they have. Cup bowls are slightly more frequent in the Primary Residential Zone as a whole than on the U-shaped platform mound. The difference in frequency is a little less than 2%, but due to the low frequency of cup bowls overall this is an almost two time increase over the platform mound, a slightly surprising result.

Collared jars were found in both the Ceremonial and Primary Residential Zones in limited frequencies (Figure 4.9), and their rarity may reflect an association with status. Carmichael found collared jars to be more common in mid-to-high-status graves, though he argues this is a result of numbers, rather than status, as they are not entirely absent from low

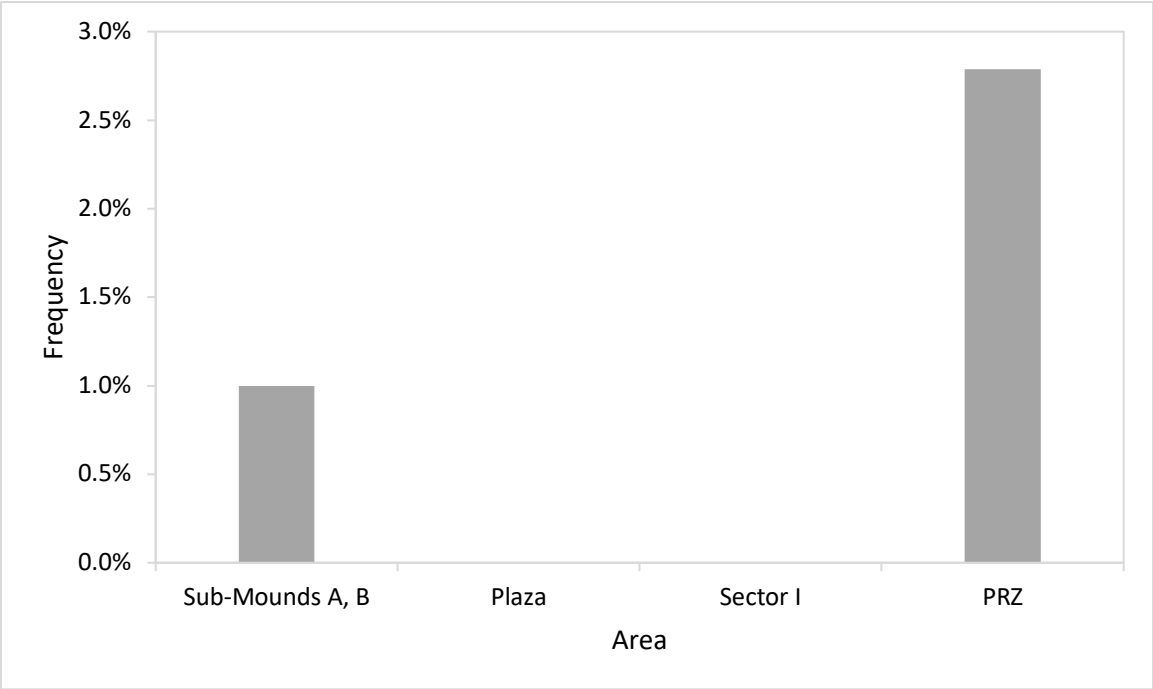

Figure 4.8 Cup bowls as a percent of fineware across the site.

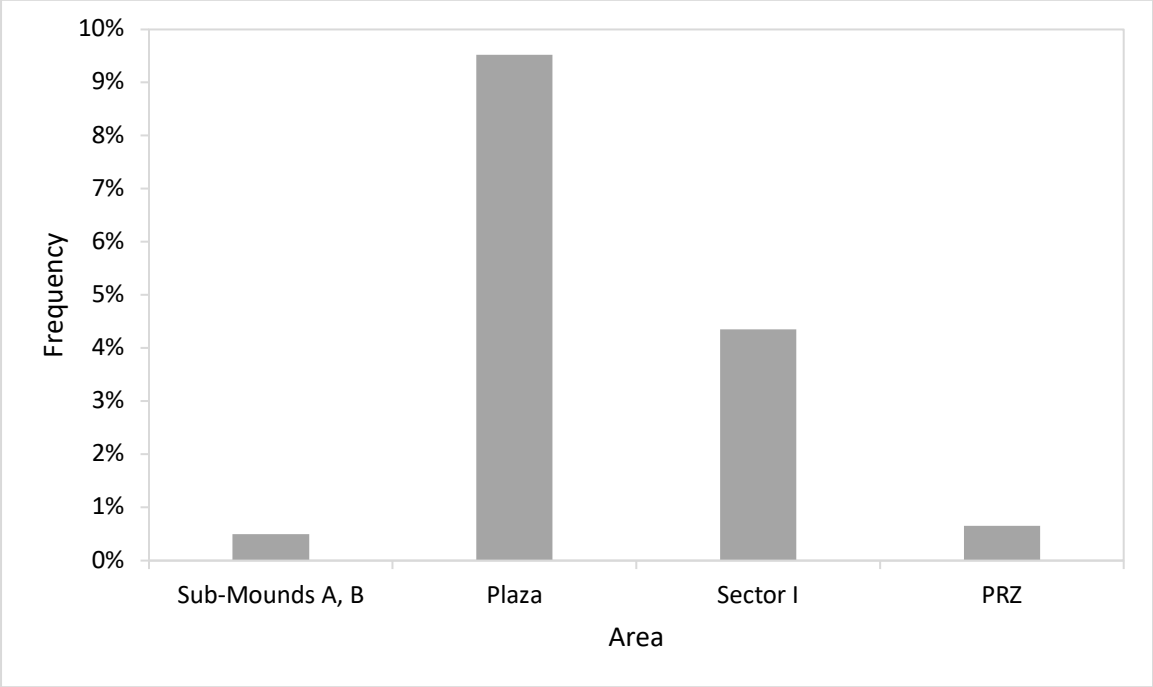

Figure 4.9 Fineware collared jars as a percent of fineware. Although there is an elevated frequency of collared jars in the plaza, the small sample size here must be kept in mind.

status burials (1988: 313). No collared jars were found at La Tiza, though one was recovered at Cahuachi (.255% of fineware assemblage; Silverman 1993: Table 16.7), and they are present in a low frequency (3% of fineware assemblage), in high status contexts, at Marcaya (Vaughn 2009: Table 6.1; Vaughn 2000: 509, 511).

Double-spout bottles are considered possibly the most prestigious form of ceramic in the Nasca repertoire (Proulx 1968: 13; Proulx 2006: 35; see Table 4.1a). They are likely found to a limited extent at Cerro Tortolita, although they are difficult to identify in fragmentary form. One must find part of the spout tube, which is relatively small, and possibly less likely to survive sufficiently intact as to be identifiable as a tube, due to its tightly curved form. In addition, the rim of the spout(s) has such a small diameter that it is even less likely that rim sherds useable for generating a minimum number of vessels (MNV) will be found. Therefore, the number of fragments and their distribution is noted here, but no attempt at generating an MNV or comparing frequencies between different areas of the site is made. An additional difficulty in the identification of double-spout bottles is that spouts can appear on other vessel forms too (e.g., "head and spout bottles" and short single spout bottles [Proulx 2006: 35, 39]; as well as other bottle forms that begin in Nasca 7 [Proulx 2006: 43], slightly later than the main occupation of the site). While less is published about these other forms of spouted bottles, their rarity would suggest a possible special status as well. For the Nasca style phases that are most common at Cerro Tortolita (Nasca 4 and 5), the double spout bottle is the most popular type of spouted bottle (Proulx 2006: 36, 39), indicating that there is a good chance that any spouts identified in this study belong to a double-spout bottle.

With these notes in mind, spouts, possibly from double-spout bottles, were recovered from both Zones. One spout fragment was found in Sub-Mound B of the Ceremonial Zone

(plus an additional fragment in Sub-Mound C, noted but not counted here due to the LIP intrusion in this area), and five spout fragments from four different contexts were found in the Primary Residential Zone. In the latter Zone one ceramic sherd with a broken hole that had been shaped prior to firing was also found, which is interpreted as a possible hole meant to fit a spout (Figure 4.10). Three additional spouts were recovered from contexts close to the surface in the Primary Residential Zone, and are therefore not considered to be "securely" from the main occupation from the site, but they are worth noting. Double-spout bottles are rare at La Tiza (1% of fineware assemblage; Noell 2014: Table 18) and Cahuachi (2.813% of fineware; Silverman 1993: Table 16.7), and are not present at Marcaya (Vaughn 2000: 291).

Other Differences in the Distribution of Vessel Forms

Bowls and plates are both more common as a percentage of fineware in Sector I, while they have a similar frequency between the mound and the Primary Residential Zone (Figure 4.11). The difference in frequency of bowls between Sector I and the next most frequent area (the Primary Residential Zone) is large enough to potentially be meaningful, about 15%. Since the remaining fineware vessel forms besides bowls and plates are more suited for drinking, perhaps people living and/or working in Sector I were using drinking vessels made from organic materials, such as skins, gourds, or wood, that have not preserved, thereby skewing the assemblage there towards bowls and plates. Bowls may also have been used as drinking vessels.

Figure 4.10 Possible hole for attachment of spout.

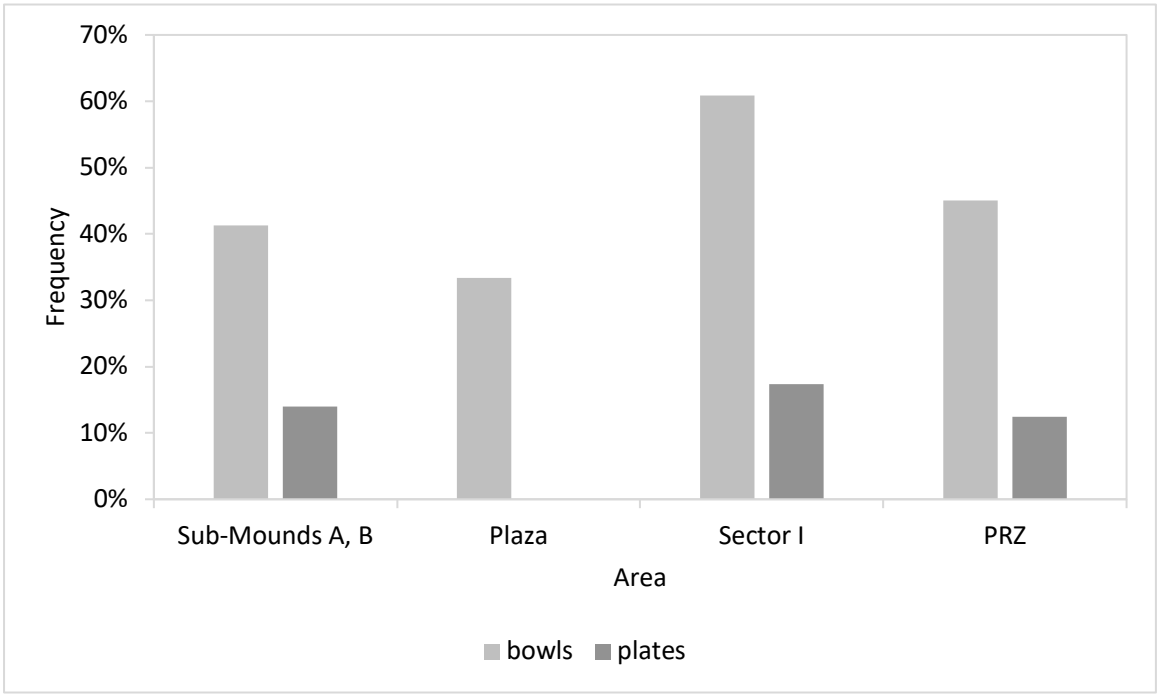

Figure 4.11 Bowls and plates as a frequency of fineware.

Fineware: Conclusions

To sum, the high frequency of fineware in the U-shaped platform mound and plaza suggests that these areas were more focused on consumption than other areas of the site. This focus on commensality was accompanied by ritual activities, strongly suggesting that special commensal events were taking place. The presence of special vessel forms such as cup bowls and spouted bottles in the U-shaped platform mound supports the presence of sociopolitical competition. The relatively low amount of fineware in Sector I suggests that food preparation and storage was of greater importance here than in other areas. Finally, although there is less fineware relative to plainware in the Primary Residential Zone than in the U-shaped platform mound, it is nonetheless plentiful; the ubiquitous iconography on fineware vessels suggests daily consumption events held religious significance as food was served in these vessels. Furthermore, the presence of special vessel forms such as cup bowls, head jars, and spouted bottles in the Primary Residential Zone suggests that at least some households participated in feasts involving suprahousehold individuals in which they demonstrated their status through possession of such vessels. These feasts may have been held in the Primary Residential Zone in people's homes, or the vessels could have been transported to feasts held elsewhere, such as in the Ceremonial Zone. In either case, (at least some) people living in the Primary Residential Zone participated in sociopolitical competition (to some degree) as well.

