

DAILY LIFE AT CERRO LEÓN, AN EARLY INTERMEDIATE PERIOD  
HIGHLAND SETTLEMENT IN THE MOCHE VALLEY, PERU

Jennifer Elise Ringberg

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Approved by:

Brian R. Billman

Vincas Steponaitis

C. Margaret Scarry

Patricia McAnany

John Scarry

Jeffrey Quilter

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## **ABSTRACT**

JENNIFER ELISE RINGBERG: Daily Life at Cerro León, an Early Intermediate Period  
Highland Settlement in the Moche Valley, Peru  
(Under the direction of Brian R. Billman)

In this dissertation I examine the cultural identity and social dynamics of individuals in households through the activities and objects of daily life. The households I study are at Cerro León, an Early Intermediate period (EIP) (400 B.C. to A.D. 800) settlement in the middle Moche valley, Peru. My results support a model of migration and long-term settlement by highland groups from the upper limits of the valley. Highland people remained in settlements throughout the middle Moche valley for roughly two centuries, abandoning the region just prior to the consolidation of the Southern Moche polity (A.D.200 to 800). Understanding interaction between highland and coastal groups as they sought access to the fertile middle zones of coastal valleys provides insight into small- and large-scale social organization. Highland-coastal interaction remained an essential element in trajectories of social complexity throughout the Peruvian Andes from prehistory into the modern era.

The three residential compounds excavated at Cerro León were the largest and best preserved of the entire settlement. Members of multi-generational, extended or multi-nuclear family households created spaces for cooking, storage, and productive tasks related to intensive farming and small-scale craft production, including production of cloth and tools and ornaments of stone and copper. Results of my multi-faceted study of the origins, manufacture, and function of the pottery assemblage demonstrate that Cerro León households imported nearly all of it for their culinary needs. Plainwares were manufactured in both highlands and coast, but over 90 percent of the fineware feasting assemblage was of highland origin. The identities of the highland settlers at Cerro León were materialized through the spatial organization of household activities and choices linked to foodways, especially the use of a highland feasting pottery assemblage, to promote and legitimize their place in

middle valley EIP society. The residences at Cerro León, like households throughout the Andes, thrived on a variety of relationships that create networks of obligations. Daily and large-scale ritual consumption of food, drink, and coca leaves provided the fuel that kept networks of social ties, resources, and labor active.

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## TABLE OF CONTENTS

ABSTRACT .....	iii
ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	xv
LIST OF FIGURES .....	xvi
Chapter 1 INTRODUCTION .....	1
1.1 Introduction .....	1
1.2 Project research questions and goals .....	2
1.3 Organization of dissertation.....	4
Chapter 2 CERRO LEÓN SITE SETTING.....	6
2.1 Introduction .....	6
2.2 Geological context .....	7
2.3 Climate and Paleoclimate in the Moche River valley.....	11
2.4 Environmental zones and diversity.....	15
2.5 Cerro León community setting .....	20
2.6 History of mapping and excavations at Cerro León .....	23
2.7 Discussion.....	30



Chapter 3 THE NORTH COAST OF PERU IN THE EIP .....	33
3.1 Introduction .....	33
3.2 EIP residence and household on the north coast.....	35
3.3 North coast society and cultural identity in the EIP .....	40
3.4 Perspectives on foodways during the north coast EIP .....	42
3.5 Connections between highland, valley, and coast during the EIP .....	48
3.6 Discussion.....	53
Chapter 4 THEORETICAL PERSPECTIVES AND PROJECT METHODOLOGY.....	56
4.1 Introduction .....	56
4.2 Household organization in central Andean and coastal regions .....	57
4.3 A household archaeology approach to Cerro León .....	63
4.4 Modeling Cerro León households: middle range theories and research objectives.....	64
4.5 Research objectives .....	65
4.6 Project Field Methods.....	76
Field methods.....	77
Laboratory Methods.....	79
4.7 Discussion.....	81
Chapter 5 RESIDENTIAL ARCHITECTURE AND HOUSEHOLD ORGANIZATION AT CERRO LEÓN .....	84

5.1 Excavation goals and methodology .....	84
5.2 Structure identification .....	84
5.3 House construction techniques .....	97
5.4 The archaeological context at Cerro León: site formation processes .....	99
5.5 Variation in structure size and function .....	106
5.6 Residential group organization, social identities and intra-residential social relationships.....	108
Compound 1 residential group.....	110
Compound 3 residential group.....	116
Compound 6 residential group.....	116
5.7 Estimating occupation span .....	120
5.8 Interpreting the life cycles of households through residential spaces.....	123
5.9 Discussion.....	129
Chapter 6 THE CERRO LEÓN POTTERY ASSEMBLAGE: ORIGINS, MANUFACTURE, AND DISTRIBUTION .....	134
6.1 Introduction .....	134
6.2 Raw Materials Survey.....	135
Raw materials survey methods .....	135
Raw Materials Survey Results .....	136
6.3 Cerro León Pottery Typology Background .....	144

Pottery typology methods .....	147
6.4 Cerro León Pottery Descriptions .....	150
Castillo Series .....	151
Cerro León Series .....	158
Otuzco Series .....	167
Quinga Series.....	170
Other wares.....	175
6.5 The Cerro León Typology in Regional and Chronological Context.....	176
6.6 Discussion.....	180
Chapter 7 FUNCTIONAL ANALYSIS OF THE CERRO LEÓN STUDY ASSEMBLAGE .....	183
7.1 Introduction .....	183
7.2 Previous Research on Pottery Function .....	184
7.3 Methods of the Functional Analysis .....	185
Minimum Number of Vessels (MNV).....	186
Shape and Size.....	190
Paste Composition .....	193
Surface Treatment.....	196
Use-alteration.....	197

7.4 Form and Function of Cerro León Vessel Classes .....	198
Angled-neck olla.....	199
Bulged collar olla.....	212
Neckless olla.....	213
Individual serving bowl .....	215
Red-slipped serving olla .....	221
Tostadera.....	223
Bottle .....	225
Tinaja .....	227
Cántaros and Jarras .....	228
Sculptural/effigy jar .....	237
Face-neck jar.....	240
7.5 Non-vessel culinary items and vessels with dubious culinary function.....	241
Miniature vessels .....	241
Canchero .....	242
Spoon .....	243
Grater bowl .....	244
Tortero spindle whorl .....	245

