Ancient Pottery Making at Cerro San Isidro, Nepeña Valley, Peru

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ANCIENT POTTERY MAKING AT
Cerro San Isidro, Nepeña Valley, Peru

A Thesis
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
In partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Geography and Anthropology

by
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August 2021
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ABSTRACT

Located in the Nepeña Valley of north-central Peru, Cerro San Isidro was first documented in the 1930s when the valley was initially surveyed. While numerous sites along the valley, particularly those located in the lower valley, have been extensively researched since this initial survey, members of the Proyecto de Investigación Arqueológica Cerro San Isidro (PIACSI) conducted the first formal excavations in 2019. My thesis project analyzes the ceramic artifacts – in particular pottery fragments – from that field season in order to evaluate continuity and change in morphological and technical styles from the Early Horizon through the Late Intermediate Periods (ca. 600 BCE – 1450 CE). I analyze 518 rim and decorated pot sherds and focus on 11 variables. The formal, technological, and stylistic analyses emphasize vessel shape, firing temperatures, and decorative elements, respectively. The study addresses the larger research questions regarding our chronological understanding of ancient Peru, including the traditional practice of identifying sites by particular stylistic patterns of ceramics. By determining continuities in the ceramic traditions, this study reexamines our understanding of ceramic traditions in the middle Nepeña Valley. Anthropologically, the analysis explores ancient artistic practices and technical choices of makers and potters.
INTRODUCTION

Ceramics and ceramic analysis can be a polarizing topic in archaeology. Some archaeologists see sherds as a wealth of information just waiting to be uncovered. Others view pottery as archaeological trash due to the sheer abundance of ceramic artifacts that exist. However, ceramic analyses are essential for archaeologists partly because fired clay objects preserve very well in the archaeological record, especially in the Andean and coastal regions of Peru. Pottery fragments are significant in the archaeological study of complex Pre-Columbian societies who have been making, using, breaking, and discarding ceramic vessels since the beginning of the second millennium BCE.

The traditional cultural historical approach in the study of pottery emphasizes seriation, building typologies, taxonomic classification, and relative / cross-dating of types using various methods (stratigraphy, radiocarbon measurements). In such traditional approaches, pottery sherds are used as guiding fossils or diagnostics of time periods, phases, or archaeological cultures. This approach has limits as it is static, normalizing, and ultimately anti-anthropological.

More recent approaches to material culture in archaeology, including pottery making, have emphasized cultural ecology (i.e., the place of technologies in negotiating human-environment relations and culture as adaptive), technology, and trade. One particular line of inquiry has focused on the technological aspect of pottery making. Inspired from advances in social theory, anthropologists and archaeologists have deployed concepts such as “practice,” “chaîne opératoire,” and “communities of practice” to study changes and continuities in pottery making. My thesis builds on those developments and explores pottery making at the ancient center of Cerro
San Isidro (PV 31-51), an archaeological complex located in the middle Nepeña Valley, north-central coast of Peru.

In 2019, a team of archaeologists under the direction of Chicoine and Navarro (2020) led the first scientific excavations at Cerro San Isidro (CSI). Their efforts indicate that the site has a long and complex history, making it the ideal location to study changes and continuities in cultural practices, including pottery making. Using the CSI 2019 ceramic database and the general catalogue for the CSI 2019 archaeological collection, this thesis analyzes, consolidates, and divides the CSI pottery assemblage into four main periods of pottery making: (1) Early Horizon (EHP), (2) Early Intermediate (EIP), (3) Late Intermediate (LIP)-Casma, and (4) Late Intermediate (LIP)-Chimú.

Cerro San Isidro is most notably influenced by Cupisnique-Chavín Religious Complex during the EHP (800-450 BCE), a period known for technological advancements and increased religious and trade networks. The EIP (200 BCE-600 CE) also saw an increase in cultural diversity based on ceramic styles, settlement patterns, and architectural practices (Daggett 1986: 49). Proulx (1973) discusses three main archaeological cultures during the EIP: Gallinazo, Moche, and Recuay. Each of these are also seen within this sample at CSI. By the end of the EIP, there were no more large ceremonial centers being built. The MHP (600-1000 CE) is often associated with Huari (or Wari) artifacts, however, two local ceramic styles were also found (Nepeña Black-White-Red and the Nepeña Black-on-White.). While these local styles continue, there is a predominance of Casma and Chimú style pottery in the LIP (1000-1450 CE). This period is split into two discrete styles, Casma and Chimú, due to the clear distinction in manufacturing and stylistic choice seen on these sherds. The Casma style dates approximately from 1000 CE to 1400 CE. The Chimú style overlaps slightly with dates between 1350 CE and 1450 CE.
My analysis traces continuities and changes in specific/relevant technological (coloring, firing, and manufacturing), formal (morphology and metrics), and stylistic (design and decoration technique) aspects of those four phases of pottery making at CSI. In doing so, I show that CSI has a strong local ceramic tradition which remains relatively consistent throughout the entirety of the site’s occupation. Although these local traditions persist in the various time periods, they are still influenced by trade and contact with foreign cultures. In the following chapters, I present the details of the analysis, highlight the major implications of the Cerro San Isidro datasets, and delineate limitations and future directions.
CHAPTER 1. BACKGROUND

In this chapter, I contextualize Cerro San Isidro and the Nepeña Valley, and describe the geographic region. I summarize the archaeological research conducted within the valley and contextualize my project within the broader history of research. Additionally, I describe the location, function, and social organization of Cerro San Isidro.

1.1. Regional and Geographic Context

In the north-central coastal region of Peru, about 400 kilometers north of Lima, lies a valley that is home to numerous archaeological sites. Its name “Nepeña” is believed to be a Spanish derivation of the Quechua words “ini” and “pina” which mean “to grow” and “brave or terrible” (Proulx 1968:1). The Nepeña Valley is geographically unique as it is relatively narrow and long at ~8km wide and 75km long (Chicoine and Navarro 2020). With the seasonal flooding of the river creating fertile land, human settlements were built along the river from the coast to the highlands. Proulx (1968) divided the valley into three main portions: Lower which encompasses from the shore to Caylán, Middle which goes from Caylán to San Jacinto, and Upper which covers from San Jacinto to past Jimbe. While the valley is still divided into three sections, the divide has shifted to include coastal inland until San Jacinto as the ‘Lower’, the Moro Pocket as ‘Middle’, and above Jimbe as ‘Upper’ (Chicoine and Navarro 2020). Cerro San Isidro falls within the Middle Nepeña Valley (Figure 1).
Archaeological regions in Peru are based loosely on previous studies. For the purpose of this study, the north coast refers to the valleys north of Chao, the north-central region encompasses the Santa, Nepeña, Casma, Culebras, and Huarmey Valleys, central are the valleys located within the department of Lima, and southern is everything south of Lima.

Initial research focused heavily in southern Peru at sites associated with the Inca culture. Large ceremonial sites located in the north coast valleys were then researched, followed by sites in the north-central coast valleys (Burger 1989; Pozorski and Pozorski 2008; Quilter 2013; Tello 1943). Many of the earliest records on the north coast sites are from explorers. In the latter half of the 19th century, Squier (1877) and Middendorf (1890) recorded and published their observations.
of the north-central coast. While these works provided detailed descriptions and helped influence future research in the region, they did not fully capture the complexity of the indigenous cultures (Maza 2017). Squier (1877) is probably the most notable of these early explorers. His records provide detailed descriptions and drawings of several sites, such as Cerro Samanco (PV 31-4), Huacatambo (PV 31-94), Pañamarca (PV 31-38), Motocachy (PV 31-56), and Siete Huacas (PV 31-56). Using these records as guides, early archaeologists began investigating the valley more systematically, focusing on identifying archaeological cultures based on ceramic and architectural styles (Proulx 1985; Sandweiss & Kvietok 1986).

Although my research focuses on Cerro San Isidro in the Nepeña Valley, it is important to mention the Virú Valley as the research and discoveries made there have influenced archaeological methods and cultural interpretations. Sponsored by the Institute of Andean Research in New York, the Virú Valley Project began in the 1940s with the surveying and excavation of several sites in the Virú Valley (Collier 1955; Millaire and Morlion 2009). This project aimed to study the entire culture history of the small Virú Valley. Through this process, the project resulted in methodological and theoretical innovations which greatly impacted the history of Americanist archaeology (Druc 1998). Gordon R. Willey, a pioneer in settlement pattern studies, emphasized the need to map all archaeological features including the disposition of artifacts and ruins (Willey 1945). Previously, only the major ruins had been mapped while the context of artifacts were lost. By combining aerial photography with field surveys, Willey managed to change the theoretical understanding of landscapes by highlighting the importance of examining sites in context of one another rather than conducting a site specific study (Burger 1989; Proulx 1985).

The practice of studying plain or non-decorated sherds revolutionized ceramic analysis in Peru. Building on Ford’s (1949) argument that domestic wares could be significant in defining an
archaeological culture, Strong and Evans (1952) focused their research on identifying plain wares by describing paste, surface color, and surface texture, as well as the morphological aspects. This was the first big paradigm shift from analyzing only decorated sherds (often excavated from a ceremonial context) to including plain sherds (Shimada and Maguña 1994). By analyzing sherds from various contexts (i.e., ceremonial and residential), archaeologists were able to construct a culture history that was more representative of the populations than previous culture histories.

One way early archaeologists worked to understand the culture history of Virú was through ceramic analysis. Focusing on the stylistic and formal aspects, these researchers developed a chronology based on the ceramics which others attempted to apply to other valleys. Since the late 1990s, there have been several major critics of these chronologies which have resulted in the addition of domestic or plain ware, but still maintained most of the classification (Ikehara 2015; Lau 2002; Shimada and Maguña 1994). Shimada and Maguña (1994) suggest the archaeological cultures were more contemporaneous rather than a successive culture. New research regarding the Gallinazo ceramic traditions supported this hypothesis and caused a reexamination of the ceramic chronology, shifting our understanding of interaction spheres and cultures within the Virú Valley (Millaire and Morlion 2009).

Using the ceramic cultural chronologies and research methodologies developed during the Virú Valley Project as a base, later archaeologists extended chronological frameworks to encompass research in neighboring valleys. For instance, Proulx’s (1968) initial surveys of the Nepeña Valley adopted the type-variety approach by focusing on the presence of ceramic sherds with distinguishable decoration styles. This resulted in his interpretation of the Moche and Recuay having a strong presence in the valley. Unfortunately, it also resulted in Proulx claiming that the
valley was “sparsely occupied” during the Early Intermediate Period due to finding less Moche and Recuay style ceramics being discovered in association with other EIP artifacts (Proulx 1968).

Proulx’s (1982) later research suggested that the middle Nepeña Valley served as a buffer zone between the strong Recuay presence in the upper valley and the Moche presence in the lower valley (Proulx 1982). Yet, others recognize distinct differences between the middle valley and the lower and upper valleys, particularly in regards to public architecture (Ikehara 2015). This example shows how a researcher’s approach can alter their interpretations. Many of the researchers who employed the traditional type-variety approach looked for major changes in stylistic aspects and took these changes as indications of cultural disruptions or the arrival of a new population (i.e., Menzel 1964; Proulx 1973; Rowe 1945, 1962; Tello 1943; Willey 1945). While a type-variety approach diminishes the presence of a local tradition by highlighting a foreign presence, a practice approach places a stronger emphasis on the similarities, allowing for continuities to be seen.

The shift from a type-variety to a practice approach started around the same time the concept of chaîne opératoire (operational sequence) emerged. Introduced by French archaeologist, André Leroi-Gourhan, this approach works to encompass the manufacturing and production process in its entirety, from the procurement of the raw materials to the steps required to produce the object and even through the function or use, and eventual disposal of the object (Bar-Yosef and Peer 2009; Grace 1997; Roux 2016; Soressi and Geneste 2011). Although it was initially created as a methodological tool for lithic analysis (similar to the core reduction sequence), it was quickly adopted by others to aid in identifying the techniques employed during the manufacturing processes for a variety of other artifacts, such as ceramics and metallurgy (Audouze 2002; De Gruyter 2014; Sellet 1993; Shugar and Simmons 2013).
When applied to ceramic analysis, *chaîne opératoire* can address a wide range of technical processes required to produce a pot. For instance, the procurement of raw materials, the process of manufacturing the vessel – preparing the clay (i.e., drying, pounding, adding temper), preforming and shaping the clay (i.e., coiling, molding, beating, scraping), finishing or applying decorative and stylistic elements (i.e., incising, impressing, burnishing), firing, post-firing finishing (i.e., slipping, painting, scratching), and potentially firing again (Ernst and Hofman 2019; Rice 1987). Each of the steps mentioned also include a variety of steps and techniques, including tool choice, which may be explored for a more in depth understanding of the technical traditions. By examining ceramic production and identifying these technical traditions, researchers can identify potential communities of practices.