Botanic Data

An analysis of botanical remains was undertaken to compare foodways between the two Zones and identify any foods that might fit the description of rare, exotic, or recreational foods, as potential markers of sociopolitical competition. A systematic sampling strategy for

soil samples was employed in the field, collecting an approximately 3 L sample from each context. Soil samples were collected without removal or intentional inclusion of material in the sample (i.e., botanic remains). A total of 17 samples from eight units in the Primary Residential Zone was selected for further analysis. Soil samples chosen came from floors, features, and mixed contexts where botanics were observed during field work. For more information about contexts, see Table 4.2. Selected samples were split in half by volume, so that about 1.5 L was studied for this project, and about 1.5 L of the sample remains at the *Museo Regional de Ica,* available for future analysis.

A total of eight soil samples from eight units were selected from the Ceremonial Zone for botanic analysis as well. As Ceremonial Zone excavations proceeded under a different project with a different director, sample collection procedures differed. Samples were collected using a judgmental sampling strategy. Only eight samples met the same volume requirements applied to those from the Primary Residential Zone, that is, a volume of about 1.5 L or greater. Since beginning with a similar volume of soil is important for the ability to compare botanic contents across soil samples, this limited the present analysis to eight samples. Samples of sufficient size were split in half, and half reserved for the possibility of future analysis; however, smaller samples were analyzed in their entirety. Three samples come from Sub-Mound A, one from Sub-Mound B, two from Sub-Mound C, and two from the Plaza. The samples from Sub-Mound C are excluded from this summary, due to possible intrusion of a Late Intermediate Period component. The remaining six samples were not chosen from contexts considered in-situ (i.e., an intact floor or feature), but they are considered to belong to the main occupation of the site (see Table 4.2 for more detail).

Table 4.2 Description of soil sample contexts used for botanic analysis.
* Areas provided for Ceremonial Zone, Sectors for Primary Residential Zone.
**Floor contexts.

Area or Sector*	Unit	Locus	Description of Context
Ceremonial Zone			
Sub-Mound A	18,21	2002	Ash lens mixed with dark grey silt (Munsell 5Y 4/1), found inside of disturbed locus 2001. Other materials include shell, botanics, and bone.
Sub-Mound A	18	1710	Soil from interior of a nearly complete pot with soot. Found adjacent to an approx. 2 m high wall.
Sub-Mound B	23	2214	A locus of compact medium-grained sand and gravel, located underneath a locus of ash. Other material includes non-diagnostic ceramics, bone, shell, and botanics.
Sub-Mound C	1	2	A locus of sandy soil with fine pyrite inclusions. A relatively shallow context. Other materials found include ceramic, lithics, shell, textile, botanic, burnt botanics, and animal bone.
Sub-Mound A	4	309	Fine, clean sand from inside of a rectangular structure built into the mound. Minimal quantity of materials found, but they include ceramic, botanics, and shells.
Plaza	14	1301	Context immediately below the superficial-most context, approximately level with an embankment wall. Contained shell, animal bone, and diagnostic ceramics.
Sub-Mound C	2	105	A thin locus of silty sand, situated to the south of a wooden post. Materials found include ceramic, shell, botanics, and camelid coprolites.
Plaza	7	603	A locus concentrated towards the Southeast sector of the unit. The soil is composed of yellowish brown fine silt, however there is some variation. Associated with ceramics, bone, shell, and carbon. Seems to be approximately level with bottom of embankment wall, based on photo.
Primary Residential Zone			
7	6	Capa H**	Capa H was the floor located inside the structure, south of the wall bisecting the unit east to west. From this context, ceramic & carbon were mostly recovered in addition to other artifacts. Also, a large, burnt ceramic that was standing erect next to the door/ledge on the west edge of the unit S of the wall was recovered.
7	6	Capa I-1 + Lente 6.3	This context is immediately below the floor (Capa H). It is a light gray, ashy lens, and is located adjacent to a very gravelly context.

7	6	B-5	This context extended throughout the area north of the wall bisecting Unit 6 (east to west), and is interpreted as a mixed context exterior to the structure. The soil is soft and silty and filled with a large number of rocks. Capa B-5 produced a significant amount of ceramics, bones, carbon, and especially shell.
9	6	Capa G	This context is located on top of what appears to be a doorway partially blocked off with stones (though other interpretations also possible). It is directly above the masonry, and below a very dark grey ash lens, interpreted as part of a possible house closing ceremony. Capa G itself is brown and was noted to contain charcoal and seeds.
7	8	Capa F	Fine sand with a low frequency of material, like ceramic and carbon. Located in a hole within a terrace possibly dug originally for the purpose of discard, or possibly originally containing items that have since been removed. Evidence of water filtration. Noted to have highest amount of botanical material for this unit.
9	12.1	Lente 1	Fine, sandy-textured organic lens (not ashy) with small rock inclusions. Many botanics noted.
9	12.1	Capa Q	Floor. Compact, level, and uniform, with ash lenses in some areas. Otherwise brown in color.
9	12.1	Capa R**	Floor associated with a wall to the southeast of the unit. Located immediately below Capa Q (another floor). Soil is unform, compact, and level.
9	16	J/(I?)	A very small pocket surrounded by sterile or almost sterile soil. An abundance of botanic material but no other cultural material.
9	25	C-1	Coarse gravel with sand. Noted high amount of cultural material and botanics.
9	25.3	Lente 3, Capa H-3	Dark brown, silty lens without gravel. Surrounded by gravelly soil. Upon excavation, this lens extended and met with Lens 1.1. Not much cultural material but a lot of carbon.
9	25.3	Lente 4	Very dark brown lens ~120 cm long and ~30 cm wide. While little to no cultural material was recovered from adjacent contexts, many ceramics and carbon were recovered from this lens.
9	24.2	Capa N-1	Gravelly soil surrounding a large olla buried almost directly underneath a wall. Abundant ceramic and botanic material noted.
9	24	Capa K	Context containing abundant cultural material, underneath a fairly sterile locus interpreted as geological in nature. Above a possible informal floor (*apisonado*), Capa O.

9	20	Capa K	Second floor directly underneath the floor named Capa J. Soil is very compact brown silt (munsell 10YR 5/3) and does not contain rocks or gravel. Some ceramics found.
9	20	Capa J**	Floor. Fine, very compact brown silt, with orange stains which may be from botanics or other organics. Also some whitish stains, possibly from shell. Small quanitity of ceramics, bone, lithics, botanics, and carbon.
9	20	Lente 1 (Capa L-1)	Ash lens underneath floor contexts. Includes carbon, botanics, ceramics, and bone. Very thin, only about 2 cm deep.

Botanic analysis for this project was carried out by Matthew Biwer. All soil samples were subjected to dry-sieving in a standard geological sieve (2 mm, 1.4 mm, and .71 mm screen sizes) for the separation of botanic remains from soil. The remains observed in-field were generally desiccated rather than charred, so this method of separation was the most appropriate. Biwer analyzed the soil samples from both the Primary Residential and Ceremonial Zones.

In addition to Biwer's work, a partial analysis of botanics recovered from the Ceremonial Zone excavations was also previously conducted by Giaccomo Gaggio (2014), and the results included in a report by Vaughn and colleagues (2019). Gaggio's pilot analysis focused on remains recovered from screens in the field (generally 1/8", though some may have been sieved through ¼" screens), as well as soil samples screened through 250 micron (.25 mm) mesh. However, the results presented are partial, as he completed his analysis near the end of the field season while excavations were still ongoing, so there is still a small number of additional, as-yet unanalyzed botanics from in-field screening and soil samples from the Ceremonial Zone. As well, the report that resulted from this analysis does not

always clarify the locus/unit from which a particular sample originated, meaning that it is not always possible to know if a particular species was found on the platform mound, plaza, or both. Based on notes recorded in the inventory for this project, Gaggio did not analyze any samples from Sector I (as this was one of the last areas to be excavated during the season), so it is certain that any information from his report is limited to the platform mound or plaza areas. However, it is also not possible to exclude samples from Sub-Mound C, which are excluded here for reporting of Biwer's analyses. Therefore due to certain limitations of Gaggio's pilot analysis, and because the methodology is different, the results of Gaggio and Biwer's analyses are not directly comparable; however, Gaggio's work can sometimes provide additional context for the Biwer's soil sample results, and is mentioned below with that limited intent. All data discussed below is from Biwer's analysis of botanics deriving from the soil samples, unless otherwise noted.

With a few exceptions, Biwer's study found similar foods in both the Primary Residential and Ceremonial Zones. Results are presented in Table 4.3 in terms of standardized count, ubiquity, and relative contribution. The standardized count is a common measure used for comparison of the relative contribution of a taxon to an assemblage, and is calculated by dividing the count of a taxon by the total weight of all plant material, including wood and seeds. Ubiquity is a measure of the number of samples in which a taxon is present, and allows one to draw conclusions regarding how widespread use or access to a particular type of botanic was. For example, quinoa was present in 2/17 soil samples from the Primary Residential Zone, and therefore has a ubiquity of 12%. The simple presence/absence measure that ubiquity provides helps correct for differences in preservation across contexts, or between different types of plants. The relative contribution indicates how much each taxon

Table 4.3 Continued.

Standardized Count			Ubiquity (%)			Relative Contribution (%)		
PRZ	Sub-Mounds A, B	Plaza	PRZ	Sub-Mounds A, B	Plaza	PRZ	Sub-Mounds A, B	Plaza
0.059			6			0.07		
0.118			12			0.13		
0.177			6			0.20		
0.236	3.88	2.38	6	25	50	0.27	5.03	2.86
80.981			6			92.01		
0.118			12			0.13		
0.236			6			0.27		
0.354			12			0.40		
0.354	0.49		12	25		0.40	0.63	
0.000	24.27			25		0.00	31.45	
0.059			6			0.07		
0.000	5.34			25		0.00	6.92	
0.177	0.49		12	25		0.20	0.63	
0.000	2.91			25		0.00	3.77	
0.354	0.49		6	25		0.40	0.63	
0.177	9.22		12	50		0.20	11.95	
4.135	10.68	80.95	53	50	100	4.70	13.84	97.14
0.413	19.42		6	25		0.47	25.16	
0.059			6			0.07		

Table 4.3 Botanic analysis from soil samples. All analyses by Matthew Biwer.

Family	Taxonomic ID	Common Name	Raw Count		
Area			PRZ (n=17)	Sub-Mounds A, B (n=4)	Plaza (n=2)
Amaranthaceae	*Atriplex* sp.	Saltbush	1		
	Chenopodium quinoa	Quinoa	2		
Cactaceae	*Echinopsis* sp.	Cactus	3		
	Cactaceae	Cactus Family	4	8	1
Cucurbitaceae	*Lagenaria siceraria*	Bottle Gourd	1371		
Cyperaceae	*Cyprus* sp.	Sedge	2		
	Cyperaceae	Sedge Family	4		
Euphorbiaceae	*Euphorbia* sp.	Spurge	6	1	
Fabaceae	*Phaseolus vulgaris*	Common Bean	6	1	
	Arachis hypogaea	Peanut		50	
	Inga feuillei	Pacay	1		
	Prosopis sp.	Algarrobo		11	
	Fabaceae	Bean Family	3	1	
Sapotaceae	*Pouteria lucuma*	Lucuma		6	
Solanaceae	Solanaceae	Nightshade Famil	6	1	
	Capsicum sp.	Ají	4	19	
Poaceae	*Zea mays*	Maize	70	22	34
	Poaceae	Grass Family	7	40	
Portulacaceae	*Portulaca* sp.	Purslane	1		

contributes to the overall assemblage, although with the usual caveats regarding preservation and sample bias that must be acknowledged for any type of analysis of botanic (or, more broadly, archaeological) assemblages. It is calculated by dividing the standardized count of a particular taxon by the sum of standardized counts for all taxa in the assemblage.

Partly due to the limited number of samples included from the Ceremonial Zone (n=6), and a sample size about three times as large for the Primary Residential Zone (n=17), statistical interpretations are limited. It should be noted that a sample size of 10 is generally considered the minimum appropriate for statistical analysis by specialists in paleoethnobotany. The effect of sample size difference may explain the wider diversity of taxa recovered from the Primary Residential Zone, as a higher number of samples is more likely to recover a greater number of taxa.

That being said, no statistical difference across contexts is detected in the density and standardized counts of plant taxa appearing in at least three samples. When these measures are plotted as box plots, with each context as a data point, no context falls more than two standard deviations from the mean (thereby qualifying as an outlier), meaning that no context is statistically different from the others in terms of plant abundance. However, some taxa, namely peanut and coca, appear only in the Ceremonial Zone.

Although there is no statistical difference between Zones, it is worth briefly discussing the importance of maize, an abundant plant in both Zones and across measures. Maize can be associated with high status, feasting, and ritual in the Andes, especially in the form of chicha, a fermented alcoholic beverage that often uses maize as a base (see Cuéllar 2013; Staller 2020). Piacenza also notes the importance of maize at Cahuachi and other sites, although further details about context are not provided (2016:105). Measures for the relative

presence of maize do not support an association with certain areas within Cerro Tortolita, although this does not mean that maize was irrelevant to negotiations of status. It is possible that maize was used for brewing chicha here, but it can be difficult to persuasively document chicha manufacture, and this was not tested at Cerro Tortolita.