Piruru spindle whorl .....	246
Crucible .....	247
Hollow figurine.....	248
Slipcast pottery .....	249
Worked sherds .....	250
7.6 Inter-assembly Comparisons .....	251
Basic Shape Frequencies .....	251
Type Distributions .....	252
Vessel Size Comparisons.....	256
7.7 Discussion.....	259
Everyday Foodways.....	260
Feasting Foodways .....	263
Foodways and Cultural Identities .....	265
Cultural Identities and Other Pottery-related Activities .....	267
Chapter 8 CONCLUSIONS.....	268
Appendix A: Plant and Animal Resources recorded for North Coast Archaeological Sites .....	274
Appendix B: Area 1 Architectural Descriptions.....	276
B.1 Introduction.....	276

B.2.1 Compound 1 .....	276
B.2.2 Compound 3 .....	293
B.2.3 Compound 6 .....	299
REFERENCES .....	308

## LIST OF TABLES

Table 2.4.1. Environmental designations by ONERN (1973), Pulgar Vidal (1987), and Billman (1996).....	15
Table 2.6.1. Surface collected and excavated residential compounds, Area 1, Cerro León. ....	25
Table 3.1.1. Current chronologies for the Moche valley EIP (400 B.C. – A.D. 600) and Middle horizon (A.D. 600 – 1000).....	35
Table 5.2.1. Total area surface collected and excavated in residential Compounds 1, 3, and 6. ....	85
Table 5.2.2. The functions and dimensions of Compound 1 structural features.....	88
Table 5.2.3. The functions and dimensions of Compound 3 structural features.....	90
Table 5.2.4. The functions and dimensions of Compound 6 structural features.....	90
Table 5.4.1. Bulk pottery weight for excavation contexts at Cerro León, Compounds 1, 3, and 6. ....	100
Table 5.4.2. Pottery types in floor contact contexts for Compounds 1, 3, and 6, Cerro León.....	102
Table 5.4.3. Pottery type distribution in floor contact contexts for Compound 1, Cerro León. ....	102
Table 5.5.1. Distribution of functional spaces in Compounds 1, 3, and 6, Cerro León.....	108
Table 5.7.1. Radiocarbon dates on carbonized annuals from Cerro León and wood from the Urban Zone at the Huacas de Moche.....	121
Table 6.3.1. Summary characteristics of the four pottery wares found at Cerro León. ....	145
Table 6.3.2. Mineral phase identification characteristics (from Neese 2000:158). ....	149
Table 7.3.1. Raw count, MNV, and metric data assemblage count for Cerro León pottery vessels. .	190
Table 7.3.2. Mechanical performance characteristics and physical properties of Cerro León pottery vessels.....	191
Table 7.3.3. Functional vessel categories for Cerro León: their proposed morphological properties and mechanical performance characteristics.....	192
Table 7.4.1. Cerro León vessel shapes in the study assemblage by basic shape. ....	199
Table 7.6.1. Relative frequencies of functional categories in Compounds 1, 3, and 6.....	251
Table 7.6.2. Frequencies of all pottery types per residential compound. ....	253

## LIST OF FIGURES

Figure 2.1.1. Cerro León in the Moche valley, Peru. ....	8
Figure 2.2.2. Modern towns of interest to the economic geology of the Moche watershed. ....	11
Figure 2.3.1. The site of Cerro León (MV-225) in the Quebrada de los Chinos drainage basin. ....	14
Figure 2.4.1. Natural zones of the Moche watershed with sites mentioned in text. ....	16
Figure 2.5.1. Cerro León and the three Highland EIP clusters in the Moche valley. ....	20
Figure 2.5.2. Cerro León (MV-225) and its twelve site areas, Compounds 1, 3, and 6 in Area 1. ....	23
Figure 2.6.1. Schematic of the residential compounds in Area 1 of Cerro León investigated by the Moche Origins Project. ....	27
Figure 3.1.1. The north and central coast of Peru with sites discussed in Chapter 3. ....	34
Figure 5.2.1. Schematic of residential Compounds 1, 3, and 6, Area 1, Cerro León. ....	86
Figure 5.2.2. The rock outcrop hearth, Feature 58.01, in the Feature 58 kitchen, Compound 6. ....	92
Figure 5.2.3. Numerous ash pits and burned areas in the northwest corner of the Feature 5 kitchen. ....	92
Figure 5.2.4. The western patio Feature 51 in Compound 6. ....	94
Figure 5.2.5. Terraces 43 and 44 above Patio Feature 32, an entry point into Compound 1. ....	94
Figure 5.2.6. Storage Features 53 and 52 in Compound 1. ....	95
Figure 5.2.7. Feature 48, a circular, slab-lined cist tomb in Compound 3, patio Feature 34. ....	97
Figure 5.4.1. Chimú Blackware sherds from the post-abandonment encampment, Compound 1. ....	105
Figure 5.5.1. Boxplot of area in meters <sup>2</sup> for rooms at Cerro León classified by inferred function. ...	107
Figure 5.6.1. Public, private, and ritual sectors in the Compound 1 residence, Cerro León. ....	109
Figure 5.6.2. Fine, detailed stone work in the Feature 44 receiving area, Compound 1. ....	112
Figure 5.6.3. Kitchen, patio, and storage space in Compound 1. ....	114
Figure 5.6.4. Kitchen, patio, and storage space in Compound 3. ....	117
Figure 5.6.5. Kitchen, patio, and storage space in Compound 6. ....	118
Figure 5.7.1. Graph of Cerro León and other published calibrated dates for Moche EIP sites. ....	122
Figure 6.2.1. The clay survey area around Cerro León. ....	137