The community of practice concept refers to a group of individuals “who engage in a process of collective learning in a shared domain of human endeavor” (Wenger 2011). Although the concept has been discussed for much longer, it was first coined by social anthropologist Jean Lave and educational theorist Etienne Wenger in the late 1980s. It was initially researched in the context of formal apprenticeships; however, have also been observed in informal group settings, such as during Alcohol Anonymous meetings (Lave and Wenger 1991). Community of practice emerged as a learning theory, but has recently been adopted by archaeologists as a way to engage with the connections between material culture, identity, and agency, as well as explore how knowledge is transferred between generations and cultural groups (Holdaway and Allen 2012; Manem 2020; Sassaman and Rudolfi 2001; Stahl 2013; Wendrich 2012). Although the type-variety approach still persists in Andean studies (particularly the chronological sequences), there have been several studies notable for their practice approach, such as Ramón’s (2008) research on swallow potters which is discussed in chapter 2 of this thesis.
1.3. Summary of the Chronological Sequence in Nepeña

The chronological sequence used within the Nepeña Valley is based on the sequence established by John Rowe (1962). Using Max Uhle’s archaeological sequence from the Ica Valley in southern Peru as the master sequence, Rowe proposed a relative chronological framework based on stylistic changes rather than calendar years (Menzel 1977; Proulx 1985). This sequence scheme alternates between “periods” and “horizons.” Periods were used to indicate periods of cultural diversity, while horizons indicated times of cultural unification (Proulx 1985; Rowe 1962). There were three main horizons defined: Early Horizon, Middle Horizon, and Late Horizon. Between these horizons are “intermediate” periods: Early Intermediate (between the Early and Middle Horizons) and Late Intermediate (between the Middle and Late Horizons). Initially, each horizon was associated with a specific style; the Early Horizon with the Chavín, the Middle Horizon with the Huari (also referred to as Wari), and the Late Horizon with the Inca Empire. Since this sequence was developed using the Ica Valley sequence as the master, the horizons and intermediate periods do not always correlate to the major cultural events occurring in other valleys (Menzel 1977). This has caused confusion when discussing the valley’s chronologies and relationships with one another, as it does not account for delayed rates of expansion which can cause inaccurate relative dating. Therefore, for this thesis, the horizons and intermediate periods are used solely to delineate a specific block of time without any assumptions about cultural affiliations.

The Nepeña Valley is typically divided into major chronological developmental periods: Preceramic, Initial, Early Horizon (EHP), Early Intermediate (EIP), Middle Horizon (MHP), Late Intermediate (LIP), and Late Horizon (LHP). The Preceramic Period is difficult to define as there is limited archaeological evidence for this period. Proulx (1973: 215) discusses two preceramic
sites: Las Salinas (PV 31-208) and an unnamed habitation site (PV 31-209). These sites were determined by stone structures and large quantities of shell refuse. With few artifacts to go on, it is difficult to date these sites, however, Proulx (1973: 11) suggests they were likely occupied between 5000 and 2000 BCE.

Following the Preceramic Period is a transitional period commonly referred to as the Initial Period (2100 – 1000 BCE). This period is often used to define the span of time during which ceramics, agricultural practices, and more defined settlements began emerging (Pozorski and Pozorski 2008; Proulx 1973). Rowe (1966) placed the Initial Period from 2050 – 1400 BCE, however, Lanning (1967) and Willey (1971) defined the period as between 1800 and 900 BCE. Advancements in radiocarbon dating redefined the Initial Period to the dates of 2100 – 1000 cal BCE (Pozorski and Pozorski 2008). Research during the 1980s helped to characterize architectural styles associated with the Initial Period: U-shaped platform mounds on the central coast and truncated rectangular pyramids and sunken circular plazas on the north-central coast (Burger 1989: 51).

The Initial Period is occasionally lumped into the Formative Period, which often serves as a catch all term for anything from the introduction of pottery that predates the Early Intermediate Period. The Formative Period has been split into three phases: Early (which encompasses the Initial Period), Middle (first half of the Early Horizon Period), and Late (second half of the Early Horizon Period) (Proulx 1985). In addition to these divisions, there are also terms delineating a “Final” and “Epi” Formative Period. Ceramics at Cerro San Isidro (PV 31-51) date to the Late-Final Formative Period. In order to minimize the confusion of these seemingly arbitrary phases, I avoid the term “Formative” and use “Early Horizon Period” instead.
The Early Horizon Period (800 -200 BCE) correlates to a period of technological advancements, increased religious and trade networks, and the spread of the Chavín religious complex (Chicoine 2006: 4). Based on Tello’s excavations at Cerro Blanco (PV 31-36), the Nepeña Valley served as a major coastal center for the Chavín religious complex (Proulx 1973). There is still some debate regarding the actual level of Chavín influence present at some of the Nepeña sites. Some ceramic decorative elements (i.e., stamped circle and dots, pattern burnishing, and generalized incision and punctation) that were once included within the Chavín phenomenon, have now been shown to be local ceramic techniques independent of the Chavín influence (Proulx 1973: 13, 1985: 258; Shibata 2011).

While the Chavín Cult thrived during the EHP, Burger (1981) suggests it initially emerged during the Initial Period (Proulx 1973). Research conducted at other Initial Period sites have supported the inclusion of the Chavín early Urabarriu phase within the Initial Period rather than the EHP (Chicoine 2006). By the end of the EHP, there was a decline in the large coastal ceremonial centers and a rise in fortifications and other defense structures (Arkush and Tung 2013). There is no more evidence for Chavín influences and the pottery styles now emphasize the decorative technique of pattern burnishing (Proulx 1985: 273).

The Early Intermediate Period (200 BCE-600 CE) is marked by population growth, which Moseley (1992: 162-163) highlights were likely the cause for increased defense structures and hostilities over obtaining and protecting good agricultural land. The EIP also saw an increase in cultural diversity based on ceramic styles, settlement patterns, and architectural practices (Daggett 1986: 49). There are three main archaeological cultures discussed during the EIP: Gallinazo, Moche, and Recuay (Proulx 1973). However, since there are debates on whether different ceramic
and architectural styles truly delineate a culture, I will discuss this “cultural diversity” in terms of stylistic ceramic phases.

Ceramic decorative elements for the EIP are characterized by the emergence of a broader corporate art design and style (Moseley 1992: 164). The Gallinazo style is most well-known for its negative or resist-painted elite wares. Although it was once believed the Gallinazo development was interrupted by the Moche military conquest, Kaulicke (1992) suggests Vicús, Salinar, Gallinazo, and Moche are merely stylistic variations present within a larger contemporaneous north-coast cultural group (Millaire and Morlion 2009: 7, 13). The Recuay is most often discussed in the context of the Peruvian highlands. The Virú Valley Project helped show the Recuay influence on ceramic style along the coast (Lau 2011: 45). Evidence of the Recuay in Nepeña is strongest in the middle and upper valleys. In terms of settlement patterns, the Recuay preferred sites where they could easily trade with individuals from the lower valley (Lau 2011). Some suggest the middle Nepeña Valley served as a trading or buffer zone between the strong Recuay presence in the upper valley and the Moche presence in the lower valley (Lau 2011; Proulx 1985; Vogel 2016).

The Middle Horizon Period (600 -1000 CE) was a time of major cultural change as large-scale expansive states began to emerge, namely the Huari (Lau 2012). Proulx and Daggett’s research recorded the presence of artifacts associated with Huari occupation at over 100 sites within Nepeña (Proulx 1973). The local ceramic styles found within the valley during the MHP are the Nepeña Black-White-Red and the Nepeña Black-on-White. These styles emphasized paint.

The Late Intermediate Period ranges from 1000 to 1450 CE. In addition to the local ceramic traditions, there were two main ceramic traditions present in Nepeña during this period: Casma and Chimú. The first of these two appears between 1000 CE and 1400 CE. There is about 50 years
of overlap within the valley as the Chimú correlated decorative elements become more popular, particularly the blackware. While there are similarities between the Casma phase ceramics and the local pottery traditions (namely circle-and-dot and other incised designs), ceramics from the Chimú phase differ greatly with their reduced pots and piel de ganzo impressed designs. The Inca conquered the Chimú around the mid-15th century (Moseley 1992; Proulx 1985).

The Late Horizon Period begins roughly around 1450 CE and continues until the arrival of the Spanish in 1532 CE. This period is most notably known for the rise and expansion of the Inca Empire, which had conquered all of the north coast by 1471 CE (Proulx 1973: 80). There are very few known sites with a strong Inca presence in the Nepeña Valley, however, the main Inca coastal road ran across the valley near the Huambacho Viejo (PV 31-103) ruins. Victor von Hagen claimed the Huambacho Viejo compound was constructed during the Middle Horizon, then reoccupied in the LIP Chimú phase, and again in the LHP as an Inca Tampo or way-station. The ceramic traditions during this time were influenced by Inca style vessel shapes, however, were manufactured in the local Chimú blackware tradition (Proulx 1973: 80).

1.4. Cerro San Isidro

The middle Nepeña Valley is characterized by flat terrain which leads to the foothills of the Cordillera Negra. The Rio Nepeña is a shallow second class river with seasonal flooding and is fed by three tributary rivers: Jimbe, Vinchamarca, and Salitre. This allows for irrigation of fertile lands along the river. Approximately one kilometer west of Moro is are two natural hills upon which the Cerro San Isidro archaeological complex is located. The Cerro San Isidro archaeological complex refers to both the Cerro San Isidro (PV 31-51) and Puente Piedra (PV 31-50) sites (Figure 2). These two sites were originally described as independent of one another, although (Proulx
1968: 93) did note there was a stone wall connecting them. Architectural and ceramic similarities now suggest these two sites were connected and should be studied as one archaeological complex (Chicoine and Navarro 2020).

Puente Piedra is a small site with a badly deteriorated stone structure and several walls extending toward the CSI site (Proulx 1968). Strategically located on a natural hill CSI is visible from many of the neighboring communities, perhaps indicating it was a center of regional political power due to its location, size, and complexity (Chicoine and Navarro 2020: 10). CSI is a much larger compound with a series of terraces and several architectural compounds (Figure 1).

During a surface survey, Proulx (1968: 93) hypothesized the site was occupied from the Middle Horizon and the Late Intermediate Period based on diagnostic Northern Huari and Chimú ceramics. Later surveys conducted by Daggett (1984), Ikehara (2015), and Chicoine and Navarro (2020) identify evidence for occupation beginning in the Early Horizon Period. During the 2019
season of PIACSI, excavators of Excavation Unit 3 (UE3) identified three superimposed construction phases – stone, adobe brick, and stone with mortar. Although these building phases help inform on the occupational sequence of the site, it should not be deemed the primary source of occupation as individuals or groups may have reoccupied the site in different ways, according to geographical location. Their histories are more likely to be evident in ceramic, refuse, and other artifacts.

During the 2019 field season, Proyecto de Investigación Arqueológica Cerro San Isidro (PIACSI) excavated seven block units measuring 5x5m each, as well as eight test units (1x2m), in Sector 51 (Figure 2) (Chicoine and Navarro 2020). The excavation units are all located within Architectural Complex 3 (Conjunto 3) (Figure 3). The test pits, each measuring 1x2m, were placed along the fringes of the architectural complex on the southern slope and summit of CSI.
The preliminary analysis of the artifacts excavated from Sector 51 support the time frame suggested by previous surface surveys (Daggett 1984; Ikehara 2015; Proulx 1968). However, artifacts more often associated with the Early Horizon Period were found in the same context as artifacts associated with the later time periods (i.e., Middle Horizon and Late Intermediate Periods) (Chicoine and Navarro 2020). Therefore, it appears as if with each occupation of the site, people continued to use and move around artifacts left at the site by previous occupants in addition to their own materials.
CHAPTER 2. METHODOLOGY

Prior to analyzing ceramics, we need to understand the different types of analyses available. In this chapter, I provide an overview of ceramic analysis in archaeology. I then discuss my methodology beginning with descriptions of the variables analyzed and discussed in this thesis. Next, I introduce the ceramic sample excavated during the 2019 field season at Cerro San Isidro. The sample is divided by time periods then type as they were listed in the database.

2.1. Ceramic Analysis

When studying ceramic artifacts archaeologists typically deploy four main types of analysis: stylistic, formal, technological, and compositional. Stylistic analyses focus on the decorative elements present on the ceramic artifacts. These include surface treatments (i.e., slips and glazes), painted designs, incisions, and appliqués (Rice 1987). Formal analyses examine the morphology of the objects, such as vessel shape and metrics (Orton, Tyers, and Vince 1993). It also often includes a discussion of the function of the artifact. While technological analyses explore how artifacts are manufactured, compositional analyses examine the petrographic and/or geochemical makeup of a piece via paste analysis (Druc 1998; Glascock 2016).