Peanut is one of the two comestibles only present in the platform mound, and constitutes the highest relative contribution to diet in this area (31.45%; although the ubiquity is low: 25%, or 1/4 samples), suggesting that peanuts were a special, restricted-access food at Cerro Tortolita. The high labor requirements for peanuts in non-industrial contexts supports this possibility, as well as archaeological and ethnographic data from elsewhere in the Andes indicating that peanuts carried religious symbolic importance as well as associations with status (Masur et al. 2018: 591). While studies regarding the preparation, consumption, and meaning of peanuts in other Andean societies cannot be uncritically applied to Cerro Tortolita, they may still provide some hypotheses as to their use here. Peanuts are documented to have been eaten in Inca society in a variety of preparations, including whole, as an additive in other dishes, or as a fermented alcoholic beverage (Masur et al. 2018: 592). Peanuts are associated with ritual in Inca culture during the Colonial period, feasts in the context of monumental architecture in Late Moche culture (as well as being prominent in Moche art across a variety of mediums), feasting contexts in the Early Horizon Nepeña Valley, and elite and civic-ceremonial contexts in the Early Intermediate Period Virú Valley (Duke 2017; Chicoine 2011; Chicoine et al. 2022; Swenson 2006; as cited in Masur et al. 2018). In the latter case, peanuts are absent or only present in very low quantities in commoner domestic contexts, as at Cerro Tortolita, where they are absent in the Primary Residential Zone (Masur et al. 2018). Masur and colleagues also note the use of peanuts as

offerings in high status burials from both Moche and Inca cultures (Masur et al. 2018: 592-596). Based on the distribution of peanuts at Cerro Tortolita, they may have carried ceremonial and/or status associations here as well.

The restriction of coca leaf, a recreational food, to the platform mound is also potentially significant. Coca leaves were identified in Gaggio's analysis of the Ceremonial Zone (Table 4.4). They were present only in Sub-Mound B and have a ubiquity of 2.5%. No coca leaves were found in the soil samples analyzed by Biwer from either Zone. It appears then that their use was limited to the Ceremonial Zone, and possibly even just Sub-Mound B. Coca was likely consumed on its own, as it is today, as a stimulant. Although coca is not generally considered an indicator of high status in the Andes, it can be in some contexts (e.g., Moseley et al. 2005: 17270, as cited in Cuéllar 2013). Its restriction to the U-shaped mound suggests it may have been an unusual good in this region at this time (see further discussion of coca usage in the Nasca culture in Chapter 3).

Faunal Data

A preliminary analysis of faunal remains from the Primary Residential Zone was led by Sarah Noe in 2018. This analysis helps to provide a baseline for future comparison with faunal remains from the Ceremonial Zone, which have yet to be analyzed. However, some preliminary observations can be made, including a comparison of the density of faunal material in different areas. Noe and two students cleaned and organized all faunal remains from the Primary Residential Zone, dividing them into identifiable and unidentifiable, then categorizing the identifiable remains by element/section, portion, side, size class, fused/unfused, and degree of burning (if present). Here I will focus on the category of size

Table 4.4 Data from partial botanic analysis done by Giaccomo Gaggio, from Vaughn and colleagues (2019).

Family	Name	Organ	Ubiquity (%)	Counts
Leguminosae	Peanut	Pod	60.5	2383
	Pacae	Pod	10.5	54
		Leaf	14.5	316
	Pallar	Seed	1.3	1
	Huarango	Seed	1.3	1
Cucurbitaceae	Squash	Seed coat	38.0	411
		Seed embryo	4.0	5
	Gourd	Seed	10.5	35
		Shell	17.0	45
Poaceae	Maize	Cob	38.0	215
		Peduncle	2.5	11
Myrtaceae	Palillo	Seed	9.0	19
Tuberaceae	Yuca	Root	4.0	41
Erythroxylum	Coca	Leaf	2.5	23
Sapotaceae	Lucuma	Seed	2.5	4
Solanaceae	Chili pepper	Peduncle	2.5	3

n=76

Table 4.5 NISP and weight for each faunal size category.

Size Category	NISP	Weight (g)
Small	236	26.65
Large and Medium	400	3375.48
TOTAL	636	3402.13

class, which provides some clues as to what kinds of animals were present and/or consumed in the Primary Residential Zone (Table 4.5). The total number of identified specimens is 636, with a weight of 3402.13 g. Of these, 236 specimens were identified as belonging to "small" animals (37%), and 400 were identified as belonging to "large and medium" animals (63%).

Previous work on the south coast provides some clues as to what taxa might comprise these size categories. Christina Conlee's work at the site of La Tiza in the SNR found that the faunal assemblage of the Early-Middle Nasca component of the site contained 74% camelid, 21% guinea pig, and 5% fish (2016: 124). The presence of juvenile camelids in the assemblage as well as camelid dung indicates that camelids were herded, rather than obtained for meat by trade. Guinea pig was likewise a domesticated animal, while fish and shellfish were wild resources. In the Early Horizon faunal assemblage at the site, Conlee found unspecified rodent, deer, vizcacha, and bird as well (2016: 85-86); these resources were not present in the Nasca component, however. The faunal assemblage from Vaughn's work at Marcaya is more in line with La Tiza's Early Horizon assemblage. It includes camelid (adult and juvenile), Cavia (a genus that includes guinea pigs), Ave, Lagidium (the genus that contains vizcachas), and Cervid (Vaughn 2009: 131-132). Excavations at Cahuachi and Pajonal Alto also support the prominence of camelids in the Nasca diet, as well as the importance of cuy and birds (Vaughn 2009:129-130). Based on this body of work, the small size category at Cerro Tortolita likely includes viscachas, small birds, guinea pigs, and other rodents. The large and medium size category may include deer, camelids, and larger birds. In addition to serving as a food source, it is possible that vizcacha fur was also used in textiles, as in the case of one Paracas Necropolis textile (Solazzo and Phipps 2022).

Additional wild resources known to be exploited at Cerro Tortolita include shellfish and fish. An analysis of shellfish remains from the Ceremonial Zone was completed by Manuel Martin Gorriti Manchego and Giuliana Mattos, and reported in Vaughn and colleagues (2019). A total of 34 taxa are identified. The species *Choromytilus chorus* is the most common (n=1195, MNI=173), and most taxa are either bivalves or gastropods (Gorriti Manchego n.d.). A formal analysis was not undertaken of the shellfish from the Primary Residential Zone, but a general impression suggests similar major patterns (with the notable absence of *Spondylus*, and possibly other taxa).

Fish vertebrae were recovered in the Primary Residential Zone from soil samples reserved for 1/8" and 1/16" screening, but these samples have currently only been partially analyzed and no formal taxa identification or quantification has taken place. The samples reside in the regional museum in Ica. The presence of fish and shellfish at Cerro Tortolita, despite its distance from the shore, make its food assemblage comparable to contemporaneous sites in the SNR, including Marcaya, Taruga, and Cahuachi (Vaughn 2009: 132-133).

A comparison can be made of the relative amounts of shellfish and faunal material in different areas of the site. In each area, the weight of the material being compared (shellfish or faunal) is converted to an index by calculating its ratio against the weight of ceramics from the same area. Surface contexts and Sub-Mound C are excluded (Table 4.6). Sub-Mounds A and B have the highest shellfish index, followed closely by the plaza. Both have around 5x the shellfish index of the Primary Residential Zone, while Sector I has only about 2/3 the shellfish index in the Primary Residential Zone. While shellfish is less common in the Primary Residential Zone, it is present in every unit, suggesting access was widespread. The

Table 4.6 Index comparing weight of shellfish and faunal remains to ceramic remains for each area.

Ratio to ceramic (by weight)	Sub-Mounds A, B	Plaza	Sector I	Primary Residential Zone
shellfish	0.0135	0.0117	0.0017	0.0026
faunal	0.0365	0.0712	0.0011	0.0150

same pattern does not quite hold true for the faunal data. Here, the plaza has the highest faunal index, about twice that of Sub-Mounds A and B, and almost five times that of the Primary Residential Zone. Sub-Mounds A and B still have a faunal index two and a half times higher than the Primary Residential Zone however, and Sector I once again trails the Primary Residential Zone with a faunal index only about 2/3 of the latter's.

It seems that both shellfish and meat were an important part of commensal activities in the Ceremonial Zone's plaza-mound complex. Perhaps meat was more common in the plaza due to its large package size, which may have been excessive for the relatively small groups eating in the platform mound (although wastage can be a marker of sociopolitical competition in special commensal events; however, it is not supported here for the mound based on this evidence [Kassabaum 2019]). The shellfish present seems to be primarily or exclusively from the ocean, which is about 70 km away as the crow flies, or a journey of likely 2-3 days on foot. The additional costs of procuring shellfish may have made it a food fit for special commensal events in the Ceremonial Zone, and potentially for the smaller-scale special commensal events in the Primary Residential Zone as well. Despite its ubiquity

in the Primary Residential Zone, the emphasis on shellfish in the Ceremonial Zone suggests its consumption had special import.

Discussion: Group Size and Sociopolitical Competition at Cerro Tortolita

The sum of evidence for commensal activity in different areas of the site will now be discussed in light of the two dimensions of group size and sociopolitical competition. I interpret commensality in the Primary Residential Zone as having generally small group size, based on commonplace vessel size, everyday locations, a lack of monumental architecture, and small spaces both indoors and out (due to the steep nature of the site). Sociopolitical competition is relatively low, but not zero, as the Primary Residential Zone does contain high status special vessels. Furthermore, the presence of head jars in the Primary Residential Zone, and their absence in the Ceremonial Zone, suggests that they may have been more important for non-religious forms of authority or prestige.

Feasts may have been held in the Primary Residential Zone as part of smaller, more intimate ritual ceremonies, and/or part of seasonal or life event marking ceremonies. While indices for shellfish and faunal remains are low compared to the plaza and mound, the presence of shellfish in both Zones suggests that it may have been a food required to make a commensal event "special," rather than an indicator of sociopolitical competition (following Dietler 2000: 89). The large quantities of shellfish and fauna in the plaza in particular suggest that these foods were feast-worthy, rather than markers of high status for participants. Commoners were certainly agents in hosting and participating in feasts as well.

The plaza has a large group size and most likely low sociopolitical competition, although the latter bears some discussion. Group size here is concluded to be large due to the

plaza's large, open location as well as evidence for large-scale food preparation, namely the two substantially sized plainware vessels and the sizable grinding stone near the plaza's periphery. In the interpretation of level of sociopolitical competition, the absence of special vessel forms such as cup bowls, head jars, and spouted bottles, was weighed, although there are two fineware collared jars, which may be associated with high status. Notably, the sample size for ceramics here is quite small, making it less likely that these low frequency vessel forms will be included. As argued, the high indices for shellfish and faunal remains appear to mark commensality in the plaza as "special" rather than necessarily high status. No coca or peanut was recovered from this space, despite being present in the platform mound, although botanic remains were sparse in general. The main indicators that there may have been some sociopolitical competition in the plaza are its association with the monumental platform mound, discussed next, and the potentially centralized production of food here and in Sector I. Given the large group size in the plaza though, feasting here likely served the dual purposes of affirming the status of religious specialists as well as bringing the community together and encouraging a sense of unity.

Commensality on the U-shaped platform mound has the attributes of small group size and relatively high sociopolitical competition—at least compared to elsewhere at the site. As previously stated, the platform mound's relatively small structures on its summit and its restricted access suggest exclusivity and sociopolitical competition. The normal size of plain- and fineware (relative to the Primary Residential Zone) also both support small group size. As in the Primary Residential Zone, special vessel forms indicating status are present. Furthermore, the presence of unique foods such as coca and peanuts suggests possible luxury or restricted-access foods. While high indices for faunal and shellfish material appear to

support special commensal events rather than status, the higher index of these foods relative to the Primary Residential Zone suggest more intense participation in special commensal events here. Overall, commensality on the U-shaped mound fits Dietler's diacritical feast type well (Dietler 2001: 85-88).

Cultural context is key for interpreting sociopolitical competition through foodways (Kassabaum 2019). At Cerro Tortolita there are not currently strong additional lines of evidence for the high status of people participating in activities in the platform mound, such as exotic goods like those found at Cahuachi (see Chapter 3). Therefore, I stop short of interpreting the exclusivity of coca and peanuts in the platform mound as signs of status, though they do seem to be minimally associated with ritual. While there does seem to be evidence for some level of sociopolitical competition on the mound, more so than elsewhere at Cerro Tortolita, in the absence of further lines of evidence suggesting status differentiation, I stop short of calling this competition "high"—only relatively high for the site. Future lines of evidence, such as a full zooarchaeological analysis, comparison of burial goods at the site (burials have not been excavated, although they are present), and isotopic analysis of human diet, may strengthen this impression, or possibly illustrate greater social differentiation than concluded here.

I do not interpret Sector I as a place where commensality, whether everyday or special, played a prominent role. Some food consumption may have have taken place here, based on the presence of fineware, faunal, and shellfish remains. Group size would have been small and sociopolitical competition low, given the lack of any of the previously mentioned markers of status at the site, particularly special vessel forms. However, it seems

likely that Sector I played a supporting role in sociopolitical competition at the site, through storing and providing food for activities in the plaza, and even the platform mound.