Figure 6.2.2. Sites and locales of clay collection for the raw materials survey. ....	138
Figure 6.2.3. Clay deposits near the Huacas de Moche. ....	139
Figure 6.2.4. Detail of clay strata in deposits near the Huacas de Moche. ....	140
Figure 6.2.5. Small-scale clay mining near the archaeological site of Cuidista, upper Moche valley. ....	143
Figure 6.2.6. White (illite) clay deposits in clay mine near Cuidista. ....	144
Figure 6.4.1. Igneous extrusive (volcanic) aplastic inclusion with fine, plagioclase lath (plain and crossed polars). ....	152
Figure 6.4.2. Shrinkage cracks in Castillo Series paste running parallel to pottery surface. ....	153
Figure 6.4.3. Possible cord-impressed Castillo Series pottery fragments. ....	154
Figure 6.4.4. Plastic decoration typical in the Castillo Series assemblage at Cerro León. ....	156
Figure 6.4.5. Representational themes in Castillo Modeled pottery at Cerro León. ....	156
Figure 6.4.6. Typical Cerro León Series paste and temper, with large grain exhibiting myrmekite secondary reaction texture (right) and presences of slip (bottom). ....	160
Figure 6.4.7. Evidence of scraping Cerro León Series vessels to thin vessel walls. ....	161
Figure 6.4.8. Representational themes in Cerro León Series sculptural vessels. ....	163
Figure 6.4.9. Slip and slip-paint common in Cerro León Series vessel assemblage. ....	164
Figure 6.4.10. Simple and elaborate resist-painted (negative) designs of the Cerro León Series. ....	165
Figure 6.4.11. Otuzco Series buff paste (left) compared to Cerro León Series red-brown (right). ....	168
Figure 6.4.12. Otuzco Series paste and aplastic inclusions in plain (right) and crossed polars. ....	169
Figure 6.4.13. Quinga Series without aplastics (left), containing hematite concentrations and with aplastics (right), including embayed volcanic quartz (center of slide). ....	172
Figure 6.4.14. A sample of Quinga Series white paste bowl sherds. ....	173
Figure 6.4.15. Other types of pottery possibly made within 5 km of Cerro León. ....	176
Figure 7.3.1. Reconstructions of Castillo Series coastal vessels. ....	187
Figure 7.3.2. Reconstructions of Cerro León Series highland vessels. ....	188
Figure 7.4.1. Cerro León Series angled-neck <i>ollas</i> . ....	201
Figure 7.4.2. Castillo Series angled-neck <i>ollas</i> . ....	202

Figure 7.4.3. Angled-neck <i>ollas</i> with other paste and temper. ....	203
Figure 7.4.4. Cut-lip ( <i>escalonado</i> ) <i>ollas</i> , Castillo Series are at top left: 2006-40, 2004-23, 2002-63, and 2004-19, 2007-119 is Otuzco Series, the rest are Cerro León Series.....	204
Figure 7.4.5. Boxplot of neck height (mm) for Castillo, Cerro León, and other <i>ollas</i> . ....	205
Figure 7.4.6. Angled-neck <i>ollas</i> with handles (Castillo are at top, Cerro León wares below). ....	206
Figure 7.4.7. Bar graph of orifice diameters for angled-neck <i>ollas</i> . ....	207
Figure 7.4.8. Box plot of angled-neck <i>olla</i> orifice diameters grouped by ware series. ....	208
Figure 7.4.9. Large-capacity angled-neck <i>ollas</i> of the Cerro León Plain type. ....	209
Figure 7.4.10. Castillo Incised <i>ollas</i> . ....	211
Figure 7.4.11. Bulged collar <i>ollas</i> , Cerro León Series at top, Castillo Series forms at bottom. ....	213
Figure 7.4.12. Neckless <i>ollas</i> of the Castillo Series. ....	215
Figure 7.4.13. Bowl profiles for the Cerro León Series.....	217
Figure 7.4.14. Cerro León Polychrome, White-on-red, and Red Slipped individual serving bowls. .	219
Figure 7.4.15. Cerro León Black, Burnished, and Quinga Painted individual serving bowls. ....	220
Figure 7.4.16. Cerro León and Otuzco Series Red-slipped serving <i>ollas</i> .....	222
Figure 7.4.17. <i>Tostadera</i> forms in Cerro León and Otuzco Series wares.....	224
Figure 7.4.18. Castillo Series bottles. ....	226
Figure 7.4.19. Castillo Series <i>tinaja</i> . ....	229
Figure 7.4.20. Cerro León Series Plain and Burnished <i>cántaros</i> .....	231
Figure 7.4.21. Cerro León and Otuzco Red-slipped and White-on-red <i>cántaros</i> . ....	232
Figure 7.4.22. Cerro León and Otuzco Red-slipped and Polychrome <i>cántaros</i> ....	233
Figure 7.4.23. Castillo Plain and Burnished <i>cántaros</i> . ....	235
Figure 7.2.24. Box plot of orifice diameter for Cerro León and Castillo Series <i>cántaros</i> .....	236
Figure 7.4.25. Cerro León and Otuzco Series <i>jarras</i> . ....	238
Figure 7.4.26. Castillo Series <i>jarras</i> . ....	239
Figure 7.4.27. Castillo Modeled face-neck jar.....	240

Figure 7.5.1. Miniature vessels in the Cerro León assemblage. ....	242
Figure 7.5.2. <i>Canchero</i> forms in Cerro León pastes.....	243
Figure 7.5.3. Spoon form in Cerro León Black with fugitive orange paint. ....	243
Figure 7.5.4. Castillo Series grater bowl potsherd.....	244
Figure 7.5.5. A Sample of <i>tortero</i> spindle whorls and blanks made from Cerro León potsherds. ....	246
Figure 7.5.6. <i>Piruru</i> spindle whorls.....	247
Figure 7.5.7. Possible crucible fragment profile and thin section in plain polarized light. ....	247
Figure 7.5.8. Castillo series hollow figurines. ....	248
Figure 7.5.9. Slipcast tube fragments. ....	249
Figure 7.5.10. Unusual worked sherd shapes. ....	250
Figure 7.6.1. Frequencies of Castillo plain and Cerro León plain <i>ollas</i> in Compounds 1, 3, and 6...254	
Figure 7.6.2. Frequencies of individual serving bowls in Compounds 1, 3, and 6.....	255
Figure 7.6.3. Boxplot of orifice diameters for cooking <i>ollas</i> in Compounds 1, 3, and 6. ....	257
Figure 7.6.4. Boxplot of individual serving bowl orifice diameters for Compounds 1, 3, and 6. ....	258
Figure 7.6.5. Box plot of <i>tostadera</i> (parching pan) orifice diameters (in cm) by compound.....	258
Figure 7.6.6. <i>Cántaro</i> orifice size distribution in cm by compound.....	259
Figure 7.7.1. Cerro León (highland) and Castillo (coastal) functional categories in Area 1 houses. .265	

## **Chapter 1 INTRODUCTION**

### **1.1 Introduction**

This dissertation explores highland-coastal interaction during the Early Intermediate period (EIP) in the Moche valley, north coast of Peru, from the perspective of individual households in the middle part of the valley. Research for my dissertation took place on the north coast of Peru in the department of La Libertad, near the present day city of Trujillo. Archaeological evidence indicates that residents at the EIP settlement of Cerro León brought in material culture and other resources from both coast and sierra to supplement their middle valley, irrigation agriculture-based lifeway. The site has an absolute date range of AD 60 to 330 (2 sigma calibration<sup>1</sup>). It is the first highland EIP site in the middle Moche valley to be subject to intensive excavation and absolute dating. The data that is the subject of this dissertation was drawn from intensive excavation of a group of three residential compounds, chosen for their state of preservation as well as their prominent location, large size, and extensive remodelling compared to all other habitation areas at the site.