Methods of ceramic analysis have grown exponentially over the past century. Early ceramic analyses focused heavily on stylistic and morphological components (Druc 1998; Proulx 1973). During the second half of the twentieth century, archaeologists began to pay more attention to the form and function of ceramic vessels (Velde and Druc 1999). In order to help gain a better understanding of ceramic methods, experimental studies were employed. Experimental archaeological studies on ceramics attempt to replicate ancient manufacturing methods and
provide information about firing techniques and temperatures (Daszkiewicz and Maritan 2017). One method used for experimental archaeology includes ethnoarchaeological studies, which uses ethnographic methods to study the techniques of present-day potters in order to understand traditional methods (Fowler 2017; Ramón 2008). These studies are conducted to aid interpretations of ancient ceramic making techniques.

Ethnoarchaeological research conducted on ceramic traditions of Northern Peru has extensively shifted our understanding of ceramic production and distribution patterns (Druc 2013; Ramón and Bell 2012). Ramón’s (2008) research on swallow potters in the Central Andes relied on both ethnographic and archaeological information to study the migratory patterns of potters. The term ‘swallow potters’ is used to refer to potters who migrate seasonally to areas or communities with a higher demand for pottery. By highlighting the role these potters play as “agents of stylistic transformation,” Ramón’s (2008: 160) research determined a separation between production techniques and stylistic features. While stylistic features are determined by the preferences of the community in which the potters are working, the actual manufacturing techniques used are consistent with those used in the potter’s original communities.

Improvements in chemical analysis methods on clay and temper also proved helpful as some potters carry their own clay while migrating and raw clay, as well as other materials, have unique chemical compositions that allow the original clay source to be distinguished (Druc 2013; Ramón 2008; Weigand et al 1977). This continuity in manufacturing techniques allows archaeologist to trace migratory patterns. Although Ramón’s (2008) study worked with modern potters, the concept can be applied in an archaeological context as it provides an alternate perspective for the ceramic type-variety approach by showing how easily decorative styles are changed for a market economy.
2.2. Sample and Methodology

Ceramics are initially classified as four paste classes: coarse earthenware, stoneware, refined earthenware, and porcelain. All of the sherds in this sample are classified as coarse earthenware (also called pottery). This class is characterized by ceramics with porous, lightly compacted paste (often with temper) that undergoes low firing conditions (both time and temperature) (Velde and Druc 1999).

The 2019 PIACSI team excavated 63,620 fired clay artifacts, with 8,444 rim and decorated body sherds and over one metric ton being undecorated, plain ware body sherds (Table 1). Of the decorated body and rim sherds, Chicoine analyzed approximately 4,000 sherds, compiling the data in an excel spreadsheet – henceforth referred to as the ceramic database. With the Covid-19 pandemic preventing travel to Peru, I extracted data from the ceramic database, as well as consulted the general catalogue containing all the contextual information about the CSI 2019 archaeological collection.

Table 1. Ceramic artifacts excavated at CSI in 2019.

<table>
<thead>
<tr>
<th>Artifact Class</th>
<th>Total Count</th>
<th>Bag Weight (grams)</th>
<th>Ceramics Count</th>
<th>C Weight (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beads</td>
<td>660</td>
<td>316.7</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>Special Artifacts</td>
<td>48</td>
<td>793.8</td>
<td>9</td>
<td>29.1</td>
</tr>
<tr>
<td>Funerary Context</td>
<td>90</td>
<td>1,753.70</td>
<td>7</td>
<td>383</td>
</tr>
<tr>
<td>Decorated Ceramics</td>
<td>8,444</td>
<td>181,012.70</td>
<td>8,444</td>
<td>181,012.70</td>
</tr>
<tr>
<td>Undecorated Ceramics</td>
<td>54,625</td>
<td>1,035,730</td>
<td>54,625</td>
<td>1,035,730</td>
</tr>
<tr>
<td>Other Ceramics</td>
<td>519</td>
<td>10,705.10</td>
<td>519</td>
<td>10,705.10</td>
</tr>
<tr>
<td>Complete Vessels</td>
<td>14</td>
<td>16,855</td>
<td>14</td>
<td>16,855</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>64,400</strong></td>
<td><strong>1,247,167</strong></td>
<td><strong>63,620</strong></td>
<td><strong>1,244,717</strong></td>
</tr>
</tbody>
</table>
Wanting to analyze as many of the manufacturing and decorative variables as possible, I narrowed my sample by removing entries lacking data in the following fields: type, time period, manufacturing, and decoration technique. This allowed me to analyze the most complete and conclusive entries, resulting in a sample size of 518 sherds. Within this sample, thirty-six ceramic types are represented from the Early Horizon Period to the Late Intermediate Period.

Departing and building on previous seriation and cultural historical analyses, my analysis uses the pottery types as a point of departure to divide the CSI pottery assemblage into four distinct periods of pottery making: (1) Early Horizon, (2) Early Intermediate, (3) LIP-Casma, and (4) LIP-Chimú. Based on radiometric data from the north-central coast, we can approximately date the EHP wares between 800 and 450 cal BCE, the EIP wares between 200 BCE and 600 cal CE, the LIP-Casma wares between 1000 and 1400 cal CE, and the LIP-Chimu wares between 1350 and 1450 cal CE. My analysis traces continuities and changes in specific/relevant technological (coloring, firing, and manufacturing), formal (morphology and metrics), and stylistic (design and decoration technique) aspects of those three moments of pottery making at CSI.

2.3. Ceramic Database Variables

In addition to the contextual information, the ceramic database examines 22 variables detailing formal, stylistic, and technological aspects of 4,061 sherds excavated from Sector 51. Based on my research questions, I focus most heavily on the following variables: type, vessel shape, rim shape, lip shape, firing, coloring manufacturing, decoration technique, and design. This section will briefly describe each of them.
2.3.1. Type

Type refers to a ceramic category constructed by archaeologists to help order the ceramic assemblage. These distinctions are often based on previous research conducted in the region and have historically emphasized stylistic elements. While types can help archaeologists see patterns across regions, cultures, and time periods, they also have the potential to become confusing. This is particularly true whenever similar styles are classified as two different types, such as with the Gallinazo negative and Virú negative ware types (Millaire and Morlion 2009). Therefore, types must be clearly defined for each site.

2.3.2. Formal Variables

2.3.2.1. Vessel Shape

Vessel shape refers to the general morphology of the vessel as indicated by the sherd. Determining the vessel shape is the first step to determining the vessel’s function (Hagstrum and Hildebrand 1990; Shepard 1956). Several methods have been developed to aid in determining morphology from a sherd, most measure the curvature and angles of the sherds; however, the technique chosen depends on from which portion of the vessel the sherd originated (Hagstrum and Hildebrand 1990; Shepard 1954; Whalen 1998). There are three quantitative variables in the CSI ceramic database which help indicate the overall morphology: interior diameter, neck diameter, and thickness. The diameter variables are determined by rim and neck sherds. These variables can provide information about the overall shape of the vessel. Thickness is recorded in millimeters and measures both the thinnest and thickest portion of each sherd.

In lieu of finding a complete (or mostly complete) vessel, body morphology can be estimated by the curvature of a body sherd, while neck and rim sherds tend to be more helpful
approximating the size and shape of the vessel orifice. Vessel shapes have been used to distinguish time periods based on morphological changes. Within this sample, there are six main vessel shapes: bottle, bowl, neck jar (jug), olla con cuello, olla sin cuello, and tinaja con cuello. An example of these vessel shapes can be seen in Figure 4 which depicts the range of vessel shapes excavated from Caylán in the lower and Kushipampa in the upper-middle Nepeña Valley (Ikehara and Chicoine 2011).

Figure 4. Vessel Shapes present at Caylán (lower) and Kushipampa (upper), Nepeña Valley (Ikehara and Chicoine 2011: 174, Figura 15)

In archaeological settings, ceramic artifacts are typically divided into three sherd categories: (1) rim, (2) body, and (3) basal. Figure 5 shows the major subdivisions (or anatomy) of a variety of vessel shapes. The various portions of a vessel’s anatomy are briefly described below within the overarching branch of these three categories.

- **Basal sherds** – ceramic fragments from the lower portion of the vessel. These are typically the thickest portion of the vessel as they form the surface that the vessel is rested on and
may have additional rests attached to support the vessel, such as a foot or tripod (Banning 2000).

- **Body sherds** – ceramic fragments from the middle portion of the vessel, above the base but below the rim. These are typically either flat or slightly curved; however, certain portions of the body may have more significant morphological attributes.
  - **Shoulder** – the portion of the vessel between the widest point (maximum diameter) of the body and the neck or the rim (Banning 2000).
  - **Neck** – the neck is formed when the vessel body constricts above the maximum diameter or shoulder of the vessel (Banning 2000; Rice 1987). The neck shape may remain the same diameter or widen again before the rim.
  - **Collar** – the area between the neck and the rim (Rice 1987).
  - **Handle** – an additional appendage attached to the exterior of the vessel, most often to the body or rim (Banning 2000). The placement angle and location of a handle can provide information about the vessel’s function.
  - **Spout** – an additional appendage similar in form to a neck which forms a second opening on the side of vessel (Banning 2000). These are typically located on the shoulder of upper body of a vessel. Some vessels may have one or more spouts.

- **Rim sherds** – ceramic fragments which form the uppermost portion of a vessel. These sherds are formed by the rim and the lip. The shape of these sherds may help indicate the diameter of the vessel opening, as well as lend clues as to what the vessel was used for (i.e., a rim sherd which has a tapered lip may suggest the vessel was used for pouring).
  - **Rim** – the area surrounding the vessel’s opening (or orifice).
  - **Lip** – the edge point of the vessel opening.
2.3.2.2. Rim Shape

The rim shape refers to the shape of the opening of the vessel. Rim sherds can help determine vessel shape by allowing the diameter of the vessel to be approximated. The shape of a rim is determined by the profile (or cross-section). There are five main rim shapes present in this sample:
vertical, everted, incurved, cambered, flared (see Figure 6. There are also instances of rims having a combination of these five shapes (i.e., vertical flared or everted incurved).

![Rim Shapes](image)

*Figure 6. Rim shapes present at Cerro San Isidro (PV 31-51)*

2.3.2.3. Lip Shape

The lip shape refers to the shape of the edge point along the opening of the vessel rim that is the furthest from the base (Banning 2000). Figure 7 depicts the proximity between the rim and lip on three different vessel shapes. The rim and lip, when recorded, can indicate the diameter of the vessel’s opening and its shape, as well as provide insight on what function the vessel had (i.e., serving or storage). Similar to the rim shape, lip shape is described in terms of its profile. There are six main profile shapes within this sample: beveled (interior or exterior), incurved, thickened (interior or exterior), rounded, straight, and tapered.

![Lip and rim](image)

*Figure 7. Proximity of the lip and the rim (Rice 2005: 214; Figure 7.3)*
2.3.3. Technological Variables

2.3.3.1. Firing

**Firing** refers to the results produced by the method of firing used during the manufacturing process. It is determined by the coloring of the natural clay via a Munsell color chart as the clay is irrevocably altered during the firing process, therefore, provides evidence of the amount of oxidation the sherd underwent. Examining firing can help identify the temperatures at which the piece was fired which may then attest to manufacturing traditions.

There are some difficulties in truly classifying the firing method due to the possibility of the same piece oxidizing at different rates based on its proximity to and the intensity of the heat source. When sherds are fired in an oxidizing atmosphere, oxygen is abundant and reacts with the iron in the clay to form red hematite which results in the sherd taking on a reddish or reddish-brown color, depending on the clay’s mineral composition (Banning 2000; Braekmans and Degryse 2017). Complete oxidization of iron minerals typically occur around 800°C (Shepard 1954). Sherds fired in a reduced atmosphere result in the formation of magnetite rather than hematite due to an increase of carbon dioxide gases during the firing process. This causes the sherds to typically be darker in color (Banning 2000). Rather than being completely oxidized or completely reduced, sherds often fall along a spectrum between these two due to the wide range of variables which can impact the firing process (e.g., temperature of and proximity to the heat source, amount of organic material in the clay, and mineral composition).

2.3.3.2. Coloring

**Coloring** refers to the overall pigmentation of a sherd. It can refer to the shade of the natural clay or the shade of a decorative surface treatment, such as paint or slip (see 2.3.4.1). Coloring can also be altered by firing methods as the amount of oxygen in the atmosphere reacts with the clay. The
natural color of the clay can impact the results. In regards to this sample, pottery fired in a highly oxidized atmosphere have a higher percentage of having a red or orange coloring while those fired in a reduced atmosphere are typically grey or black.

2.3.3.3. Manufacturing

Manufacturing refers to the primary forming method used to initially shape the piece. While there are numerous forming methods, they are generally categorized as modeled (hand-formed), molded, or wheel thrown (Banning 2000). Since all of the sherds in my sample were either modeled or molded, I focus on the techniques that fall within these two categories.