Conclusion

Overall, it seems that the primary distinguishing factor when comparing commensality across the site is in terms of group size, although sociopolitical competition also played an important role. Everyone participated in special commensality in some manner, and few items, in terms of fineware or foods, are unique to any one area. There is evidence for some level of sociopolitical competition in both the Primary Residential and Ceremonial Zones, although in the latter case competition revolves mostly around the U-shaped mound. Commensality in the Primary Residential Zone included daily meals that would have reinforced smaller-scale identities and relations, and provided a stage for playing out micro-politics and status; as well as special, small-scale commensal events, or feasts, that likely included at least some extra-household members, incorporated special foods such as shellfish and meat, and involved the display of status-marking drinking vessels. Such meals could have promoted feelings of comradery between participants as well as emphasizing the ability of the host to provide a good meal, thus maintaining or even increasing their status in the eyes of their neighbors.

The dual outcomes of promoting feelings of shared group membership and sociopolitical competition can also be said for special commensal events within the Ceremonial Zone. Events in the plaza catered to a large group and likely encouraged feelings of belonging for residents of the site as well as any visitors from other sites, while at the same time they reinforced the distinctions between the majority of participants and the ritual

specialists leading activities. It is possible that religious specialists also provided food and drink for these events. As Twiss notes, "…the provider of a feast involving religious symbolism elevates the prestige he gains through his generosity by demonstrating control over cultural symbols as well" (2012: 375). Other social distinctions within the space of the plaza may have been relevant as well, such as how close one was located to the platform mound, but these cannot be supported as yet.

The raised U-shaped mound is probably the area of most pronounced sociopolitical competition due to its monumental architecture, restricted access, and small space limiting participants. While it may be tempting to interpret these architectural factors as evidence of major sociopolitical differentiation, extant additional lines of evidence simply are not very strong. Ceramics and comestibles in this area are not very different from other areas that also likely held feasts, and differences are mostly in terms of degree rather than kind. It is important to note though that social complexity is not necessarily reflected in the differentiation of foodways, and that even if differences in foodways are found they do not necessarily reflect economic inequality (Cuéllar 2013). While the relative paucity of exotic goods (compared to say, Cahuachi; see Chapter 3), support this interpretation, future studies that allow the incorporation of additional lines of evidence to address social differentiation and inequality at Cerro Tortolita could alter this interpretation. At present, it is most appropriate to state that while the role of religious specialist may have been a revered or prestigious role, based on the data available it does not seem to have led to marked distinctions in other areas of life (at least in terms of economic, and potentially also political, power), similar to the Pueblo peoples of the American Southwest (Fowles 2013). Thus, while I follow Kassabaum's usage of the term "sociopolitical competition," in this case it seems

that the distinction of those participating in events on the U-shaped mound is primarily in their role as religious specialists rather than in other potential sources of power. In other words, the social currency being displayed was religious knowledge and ritual abilities.

In this study I have investigated evidence of daily and special commensality in different areas of Cerro Tortolita, to better understand the impact of commensality and ritual on social structure at the site. Commensalism was important for social status in both the Ceremonial and Primary Residential Zones; its combination with ritual activity in the Ceremonial Zone demonstrates the important, active role of both in creating and reinforcing the special status of religious specialists. By choosing whether or not to participate in these events, commoners also actively contributed to social structure at the site. It seems likely that they also supported special commensal events in the Ceremonial Zone through contributions of food and labor. Daily commensality as well as special commensality in the Primary Residential Zone was undoubtedly important for maintaining relationships, identities, and the negotiation of micro-politics in this area, which would have affected how people interacted with activities in the Ceremonial Zone and ritual specialists. In addition, commensal events in the Ceremonial Zone had certain commonalities with those in the Primary Residential Zone that would have increased their relevance for everyday people. People in a variety of social roles at Cerro Tortolita, from commoners to religious specialists, actively shaped their society through variable participation in daily and special commensality.

CHAPTER 5

Conclusion

Three chapters present different facets of the data to address questions related to religion, power, and social differentiation at Cerro Tortolita. The conclusions drawn from each chapter will now be discussed to further explore topics of religion and social differentiation, community negotiation of power through religion, and implications for regional social organization. This discussion also has bearing on broader anthropological perspectives on these issues.

Religious Authority and Social Differentiation

First, what can be said regarding the relationship between religion and power at Cerro Tortolita? Or, how did religion shape social structure at the site? Based on the studies presented here, there is little evidence for social differentiation in the form of politico-economic power between the Ceremonial and Primary Residential Zones. Political, economic, and religious power, while inseparable in many societies, do not seem to have overlapped much, or indeed to have been very strongly expressed (aside from religious power), here. However, there may be some difference in economic activities, as well as differences in authority that extends to the ability to direct labor. These differences might more appropriately be described as heterarchy, rather than hierarchy, however. In Chapter 3, analysis of ritual activity in each Zone does not suggest that differences in ritual led to significant differences in politico-economic power, given the paucity of exotic or other difficult-to-obtain goods associated with ritual in this region found in the Ceremonial Zone.

Similarly, in Chapter 4 most differences in foodways could be explained as being related to special ritual activities in the Ceremonial Zone, rather than politico-economic status, although there may have been some of the latter in the Primary Residential Zone. Some special feasting foods did exist, such as shellfish and meat, and are found in higher concentrations in the U-shaped platform mound, but they also are found throughout the site. Peanuts and coca are the only comestibles restricted to the U-shaped platform mound. The findings of these two chapters do not preclude variability in politico-economic power existing *within* the Primary Residential Zone, but that is not a question addressed here. The most visible form of power at the site, manifested in monumental architecture, seems to be religious in nature. Based on the available evidence, sociopolitical competition was present but mainly existed along the lines of religious authority.

There is some evidence that the economic activities of religious specialists differed from commoners. Food storage and preparation facilities, particularly in Sector I, might have provided religious specialists with food for daily life, though these facilities could also have been used only for special feasts. In the first scenario, religious specialists might have been supported by others, and abstained from farming, hunting, and gathering activities, and this might have freed up their time to devote themselves to activities felt to be more beneficial to the community. Again however, the foods eaten here do not seem very different from the Primary Residential Zone, therefore there is no elite cuisine, or social stratification. In addition, there is evidence that religious specialists might have produced ceramics on a part-time basis, while no evidence for ceramic production was found in the Primary Residential Zone. Religious specialists in the Ceremonial Zone may have had a role as "shamanic artisan-chiefs" (*a la* Carmichael 2020), deriving some power from their ability to control the

elements and produce finely made pots bearing religious iconography, as a sign of their communion with other-than-human forces. This part-time specialization would have provided a unique product that was at once economic and religious, providing religious specialists with a good whose distribution they could control to their advantage, though it would not necessarily preclude them from otherwise participating in the same economic activities as everyone else.

The authority of religious specialists seems to have also extended to the ability to direct labor for the monumental constructions in the Ceremonial Zone. Platform mounds involve high labor investment, requiring many people, but they may be built all at once or more slowly over time. If built within a relatively short period of time (or in bursts), they can indicate the power of a small number of individuals to direct the labor of others; if built more slowly over the years, less powerful leadership may be involved (Moore 2005: 53-122). In addition, people constructing platform mounds sometimes make use of naturally elevated areas, thus lessening labor requirements and the need for strong authority, and people at Cerro Tortolita likely made use of the existing hillside behind the platform mounds for their construction. The phases of construction for the U-shaped mound and its structures are not precisely dated, therefore it is unclear how long it took to build and how much labor might have been required for any given stage. However, at least some centralized planning would have been required for constructions of this size and complexity. Plazas require less labor investment than a platform mound, though they are generally leveled, cleared, and outlined, and sometimes have internal architecture, such as levels or stairs. Some labor is also involved in clearing and maintaining the cleanliness of the space. The construction of the Ceremonial Zone certainly would have required more labor than the (likely) mostly *quincha* structures of

the Primary Residential Zone, and crumbling terrace walls (though some more substantial stone walls are present). Some authority to direct labor, at a scale larger than that in the Primary Residential Zone, must have been present. Based on the overall evidence at Cerro Tortolita, I argue that this authority derived primarily from religious roles.

Future excavations of burials might further support the conclusions here, or potentially provide evidence of greater social differentiation than identified in these studies. Although exotic or otherwise rare goods were not present in great quantities in the Ceremonial Zone, it is possible that more of such goods will be found in burials. The almost complete lack of exotic goods, limited to one piece of *Spondylus* in a secure context (from the plaza, however) and coca leaves, does not make this seem very probable, however. Future isotope studies of human remains could inform us more about diet; some individuals might have had a better, or simply different, diet from others, suggesting elevated, or lower, status. The botanic data does not support this (though samples from the Ceremonial Zone are limited), but shellfish and faunal data indicate that differences in levels of consumption may have been significant. Further, osteological analysis might yield information regarding activities with relevance for specialization. Some people might have evidence of more manual labor or specialized activities than others, reflecting abstention from common economic activities such as farming by religious specialists, or specialized activities for some individuals.

Community Negotiation of Social Structure

Here I return to discussion of how all members of Cerro Tortolita were active participants in constructing the social structure of their community. In Chapters 1 and 3, I

discuss Joyce and colleagues' (2001) three, overlapping means of commoner participation in religion and, by extension, negotiations of power. Chapter 3 compares ritual in the Primary Residential Zone and Ceremonial Zones to understand how ritual and religion shaped social structure at the site. Comparing ritual in different types of contexts allows us to question the degree to which religious beliefs, knowledge, and world views were shared or contested. The most notable differences in ritual between the Zones are found in the architectural setting for ritual activities, namely the monumental architecture of the Ceremonial Zone and the domestic architecture of the Primary Residential Zone, as well as the distribution of some special goods. Some types of ritual goods were present in both Zones and reflect basic commonalities between the two, although some were limited to the Ceremonial Zone. Differences in the frequency of iconographic themes, reflecting a heightened consumption of ceramics with supernatural themes in the Ceremonial Zone, exist but are a matter of degree rather than kind. The sum of evidence suggests the presence of an ideology and set of ritual practices that is widely shared throughout the site, though with slight distinctions reflecting the privileged religious knowledge and ritual abilities of religious specialists in the Ceremonial Zone.

As a generalization, commoners seem to have engaged with the ideology promoted in the Ceremonial Zone, but this does not mean that they could not be critical of religious specialists' presentation of the ideology or conduct of rituals. This ideology was likely shaped by commoner's preferences and beliefs in the first place, as it continued to be. Evidence for ritual in the Primary Residential Zone supports commoners' independence and ability to maintain their own ritual knowledge to take care of their own family's religious needs, while religious specialists would have tended to the community's needs. Therefore,

despite a shared ideology, or perhaps because of it, ritual activity would have been a medium of power negotiation; ritual specialists would have been beholden to commoners' participation in Ceremonial Zone activities, or lack thereof, their expectations and ritual knowledge, and their ability to contest religious authority.

Chapter 4 further discusses how everyone in the community participated in power politics at Cerro Tortolita through both daily and special commensality. Ceramic, botanic, and to a lesser degree zooarchaeological and shellfish data are brought to bear on this issue. Commensality is investigated along two axes, group size and sociopolitical competition, in order to more specifically explore the intentions and outcomes of different types of commensal events. Group size of feasts is found to vary across the site, as well as sociopolitical competition, which is most demonstrated within the structures atop the U-shaped mound, but also present in the Primary Residential Zone. Daily commensality would have allowed negotiations of the micro-politics of society, while special commensal events were important for negotiation and maintenance of status on a larger scale for individuals in both Zones. Participation of commoners in plaza events was critical for negotiation of power, just as in ritual; indeed, feasts were likely associated with ritual activities. Commoners may also have supported such events through providing food and drink. Commensality would have been a means for all members of Cerro Tortolita society to actively participate in the shaping of their social fabric, and was important for maintaining shared identities and relationships as well as allowing the negotiation of (different types of) status via the expression of hospitality, whether in the Ceremonial or Primary Residential Zones.

The Cahuachi Connection and Regional Social Structure

The connection of people at Cerro Tortolita to the center of Cahuachi is addressed in Chapter 2. Here, I use Instrumental Neutron Activation Analysis (INAA) of ceramic pastes to address the relationship between Cerro Tortolita and Cahuachi, as well as the dynamics of religious authority within Cerro Tortolita. No SNR-produced ceramics were identified at Cerro Tortolita, though there is some evidence for ceramic production in the Ceremonial Zone. Both of these findings suggest that neither commoners nor religious specialists at Cerro Tortolita were interacting closely with their peers at Cahuachi (at least as visible through the movement of pots), and that Cerro Tortolita may have been a pilgrimage center in its own right, with its leaders distributing fineware ceramics throughout the Upper Ica Valley similarly to Cahuachi for the SNR. The latter suggestion could be tested in future through compositional analysis of ceramics from other Ica Valley sites. In either case, close connections to Cahuachi do not seem to have been an important source of authority for religious specialists.

These findings have bearing on Massey's (1986) argument that Cerro Tortolita was a secondary administrative center for a state based at Cahuachi. At the time of her writing, Cahuachi was more widely accepted to be the capital of a state, though opinion is much more divided now (see discussion in Chapter 1); it is uncertain if she would take the same view today. Here I view Cahuachi as a primarily religious center, and not the head of a political state, which surely colors my interpretations of Cerro Tortolita. However, regardless of one's opinion about Cahuachi, based on evidence from Cerro Tortolita alone there is not evidence to support that it was a secondary administrative center. In the absence of ceramics originating in the SNR at Cerro Tortolita, there simply is not any material evidence for a close relationship. Overall similarities in ceramic styles support awareness of developments

in neighboring valleys, but stylistic differences exist between the two regions as well, as other scholars have previously noted (Proulx 1968; Carmichael 2013). Neither are there a number of elite goods that might be expected if religious specialists were tied into a Cahuachi state and its exchange networks. Based on the evidence discussed in Chapter 2, it appears that people at Cerro Tortolita were drawing on a common religious and iconographic tradition, but in a locally-specific and meaningful manner, and that people at Cerro Tortolita were participants in a religious network of sites with varying levels of interaction, hierarchy, and influence.