Similar to Cerro León, highland material culture is present at the majority of residential sites in the middle Moche valley dating roughly to this time period, indicating some form of intensive highland presence. Studying interaction of diverse highland, coastal, and middle valley groups during this time period is especially important because we may understand how highland-coastal interaction spurred increasing sociopolitical complexity in the Moche valley that led to the development of the Southern Moche state (AD 200 to 800). What kind of interaction was taking place in the core valley of this centralized polity? Currently we have relatively little information on the identities and daily lives of households or communities in the Moche valley during the EIP, except for elites and craft specialists living at the Huacas de Moche. Through this project, I explore when and why highland

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<sup>1</sup> Dates are from carbonized annuals from Compound 1 only.

groups came into the middle part of the Moche valley by documenting daily life. I focus on culinary practices and the use of household space as a means to understand social identity and organization.

## **1.2 Project research questions and goals**

Heightened interaction between diverse, small-scale groups in a region is recognized as a driving force for increasing social complexity (Bray 2005; Junker 1990; Stein 2002). What are the common elements in the types of interaction involved and how did interaction vary in different times and places? Archaeologists have come to appreciate that many different forms of interaction can be studied from the perspective of the household. This is especially the case with smaller-scale, non-state societies where private, domestic life coexists in houses alongside public, political or ceremonial endeavors. In agent-based approaches to interregional interaction, the social identities of household members as they engage in daily activities and relationships have become essential to understanding how and why complexity develops in prehistory (Brumfiel 1992; Stein 2002). Studies of households that focus on groups of individuals interacting in various contexts highlight the social and political impact of economic activity and how it connects identities, action, and space (Hendon 2009:188).

Many Andeanists have provided working models of highland-coastal interaction that guided my research when modeling such interaction specifically for the Moche valley during the EIP. María Rostworowski de Diez Canseco (1981; 1988) provided a broad range of examples from the ethnohistory of coastal Peru, especially for the importance of lower elevation ecological zones to highland populations and the factors influencing how highland-coastal groups related to one another in controlling or sharing resources. Tom Dillehay's (1976) dissertation research focused on the archaeological correlates of various forms of interaction, focusing in particular on multi-ethnic settlement in the Chillón valley. Brian Billman (1996; 2002) completely surveyed the middle Moche valley. He discusses broad-scale shifts in settlement structure and the appearance of highland material culture in the middle valley EIP. Based on this work, he discusses scenarios for the occupation of the middle Moche valley by highlanders through invasion or more peaceful migration

and colonization (Billman 2002). John and Theresa Topic (1982; 1987) propose intensive exchange networks as the manner in which highland and coastal populations interacted.

I adapted different models of highland-coastal interaction based largely on the work of Billman (1996), Dillehay (1976), Rostworowski (1988) and Topic and Topic (1982). These models propose that:

1. Highlanders invaded the middle valley and forced out coastal native groups
2. Coastal natives lived at Cerro León and had intensive exchange relationships with highlanders
3. Highland groups peacefully occupied the middle valley alongside local populations.

John and Theresa Topic's (1982; 1987) fortifications survey of the Chicama and Moche highlands and coast, as well as Brian Billman's (1996) intensive, total coverage survey of the middle Moche valley, emphasize the defensive character of highland and coastal settlements during the EIP.

Rostworowski and Dillehay provided depictions of highland involvement in the middle Chillón valley in southern Peru that involved both continual conflict as well as multi-ethnic settlement. I developed research objectives geared toward identifying the daily activities and social organization of households because social identity is manifested in both routine and special occasion tasks in a variety of ways. I focused on foodways, especially the organization of residential space and the manufacture and function of culinary equipment as expressions of social identity. I considered other daily activities and their context within the house as well. Through the routines and objects of daily existence people reinforced social order and identity in both tacit and explicit ways.

My findings support the model that highlanders occupied the site of Cerro León and were not merely trade partners with native valley-dwelling groups. Exchanges did take place between the migrant communities living at Cerro León and coast-based communities, but highland settlers living in the middle valley focused mainly on relationships with their communities of origin in the highlands. Based on Billman's (1996) survey, highland groups had a greater stake in middle Moche valley resources than coastal communities during this part of the EIP, although it does not appear that overtly hostile relations existed at all times throughout the long highland occupation of Cerro León.

Billman's survey demonstrates that sites with a highland presence were abandoned at roughly the same time throughout the middle Moche valley. The results of excavations at Cerro León indicate that abandonment was likely anticipated and residents did not intend to return. The process of abandonment likely coincided with developments in the consolidation and expansion of the Southern Moche polity. Residents may have withdrawn their influence over middle valley holdings under the pressure of expansion, returning to the highlands. Or they may have been drawn in to the Southern Moche polity's orbit, resettling in one or several of the valley's larger Moche communities.

My dissertation focuses on the origins, manufacture, and use of the pottery assemblage in three large residences at Cerro León. Raw materials survey and petrographic analysis demonstrate that Cerro León residents did not make most of their own pottery from local (within 5 km) resources. The bulk of the assemblage came from two regions; the main sources were likely in the upper Moche valley with lesser quantities coming from lower Moche valley resources. Functional pottery analysis indicates that not only did most pottery come from highland sources but that highland technical choices and identity dominated private, daily routines as well as formal, ceremonial and public life. However, daily foodways also incorporated a significant proportion of basic equipment, mainly cooking pots (*ollas*), from coastal sources. The results of this study indicate that in the three residences at Cerro León, people enacted and negotiated ethnic and gender identities and relationships through choices, objects, technologies, and practices related to foodways.