- **Modeled** – a broad category of ceramics which formed by hand, without the aid of a mold.
  - **Coiling** – a primary forming technique in which a potter rolls prepared clay into a long cylindrical tube (i.e., coil or rope), which is then used to construct the vessel. This technique may use numerous single layered coils stacked upon each other or one long coil which is wrapped on top of previous layers until the desired height is reached. Pinching is used to secure the coils to each other, then a secondary forming technique may be used to smooth the coils further (Banning 2000). The coils may still be visible in the cross-sections of these sherds and may even be confused with a rim sherd if broken between the coils (Banning 2000: 169).
  - **Drawing** – a primary forming technique where a potter uses their fist to press into the clay then stretch the clay upwards to form the walls of the vessel (Banning 2000: 168). This technique tends to align the inclusions vertically and may result in the vessel’s wall to vary in thickness and have a wavy pattern.
  - **Pinching** – a primary forming technique similar to drawing in that a potter uses their fingers and thumb to manually squeeze a ball of prepared clay into a rough
outline of their desired shape. They then continue to squeeze and shape it more as they rotate the piece in order to evenly thin the walls (Banning 2000). This technique leaves shallow indentations as the potter pinches and lifts the clay which can be seen in a sherd’s cross section as it can vertically orient the inclusions (Banning 2000: 168). This technique is typically used for small, round vessels.

- **Slab-building** – a primary forming technique where a potter flattens out slabs of clay (either with their hands or using a cylindrical object). These slabs are then joined to a base slab by pinching and smoothing the seams. By repeating this step, the potter is able to construct and shape the vessel (Banning 2000: 169).

- **Molded** – a primary forming technique where raw clay is pressed into a mold. A variety of objects may be used as a mold, such as a shallow pit dug into the ground, another vessel, or a carved stone. Designs (either reliefs or depressions) may be transferred from the mold to the vessel being formed as it is pressed into the mold (Banning 2000: 170). This technique may be seen through the thickened seams where multiple pieces were joined.

Figure 8. Example of vessel construction (Shimada & Wagner 2019: 143, Figure 6)
Vessels may be formed using a mixture of these manufacturing techniques. For instance, the base and body of a vessel may be constructed using a hand modeling technique, such as coiling (primary) which is then smoothed with pinching (secondary), while the handles or rim of the same vessel may have been created using a mold. Figure 8 provides an example of how different portions of one vessel may have been joined. By examining the manufacturing method in correspondence with stylistic elements, we can determine if there are continuities between the two, as well as the rate of change in manufacturing methods compared to stylistic elements.

2.3.4. Stylistic Variables

2.3.4.1. Decorative Technique

Decorative technique refers to the type of decoration applied to the surface of a vessel. This variable has historically been used to distinguish cultures and/or time periods. There is a wide variety of decorative techniques observed on the sherds from CSI; however, the most common technique in this sample is incising, followed by impressed and then painted (Figure 9). In the next chapter, I group the types by the most prominent decorative techniques which are described below.

Appliqué – a small piece of clay which is joined to the surface of the vessel. These pieces may be shaped and design prior to or after application. Several types present within this sample have small appliqués around the rim or neck of the vessel which are then decorated additionally using an incising or punctate technique.

Burnished – a type of surface finishing technique which gives the vessels surface a lustrous appearance (Shepard 1954: 122). This is often done by rubbing a harder object on the vessels surface in one direction which causes the clay particles to realign. Designs are made using the contrast from the burnished (lustrous) areas and the unburnished (matte) areas.
**Impressed** – when a tool is used to press a design into the vessel. Textile impressed is created by pressing a textile into a wet clay, the textile is then either removed or burned off during the firing process. For designs that are more details textiles, it is likely removed before firing in order to minimize having to recreate the textile. An impressed design may also be created using a mold which has had the desired design either carved or applied to the interior of the mold. This will press the design into the vessel as it is being manufactured rather than waiting to design it manually after. One example of this is the *piel de ganzo* design seen in the LIP-Chimú period.

**Incised** – a sharpened tool is used to cut lines into the surface of the vessel. The shape of the tool (i.e., pointed, angled, or rounded), the pressure applied, and the angle it is held are all factors which impact the appearance and may be used in order to achieve different results. The appearance can also be impacted by the wetness of the clay when performing this technique. For instance, in order to get a deeper design (such as the raised circle and dot design in the Casma Incised Red type), the incisions need to be made prior to firing the vessel. However for designs seen in the Post-Fire Scratched type, the incisions are created using a sharpened tool after the vessel has been fired but before it has had time to properly cool and dry.

**Painted** – a pigmented material is added to the surface of the vessel either pre- or post-fired. This is the most common decorative technique for surface treatments and may be monochrome (one color), bichrome (two colors), or polychrome (three or more colors). White, black, and red are the most prominent colors used within this sample.

**Punctated** – a depression is made in the clay prior to firing. This may be done using a variety of tools such as a hollow reed, a sharpened stick or bone, an awl, or even fingernails. There are several punctated shapes seen at CSI (i.e., triangular, quadrangular, cylindrical, and tubular).
Stamped – when an object is used to press a design into the clay but not puncture through completely. For instance, stamped circle and dot was likely created via a hollow reed with an interior awl or sharpened object to make the dot.

2.4.4.2. Design

Design refers to the basic design or shape of the decorative elements. The most common designs present within this sample are anthropomorphic (i.e., face neck jars), geometric (i.e., spirals, punctate zones, circle-and-dot), or zoomorphic (i.e., birds, reptiles, feline) in nature. Certain designs are believed to be associated with specific sites, regions, or cultures, and therefore, have been used to help contextualize a piece. However, recent studies on production and distribution have shown that designs can be easily imitated, and therefore, do not imply total cultural replacement but still may suggest foreign influence (Druc 2013; Ramón and Bell 2012). Analyzing the design in conjunction with manufacturing aspects (which tend to remain consistent) can provide a more accurate understanding of the culture history for a site (Ramón 2008).
<table>
<thead>
<tr>
<th>Decoration Treatment</th>
<th>Categories of decorative treatments</th>
<th>Types of decorative treatments</th>
<th>Sub-types of decorative treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impressing</td>
<td></td>
<td>Simple impressing</td>
<td>Textile Impressed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Molded impressing</td>
<td>Piel de ganso</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stamping</td>
<td>Stamped Circle (Cylinder)</td>
</tr>
<tr>
<td></td>
<td>Punctuation</td>
<td></td>
<td>Stamped Circle and Dot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punctuation</td>
<td>Cylinder Punctate</td>
</tr>
<tr>
<td></td>
<td>Cutting</td>
<td></td>
<td>Quadrangular Punctate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Triangular Punctate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tubular Punctate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incising</td>
<td>Fine Incised</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rough Incised</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Incising Punctate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Punctate imitation incised</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post-fire Scratching</td>
</tr>
<tr>
<td></td>
<td>Perforating</td>
<td></td>
<td>Perforation</td>
</tr>
<tr>
<td>Joins to the surface</td>
<td>Appliqué</td>
<td></td>
<td>Raised Circle and Dot</td>
</tr>
<tr>
<td>Color and colorants</td>
<td>Painting</td>
<td></td>
<td>Bichrome</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Polychrome</td>
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<td></td>
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<td>Negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slip</td>
<td>Red slip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glaze</td>
<td>White slip</td>
</tr>
</tbody>
</table>

*Figure 9. Decoration techniques present in this sample*
CHAPTER 3. RESULTS

This chapter divides the ceramic sample into four phases: (1) Early Horizon Period (800-150 BCE), (2) Early Intermediate Period (200 BCE-800 CE), (3) Late Intermediate Period – Casma (1000-1400 CE), and (4) Late Intermediate Period – Chimú (1350-1450 CE). Although these periods are used to delineate time, as mentioned above, the types placed within each of the periods were chosen based on overall similarities of variables. The sample is further separated within these periods based on decorative techniques, highlighting the continuation and reemergence of techniques spanning the total occupation.

3.1. Early Horizon Period

The pottery types present in the Early Horizon Period are shown in Table 2.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Types</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliqué</td>
<td>Appliqué Nubin</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Ridge Applique</td>
<td>5</td>
</tr>
<tr>
<td>Impressed</td>
<td>Textile Impressed</td>
<td>8</td>
</tr>
<tr>
<td>Burnished</td>
<td>Pattern Burnished</td>
<td>42</td>
</tr>
<tr>
<td>Incised</td>
<td>Banded Lozenge</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Broad Line Incised</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Formative Incised</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incised Punctate</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous Incised</td>
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</tr>
<tr>
<td></td>
<td>Post-Fire Scratched</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Painted Incised</td>
<td>2</td>
</tr>
<tr>
<td>Painted</td>
<td>White-on-Red (Salinar)</td>
<td>6</td>
</tr>
<tr>
<td>Punctated</td>
<td>Angular Zoned Punctate</td>
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</tr>
<tr>
<td></td>
<td>Triangular Zoned Punctate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Zoned Punctate</td>
<td>2</td>
</tr>
<tr>
<td>Stamped</td>
<td>Stamped Circle-and-Dot</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 2. EHP types and counts.

EHP (Types: 16) (Count: 157)
3.1.1. Appliqué

3.1.1.1. Appliqué Nubin

The Appliqué Nubin type is represented in the Early Horizon Period by one body sherd. This sherd, which appears modeled, has a thickness ranging from 5-6mm and was partly reduced. While the interior is grey, the exterior is black and decorated with appliqué and geometrically designed incisions.

3.1.1.2. Ridge Appliqué

There are five body sherds attributed to the Ridge Appliqué type. These sherds are modeled, range in thickness from 5mm to 10mm with the minimum measurements being 5.8mm and the maximum 6.7mm. The coloring varies between red, orange, light/dark brown, and brownish grey. While all appear to be modeled and are decorated with appliqué and geometric incisions, the sherds vary in the amount of oxidization experienced (partial, complete, or sandwiched).

3.1.2. Impressed

3.1.2.1. Textile Impressed

The Textile Impressed type is represented by eight body sherds with a thickness ranging from 4.5mm to 8mm. Coloring varies slightly between brown, light grey, and black, perhaps due to the varying firing atmospheres present (reduced, sandwiched, and partially oxidized). These sherds are modeled and decorated with textile impressions. Seven were created by coarse textiles and one with twined textile.
3.1.3. Burnished

3.1.3.1. Pattern Burnished

The Pattern Burnished type is represented by twenty-three rim sherds. While twenty-two of these are shaped as a bowl, there is one neckless jar (commonly known as an “olla sin cuello” in Peruvian literature). The straight lipped *olla sin cuello* is modeled, has an interior diameter of 15cm, and an average thickness of 7.5mm. This sherd was fired in a partially reduced atmosphere and is grey on the interior and black on the exterior. While this sherd shares the burnishing decorative technique with the other twenty-two sherds, this is the only with the design of rocker lines. Of the twenty-two bowl rim sherds, eighteen have everted rims and one has a vertical rim. The lip shape for these sherds are either rounded or tapered. These sherds have an interior diameter ranging from 12cm to 23cm (avg. 23cm, \( \sigma: 3.18 \)) and an average thickness of 4.8mm.

There are nine sherds that are completely oxidized are relatively uniform in coloring and predominantly reddish brown, followed by reddish orange. The nine sherds fired in a partially oxidized atmosphere are also uniform but have less occurrences of the reddish hue seen in the oxidized sherds. The two partially reduced sherds both have brown exteriors (one light and one dark), while the interior coloring are dark grey and black. There are two everted rimmed bowl sherds with sandwich firing results which are uniform interiorly and exteriorly with one being light brown and the other red. All of the sherds, regardless of the vessel shape, are decorated with burnishing. Seventeen of the sherds have designs recorded, of which there are twelve cross-hatched lines, two geometric, two vertical lines, and one vertical lines grouped in three coming down from four lines circling the lip.

Of the sixteen body sherds represented in this type, two are labelled as a bowl, the other fourteen do not list a vessel shape. The average thickness of these sherds ranges from 4.6mm to
5.4mm. Seven of these are completely oxidized and are variations of red and brown in color. Nine of the sherds are partially oxidized and tend to be darker in color with several occurrences of black and dark brown, as well as reddish brown. All of the body sherds present exterior decorations created via burnishing, twelve of which have design data available. Ten of these have cross hatched lines, one has irregular cross-hatched lines, and one with double crossed hatched lines. There is one sherd with interior and exterior decorations. Although this sherd does not have design data, it is listed as a coarse ware.

There are three base sherds attributed to the Pattern Burnished type, two of which are the bases of bowls. The average thickness of these sherds 5.3mm. The two sherds whose base are flat are reddish brown both interiorly and exteriorly. These two are also decorated with a burnished pattern designed as cross hatched lines. The third sherd is convex and uniformly dark brown. All three sherds were modeled. Two are partially oxidized while one is completely oxidized.