Future research may shed more light on connections between Cerro Tortolita and the SNR, however. One could argue the unexplored possibility that the potters producing the ceramics found at Cerro Tortolita trained in the SNR. Specifically, investigation of ceramic production steps, or the *chaîne operatoire*, might provide evidence of shared communities of practice for potters (Lemonnier 1992; Wenger 1998). While the most visible aspects of pottery are relatively changeable, invisible steps of production also involve a choice between alternative methods, and can be more conservative, since they are not actively communicating information, for example about identity (see Bowser & Patton 2008; Gosselain 2008a, 2008b, 1998: 102, 1992; Roddick 2009). In his ethnographic study, Gosselain (2008b) found that motions in the shaping of pots in southwestern Niger, were the most conservative aspect of their production, reflecting where a potter learned their craft. Therefore, aspects of pottery production such as shaping methods, especially for complex forms already known to have alternative methods of construction, such as double spout bottles (Carmichael 2020: 148; Carmichael 2013: 220), or pigment recipes, have the potential to illuminate communities of practice that might link potters producing the ceramics found at

Cerro Tortolita and in the SNR. This in turn would suggest training of potters in the production of this important iconographic medium in the SNR, and possibly training in other aspects of the Cahuachi ideology, especially if potters and religious specialists were one and the same. While this outcome would not support Cerro Tortolita's status as a secondary administrative center, it would suggest closer linkages through religion. However, while this situation cannot be ruled out at present, it still is striking that absolutely no ceramics from the SNR were found in either Zone of Cerro Tortolita, as one might expect some movement of goods if people were in regular contact with the SNR (especially given their proximity of only a few days' walk), or if potters trained there brought back some of their handiwork, or even some examples to work off of.

Religion, Politics, and Social Structure in a Non-State Society

The findings at Cerro Tortolita have implications for broader discussions of the active role of religion in constructing societies. While differences in authority exist, rooted in religion and ritual, there are no sharp differences in politico-economic power, despite the presence of monumental architecture, often linked in archaeologists' imagination with hierarchy. The few differences between Zones are attributable to religious-ritual roles, and most often in degree rather than in kind, though there is reason to speculate that the authority of religious specialists might have led to differences in lifestyle from those in the Primary Residential Zone, such as part-time specialized ceramic production, and possibly abstention from or reduced participation in food production. I conclude that some were privileged due to their religious and ritual knowledge, which was an ends in itself, rather than a means to another ends, such as economic wealth. The knowledge and abilities of religious specialists

were their own form of wealth. However, it was also a form of wealth that had to be negotiated and earned. Through participation in religion and ritual, all members of society were active in the generation of this wealth.

The people of Cerro Tortolita participated in a regional religious network with various levels of hierarchy and social differentiation demonstrated at different sites. Some sites, like Cahuachi, La Tiza, and La Muña, demonstrate the high status of certain individuals and groups, which is not present to the same degree at Cerro Tortolita. Rather than viewing Cerro Tortolita as a secondary center to Cahuachi, or a pale, less successful reflection of it (i.e., assuming that if religious specialists here *could* have relayed their power to be more Cahuachi-like they *would* have), I view it as a local center that reinterpreted the Cahuachi ideology to suit local needs and perspectives. Close connections with Cahuachi apparently were not sought out, by either religious specialists or commoners. Instead, people here were sophisticated consumers of an ideology that may have originated at Cahuachi, but was shaped by local reinterpretation, contributions, and reproduction in the different Nasca culture regions. The high frequency of supernatural themes in the iconography of the Primary Residential Zone, compared to residential sites in the SNR, suggests that people here may have been hyper-religious, or more focused on certain aspects of ideology, in either case diverging from their SNR neighbors in the incorporation of Nasca iconography into their lives. People at Cerro Tortolita were participants in a regional cult that loosely tied different regions together, while being expressed in unique ways in each. Cerro Tortolita provides a case study of how religion and ritual can shape social structure not only at a single site but also on a regional level, even in the absence of state infrastructure.

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Appendix 1. Description of INAA sample

ANID	Alt. ID	Ceramic Type[1]	Period	Vessel Form	Zone	Area	Unit
AJG001	4-2	Nasca 3	Early Nasca	convex bowl	PRZ	Sector IX	21.1
AJG002	1-16	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	25
AJG003	28-1	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	24
AJG004	262-2	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	6
AJG005	117-6	Nasca 3	Early Nasca	incurving vessel	PRZ	Sector IX	20
AJG006	244-1	Nasca 3	Early Nasca	insloping vessel	PRZ	Sector IX	20
AJG007	160-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	24
AJG008	204-6	Nasca 3	Early Nasca	straight-sided vessel	PRZ	Sector IX	25.3
AJG009	154-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	20
AJG010	427-10	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	6
AJG011	43-9	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	18
AJG012	43-4	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	18
AJG013	189-8	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	25
AJG014	69-1	Nasca 3	Early Nasca	collared jar	PRZ	Sector IX	12
AJG015	409-7	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	25.1
AJG016	345-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	6
AJG017	370-2	Nasca 3	Early Nasca	straight-sided vessel	PRZ	Sector IX	25.3
AJG018	15-2	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	16

AJG019	355-9	Nasca 3	Early Nasca	incurving vessel	PRZ	Sector IX	21.1
AJG020	189-7	Nasca 3	Early Nasca	vase?	PRZ	Sector VII	6
AJG021	374-4	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	4
AJG022	207-17	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	21.1
AJG023	204-10	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	25.3
AJG024	351-3	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	21.1
AJG025	48-3	Nasca 3	Early Nasca	bowl?	PRZ	Sector IX	18
AJG026	165-5	Nasca 3	Early Nasca	bowl	PRZ	Sector VII	6
AJG027	254-7	Nasca 3	Early Nasca	unknown	PRZ	Sector VII	6
AJG028	47-1	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	24
AJG029	355-6	Nasca 3	Early Nasca	flaring vessel	PRZ	Sector IX	21.1
AJG030	124-1	Nasca 3	Early Nasca	plate	PRZ	Sector IX	25
AJG031	204-8	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	25.3
AJG032	263-12	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	6
AJG033	195-4	Nasca 3	Early Nasca	plate	PRZ	Sector IX	21.1
AJG034	204-5	Nasca 3	Early Nasca	straight-sided bowl	PRZ	Sector IX	25.3
AJG035	119-2	Nasca 3	Early Nasca	vase	PRZ	Sector IX	24
AJG036	433-4	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	6
AJG037	113-5	Nasca 3	Early Nasca	convex bowl	PRZ	Sector IX	24
AJG038	99-1	Nasca 3	Early Nasca	convex bowl	PRZ	Sector IX	12
AJG039	265-9	Nasca 3	Early Nasca	collared jar	PRZ	Sector VII	6

AJG040	113-20	Nasca 3	Early Nasca	convex bowl	PRZ	Sector IX	12
AJG041	344-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	6
AJG042	289-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	6
AJG043	299-1	Nasca 3	Early Nasca	convex bowl	PRZ	Sector VII	6
AJG044	262-9	Nasca 3	Early Nasca	plate?	PRZ	Sector VII	6
AJG045	121-28	Nasca 3	Early Nasca	bowl	PRZ	Sector IX	25
AJG046	202-1	Nasca 3	Early Nasca	straight-sided plate	PRZ	Sector IX	21.1
AJG047	212-2	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	21.1
AJG048	208-1	Nasca 3	Early Nasca	convex bowl	PRZ	Sector IX	25
AJG049	206-5	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	25.2
AJG050	376-7	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	7
AJG051	4-1	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	21.1
AJG052	127-1	Nasca 3	Early Nasca	unknown	PRZ	Sector IX	20
AJG053	31-4	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	20
AJG054	192-2	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	25
AJG055	233-12	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	6
AJG056	234-3	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector VII	4
AJG057	258-2	Nasca 3	Early Nasca	plate	PRZ	Sector VII	7
AJG058	113-3	Nasca 3	Early Nasca	flaring bowl	PRZ	Sector IX	12
AJG059	480-3	Nasca 3	Early Nasca	panpipe	PRZ	Sector IX	12
AJG060	116-1	Nasca 3	Early Nasca	insloping vessel	PRZ	Sector IX	12

AJG061	58-5	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	24
AJG062	58-6	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	24
AJG063	58-10	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	24
AJG064	188-5	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	24.2
AJG065	188-15	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	24.2
AJG066	188-19	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	24.2
AJG067	138-3	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	20
AJG068	143-16	plainware	Early-Middle Nasca	handle base	PRZ	Sector IX	20
AJG069	144-3	plainware	Early-Middle Nasca	collared jar	PRZ	Sector IX	20
AJG070	153-1	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	20
AJG071	163-3	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	20
AJG072	163-5	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	20
AJG073	69-18	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	12
AJG074	310-6	plainware	Early-Middle Nasca	collared jar or olla	PRZ	Sector IX	12.1

AJG075	331-4	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	12.1
AJG076	331-5	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	12.1
AJG077	331-8	plainware	Early-Middle Nasca	collared olla	PRZ	Sector IX	12.1
AJG078	331-21	plainware	Early-Middle Nasca	unknown	PRZ	Sector IX	12.1
AJG079	286-33	plainware	Early-Middle Nasca	collared jar	PRZ	Sector VII	8
AJG080	286-39	plainware	Early-Middle Nasca	base	PRZ	Sector VII	8
AJG081	291-3	plainware	Early-Middle Nasca	collared olla	PRZ	Sector VII	8
AJG082	291-4	plainware	Early-Middle Nasca	collared jar or olla	PRZ	Sector VII	8
AJG083	291-12	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	8
AJG084	291-13	plainware	Early-Middle Nasca	collared jar or olla	PRZ	Sector VII	8
AJG085	344-3	plainware	Early-Middle Nasca	collared jar	PRZ	Sector VII	6
AJG086	345-13	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	6
AJG087	345-15	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	6
AJG088	414-11	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	6

AJG089	427-4	plainware	Early-Middle Nasca	collared olla	PRZ	Sector VII	6
AJG090	427-5	plainware	Early-Middle Nasca	collared olla	PRZ	Sector VII	6
AJG091	452-4	plainware	Early-Middle Nasca	collared jar	PRZ	Sector VII	2
AJG092	452-21	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	2
AJG093	452-23	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	2
AJG094	452-24	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	2
AJG095	473-4	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	2
AJG096	473-10	plainware	Early-Middle Nasca	unknown	PRZ	Sector VII	2
AJG097	25-4	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound A	4
AJG098	25-18	Nasca 4	Middle Nasca	collared jar	CZ	Sub-Mound A	4
AJG099	25-19	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound A	4
AJG100	43-9	Nasca 4	Middle Nasca	collared jar	CZ	Sub-Mound C	1
AJG101	43-13	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound C	1
AJG102	43-23	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound C	1
AJG103	43-96	Early Nasca	Early Nasca	unknown	CZ	Sub-Mound C	1
AJG104	44-7	Nasca 3	Early Nasca	plate	CZ	Sub-Mound C	1
AJG105	44-10	Nasca 1	Proto-Nasca	convex bowl	CZ	Sub-Mound C	1
AJG106	44-16	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound C	1

AJG107	44-26	uncertain	uncertain	plate	CZ	Sub-Mound C	1
AJG108	44-36	Nasca 3	Early Nasca	insloping vessel	CZ	Sub-Mound C	1
AJG109	54-2, 3	Nasca	Nasca	panpipe	CZ	Plaza	10
AJG110	45-2	Nasca 3	Early Nasca	cup bowl?	CZ	Sub-Mound C	1
AJG111	45-14	Nasca 3	Early Nasca	plate	CZ	Sub-Mound C	1
AJG112	45-59	Nasca 3	Early Nasca	plate	CZ	Sub-Mound C	1
AJG113	45-62	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound C	1
AJG114	49-5	Nasca 4	Middle Nasca	collarless jar or olla	CZ	Sub-Mound A	4
AJG115	49-6	Nasca	Nasca	convex bowl	CZ	Sub-Mound A	4
AJG116	53-4	Nasca 4	Middle Nasca	flaring bowl	CZ	Plaza	10
AJG117	53-25	Nasca 1	Proto-Nasca	bowl	CZ	Plaza	10
AJG118	78-7	Nasca 4 or 5	Middle Nasca	cup bowl	CZ	Sub-Mound A	18
AJG119	78-8	Nasca	Nasca	plate	CZ	Sub-Mound A	18
AJG120	78-18	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound A	18
AJG121	94-4	Nasca 3	Early Nasca	incurving vessel	CZ	Sub-Mound C	2
AJG122	138-2	Nasca 5	Middle Nasca	flaring bowl	CZ	Sub-Mound B	23
AJG123	108-1	Nasca 5	Middle Nasca	vase	CZ	Sub-Mound B	23
AJG124	108-3	Nasca 4 or 5	Middle Nasca	vase	CZ	Sub-Mound B	23
AJG125	108-7	Nasca 3	Early Nasca	insloping vessel	CZ	Sub-Mound B	23
AJG126	142-14	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound B	23
AJG127	142-18	Nasca	Nasca	plate	CZ	Sub-Mound B	23
AJG128	142-20	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound B	23