### **1.3 Organization of dissertation**

Chapter 2 provides the site setting and previous research at the site. Chapter 3 summarizes the previous research conducted by archaeologists, anthropologists, and ethnohistorians for the Peruvian north coast. I concentrate my efforts at synthesis on the EIP and organize the discussion around the main topics of this dissertation. Chapter 3 specifically treats the topics of cultural identities, household studies, foodways, and highland-coastal interaction to show that when combined, they can provide a clearer picture of who occupied Cerro León and why their actions

mattered in broader, Moche valley prehistory. Chapter 4 explains the theoretical and methodological perspectives that guided my dissertation research.

The following three chapters, 5, 6, and 7, present the bulk of the data analyses and interpretations for my dissertation study. I demonstrate in these three data-oriented chapters that multiple lines of evidence support the interpretation that the three households maintained mainly a highland lifeway through generations of occupation. Chapter 5 examines architecture and context, household histories from initial occupation through abandonment, the functional significance of architecture and internal features, and the initial absolute dates for the main residential compound at the site. In chapter 6 I present the geographical and technological typology I developed for the Cerro León pottery assemblage, including the methods and results of a clay survey and petrographic analysis conducted not only for a sample of Cerro León diagnostic pottery but also for raw materials for the area surrounding the site. In chapter 7 I focus on foodways through the functional analysis of the pottery assemblage. The functional significance of the pottery assemblage from the three residences lies in the full range of forms for highland types contrasted with the more limited functional range of the valley-produced assemblage. I support the information on the culinary assemblage with information on other functions of items made of clay such as spindle whorls, panpipes, and other tools and ornaments. Chapter 8 draws together inferences and conclusions about the meaning and significance of my research on the identities and activities of Cerro León household members, setting the research in the broader context of the Moche valley and the north coast EIP.



## **Chapter 2 CERRO LEÓN SITE SETTING**

### **2.1 Introduction**

In this chapter I provide a detailed description of the physical setting of Cerro León, a synopsis of the site's archaeological significance and a history of its scholarly investigations. The geology, climate, and environment of the northern central Andes and coast are the products of great variability in latitude, longitude, and elevation and have had a profound effect on human occupation. The geology of the Moche valley and surrounding regions is important to this project because my research marks the initial phase of investigation into pottery petrography and raw materials resources research for entire valley. Such research could lead to a much clearer understanding of the origins and distribution of pottery throughout the valley. I then focus on cultigens and ecozones of the Moche valley in order to demonstrate the great variability and potential for specialization and intensification of different, highly valued crops that may have played a role in the development of exchange or competition in intercommunity relationships between ecozones.

The Andes are lower in the north and increase in elevation moving south. The coastal valleys are wetter in the north and become increasingly drier moving south. One can cover a range of elevation along the Moche River drainage and encounter a wide variety of ecozones from sea level to 4,000 masl in less than 100 km Euclidian distance (Fariss 2008:8). The Moche valley's unique geology and topography and its compressed and diverse ecological zones provide a dynamic context for human occupation and interaction. Cerro León is located at an important crossroads both geographically and temporally within this system (Figure 2.1.1).

John and Theresa Topic first noted the significance of Cerro León as a large and important node in a regional interaction network during the EIP. However it was not until the late 1990s that Brian Billman designed a program of intensive investigation at the site. Since then, Billman and other

scholars have engaged in excavation and data collection to answer questions about the nature of Cerro León's occupation and its role in highland-coastal interaction and the development of southern Moche complexity. All of these past and present studies of Cerro León recognize the significance of geology, geomorphology, climate, and environment in the occupational history of the site and its unique setting.

## 2.2 Geological context

The central Andes comprise modern Peru, Ecuador, northern Chile, and highland Bolivia (Sandweiss and Richardson 2008:95). The mountains are at the margin of the oceanic Nazca tectonic plate and the continental South American plate. The Nazca plate pushes under the continental plate and this subduction causes continental uplift rates of up to 15 cm per year, making the Andes tectonically and volcanically active (Moseley 2001:26). However, northern and central Peru are not currently volcanically active. The lack of volcanism in this section of the Nazca plate is due to its shallow angle of subduction under the continental plate. Currently active volcanic zones in Columbia, Ecuador, Southern Peru and Chile correspond to steeply dipping segments of the subducting slab (Winter 2001). The Andes form two linear chains of plutons<sup>2</sup> called Cordilleras; the lower, western Cordillera Negra and the higher, eastern Cordillera Blanca. Usually, plutonic activity keeps pace with formation of volcanics but where volcanism ceased in northern and central Peru, erosion and uplift of the thickened crust exposed plutons. The Andes mountains contain several linear chains of plutons called batholiths<sup>3</sup>. The Peruvian Coastal Batholith (PCB) extends for more than 1,600 km in the western Andean cordillera and contains up to 1,000 plutons (Haederle and Atherton 2002). For the PCB, the cessation of volcanism due to the decreased angle of subduction

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<sup>2</sup> A pluton is a body of igneous intrusive rock crystallized from slow-cooling magma beneath the earth's surface. Plutons either cut *across* (discordant) or run *parallel* to (concordant) the bedding/foliation of host rocks (Easterbrook 1999:286–291).

<sup>3</sup> Batholiths are the largest size (>100 km<sup>2</sup> by definition) of discordant plutons. They form at plate margins and can cover thousands of square kilometers.