3.1.4. Incised

3.1.4.1. Banded Lozenge

There are seven rim sherds in this sample attributed to the Banded Lozenge type. While all of the sherds indicate a carinated bowl vessel shape, they vary in the shape of lip of the bowl. The four sherds with a straight lip are also partially oxidized and mostly reddish brown on both the exterior and interior with the exception of the occurrences of one light brown and one brownish grey interior. Of two sherds with an exterior beveled lip, one is partially oxidized with black on both the interior and exterior, while the other is sandwiched and dark brown on both the interior and exterior. The last sherd in this sample has an exterior thickened shaped lip and is oxidized with a reddish orange interior and a red exterior. The interior diameter of these sherds range from 17cm
to 26cm and averages 22cm. These sherds are modeled and, on average, ranges in thickness from 4.6mm to 6mm. All seven sherds uses the incising technique to create geometric designs. Five also indicate the use of various punctate techniques; four shows punctated punctate, two stamped circle-and-dot, and one with tubular punctate.

3.1.4.2. Broad Line Incised

This type is represented by five bowl rim sherds, two with an incurved rim. Three sherds have a tapered lip, one has an interior beveled lip, and one has a rounded lip. These sherds range from 3.5mm to 9mm in thickness and have an average interior diameter of 17.4cm. While the colors are uniform interiorly and exteriorly for each sherd, they vary based on the atmosphere in which they were fired. There were three sherds fired in a reduced atmosphere, all of which are black on both sides. The one sherd fired in a partially oxidized atmosphere is reddish grey in color, while the sherd fired in an oxidized atmosphere is red. All five of these sherds were modeled and decorated with incising; one also indicates the cylinder punctate technique was used. The design pattern on each sherd was created using geometric lines, one presents cross hatched lines and another is two parallel incised lines which circles the bowl.

3.1.4.3. Formative Incised

The Early Horizon Period Incised type is represented by three body sherds, two were fired in a reduced atmosphere and one in a partially oxidized atmosphere. These modeled sherds are reddish brown and black in color and range in thickness from 3mm to 9mm. The decorative technique of incising was used to create the line pattern on one of the sherds and the geometric pattern on the other; the third sherd did not indicate the type of design.
3.1.4.4. Incised Punctate

The two sherds attributed to the Incised Punctate type are a body sherd and a rim sherd of a carinated bowl. The body sherd has a thickness averaging 4.5mm. It is orange on both sides, modeled, and appears to have been fired in an oxidized atmosphere. The rim sherd has a tapered lip. This sherd has an interior diameter of 10cm and an average thickness of 4.75mm. It was modeled and fired in a partially oxidized atmosphere. Both the interior and exterior are reddish brown in color. There are geometric decorations created using the incising punctate technique.

3.1.4.5. Miscellaneous Incised

There is one body sherd labelled “Miscellaneous Incised.” This oxidized sherd is modeled, has an average thickness of 6.75mm, and is red on the interior and reddish brown on the exterior. The decorative geometric pattern was created using incising and tubular punctate.

3.1.4.6. Post-Fire Scratched

The Post-Fire Scratched type is represented during the Early Horizon Period by eleven rim sherds and fifteen body sherds. All of the sherds in this sample were modeled and decorated using a technique known as post-fire scratching in order to create geometric designs on twenty-one of the sherds and various line designs on the others (one cross hatched, three plain lines, and one zigzagging line). There are seven sherds with everted rims, seven with a rounded lip, and three with a tapered lip. Of the eleven rim sherds, six are completely oxidized, three are partially oxidized, and one is completely reduced. The one rim sherd which is completely reduced has a dark grey interior and a black exterior. Save for one uniformly dark brown rim sherd, the oxidized rim sherds all share a red hue in coloring with two uniformly red sherds, two uniformly reddish orange sherds, and one sherd with a red interior and a brownish red exterior. These sherds have an
interior diameter ranging from 15cm to 23cm with an average of 18.3cm and range in thickness from 2mm to 7.5mm with the averages being between 4.6mm and 5.8mm.

The body sherds have a thickness ranging from 2mm to 8mm with an average of 5.7mm. Similar to the rim sherds in this type, the twelve oxidized body sherds all have a reddish hue to them with reddish brown being the most common color seen on the interior and the exterior. The two partially oxidized body sherds are browner in their coloring with one being uniformly brown and the other having a dark brown interior and a brownish red exterior. There is only one partially reduced sherd which is uniformly dark grey. Based on this sample, the Post-Fire Scratched type is characterized by modeled sherds which are completely oxidized, reddish brown in color, and have geometric designs created by post-fire scratching.

3.1.4.7. Painted Incised

The Painted Incised type is seen in two sherds during the Early Horizon Period, one body and one rim. The body sherd averages 3.75mm in thickness, has a reddish grey interior and a dark grey exterior, and was fired in a partially oxidized atmosphere. The rim sherd is a part of a bowl with a rounded lip and an interior diameter of 20cm. This sherd is black both interiorly and exteriorly, has a thickness averaging 2.75mm, and was fired in a reduced atmosphere. Both sherds were modeled and decorated with red paint inside incisions.

3.1.5. Painted

3.1.5.1. White-on-Red

White-on-Red is characterized by decorations of white paint over red natural paste. Elsewhere on the north coast, it is traditionally associated with the Salinar phenomenon (Ikehara and Chicoine 2011). There are five rim sherds of bowls, three with everted rims and one with an incurved rim,
and one body sherd. The average interior diameter is 18.25cm and average neck diameter is 17cm. Thickness ranges from 4-9mm with averages of 5.1mm (minimum) and 5.9mm (maximum). Coloring is relatively uniform as reddish orange with slight variations of light/dark brown and reddish brown. These sherds were fired in an oxidized atmosphere. There is one rim sherd decorated with white paint and lines on the interior.

3.1.6. Punctated

3.1.6.1. Angular Zoned Punctate

The Angular Zoned Punctate type is represented by one oxidized rim sherd. This carinated bowl has a straight lip, an interior diameter of 14cm and is 5-5.5mm thick. It is chalky white both on the exterior and interior. This piece was modeled and incisions and punctated punctate decorations in a geometric design.

3.1.6.2. Triangular Zoned Punctate

The Triangular Zoned Punctate type is seen in three sherds in this sample. The two body sherds average 5.4mm in thickness and are uniform in coloring. The sherd fired in a partially oxidized atmosphere is reddish brown both interiorly and exteriorly, while the sherd fired in a reduced atmosphere is uniformly colored black on both sides. The one rim sherd, averaging 5.25mm in thickness, is part of a carinated bowl with a straight lip. This sherd is light grey on the interior and light brown on the exterior and was fired in a partially oxidized atmosphere. All three of these sherds are modeled and decorated with geometric designs created via incising and punctated punctate.
3.1.6.3. Zoned Punctate

The Zoned Punctate type sherds found in the Early Horizon Period have decorations that are geometric incisions (imitating punctate and quadrangular punctate). These sherds are modeled, have a thickness averaging between 3.75mm and 4.25mm, and are light/dark grey, light brown, and black in coloring.

3.1.7. Stamped

3.1.7.1. Stamped Circle-and-Dot

The Stamped Circle-and-Dot type is present on modeled carinated bowls with exterior decorative design of circles with a dot in the center of each. This sample includes seven body, two neck, and thirty-four rim sherds. The average thickness for these sherds is 4.95mm while the average interior diameter is 20.6cm. There is a wide variety of colors seen on these sherds with the most common being light brown (ten exterior and nine interior). The colors tend to be uniform from the interior to the exterior, if not uniform they are often still within the same color family, just a different shade (i.e., C85.31 which has a reddish orange exterior and an orange interior).

The seven body sherds range in thickness from 3mm to 9.5mm. While the coloring of the partially oxidized sherds are various shades of brown, the oxidized sherds tend to be orange, reddish orange, or light brown. There is also one completely reduced sherd which has a light grey interior and black exterior. Three have a decorative circle-and-dot design on the exterior which was created using the tubular punctate and punctated punctate techniques. There are two geometrically designed created with the stamped circle-and-dot decoration technique. The neck sherds are approximately 2.5mm to 4mm in thickness. The completely oxidized sherd is red on both the interior and the exterior, while the partially oxidized sherd has a black interior and a
reddish orange exterior. Both have a decorative circle-and-dot design on the exterior which was created using the tubular punctate technique.

Twenty-eight of the rim sherds are parts of carinated bowls. Only one of these have a cambered rim, the rest are carinated. These sherds have an average thickness of 5mm, while interior diameter of these sherds averages 21.3cm. As with the other sherds described in this sample, the coloring of these vary in their shades of brown and orange but have a higher frequency of brown coloring. Four of the five completely or partially reduced sherds have a straight lip, the fifth is rounded. The two partially reduced sherds are grey both interiorly and exteriorly, while the oxidized sherds are dark brown or black in color. The sandwiched sherd has a rounded lip, black interior, and brownish grey exterior. With the exception of one sherd which has incising as well as the circle-and-dot design, all of these sherds have an exterior decorative circle-and-dot design.

Of the thirty-four rim sherds, there are six shaped as an *olla sin cuello*. Two of these have a rounded lip, two have a straight lip, one has an exterior beveled lip, and the last has an exterior beveled and interior thickened lip. The interior diameter for these neckless jars average 17.4cm while the average thickness is 4.5mm. Each are partially oxidized and relatively uniform in color from the interior to exterior. There are two light brown sherds, one reddish orange sherd, two with a grey interior with one having a red exterior and the other having a reddish brown exterior, and the last sherd is reddish grey interiorly and reddish brown exteriorly. As with the other sherds in this sample, these are decorated using the tubular punctate and punctated punctate techniques to create a circle-and-dot design on the exterior.
3.2. Early Intermediate Period

The types present in the Early Intermediate Period are shown in Table 3.

### Table 3. EIP types and counts.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Types</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incised</td>
<td>Incised Red (Gallinazo)</td>
<td>1</td>
</tr>
<tr>
<td>Modeled</td>
<td>Miscellaneous Modeled</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Orange Modeled</td>
<td>4</td>
</tr>
<tr>
<td>Molded</td>
<td>Molded Red</td>
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<tr>
<td>Painted</td>
<td>Grey Painted (Recuay)</td>
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</tr>
<tr>
<td></td>
<td>Negative Painted</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Orange Painted (Recuay)</td>
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</tr>
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<td></td>
<td>Recuay Painted</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>White Painted (Recuay)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>White-and-Red (Moche)</td>
<td>1</td>
</tr>
</tbody>
</table>

3.2.1. Incised

3.2.1.1. Incised Red (Gallinazo)

There is one body sherd representing the Incised Red (Gallinazo) type during the Early Intermediate Period. This partially oxidized, dark brown sherd is modeled with a thickness averaging 7mm. It is decorated in geometric designs created by triangular punctuation.

3.2.2. Modeled

3.2.2.1. Miscellaneous Modeled

This *olla con cuello* body sherd has an average thickness of 8mm and is light brown in color. It is modeled with appliqué decorations.

3.2.2.2. Orange Modeled

The Orange Modeled type in the Early Horizon Period to Early Intermediate Period is represented by a fragmented sculpted vessel with a thickness averaging 5mm. The reddish orange coloring is
uniform both interiorly and exteriorly. This oxidized sherd is decorated with anthropomorphic modeling and incising. There is a second sherd attributed to this type which ranges in thickness from 6mm to 8.5mm and was fired in an oxidized atmosphere.

3.2.3. Molded

3.2.3.1. Molded Red

This oxidized neck sherd was molded and has a diameter of 5.5cm and thickness of 6-8mm. It was decorated with anthropomorphic designs and has an orange interior and reddish orange exterior.

3.2.4. Painted

3.2.4.1. Grey Painted

The Grey Painted has two modeled rim sherds in this sample. It is traditionally associated with the Recuay phenomenon in the Callejón de Huaylas. These incurved rimmed bowls have an interior diameter averaging 15.5cm and a thickness averaging 2.5mm to 3.25mm. The interiors and exteriors of these bowls are similar in their whitish grey/greyish beige color. These oxidized bowls are decorated with dark red lines and anthropomorphic figures painted over the whitish grey natural paste.

3.2.4.2. Negative Painted

This type has a thickness ranging on average from 4.25mm to 5.75mm. One sherd is molded, the other is modeled. Its coloring is fairly consistently orange with the exception of one light grey interior. It is characterized by its negative painted decorations of reddish orange designs on black resist paint. The oxidization might have played a role in the natural orange paste present in these sherds.
3.2.4.3. *Orange Painted*

The Orange Painted type is seen in two sherds at CSI. Similarly to the Grey Painted type described above, this type is traditionally associated with the Recuay phenomenon in the Callejón de Huaylas. One is an oxidized body sherd, the other an incurved rim sherd with a rounded lip and an interior diameter of 17cm. The thickness is approximately 2.5mm to 5mm. These sherds are orange on both the interior and exterior and present painted decorations of white and black over the bright orange paste.