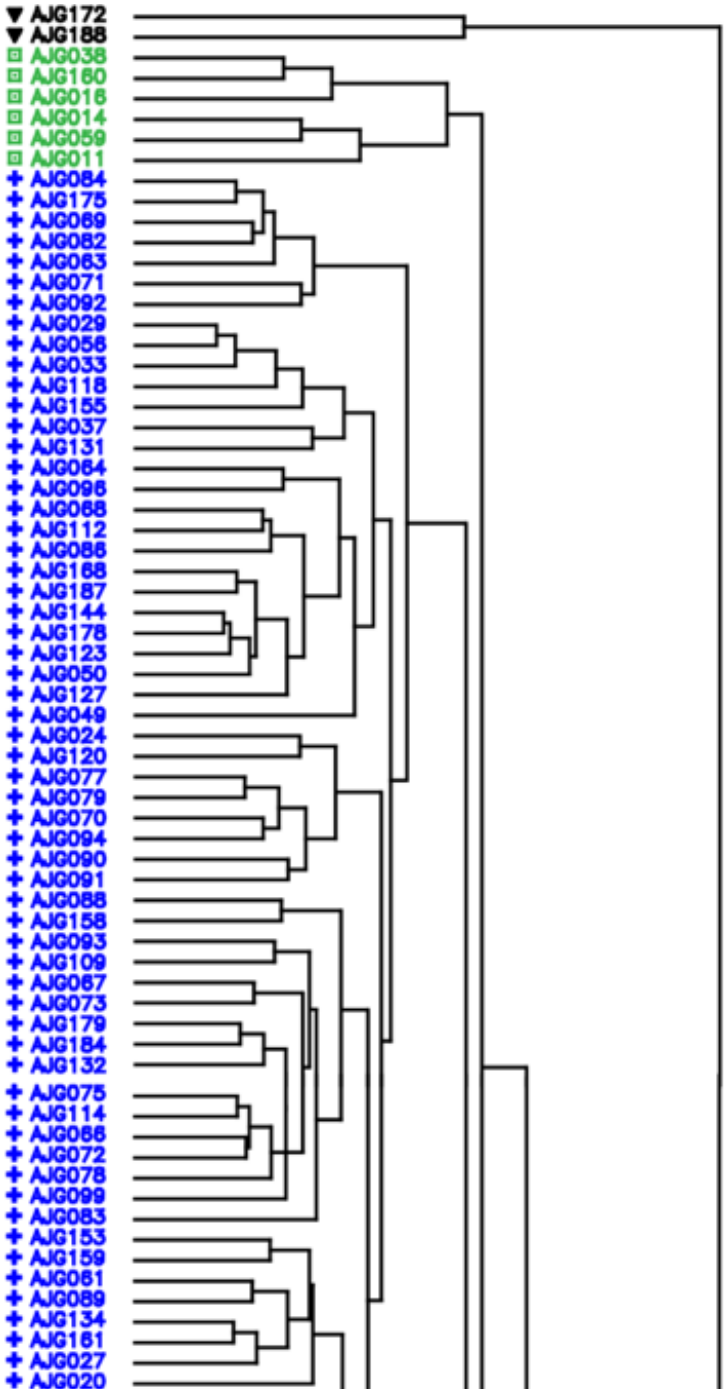
AJG129	142-35	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound B	23
AJG130	142-36	Nasca 4	Middle Nasca	convex bowl	CZ	Sub-Mound B	23
AJG131	142-42	Nasca 2 or 3	Early Nasca	vase	CZ	Sub-Mound B	23
AJG132	95-2	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound A	13
AJG133	95-6	Nasca 5	Middle Nasca	vase	CZ	Sub-Mound A	13
AJG134	93-2	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound B	22
AJG135	93-15	Nasca 4	Middle Nasca	unknown	CZ	Sub-Mound B	22
AJG136	101-1	Nasca 4 or 5	Middle Nasca	cup bowl	CZ	Sub-Mound A	21
AJG137	101-7	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound A	21
AJG138	101-9	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound A	21
AJG139	101-13	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound A	21
AJG140	101-96	Nasca 6	Late Nasca	unknown	CZ	Sub-Mound A	21
AJG141	133-2	Nasca 5	Middle Nasca	vase	CZ	Sub-Mound B	23
AJG142	133-4	Nasca 3 or 4	Early-Middle Nasca	vase	CZ	Sub-Mound B	23
AJG143	133-12	Nasca 3	Early Nasca	incurving vessel	CZ	Sub-Mound B	23
AJG144	133-14	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound B	23
AJG145	135-3	Nasca 4	Middle Nasca	convex bowl	CZ	Sub-Mound B	23
AJG146	135-4	Nasca 4	Middle Nasca	vase	CZ	Sub-Mound B	23
AJG147	135-20	Nasca	Nasca	unknown	CZ	Sub-Mound B	23
AJG148	149-3	Nasca 4	Middle Nasca	convex bowl	CZ	Terrace (Sector I)	25
AJG149	124-2	Nasca 4	Middle Nasca	insloping vessel?	CZ	Sub-Mound B	22

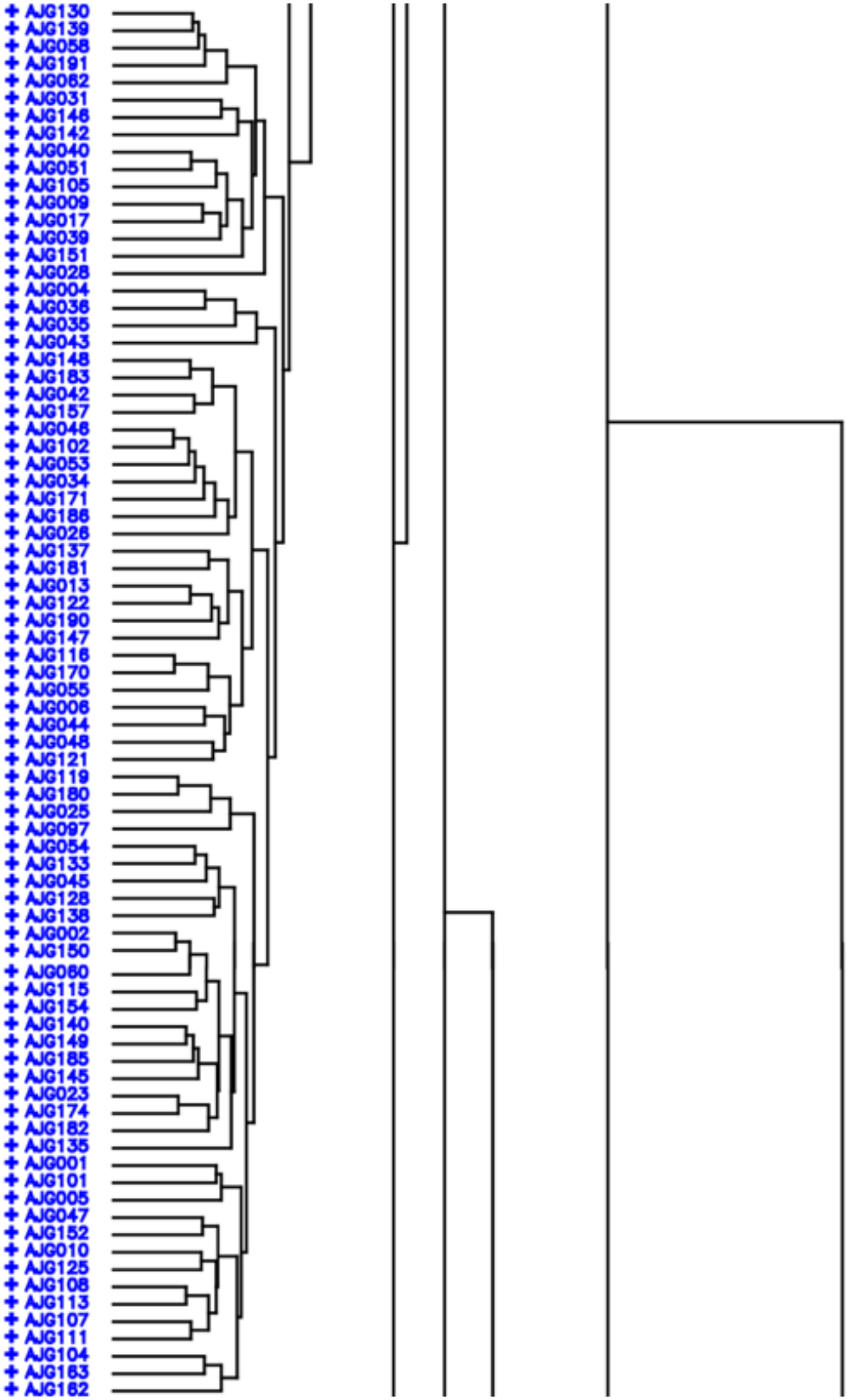
AJG150	124-6	Nasca 3	Early Nasca	unknown	CZ	Sub-Mound B	22
AJG151	124-8	EIP	EIP	convex bowl	CZ	Sub-Mound B	22
AJG152	124-48	Nasca	Nasca	bowl or plate	CZ	Sub-Mound B	22
AJG153	144-1	Nasca 4 or 5	Middle Nasca	convex bowl?	CZ	Sub-Mound B	23
AJG154	145-1	Nasca 5 or 6	Middle-Late Nasca	flaring bowl	CZ	Sub-Mound A	24
AJG155	145-3	uncertain	uncertain	plate	CZ	Sub-Mound A	24
AJG156	79-4	Nasca 3 or 4	Early-Middle Nasca	convex bowl	CZ	Sub-Mound A	18
AJG157	79-5	Nasca 4	Middle Nasca	convex bowl	CZ	Sub-Mound A	18
AJG158	79-7	Nasca 5 or 6	Middle-Late Nasca	vase	CZ	Sub-Mound A	18
AJG159	79-51	Nasca 4	Middle Nasca	unknown	CZ	Sub-Mound A	18
AJG160	103-49	Nasca 4	Middle Nasca	bowl	CZ	Sub-Mound A	21
AJG161	103-50	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound A	21
AJG162	103-57	Nasca 5	Middle Nasca	incurving or insloping vessel	CZ	Sub-Mound A	21
AJG163	150-9	Nasca 5	Middle Nasca	unknown (vase?)	CZ	Terrace (Sector I)	25
AJG164	134-1	Nasca 3	Early Nasca	flaring bowl	CZ	Sub-Mound B	23
AJG165	134-3	Nasca 3	Early Nasca	vase	CZ	Sub-Mound B	23
AJG166	134-12	Nasca 4	Middle Nasca	flaring bowl	CZ	Sub-Mound B	23
AJG167	134-32	Nasca	Nasca	incurving or insloping vessel	CZ	Sub-Mound B	23

AJG168	134-82	uncertain	uncertain	unknown (vase?)	CZ	Sub-Mound B	23
AJG169	80-1	Nasca	Nasca	unknown	CZ	Sub-Mound A	18
AJG170	127-1	uncertain	uncertain	vase	CZ	Sub-Mound A	18
AJG171	152-1	Nasca 3	Early Nasca	convex bowl	CZ	Terrace (Sector I)	25
AJG172	152-2	Nasca 4 or 5	Middle Nasca	flaring bowl	CZ	Terrace (Sector I)	25
AJG173	152-6	Nasca 5	Middle Nasca	collared jar	CZ	Terrace (Sector I)	25
AJG174	152-13	Nasca 3 or 4	Early-Middle Nasca	bowl	CZ	Terrace (Sector I)	25
AJG175	152-14	Early Nasca	Early Nasca	cantaro?	CZ	Terrace (Sector I)	25
AJG176	76-5	Nasca 3	Early Nasca	convex bowl	CZ	Plaza	14
AJG177	76-1	Nasca 5	Middle Nasca	collared jar	CZ	Plaza	14
AJG178	129-3	Nasca 5	Middle Nasca	vase	CZ	Sub-Mound B	22
AJG179	121-1	Nasca	Nasca	unknown	CZ	Sub-Mound B	22
AJG180	121-23	Nasca	Nasca	unknown	CZ	Sub-Mound B	22
AJG181	121-51	Early Nasca	Early Nasca	plate?	CZ	Sub-Mound B	22
AJG182	140-1	Nasca 4	Middle Nasca	plate	CZ	Sub-Mound B	23
AJG183	140-9	Nasca 2	Early Nasca	plate?	CZ	Sub-Mound B	23
AJG184	140-17	Nasca 5 or 6	Middle-Late Nasca	plate?	CZ	Sub-Mound B	23
AJG185	140-31	Nasca	Nasca	convex bowl	CZ	Sub-Mound B	23
AJG186	140-34	Nasca 3 or 4	Early-Middle Nasca	unknown	CZ	Sub-Mound B	23
AJG187	92-3	EIP	EIP	bowl?	CZ	Sub-Mound B	22