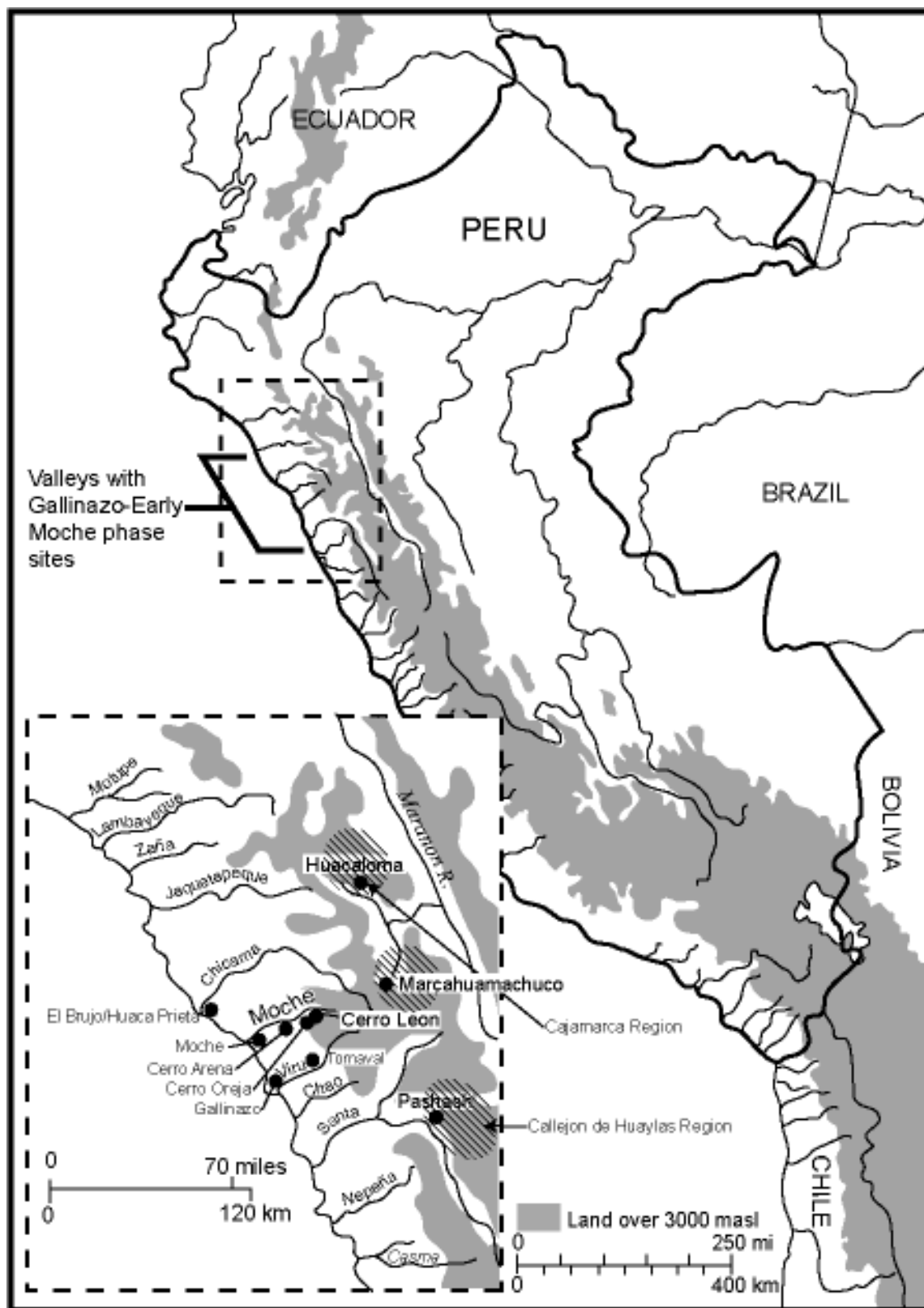


Figure 2.1.1. Cerro León in the Moche valley, Peru.

exposed a volume of intrusives that greatly exceeds the amount of volcanics (Cobbing et al. 1981; Huckleberry and Billman 2003; Pitcher 1978; 1997; Winter 2001).

The physical characteristics of the PCB affect life in northern Peru in subtle to more significant ways. For example differences in topography, elevation, exposure, and precipitation greatly affect agricultural technology, crops grown, and soil quality in all areas of the Central Andes (Brush 1977:10-16). A significant component of this dissertation focuses on differences visible in the mineralogical makeup of pottery clays and non-plastics under the petrographic microscope. Batholiths may seem like an immense, monolithic features, however, they are emplaced over time, have complex and diverse compositions, and intrude other deposits of varied age and composition (Best 2003:225, Pitcher 1997:234-235). The PCB was emplaced from roughly 102 to 34 mya and its hundreds of intersecting plutons display a range of compositions including: hornblende gabbros, tonalites, granodiorites, and granites, with a hiatus between earlier emplacement of the mafic gabbros and the other more felsic types of igneous rock (Cobbing 1972:35; Hall 1996:365). Petrological distinctions might include the mineralogical composition of parent rocks as well as clay formation processes between regions within the highlands, between highlands and coastal valleys, and possibly between coastal valleys of the western cordillera. Although it's less certain, differences between separate plutons within the batholith (beyond the more obvious gabbro-granite distinctions) may be identified. Moche River drainages are filled with mostly volcanic and metasedimentary rock and little or no granodiorite (Huckleberry and Billman 2003:513), a distinction that would be visible in locally gathered tempering material for pottery construction. Differences in igneous volcanics crosscut by the PCB may be spatially significant as well. Distinctions between coastal valleys may also be apparent in petrographic analysis. For example, pillow lavas and pyroclastic compositions of extrusive bedrock in the Virú valley are distinct from the greater exposure of the PCB in the Moche valley.

Within the Moche River watershed the western cordillera rarely surpasses 4,000 masl but the terrain is still quite rugged and geologic composition is varied (Figure 2.2.1). The Moche valley

contains sedimentary, igneous, and volcanic outcrops. The oldest sedimentary deposits are part of the Chicama formation and are concentrated mostly north of the central Moche River basin and to a lesser extent in the central part of the Virú basin. The more recent Casma formation includes sedimentary and volcanic rock and is located mainly in the upper part of the Moche watershed. The most geologically recent Cretaceous-Tertiary igneous intrusives that make up the coastal batholith are found mostly in a large block in the middle and upper watershed.

Modern economic geology is concentrated mostly in the upper watershed with the exception of salt extraction which has mainly taken place in the Chao valley near the coast (ONERN 1973:76) (Figure 2.2.2). The area around Quiruvilca has the greatest volume of production of higher value ores, including silver, lead, and copper, although Salpo and Carabamba regions contain sulfites and carbonates of copper, silver, and galena that originated through hydrothermal action (ONERN 1973:76). Construction grade clays are extracted from agricultural areas of the river valley as well as mined on a small scale near Julcan and Salpo. ONERN (ibid.) also notes that good quality red and yellow ochre deposits are found in as yet unknown quantities east of the modern town of Huamachuco beyond the eastern edge of the Moche watershed. There are many small-scale clay and pigment mining operations in the Moche valley that locals collect for either personal use or to sell to others for use in small business enterprises.