3.2.4.4. *Recuay Painted*

There are nine rim sherds and five body sherds attributed to the Recuay Painted type. These modeled sherds average 2.8mm in thickness and cover a broad spectrum of beige coloring. The incurved, straight lipped bowls have an interior diameter averaging 17.4cm. Three of the body sherds have a red slip on the interior. The decorations are characterized by orange, reddish orange, and dark red paint designed in parallel lines and geometric designs on natural white paste.

3.2.4.5. *White Painted*

This type, which is often associated with the Recuay phenomenon, is represented by one rim sherd and three body sherds. The rim sherd indicates the vessel was a chalky white colored bowl with an incurved rim, a straight lip, and an interior diameter of 18 cm. This sherd is modeled with a thickness ranging from 2-2.5 mm and shows evidence of being fired in a partially oxidized atmosphere. It is decorated with reddish-orange paint over a natural white paste. The body sherds on average ranged in thickness from 2.3-2.8mm. While all three have a chalky white interior coloring, the exterior coloring differs slightly with one being chalky white and two being beige. These sherds are decorated with orange or red painted lines on a natural white background.
3.2.4.6. White-and-Red

There is one sherd attributed to the White-and-Red type, which is associated with the Moche Culture, due to the positive geometrically designed painting seen on the exterior. This body sherd has a thickness ranging from 3-5mm, is dark brown both interiorly and exteriorly, and appears to be oxidized. Unlike the majority of sherds described to this point, this sherd was molded.

3.3. Late Intermediate Period – Casma

The types present in the Late Intermediate Period and associated with Casma are shown in Table 4.

Table 4. LIP-Casma types and counts

<table>
<thead>
<tr>
<th>Technique</th>
<th>Types</th>
<th>Count</th>
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</thead>
<tbody>
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<td>LIP - Casma (Types: 4) (Count: 194)</td>
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<td></td>
</tr>
<tr>
<td>Appliqué</td>
<td>Serpentine Appliqué</td>
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</tr>
<tr>
<td>Incised</td>
<td>Incised Black (Casma)</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Incised Red (Casma)</td>
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</tr>
<tr>
<td>Painted</td>
<td>Red-White-Black</td>
<td>15</td>
</tr>
</tbody>
</table>

3.3.1. Appliqué

3.3.1.1. Serpentine Appliqué

The Serpentine Appliqué type is represented by seven sherds within this period, six body and one neck. The neck jar sherd indicates the neck was 3cm in diameter. It has a thickness of 5-8mm. The coloring is fairly consistent between light grey and light brown, however, the firing atmosphere varies greatly within this sample as all four atmospheres are represented. This type at CSI is characterized by modeled sherds with decorations of zoomorphic appliqués and punctated or tubular punctate designs.
3.3.2. Incised

3.3.2.1. Incised Black

The Incised Black type is most often associated with the Casma culture and is characterized by vessels with exterior decorations created using a combination of the following techniques: appliqué, incising, modeled, punctated punctate, tubular punctate, triangular punctate, and quadrangular punctate. The decorations are geometric with two occurrences of zoomorphic designs, and one circle-and-dot design. These sherds are primarily modeled and range in thickness from 2mm to 15mm with the average being 5.9mm. While all four firing atmospheres are represented within this type, the majority (69%) of the sherds are completely reduced.

The twenty-three body sherds with unspecified vessel shapes range in thickness from 3mm to 11mm with an average of 5.6mm. While eleven of the fourteen completely reduced sherds have black exteriors, the exterior colors for the partially reduced and partially oxidized sherds are less uniform. The interior color for all varies greatly between shades of black and brown, however, black is the most common at 61 percent.

There are two neck jar (jug) sherds averaging 4.5mm thick, one of which is a shoulder lug handle, the other has a neck diameter measuring 9cm. The shoulder lug handle is molded, completely reduced, and has a black interior and grey exterior. The other sherd is modeled and partially oxidized with a grey interior and a black exterior. While both have geometric designs created with punctated punctate, the shoulder lug also presents the incising technique as the other sherd has appliqués and tubular punctations.

The *tinaja con cuello* sherd is completely reduced with appliqué decorations on the exterior. It is between 7mm and 15mm thick and is grey on the interior and black on the exterior. There is one miniature vessel sherd which is modeled, partially reduced, and has a brown interior
and a dark grey exterior. It has a thickness ranging from 2mm to 4mm and has geometrically
designs on the exterior. These designs were created using an incising and punctated punctate
technique.

Of the forty-two sherds in this sample, there are ten rim sherds representing three vessel
shapes: neck jar (jug), bowl, and olla con cuello. Each of these are decorated with a combination
of appliqué, incising, tubular punctate, and punctated punctate techniques. In addition to the two
neck jar body sherds, there are seven neck jar rim sherds, three have cambered rims, two of which
have a rounded lip and one with a tapered lip. Although the latter has the smallest diameter of all
of the neck jar sherds, with an interior diameter of 8cm and a neck diameter of 8cm, it is similar
in all other aspects save for the decorative design. This sherd depicts a circle-and-dot design while
the other neck jar sherds have geometric designs. The average interior and neck diameters of the
two cambered sherds are 10.5cm and 9.5cm and are approximately 6.5mm thick. The first of the
cambered rim sherds has an incised appliqué decoration around the lip of the vessel. The second
has a neck strap handle. All three of the cambered rim neck jar sherds are completely reduced,
modeled, and black on both the exterior and interior.

While there are two neck jar rim sherd with an everted rim and both have an incised
appliqué decoration around the lip, one has a straight lip while the other is rounded. The latter of
these two has an interior diameter of 9cm and a neck diameter of 8.5cm. The coloring is uniformly
dark grey, likely due to the reduced firing atmosphere used. The sherd with the straight lip has an
interior diameter of 14cm and an average thickness of 8mm. It is partially oxidized and uniformly
dark brown as a result. They both share the similar decorative characteristics as the rest of the
sherds in this sample.
There is one neck jar with an incurved rim. This sherd is dark grey on both the interior and exterior, modeled, and completely reduced. It has an interior diameter of 13cm and a neck diameter of 10cm. The thickness ranges from 6mm to 9mm. There is one neck jar sherd with a vertical flared rim with an exterior beveled incised appliqué decoration. This sherd has a shoulder strap handle, has an interior diameter of 13cm, a neck diameter of 11cm, and ranges from 4mm to 7mm in thickness. Its interior is black in color while its exterior is dark grey due to the completely reduced firing atmosphere. This is the only neck sherd to be molded rather than modeled.

There are two bowl rim sherds. The first has an incurved rim with a rounded lip with an incised appliqué decoration. It has an interior diameter of 15cm and ranges in thickness from 5mm to 8mm. The second bowl rim sherd has a tapered lip, an interior diameter of 25cm, and an average thickness of 7.25mm. Both are completely reduced and have an exterior coloring of black, however, the incurved rim sherd has a dark grey interior and is molded while the tapered lip sherd has a black interior and is modeled. They also have geometric designs on the exterior from incising and appliqué. There is one rim sherd of an olla con cuello which has a cambered rim with a rounded lip and exterior decorations of appliqués and incising. Its interior diameter is 19cm and neck diameter is 16cm.

There are three neck sherds attributed to this type, two of which are from a neck jar with an average diameter of 10cm, while the third has an interior diameter of 9cm. These sherds have an average thickness of 6.9mm and are all modeled. There are two completely reduced sherds which have black exteriors and a black and light grey interior. The third sherd’s firing atmosphere resulted in a sandwich appearance. This sherd has a brownish grey exterior and a dark grey interior. All three have geometric designs on the exterior created using appliqué, incising, and various punctate techniques.
The two handle sherds in this type are nearly identical in every variable. They are both modeled and completely reduced with exterior decorations created by incision. They are black on both the interior and exterior and have an average thickness of 4mm. Although both are shoulder strap handles, only one is serrated.

3.3.2.2. Incised Red

The Incised Red type is characterized by partially oxidized, modeled sherds with an average thickness of 5.7mm. This type is traditionally associated with the Casma phenomenon. The exterior of these sherds have a geometric decorative design on the exterior created by a combination of the following techniques: raised circle-and-dot, appliqué, incising, impressed, modeling, and various types of punctate (cylinder, punctated, tubular, and quadrangular).

There are eighty body sherds in this sample of unspecified vessel shapes, seventy of which are modeled while the other ten are molded. The average thickness for the modeled sherds is 5.6mm with the thinnest being 2mm and the thickest being 10mm. The majority (63%) of these sherds were fired in a partially oxidized atmosphere, followed by 30% oxidized, and 7% with sandwich firing results. The ten molded sherds have a nearly identical percentage breakdown with 60% of the sherds being completely oxidized, 30% partially oxidized, and 10% sandwiched. The average thickness of the molded sherds is also 5.6mm, with a range from 3mm to 8mm. All eighty of these body sherds have exterior decorations present, 84% have a geometric design, 3% have serpentine-shaped punctations, 3% have zoomorphic designs, 2% have an atypical series of punctated punctations, and 8% are unspecified. The three zoomorphic designs present depict an octopus, a reptile of some sort, and possibly a head of a monkey.

Within the body sherds, there are three neck jar sherds with an average diameter of 11.7cm. While all are modeled and have exterior decorations created using appliqués and various punctate
techniques, the completely oxidized sherd also is incised. This sherd is light brown on both sides and has the largest neck diameter at 15cm, but the smallest thickness averaging at 4.5mm. The other two sherds are both partially oxidized, have a neck diameter of 10cm, and depict a geometric design on the exterior. These sherds have an average thickness of 6.5mm and vary in color with an orange/red interior and a light grey/reddish brown exterior.

This type is also represented by twenty rim sherds, sixteen of which are from neck jars. Of these sixteen sherds, there are four rim shapes present: everted, incurved, flared, and cambered. These sherds represent three firing atmospheres with seven oxidized sherds, seven partially oxidized sherds, and two sandwiched sherds. Seventy-five percent of these sherds were modeled, while only five were molded. The brown/orange coloring is relatively uniform from the interior to the exterior with sixty-three percent having a reddish tint. Despite the differing rim shapes and firing atmospheres, these sherds are fairly similar to one another and follow the same decorative techniques described above. These sherds have an average interior diameter of 11.5cm, an average neck diameter of 9.2cm, and an average thickness of 6mm. While the maximum thickness varies, the minimum thickness is consistently 5mm. The majority (80%) of these sherds have a rounded lip shape, five of which have incised appliqué decorations. There are two sherds with a tapered lip and one with an exterior thickened lip with incised appliqué decorations. One of the flared rimmed sherd is a shoulder lug with incised decorations. This sherd has a smaller interior diameter than most of the others, yet is the thickest with an average of 8mm.

There are two olla con cuello rim sherds in this sample, both of which are modeled with exteriorly located decorative appliqué and incisions. The first has a cambered rim and a rounded lip with incised appliqué decoration on the exterior. This sherd has an interior diameter of 18cm, a neck diameter of 16cm, and an average thickness of 4.25mm. It is partially oxidized and has a
light grey interior and black exterior. The second *olla con cuello* sherd has an incurved rim, also with a rounded lip with incised appliqué decoration. It is approximately 7.25mm thick, reddish grey on both sides, and has an interior diameter of 24cm.

The one rim sherd with an unspecified vessel shape has a rounded lip with an incised appliqué decoration on the exterior. This sherd has an average thickness of 4.75mm and is modeled, partially oxidized, and reddish brown both interiorly and exteriorly.

There is one *olla sin cuello* rim sherd within this type. It has an irregular lip with a straight edge and thickened exterior. It has an interior diameter of 14cm and is decorated with appliqués.

Of the 18 neck sherds attributed to this type, seventeen are from neck jars and one is from an *olla con cuello*. The 13 neck jar sherds with unspecified rim or handle shapes have an average neck diameter of 9cm and average thickness of 6.5cm. There is one interior diameter of 13cm listed. While 83% of these sherds have exteriorly located geometric designs on the exterior, created by appliqué and various punctate techniques, there is one that appears to be an imitation of the Early Horizon Period Triangular Zoned Punctate type. All of these sherds are modeled except for one which is also the only one with a raised circle-and-dot design on the exterior. It is also the only one with a reddish orange interior and one of two sherds with an orange exterior. The most common colors for both the interior and exterior are reddish brown and dark grey. Although most of the sherds vary between brown and grey in color, often with a reddish hue, there is one atypical occurrence of a pinkish beige interior.