AJG188	96-1	Nasca 4 or 5	Middle Nasca	plate	CZ	Sub-Mound B	22
AJG189	96-24	uncertain	uncertain	plate?	CZ	Sub-Mound B	22
AJG190	105-4	Nasca 3	Early Nasca	convex bowl	CZ	Sub-Mound B	23
AJG191	105-13	Nasca 3	Early Nasca	plate	CZ	Sub-Mound B	23
AJG192	149-2	Nasca 4	Middle Nasca	flaring bowl	CZ	Terrace (Sector I)	25

Appendix 2. Results of Hierarchical Cluster Analysis (HCA)

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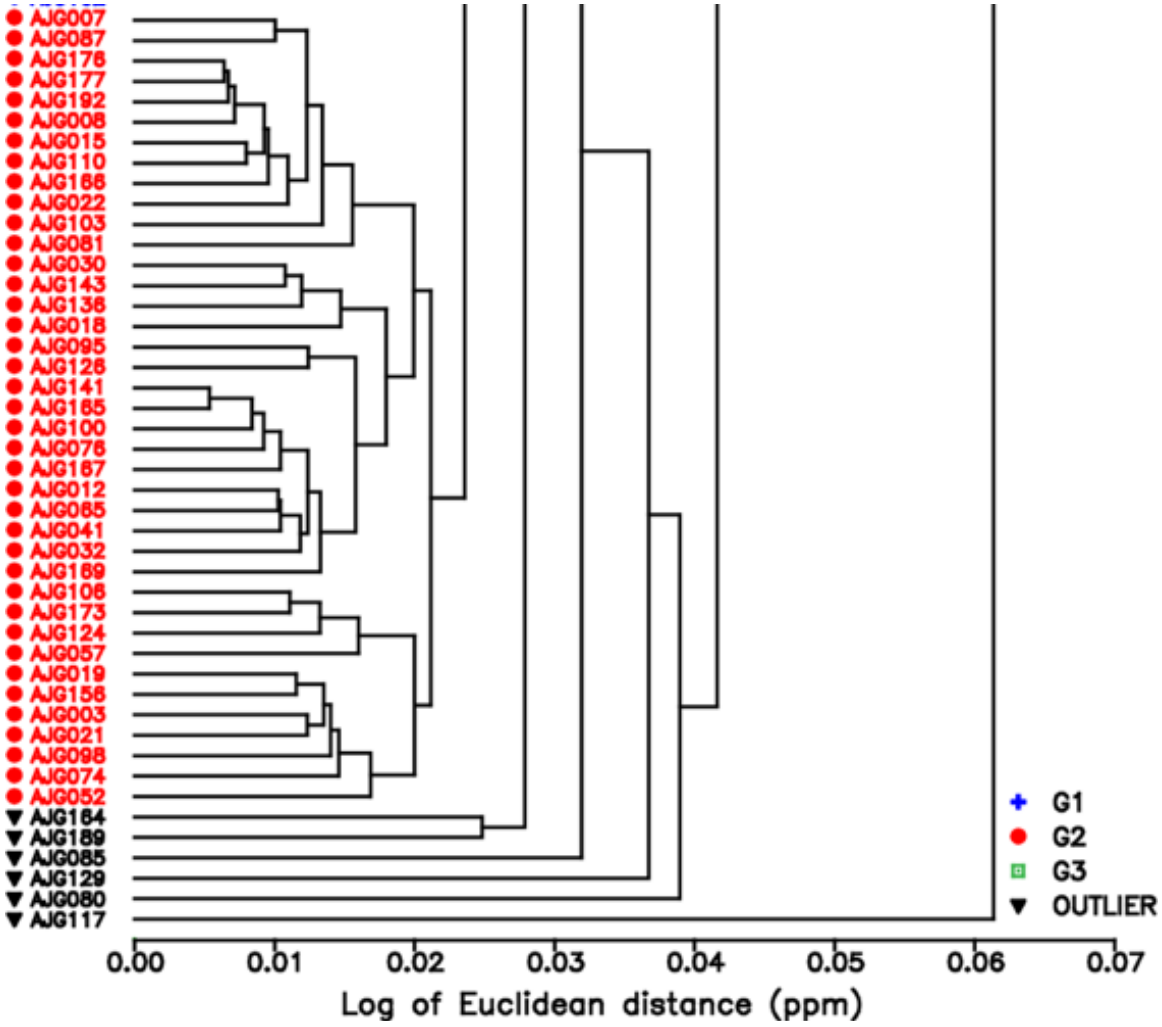
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AJG003
AJG021
AJG098
AJG074
AJG052
AJG164
AJG189
AJG085
AJG129
AJG080
AJG117
G1
G2
G3
OUTLIER
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
Log of Euclidean distance (ppm)

Appendix 3. Group membership probabilities for Cerro Tortolita INAA samples. Probabilities calculated by projecting unknowns against reference groups.

Table A. Membership probabilities for samples in Group: G-G1

ANID	G-G1	G-G2	G-G3	Best Group
AJG001	39.474	37.372	1.000	G-G1
AJG002	91.360	9.798	1.199	G-G1
AJG004	51.879	1.394	2.281	G-G1
AJG005	25.849	40.239	0.597	G-G2
AJG006	63.105	4.677	1.136	G-G1
AJG009	99.466	4.246	1.711	G-G1
AJG010	62.810	0.488	1.336	G-G1
AJG013	79.943	18.810	1.760	G-G1
AJG017	54.218	7.239	4.495	G-G1
AJG020	41.179	0.102	2.532	G-G1
AJG023	75.480	43.967	1.750	G-G1
AJG024	6.169	0.032	1.123	G-G1
AJG025	28.625	4.239	0.587	G-G1
AJG026	62.496	80.553	2.980	G-G2
AJG027	22.009	0.005	1.098	G-G1
AJG028	62.104	17.800	0.967	G-G1
AJG029	43.520	0.113	2.694	G-G1
AJG031	72.819	0.593	0.856	G-G1
AJG033	25.682	0.005	4.100	G-G1
AJG034	55.753	85.276	3.257	G-G2
AJG035	45.993	8.656	1.529	G-G1
AJG036	75.520	2.862	1.019	G-G1
AJG037	75.635	9.280	1.676	G-G1
AJG039	98.653	5.426	1.859	G-G1
AJG040	67.692	0.683	2.627	G-G1
AJG042	40.833	90.878	2.305	G-G2
AJG043	86.936	41.218	1.889	G-G1
AJG044	91.735	6.975	1.310	G-G1
AJG045	83.282	47.549	1.080	G-G1
AJG046	60.865	56.727	4.260	G-G1
AJG047	66.371	19.637	0.758	G-G1
AJG048	74.484	4.949	2.617	G-G1
AJG049	58.309	0.327	1.147	G-G1
AJG050	57.747	0.042	1.199	G-G1

AJG051	67.271	0.145	2.546	G-G1
AJG052	0.173	15.591	4.032	G-G2
AJG053	77.021	50.141	2.888	G-G1
AJG054	75.014	44.441	1.133	G-G1
AJG055	74.167	4.509	3.569	G-G1
AJG056	35.497	0.085	4.457	G-G1
AJG058	60.079	0.704	0.696	G-G1
AJG060	95.963	43.578	1.307	G-G1
AJG061	34.296	0.134	2.919	G-G1
AJG062	49.997	5.728	0.675	G-G1
AJG063	0.629	0.116	17.067	G-G3
AJG064	6.940	0.003	0.899	G-G1
AJG066	81.226	19.853	4.063	G-G1
AJG067	72.669	14.703	1.812	G-G1
AJG068	5.879	0.074	0.883	G-G1
AJG069	19.757	6.439	30.524	G-G3
AJG070	42.052	0.024	4.284	G-G1
AJG071	10.341	0.002	5.560	G-G1
AJG072	43.852	53.242	2.888	G-G2
AJG073	54.253	10.257	1.220	G-G1
AJG075	42.488	34.406	7.073	G-G1
AJG077	37.647	0.136	5.445	G-G1
AJG078	29.899	20.504	15.483	G-G1
AJG079	3.505	0.003	3.788	G-G3
AJG082	2.947	1.024	27.564	G-G3
AJG083	72.598	12.357	5.591	G-G1
AJG084	7.645	0.206	13.850	G-G3
AJG086	4.080	3.076	0.978	G-G1
AJG088	83.564	9.421	1.689	G-G1
AJG089	9.383	0.046	2.161	G-G1
AJG090	81.838	0.247	1.359	G-G1
AJG091	87.781	1.086	1.432	G-G1
AJG092	30.901	0.491	7.940	G-G1
AJG093	48.253	9.856	1.720	G-G1
AJG094	44.288	0.013	1.969	G-G1
AJG096	10.086	0.023	0.981	G-G1
AJG097	18.072	1.431	0.765	G-G1
AJG099	94.447	14.544	2.977	G-G1
AJG101	40.146	26.851	1.013	G-G1
AJG102	86.932	31.467	2.966	G-G1

AJG104	31.442	39.091	0.614	G-G2
AJG105	65.490	0.055	2.297	G-G1
AJG107	67.071	2.764	1.082	G-G1
AJG108	14.035	0.200	0.949	G-G1
AJG109	29.000	9.690	3.715	G-G1
AJG111	58.196	4.406	1.455	G-G1
AJG112	15.440	7.943	0.834	G-G1
AJG113	41.165	0.919	0.794	G-G1
AJG114	81.373	61.563	2.528	G-G1
AJG115	87.656	3.355	1.220	G-G1
AJG116	86.610	13.153	2.956	G-G1
AJG118	3.562	0.022	34.236	G-G3
AJG119	35.333	10.175	0.682	G-G1
AJG120	1.759	0.619	0.980	G-G1
AJG121	66.269	8.247	1.822	G-G1
AJG122	63.962	10.227	1.441	G-G1
AJG123	19.367	0.010	0.840	G-G1
AJG125	69.065	1.025	1.036	G-G1
AJG127	1.349	0.075	0.731	G-G1
AJG128	59.438	39.137	0.955	G-G1
AJG130	59.930	0.433	0.876	G-G1
AJG131	62.887	0.236	2.603	G-G1
AJG132	56.452	4.002	8.627	G-G1
AJG133	60.067	57.259	0.919	G-G1
AJG134	81.073	0.350	1.165	G-G1
AJG135	46.562	10.035	0.588	G-G1
AJG137	83.318	38.336	1.147	G-G1
AJG138	43.753	98.999	1.344	G-G2
AJG139	89.858	1.984	0.959	G-G1
AJG140	93.336	7.962	1.094	G-G1
AJG142	54.003	0.964	1.547	G-G1
AJG144	19.453	0.003	1.202	G-G1
AJG145	77.084	9.783	0.965	G-G1
AJG146	49.501	4.399	0.791	G-G1
AJG147	80.339	19.420	1.275	G-G1
AJG148	51.428	96.483	1.802	G-G2
AJG149	83.278	17.483	0.867	G-G1
AJG150	96.625	29.525	1.172	G-G1
AJG151	65.216	5.664	1.178	G-G1
AJG152	63.319	3.950	0.767	G-G1

AJG153	44.500	0.585	1.081	G-G1
AJG154	86.485	16.209	0.940	G-G1
AJG155	35.333	0.101	3.782	G-G1
AJG157	42.436	93.092	1.548	G-G2
AJG158	35.532	20.136	1.305	G-G1
AJG159	21.917	0.094	1.643	G-G1
AJG161	43.918	0.029	1.905	G-G1
AJG162	70.709	12.400	1.086	G-G1
AJG163	71.163	27.519	0.946	G-G1
AJG168	31.637	0.068	0.886	G-G1
AJG170	69.615	9.820	3.342	G-G1
AJG171	30.472	74.690	5.455	G-G2
AJG174	88.121	67.337	1.937	G-G1
AJG175	12.964	1.627	13.038	G-G3
AJG178	12.221	0.023	1.013	G-G1
AJG179	91.767	14.369	2.129	G-G1
AJG180	49.808	12.999	0.825	G-G1
AJG181	82.676	30.445	1.225	G-G1
AJG182	99.132	22.132	1.297	G-G1
AJG183	17.339	91.691	1.982	G-G2
AJG184	72.587	1.379	5.967	G-G1
AJG185	91.956	23.583	0.935	G-G1
AJG186	35.663	46.774	3.278	G-G2
AJG187	47.318	0.766	0.906	G-G1
AJG190	43.856	2.698	1.024	G-G1
AJG191	51.406	0.442	0.828	G-G1

Table B. Membership probabilities for samples in Group: G-G2.