Although some may argue that referencing modern distributions of resources has little to do with where or how prehistoric groups obtained similar resources, others consider this knowledge relevant. The geology of the north coast has not changed significantly for millennia and modern, small-scale mining by local populations often took place in particular regions for generations before modern operations began. For example, up the Sinsicap River, a northern tributary of the Moche, lime and gypsum are currently extracted near the modern town of Simbal (ONERN 1973:86; Alicia Boswell, personal communication 2011). The use of lime (*cal*) is an essential component of coca chewing. Although there is no evidence that prehistoric groups extracted *cal* from the Sinsicap

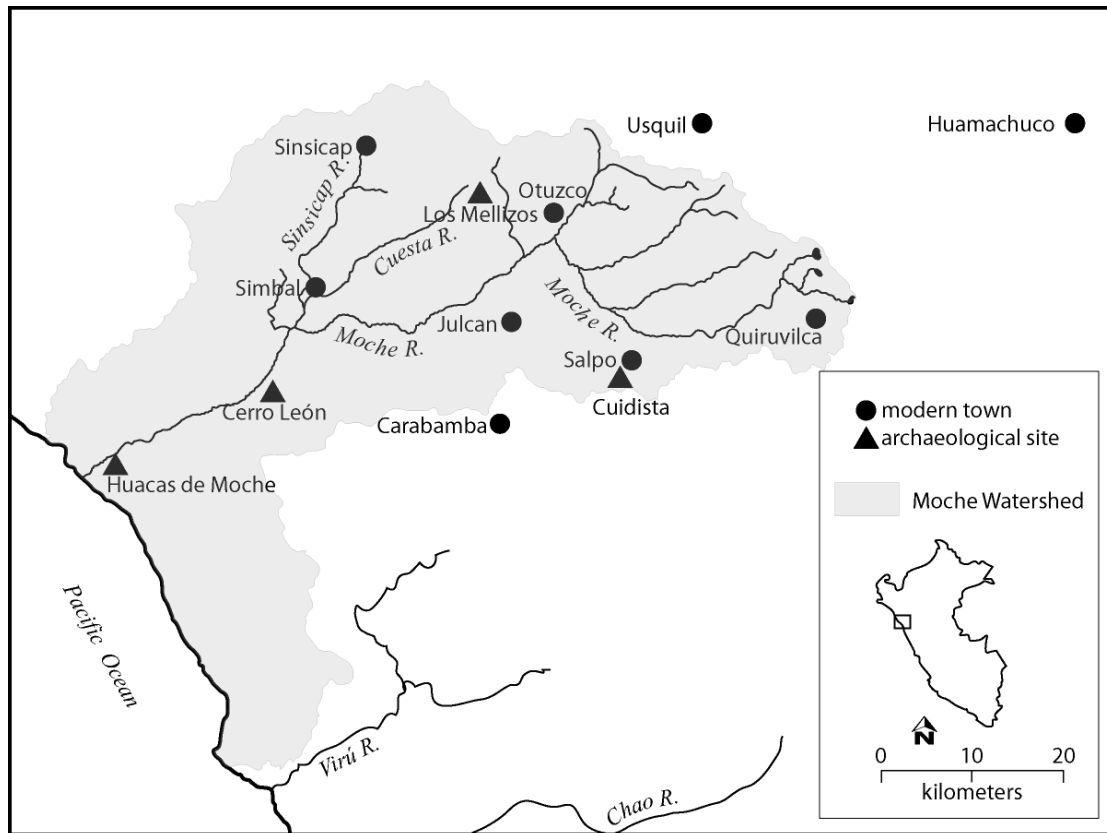


Figure 2.2.2. Modern towns of interest to the economic geology of the Moche watershed.

valley, the presence of modern *cal* mining is noteworthy because it is found in a region documented for growing exceptionally fine coca crops in Colonial times (Netherley 1988:262).

### 2.3 Climate and Paleoclimate in the Moche River valley

Weather in the Andes and coast is a complex combination of solar energy, the atmosphere and the ocean (Moseley 2001:26). Normally, most of the precipitation comes from the Atlantic Ocean, but in contacting the high Andes a rain shadow is created for the dry western slopes and coastal desert. Scientists now assume that beginning about 3,000 years ago, the weather and climate of the Andes has been similar to today's conditions (Sandweiss and Richardson 2008:99). Temperature and precipitation average 20° C and 4 mm near the ocean in the Moche valley and are reasonably stable throughout the annual cycle (ONERN 1973:65). In the highlands there is greater

diurnal temperature variation that there is change in annual temperature cycles (Sandweiss and Richardson 2008:99). Average temperature at 3,700 masl in the upper part of the Moche watershed is about 7° C and precipitation has a 4,000 mm annual mean (ONERN 1973:65).

Water is one of the most important resources for people living in the rain shadow of the Andes. Seasonal rains from October to April in the highlands feed irrigation in the middle and lower valleys. The Pacific Ocean phenomena of El Niño (warm currents, extensive heavy rains) and La Niña (unusually cold ocean waters and low inland precipitation) have varied interims and effects in north coast valleys (Waylan and Caviedes 1986). The effects of the presence or absence of water has shaped and reshaped the geomorphology of the Moche valley watershed for millennia. The Moche River watershed comprises a catchment area of 2,708 km<sup>2</sup> (ONERN 1973:32) (refer to Figure 2.2.2). At 102 km in length, the Moche River is relatively short compared to its neighbors to the north (the Chicama River, 150 km long) and south (the Santa River, 347 km long).

El Niño rains can be a source of advantage or great destruction to coastal valleys. Such rain events and ocean current changes can range from weak to extremely severe and show patchy distribution from one coastal valley to the next (Waylen and Caviedes 1986:154). In terms of rains and runoff, the Moche valley may be better off than other north coast watersheds because of the altitudinal distribution of its watershed. Most of the basin lies above 1,000 masl and half is above 3,000 masl. Researchers believe that because the Moche River has such a small catchment at low elevation, it shows minimal fluctuation in runoff between El Niño and La Niña events compared to other watersheds with large low elevation catchments on the north coast (Billman and Huckleberry 2008; Mugica 1984; Waylan and Caviedes 1986). Still, the effects of a flood-causing El Niño are more severe in the middle Moche valley where the steeper gradients closed in by foothills cause faster flowing runoff and stripping of floodplain agricultural soils (Billman and Huckleberry 2008:123).