Only three of the eighteen specifies a rim shape: one cambered, one incurved, and one everted rim with a tapered lip. The latter has an interior diameter of 11.5cm, a neck diameter of 9cm, and averages 6mm in thickness. It has a dark grey interior and a reddish orange exterior. The cambered rimmed sherd has an interior diameter of 9cm and an average thickness of 6mm. It is
dark brown on the interior and reddish brown on the exterior. The incurved rimmed sherd is reddish orange interiorly, brown reddish brown exteriorly, has a neck diameter of 8cm, and an average thickness of 6.5mm. This sherd is partially oxidized while the other two were sandwiched.

The *olla con cuello* sherd has a neck diameter of 15cm, averages 5.25mm thick, and is dark grey on the interior and light brown on the exterior. There is also one neck strap handle sherd which is completely oxidized, reddish orange on both sides, approximately 6mm thick, and has a neck diameter of 6cm.

There are nine handle sherds in this type, six shoulder straps, one with appliquéd decorations, and three straps. All of these sherds are modeled and have geometric designs on the exterior with the exception of one zoomorphic design of a bird on the shoulder strap sherd with the appliquéd decorations. There are six partially oxidized sherds, two completely oxidized sherds, and one sandwiched sherd. These sherds have an average thickness of 5.6mm and are relatively uniform in coloring from the interior to the exterior and all are either reddish orange, reddish brown, or light brown.

3.3.3. Painted

3.3.3.1. Red-White-Black

The ceramic sample for MHP is represented by 15 sherds (9 body, 4 rim, 1 base, and 1 handle) attributed to the Red-White-Black type. This type is traditionally associated with the Casma phenomenon (Vogel 2016). These sherds all share a similar range of thickness (avg. 5.2-7.25mm) and are characterized by white and black painted geometric designs over natural red paste. There is evidence of a white slip on the handle sherd and several body sherds. Although 78% of the body sherds were molded, each of the rim, base, and handle sherds were modeled. The neck diameter
measures 6cm while the interior diameter ranges from 8cm to 22cm, with an average of 16cm. Coloring of the interior and exterior varies but remains within the Munsell hue of 2.5YR.

3.4. Late Intermediate Period – Chimú

The types present in the Late Intermediate Period and associated with Chimú are shown in Table 5.

Table 5. *LIP-Chimú types and counts.*

<table>
<thead>
<tr>
<th>Technique</th>
<th>Types</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impressed</td>
<td>Press-Molded Black</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Press-Molded Red</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Plain Black (Late)</td>
<td>2</td>
</tr>
</tbody>
</table>

3.4.1. Impressed

3.4.1.1. Press-Molded Black

The Press-Molded Black type is characterized by molded, completely reduced sherds with a black exterior and a light grey or black interior. This type is also notable for its molded decorative technique and geometric (34%) or *piel de ganzo* (35%) designs. Within this sample, there are 81 body, seven rim, eight fragment, four neck, two handle, and one base sherds.

Of the 81 body sherds, seventy-nine of them are not associated with a specific vessel shape. These sherds range in thickness from 1.5mm to 15mm and average 4.8mm. While coloring between the interior and exterior is relatively consistent and tend to be shades of black or brown, these body sherds show more variation in color combinations than the others in this type. The most common is a light grey interior with a black exterior (32.5%), followed by both a black interior and exterior (29.1%), and a light grey interior and exterior (10.1%). The rest of the color combinations are only seen on less than four sherds in the sample. There are only two partially reduced and one partially oxidized sherd in this sample, the remaining seventy-six are completely
reduced. All of the body sherds use a molded decorative technique to create the piel de ganzo (32.5%), geometric (10.1%), phytomorphic (63.3%), and zoomorphic (63.3%) designs. The most notable decorative designs of the remaining sherds is that of a lizard over a piel de ganzo background, a supernatural human-feline, and thais chocolata.

There are seven total rim sherds in this type with four different vessel shapes: three are neck jars, one is a face neck jar, two are bowls, and one is an olla con cuello. All seven are molded, completely reduced, and primarily black on the interior and exterior. They differ the most in the shape of the rim and lip. The three neck jar sherds each differ in rim and lip shape. The one with a vertical rim and a rounded lip has an interior diameter of 6cm, a neck diameter of 5cm, and average thickness of 5.5mm. It is black on both sides and has a molded geometric design. The next has a cambered rim, an interior diameter of 8cm, a neck diameter of 6cm, and an average thickness of 5mm. Unlike the others in this type, this sherd is light grey on both the interior and exterior despite being completely reduced. It also exhibits a piel de ganzo molded design. The third neck jar sherd has an everted rim with a tapered lip and is noted as a neck strap handle. It is the largest of the three with an interior diameter of 10cm, a neck diameter of 8.5cm, and a thickness averaging 5.75mm. Like the previous sherd described, it also has a light grey interior but with a black exterior. The face neck jar has a vertical rim with a rounded lip. It has an interior diameter of 9cm, a neck diameter of 8cm, and ranges from 6mm to 8mm in thickness.

This sherd has an exterior anthropomorphic design. The two bowl sherds have a tapered lip, an interior diameter averaging 17.5cm, and a thickness ranging 5mm to 9mm, averaging 6.6mm. They both have a molded, geometric decorative pattern on the exterior and are black on both sides. One has a rim of an everted incurved shape. The olla con cuello sherd has an everted rim with a tapered lip and includes a strap handle on the neck. The interior diameter is 16cm while
the neck diameter is 13cm. This uniformly black sherd has a geometric decorative design and an average thickness of 5mm.

The seven fragment sherds are all from sculpted vessels ranging in thickness from 2.5mm to 9mm with an average thickness of 5.5mm. These sherds are completely reduced with a black or light grey interior and predominantly black exteriors; there is one sherd with a dark brown exterior. These are decorated exteriorly using a molded technique to create anthropomorphic, zoomorphic, and piel de ganzo designs. There was one a fragment sherd of a sculpted vessel which was modeled and fired in a reduced atmosphere. In coloring, it is light grey on the interior and black on the exterior. It is also decorated with modeling and a reptile head appliqué, possibly a toad or iguana.

There are four neck sherds in this type, averaging 6.4mm in thickness. One is from a bottle, perhaps a stirrup-spout, the next is a neck jar, and the last is a face neck jar which depicts an anthropomorphic design of a wrinkled face; the third sherd has an indeterminate vessel shape. The neck jar has an interior diameter of 15cm and a neck diameter of 12 cm while the other two have a neck diameter of 5cm and 6cm. Although three are completely reduced and one is sandwiched, all are light grey on the interior and black on the exterior. All use a molded decoration technique; however, the bottle neck sherd also exhibits the use of appliqué and incising to create its anthropomorphic design.

One of the two handles attributed to this type is a neck solid cylinder handle on a neck jar with a vertical rim. It has an interior diameter of 8cm, a neck diameter of 6cm, and is approximately 7.75mm thick. This sherd is completely reduced with a black interior and exterior yet appears to be modeled rather than molded. It is decorated using a press molding technique to create a phytomorphic design of a maize cob. The second handle is a shoulder strap which averages 4.25mm in thickness, is completely reduced (black on both sides), and has a molded decoration on
the exterior. There is one pedestal base in this type which averages 7mm thick, is black on both sides, and has geometric designs on the exterior.

3.4.1.1. Press-Molded Red

The Press-Molded Red type is characterized by molded, oxidized sherds. In this sample, there are twenty-three body sherds, four rim sherds, two fragments of a sculpted vessel, and one neck sherd. Only two of the thirty sherds are modeled rather molded, both of which are partially oxidized body sherds. The body sherds range in thickness from 4mm to 10mm with an average of 5.8mm. While the coloring of the eight partially oxidized sherds tend to have a browner hue than the completely oxidized sherds, the coloring is relatively uniform despite the atmosphere in which they were fired. The partially oxidized sherds tend to have reddish orange interior and a brown (light or dark) or black exterior. The oxidized sherds tend to be more reddish orange or reddish brown in coloring both for the interior and the exterior, with the exception of four instances of an orange interior. All of the sherds have a modeled decoration on the exterior, sixteen are geometric in design and five depict piel de ganzo.

Of the four rim sherds, all are bowls, one with an interior beveled lip and three with a tapered lip, one of which also has an everted-incurved rim. The interior diameter of these sherds average 19.5cm and maintain an average thickness of 6.9mm. The coloring of these sherds are uniform. Two have a reddish brown interior with a reddish orange exterior, while another has a light brown interior and exterior. The fourth sherd, with the interior beveled lip, is orange on both sides. Three of the sherds were completely oxidized, while one is only partially oxidized. All have molded decorations, two with a geometric design and one with a zoomorphic design, perhaps depicting a catfish.
The two fragments of sculpted vessels are molded, average 5.25mm thick, and have an exterior decorative geometric design, possibly Greco or concentric angular spiral. The sherd, which is partially oxidized, has a light brown interior and an orange exterior, while the completely oxidized sherd is reddish orange on both sides. There is one neck sherd from a neck jar (jug) which has a diameter of 9cm and a thickness averaging 8.5mm. Like many others of this type, this sherd is molded, completely oxidized, and reddish orange in color (both interior and exterior). There is a geometric design molded into the exterior, possibly depicting mountains.

3.4.2. Undetermined

3.4.2.1. Plain Black (Late)

This type is represented by one bowl sherd with an everted rim, a tapered lip, and an interior diameter of 27cm, and one neck sherd also with an everted rim and a neck diameter of 7cm. The coloring is relatively uniform from the interior to exterior for both sherds with the rim black and neck dark grey. The dark coloring is likely a result of the sherds being fired in a reduced atmosphere. The thickness varies between the two sherds. The molded rim is thicker, averaging 8.5mm, while the modeled neck sherd averages 4.5mm thick. The handle of the neck jar is a decorated (incised) neck lug. The rim has a white slip on the inside of the bowl.
CHAPTER 4. DISCUSSION & CONCLUSION

In this chapter, I discuss the most significant continuities and changes found in the data results. I also discuss my interpretations of these continuities, as well as the possible implications they have on our understanding of ceramics at CSI. I then conclude with future research to be done.

4.1. Interpretations

This section explores significant continuities and changes. It is divided into three sections. The first details major changes seen within formal variables. The second highlights technological and compositional changes. The third discusses the stylistic continuities seen from the Early Horizon Period to Late Intermediate Period.

4.1.1. Formal Variables

The most noticeable change which occurred in vessel form is the shape of the rim and lip. During the Early Horizon Period, carinated rims are most common and are almost unique to this period. While the Early Intermediate Period also has a few instances of carinated rims, it is clear the overall practice shifted to everted rims. Everted rims remained constant throughout nearly the entire occupation at CSI; however, the shape of the lip of these rims varies from one time period to the next with the incidence of creating everted-incurved rims becoming more common in the later time periods (Figure 10).

The shift from everted and flared rims to incurved rims suggest a change in the manner of constructing the rim. During the EIP, the incurved rims are predominantly straight lipped and are most commonly associated with the Recuay style sherds. While incurved rims are seen throughout...
the LIP-Casma phase, they now have a rounded lip rather than a straight lip. Returning to the concept of a community of practice, we could infer there are two communities of practice which construct incurved rims; the Recuay potters and the Casma potters.

![Figure 10. Rim shapes by time period.](image)

Interestingly, the Middle Horizon to Late Intermediate transition period is the only period in which sherds have incised appliqué decorations on the exterior of the lip (7%). This feature is only present in the Incised Red and Incised Black types, both of which are associated with the Casma culture. This suggests an increased influence of the Casma potters occurred at Cerro San Isidro later in the occupational sequence, perhaps indicating these items were traded or constructed by Casma potters, rather than local potters due to the divergence from CSI traditions.
In regards to other formal elements, Pattern Burnished is the most consistent type in regards to rim/lip shape, thickness, and design. This information coupled with the observation that the interior diameter measurements of the Pattern Burnished type align with the average interior diameter of sherds in the Early Intermediate Period, indicate this type marks the Late Early Horizon Period years. Although the Stamped circle-and-dot type also have similar interior diameter measurements, the design and overall manufacturing of the sherds suggest it to be earlier than Pattern Burnished.

There are several types whose variables allow them to teeter between two periods. For instance, the sherd attributed to the Angular Zoned Punctate type is a fragment of a carinated bowl, which is most common in the Early Horizon Period, yet it has a chalky, white coloring, which does not appear until the Early Intermediate Period with the Recuay White Painted type. This could suggest an earlier influence of Recuay ceramic traditions in the Nepeña Valley than previously thought given that the chalky white coloring is most prevalent in ceramics associated with the Recuay pottery. It could also provide an insight to the continuation of decoration traditions with the zoned punctate design remaining present despite the influence of Recuay traditions.