ANID	G-G1	G-G2	G-G3	Best Group
AJG003	1.593	25.714	7.820	G-G2
AJG007	2.082	46.788	0.598	G-G2
AJG008	7.597	91.744	1.929	G-G2
AJG012	3.330	50.941	10.147	G-G2
AJG015	15.946	95.226	1.144	G-G2
AJG018	45.713	8.686	1.148	G-G1
AJG019	32.382	71.722	4.011	G-G2
AJG021	3.096	33.748	2.754	G-G2
AJG022	17.048	54.792	0.571	G-G2

AJG030	15.492	51.648	1.141	G-G2
AJG032	5.781	32.464	35.125	G-G3
AJG041	33.164	46.462	9.304	G-G2
AJG057	1.866	15.827	0.541	G-G2
AJG065	6.381	15.067	3.315	G-G2
AJG074	3.309	37.379	2.812	G-G2
AJG076	18.571	46.376	6.878	G-G2
AJG081	0.537	28.804	2.271	G-G2
AJG087	3.208	57.558	0.989	G-G2
AJG095	1.277	47.457	1.178	G-G2
AJG098	60.599	20.869	2.719	G-G1
AJG100	16.004	69.791	8.213	G-G2
AJG103	0.601	24.408	0.753	G-G2
AJG106	4.673	49.252	0.663	G-G2
AJG110	10.524	61.604	1.143	G-G2
AJG124	2.928	42.354	0.761	G-G2
AJG126	18.133	91.197	1.610	G-G2
AJG136	2.878	31.945	0.837	G-G2
AJG141	43.705	94.093	3.553	G-G2
AJG143	15.519	28.253	0.870	G-G2
AJG156	9.498	69.190	5.012	G-G2
AJG165	31.506	91.768	4.833	G-G2
AJG166	68.793	78.845	1.060	G-G2
AJG167	5.447	79.900	4.844	G-G2
AJG169	0.163	14.430	6.142	G-G2
AJG173	17.090	85.764	0.892	G-G2
AJG176	12.225	94.815	1.181	G-G2
AJG177	17.445	94.693	1.075	G-G2
AJG192	9.099	94.925	1.229	G-G2

Table C. Membership probabilities for samples in Group: G-G3.

ANID	G-G1	G-G2	G-G3	Best Group
AJG011	0.001	0.059	83.083	G-G3
AJG014	1.114	21.213	84.124	G-G3
AJG016	0.015	0.020	82.667	G-G3
AJG038	1.454	0.315	88.612	G-G3
AJG059	0.012	0.634	82.807	G-G3
AJG160	2.314	2.155	98.557	G-G3

Table D. Membership probabilities for samples in Group: G-outlier.

ANID	G-G1	G-G2	G-G3	Best Group
AJG080	0.002	0.108	2.086	G-G3
AJG085	0.453	0.000	1.736	G-G3
AJG117	0.000	0.000	0.320	G-G3
AJG129	9.102	0.027	4.163	G-G1
AJG164	0.000	0.001	3.379	G-G3
AJG172	0.009	0.480	1.995	G-G3
AJG188	0.065	2.160	12.428	G-G3
AJG189	5.273	0.000	3.008	G-G1

Appendix 4. Group membership probabilities for Cerro Tortolita (AJG-) and SNR (V-) INAA samples. Probabilities calculated by projecting unknowns against reference groups.

Table A. Membership probabilities for samples in Group: G-G1.

ANID	V-G1	V-G2	V-G3	Best Group
AJG001	0.000	0.000	0.151	V-G3
AJG002	0.000	0.000	0.110	V-G3
AJG004	0.000	0.000	0.125	V-G3
AJG005	0.055	0.000	0.171	V-G3
AJG006	0.000	0.000	0.088	V-G3
AJG009	0.007	0.000	0.133	V-G3
AJG010	0.001	0.000	0.084	V-G3
AJG013	0.000	0.000	0.110	V-G3
AJG017	0.000	0.000	0.170	V-G3
AJG020	0.000	0.000	0.079	V-G3
AJG023	0.002	0.000	0.180	V-G3
AJG024	0.000	0.000	0.137	V-G3
AJG025	0.000	0.000	0.095	V-G3
AJG026	0.000	0.000	0.143	V-G3
AJG027	0.005	0.001	0.080	V-G3
AJG028	0.003	0.001	0.133	V-G3
AJG029	0.005	0.000	0.216	V-G3
AJG031	0.236	0.002	0.112	V-G1
AJG033	0.000	0.000	0.150	V-G3
AJG034	0.000	0.000	0.183	V-G3
AJG035	0.000	0.000	0.114	V-G3
AJG036	0.000	0.000	0.132	V-G3
AJG037	0.004	0.019	0.191	V-G3
AJG039	0.000	0.001	0.150	V-G3
AJG040	0.000	0.000	0.144	V-G3
AJG042	0.001	0.000	0.221	V-G3
AJG043	0.000	0.000	0.202	V-G3
AJG044	0.000	0.000	0.101	V-G3
AJG045	0.000	0.000	0.144	V-G3
AJG046	0.000	0.000	0.135	V-G3
AJG047	0.002	0.000	0.115	V-G3
AJG048	0.000	0.000	0.090	V-G3
AJG049	0.001	0.000	0.207	V-G3
AJG050	0.001	0.005	0.131	V-G3

AJG051	0.000	0.000	0.124	V-G3
AJG052	0.000	0.000	0.846	V-G3
AJG053	0.000	0.000	0.131	V-G3
AJG054	0.000	0.000	0.123	V-G3
AJG055	0.001	0.000	0.119	V-G3
AJG056	0.022	0.001	0.190	V-G3
AJG058	0.104	0.001	0.120	V-G3
AJG060	0.012	0.000	0.149	V-G3
AJG061	0.000	0.000	0.087	V-G3
AJG062	0.059	0.001	0.140	V-G3
AJG063	0.000	0.000	0.084	V-G3
AJG064	0.002	0.016	0.215	V-G3
AJG066	0.000	0.000	0.147	V-G3
AJG067	0.000	0.000	0.174	V-G3
AJG068	0.667	0.163	0.260	V-G1
AJG069	0.000	0.000	0.156	V-G3
AJG070	0.001	0.000	0.163	V-G3
AJG071	0.000	0.000	0.093	V-G3
AJG072	0.000	0.000	0.224	V-G3
AJG073	0.006	0.000	0.139	V-G3
AJG075	0.000	0.000	0.163	V-G3
AJG077	0.000	0.000	0.239	V-G3
AJG078	0.000	0.000	0.190	V-G3
AJG079	0.000	0.000	0.304	V-G3
AJG082	0.000	0.000	0.108	V-G3
AJG083	0.000	0.000	0.159	V-G3
AJG084	0.000	0.000	0.096	V-G3
AJG086	0.215	0.020	0.470	V-G3
AJG088	0.594	0.000	0.201	V-G1
AJG089	0.000	0.000	0.070	V-G3
AJG090	0.000	0.000	0.116	V-G3
AJG091	0.006	0.000	0.198	V-G3
AJG092	0.000	0.000	0.176	V-G3
AJG093	0.000	0.000	0.257	V-G3
AJG094	0.000	0.000	0.145	V-G3
AJG096	0.026	0.156	0.267	V-G3
AJG097	0.000	0.000	0.078	V-G3
AJG099	0.005	0.000	0.166	V-G3
AJG101	0.003	0.000	0.160	V-G3
AJG102	0.000	0.000	0.128	V-G3

AJG104	0.015	0.000	0.160	V-G3
AJG105	0.001	0.001	0.105	V-G3
AJG107	0.000	0.000	0.108	V-G3
AJG108	0.007	0.000	0.104	V-G3
AJG109	0.001	0.000	0.381	V-G3
AJG111	0.000	0.000	0.092	V-G3
AJG112	0.005	0.001	0.299	V-G3
AJG113	0.003	0.000	0.102	V-G3
AJG114	0.000	0.000	0.192	V-G3
AJG115	0.000	0.000	0.098	V-G3
AJG116	0.000	0.000	0.111	V-G3
AJG118	0.000	0.000	0.213	V-G3
AJG119	0.000	0.000	0.098	V-G3
AJG120	0.000	0.000	0.538	V-G3
AJG121	0.000	0.000	0.085	V-G3
AJG122	0.000	0.000	0.088	V-G3
AJG123	0.003	0.003	0.156	V-G3
AJG125	0.001	0.000	0.087	V-G3
AJG127	0.002	0.002	0.166	V-G3
AJG128	0.001	0.000	0.136	V-G3
AJG130	0.001	0.000	0.095	V-G3
AJG131	0.001	0.003	0.132	V-G3
AJG132	0.000	0.000	0.172	V-G3
AJG133	0.000	0.000	0.137	V-G3
AJG134	0.025	0.000	0.108	V-G3
AJG135	0.000	0.000	0.132	V-G3
AJG137	0.000	0.000	0.111	V-G3
AJG138	0.004	0.000	0.229	V-G3
AJG139	0.010	0.001	0.107	V-G3
AJG140	0.000	0.000	0.155	V-G3
AJG142	1.706	0.001	0.238	V-G1
AJG144	0.003	0.029	0.130	V-G3
AJG145	0.065	0.000	0.173	V-G3
AJG146	0.680	0.014	0.207	V-G1
AJG147	0.001	0.000	0.099	V-G3
AJG148	0.000	0.000	0.247	V-G3
AJG149	0.002	0.000	0.164	V-G3
AJG150	0.001	0.000	0.128	V-G3
AJG151	0.087	0.001	0.228	V-G3
AJG152	0.001	0.000	0.102	V-G3

AJG153	0.005	0.000	0.076	V-G3
AJG154	0.011	0.000	0.135	V-G3
AJG155	0.000	0.000	0.236	V-G3
AJG157	0.000	0.000	0.197	V-G3
AJG158	0.013	0.000	0.264	V-G3
AJG159	0.000	0.001	0.062	V-G3
AJG161	0.000	0.000	0.085	V-G3
AJG162	0.001	0.000	0.102	V-G3
AJG163	0.000	0.000	0.120	V-G3
AJG168	0.001	0.009	0.122	V-G3
AJG170	0.000	0.000	0.116	V-G3
AJG171	0.000	0.000	0.146	V-G3
AJG174	0.000	0.000	0.159	V-G3
AJG175	0.000	0.000	0.135	V-G3
AJG178	0.015	0.022	0.144	V-G3
AJG179	0.000	0.000	0.148	V-G3
AJG180	0.000	0.000	0.093	V-G3
AJG181	0.000	0.000	0.105	V-G3
AJG182	0.000	0.000	0.156	V-G3
AJG183	0.000	0.000	0.291	V-G3
AJG184	0.000	0.000	0.133	V-G3
AJG185	0.000	0.000	0.153	V-G3
AJG186	0.000	0.000	0.103	V-G3
AJG187	0.000	0.000	0.152	V-G3
AJG190	0.000	0.000	0.076	V-G3
AJG191	0.001	0.000	0.116	V-G3

Table B. Membership probabilities for samples in Group: G-G2.

ANID	V-G1	V-G2	V-G3	Best Group
AJG003	0.000	0.000	0.358	V-G3
AJG007	0.013	0.000	0.514	V-G3
AJG008	0.000	0.000	0.383	V-G3
AJG012	0.000	0.000	0.127	V-G3
AJG015	0.026	0.000	0.342	V-G3
AJG018	0.001	0.000	0.079	V-G3
AJG019	0.000	0.000	0.221	V-G3
AJG021	0.000	0.000	0.330	V-G3

AJG022	0.003	0.000	0.229	V-G3
AJG030	0.000	0.000	0.141	V-G3
AJG032	0.000	0.000	0.169	V-G3
AJG041	0.000	0.000	0.183	V-G3
AJG057	0.000	0.000	0.414	V-G3
AJG065	0.000	0.000	0.126	V-G3
AJG074	0.000	0.000	0.610	V-G3
AJG076	0.000	0.000	0.274	V-G3
AJG081	0.000	0.000	0.651	V-G3
AJG087	0.000	0.000	0.727	V-G3
AJG095	0.000	0.000	0.296	V-G3
AJG098	0.000	0.000	0.125	V-G3
AJG100	0.000	0.000	0.162	V-G3
AJG103	0.001	0.000	0.873	V-G3
AJG106	0.119	0.000	0.423	V-G3
AJG110	0.025	0.000	0.517	V-G3
AJG124	0.000	0.000	0.397	V-G3
AJG126	0.000	0.000	0.221	V-G3
AJG136	0.000	0.000	0.172	V-G3
AJG141	0.000	0.000	0.193	V-G3
AJG143	0.000	0.000	0.127	V-G3
AJG156	0.000	0.000	0.254	V-G3
AJG165	0.000	0.000	0.193	V-G3
AJG166	0.028	0.000	0.193	V-G3
AJG167	0.000	0.000	0.216	V-G3
AJG169	0.000	0.000	0.246	V-G3
AJG173	0.000	0.000	0.304	V-G3
AJG176	0.000	0.000	0.281	V-G3
AJG177	0.000	0.000	0.247	V-G3
AJG192	0.000	0.000	0.377	V-G3

Table C. Membership probabilities for samples in Group: G-G3.

ANID	V-G1	V-G2	V-G3	Best Group
AJG011	0.000	0.000	1.910	V-G3
AJG014	0.000	0.000	0.256	V-G3
AJG016	0.000	0.000	0.449	V-G3
AJG038	0.000	0.000	0.110	V-G3

AJG059	0.000	0.000	0.577	V-G3
AJG160	0.000	0.000	0.174	V-G3

Table D. Membership probabilities for samples in Group: G-outlier.

ANID	V-G1	V-G2	V-G3	Best Group
AJG080	0.000	0.000	0.064	V-G3
AJG085	22.901	0.003	0.335	V-G1
AJG117	0.000	0.000	0.056	V-G3
AJG129	0.001	0.001	0.066	V-G3
AJG164	0.001	0.000	4.802	V-G3
AJG172	0.000	0.000	0.838	V-G3
AJG188	0.000	0.000	0.619	V-G3
AJG189	0.006	0.002	0.230	V-G3