4.1.2. Technological and Compositional Variables

Of all of the variables observed, manufacturing remained relatively homogenous across the Early Horizon types with a modeling technique used for 99.4% of the total sherds (Figure 11). Although there was a slight increase of molded manufacturing in the Early Intermediate Period (from 0.6% to 10%), it was not until the Middle Horizon Period that this technique became more common (27.9%). This trend continues into the Late Intermediate Period with 97% of the sample sherds exhibiting molded manufacturing techniques rather than the modeled techniques used in the Early
Horizon Period. Once again, with the overwhelming majority of the LIP sherds being attributed to the Incised Black type, this suggests molded manufacturing traditions were more common in the Casma ceramic tradition and are present at CSI due to an increased influence of Casma while the local pottery traditions preferred a modeled manufacturing technique. The shift to using a molded manufacturing technique aligns with the arrival of the Chimú as several of the large Peruvian empires (i.e., Moche, Chimú, Inka) used ceramic molds to quickly produce and distribute their style of pottery (Donnan 1997).

![Manufacturing Method](image)

**Figure 11.** Manufacturing methods represented within each time period.

Continuing with the manufacturing elements of ceramics, the conditions in which the sherds were fired varied the most during the Early Horizon Period then became increasingly homogenous within particular types during the Middle Horizon and Late Intermediate Periods.
The sample from the Early Horizon Period represented all four firing atmospheres; however, the Early Intermediate Period is represented by sherds primarily fired in an oxidation atmosphere with 97% of sherds being either completely or partially oxidized, 3% sandwiched, and no presence of any sherds fired in a reduced atmosphere. Although present in the Early Horizon Period, there are no sherds in this sample from the Early Intermediate or Middle Horizon Periods which were fired in a reduction atmosphere (Figure 12).

Reduced firing conditions reemerge in the transitional period between the Middle Horizon and Late Intermediate Periods with the Incised Black type (88% for type and 18% for period), however, it is predominantly seen in the Late Intermediate Period with the Press-Molded Black type (97%). This suggests potters developed a way to better control the firing atmosphere in the later periods of occupation in order to maintain a reduced atmosphere to achieve the reduced pottery. With the reduced atmosphere reemerging with Casma associated types, perhaps the Casma style potters introduced a new firing method in the region which allowed for more uniformly fired pottery. As there are several Casma types present, each with uniform firing results within the specific types, we can infer that the Casma potters were well versed in controlling and manipulating firing atmospheres in order to achieve a desired result.

In general, coloring is associated with paste and firing temperatures. Coloring may also be influenced by the type of clay used, however, more data is needed to confirm this. Although there is no paste data listed for the Early Horizon Period or the Late Intermediate Periods, there is a strong representation of red and orange colored paste seen from the late Early Horizon Period throughout the Middle Horizon Period. This suggests the local clay source is likely reddish brown which becomes orange when fired as a higher temperature in an oxidized atmosphere. For instance, sherds of the Post-Fire Scratched type of the Early Horizon Period are predominantly completely
oxidized. However, they are darker in color than completely oxidized sherds from the later time periods – not by much, they are still orange, just darker with more reddish tones than just orange as is seen later. This indicates that although these sherds are completely oxidized, the oxidization occurred at a lower firing temperature during the Early Horizon Period (Figure 12).

![Diagram of Firing by Periods]

Figure 12. Firing atmospheres represented within each temporal period

Coloring seen in other types would suggest that Early Horizon pottery were fired at lower temperatures based on the higher percentage of Earth-tones (reddish browns) seen in these sherds. As the firing conditions became hotter, coloring varies less and hotter firing conditions are maintained resulting in brighter oxidized colors – from the reddish brown tones in the Early Horizon Period to the reddish orange tones in the late EHP to early EIP, then the orange colored
sherds in the EIP. The EIP sees more uniform coloring within types and even within the interior and exterior coloring of the same sherd. Although the reddish tones of orange and brown colored sherds are not represented in the EIP in this sample, it is likely due to the smaller sample size and foreign influence (Recuay) that represents the EIP.

4.1.3. Stylistic Variables

Although continuities are most commonly discussed in the context of manufacturing and production elements, the most notable continuities in this sample are seen in the decorative elements, primarily through the designs themselves and the techniques used to create the designs.

One of the most prominent design at CSI is the circle and dot design. There are several variations of this design seen within this sample; the first is within the Stamped Circle-and-Dot type of the Early Horizon Period. The typical design for this type is a series of stamped circles with either a single or multiple circular tip point impressions located in the center of each circle. The stamped circle was likely made with a hollow reed, while a sharpened object (such as an awl) was used to create the central dots. Figure 13 shows two variations of the inner circle seen within the EHP sample; C20.10 shows evenly spaced circles with a single point impression within each while C27.27 depicts a similar design but with a slightly smaller inner circle rather than a dot. This inner circle may have been created using a smaller hollow reed than the one used to make the outer circle. Figure 13 depicts the location of these designs on the shoulder of a carinated bowl.

The second variant of the circle and dot design is found within the Incised Red type in the LIP-Casma. These sherds are less uniform with some circles overlapping, while others are created with more force causing the circle-and-dot design to be raised, such as C4.8 (Figure 14). The outer circles appear to be a similar size to those seen on the EHP sherds; however, the object used to
make the inner dot may have had a blunt tip in order to push the clay against the hollow reed, giving it the desired raised circle and dot affect.

Regardless of the variation seen within in this design, the placement remains relatively constant with the most common placement being around jar necks or rims of *ollas sin cuellos*. While this design is most common in the Early Horizon Period and MHP-LIP periods, similar design practices also occurred in the EIP and MHP just with the circle and dots being painted rather than incised (Figure 14, 15). Although the circle and dot design undergoes minor changes, it reoccurs from the Early Horizon Period to the late-Middle Horizon to early-Late Intermediate Periods. This suggests that the circle-and-dot design is a local tradition that continues throughout the entirety of occupation at CSI, though the changes pressure applied and tools used were likely a result of foreign cultural influences.

*Figure 13. Two sherds from the EHP showing the variation in the stamped circle-and-dot type: C20.10 on left and C27.27 on right*
The Early Horizon Period also sees a high percentage of Pattern Burnished type sherds (29%). This type sherd has only been attributed to the Early Horizon Period at CSI currently, yet is seen throughout Early Horizon sites in the Middle (PV 31-38) and Upper (PV 31-48, 56, 159) portions of the Nepeña Valley (Proulx 1973).

Although paint is occasionally used in the Early Horizon Period, it is done so in a simple manner and in tandem with incising. The designs of the incisions on both sherds are similar,
differing only by the use of red paint to trace the incisions. This is the only time period for which painted incisions are seen within this sample. Using paint as a decoration technique emerged in the late Early Horizon to Early Intermediate years with the White-on-Red type which employs both paint and punctate decoration techniques.

Although the medium changed, the designs being drawn remained similar. For instance, Painted Incised from the Early Horizon Period is characterized by designs that were incised, then painted red. Similarly, Recuay Painted pottery from the Early Intermediate Period is decorated in geometric designs with red paint. While the designs may suggest continuities, the stark contrast in coloring of the interior and exterior of these two types suggest otherwise. These types have black or white painted designs over natural colored paste. That said, the EIP also still sees the use of punctate techniques in the Incised Red (Gallinazo) type. Based on written descriptions, the Gallinazo style sherd (C11.2) appears similar to the Incised Red (Casma) sherd (C40.85) from the LIP-Casma phase; however, the photos show a clear difference (Figure 16). For instance, C11.2 has larger inclusions, light brown paste, and triangular punctations in a geometric design while C40.85 has smaller inclusions, red paste, uneven firing affects, and circular punctate designs.

![Figure 16. Stylistic comparison of a EIP sherd (C11.2 – Gallinazo Incised Red) (on left) and a LIP-Casma sherd (C40.85 – Incised Red) (on right)](image-url)
Circle-and-dot designs are still seen in the EIP and MHP, however, they are no longer stamped or incised but rather created using paint. The transitional period from the EIP to the MHP begin to see a rise in anthropomorphic designs. Zoomorphic designs emerged in the MHP-LIP period as geometric designs continued. This time period also experienced the reemergence of incised and stamped circle and dot designs which is not present in this sample during the EIP and MHP. The LIP diverges the most from the traditional designs and has the most variety with geometric, anthropomorphic, and zoomorphic all continuing from the previous time periods, yet also with the addition of a *piel de ganzo* background design. Many of these later designs were created using a molded technique in addition to punctate, appliqué, and incising.

Geometric designs created by white and/or black paint over a red or white slip or red paste continue into the MHP. Another interesting observation about the sherds’ designs is the reoccurrence of white and/or black paint over a natural red paste. The design recorded for the White-on-Red type, which is represented in the transitional period between the Early Horizon Period and the Early Intermediate Periods, is “white paint (lines/circles) over natural red paste”. The design noted for the Red-White-Black type from the Middle Horizon Period is “white and black paint over natural red paste”. Both of these types are noted as having a natural red paste, however, they are from two non-consecutive time periods. There are no known sherds with a natural red paste represented in this sample for the period in between these two. The design is not the only similarity between these types. They also share similarities in vessel shape; a bowl with a rounded lip and an interior diameter of approximately 20cm. Overlaps in interior and exterior color, firing atmosphere, and manufacturing provide more support for the continuities between the two, which leaves the question: why is there no record of red paste during the Early Intermediate Period? Perhaps with a larger sample, we would see a continuation through each of the time periods.
or perhaps this inconsistency is due to influences from another culture; more research is needed before that can be determined.

4.2. Limitations and Future Studies

The reliability of my data is limited to the accuracy of the preliminary analysis database. As the pandemic prevented me from travelling to Peru and examining the sample myself, I had to rely on the data collected during the 2019 field season. While I was lucky to have access to photos and drawings in addition to the database, I only had photographs for 122 of the 518 sherds in my sample. This hindered my ability to double check the sherds’ descriptions for accuracy. However, I counteracted this to the best of my abilities by examining the photos available for other sherds attributed to the same type but without description information in the main database.

I hypothesized that several of the types present at CSI were actually similar enough to be combined into one type. For instance, based on the descriptions available for the Early Horizon Period Incised and the Painted Incised (Early Horizon Period) types, I expected these two types to be very similar, if not the same. With the exception of one sherd attributed to the Early Horizon Period Incised type having an average thickness of 8mm while the rest have an average of 3.75mm, the sherds in these two types are comparative in thickness, coloring (black for reduced firing atmosphere and reddish grey for a partially oxidized firing atmosphere), manufacturing technique (modeled), and decoration (geometric incisions). The only notable difference is that the Painted Incised (Early Horizon Period) sherds has red lines painted along the incisions. Future studies, particularly those focusing on technical and compositional aspects can help to more accurately categorize the sherds into proper types.
This research may provide the background information in determining the relationship between various cultures and time periods at the site, and even within the valley. A more in-depth study of the technological aspects of these sherds can help indicate the similarities between types, as well as if the manufacturing methods remained consistent through the occupation of the site or if they changed with new, incoming cultures. A technological study will help support this study based on the stylistic aspects of the sherds. It will also be a good way to test my hypothesis that firing techniques became more consistent in the later time periods, resulting in less variation in coloring.

4.3. Conclusions

This study suggests there is a strong local tradition for ceramic production at Cerro San Isidro (PV 31-51). Although there is clear foreign influence in the Early Intermediate Period with the Recuay style pottery and the Late Intermediate Period with the Casma and Chimú style pottery, the local traditions persist throughout the entirety of the site’s occupation. This suggests enduring communities of practice and pottery makers who emphasized plastic decorative techniques (i.e., incising, burnishing, and punctation) over painting modes. They also preferred to use modeled manufacturing techniques and fire their clay in an oxidizing atmosphere. The designs changed the most with the introduction of foreign designs, such as with the piel de ganzo design in the LIP-Chimú; however, many varying designs remained consistent in how they were produced regardless. For instance, the circle and dot design was likely manufactured using a hollow reed from the Early Horizon out through the Casma phase of the Late Intermediate. Although more research is needed to support these findings, especially ethnoarchaeological research on the clay and firing effects, this study may serve as a base for future studies to come.
REFERENCES CITED


VITA

Kaitlyn Michelle Lowrance was born in Gastonia, North Carolina, in 1996 to Gregory Calvin Lowrance and Cynthia Robinson Lowrance. Kaitlyn earned her triple Bachelor of Arts degree in Anthropology, History, and International Studies in 2018 from the University of North Carolina Wilmington. She concentrated on Latin American and Spanish studies, completing her undergraduate Honors thesis on 16th century Spanish colonization attempts in North Carolina. She has archaeological and historical research experience in North Carolina, Chile, Belize, and Peru, and worked as a site supervisor for the Berry Site Archaeological Field School during summer 2019. In the fall of 2019, she began graduate studies at Louisiana State University under the advisement of Dr. David Chicoine. While attending LSU, she worked as a curatorial assistant for the Museum of Natural Sciences, then as a graduate assistant for the Screen Arts Program. Kaitlyn completed the Geographic Information Science (GIS) Graduate Certificate Program while at LSU and plans to graduate August 2021 with her Masters of Arts degree in Anthropology. She intends to continue her research in Latin America while pursuing her doctoral degree.