Michael Moseley (2001:29) states that between 400 and 200 B.C. and again from A.D. 1 to 300, the Lake Titicaca basin in southern highland Peru fell into periods of drought. These dry periods during the southern highland EIP may correspond to wetter than normal conditions along the northern

Peruvian coast and in the middle Moche valley (Billman and Huckleberry 2008; Moseley 2001:29). Both local proxy records and ice core data from the Quelccaya glacier suggest that the EIP was wetter than normal with more frequent flood-causing events in the Moche River valley than any other time before 1000 A.D. (Billman and Huckleberry 2008; de Menocal 2001; Huckleberry 1999; Shimada et al. 1991; Paulson 1976). It appears that proxy records for the Moche valley may be the best indicator to date of what conditions might have been like when people were living at Cerro León (Billman and Huckleberry 2008; Huckleberry 1999).

The EIP settlement of Cerro León covers most of the habitable terrain on an isolated hill located south of the Quebrada de los Chinos and Quebrada del León drainage basins (Figure 2.3.1). The Quebrada de los Chinos drains an area of 65 km<sup>2</sup> into the Moche River (Billman and Huckleberry 2008; Huckleberry 1999). A 4- to 5- meter cut into a stream bank in the Quebrada de los Chinos showed that during a period from approximately 800 B.C. to A.D. 700, twelve floods large enough to inundate the quebrada took place (Billman and Huckleberry 2008:105). A period of 600 years, between 345 B.C. and 220 A.D. showed increases in relative frequency of flooding events (Billman and Huckleberry 2008:117). As I will discuss in the presentation of absolute dates for Cerro León in Chapter 5, this time range coincides with the occupation of the site. Although the proxy record shows only flooding caused by very strong events and not the complete record, it does indicate that this period of the EIP in the Moche valley may have experienced wetter conditions due to increased occurrence of El Niño phenomena. Whether there were many near-moderate to moderate El Niño events during these centuries remains open to question, but modern data indicate that these would probably have been positive occurrences overall providing farmers and herders in the lower and middle valleys extra moisture and not causing floods (Billman and Huckleberry 2008:122).

Researchers are still unsure how and when changes in paleo-climate and -environment might have correlated with culture change. Based on current evidence, researchers surmise that during these periods of increased precipitation, highland and lowland groups engaged in various strategies to gain access to irrigation-fed agricultural lands in many valleys on the Peruvian north coast (Paulson 1976;



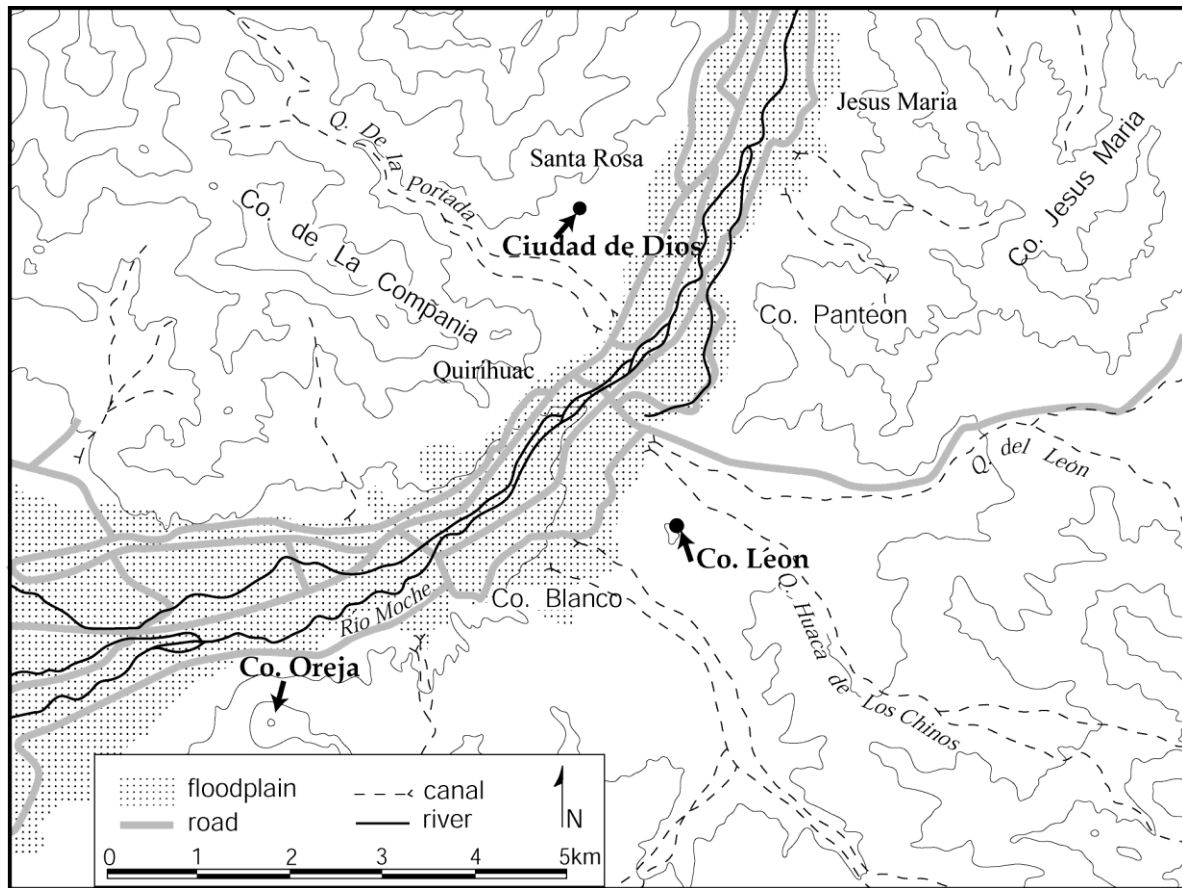


Figure 2.3.1. The site of Cerro León (MV-225) in the Quebrada de los Chinos drainage basin.

Shimada et al. 1991). On the local level, people living and farming in or adjacent to floodplains of rivers or quebradas in the middle Moche valley would have been in the highest risk category (Billman and Huckleberry 2008:126). Most farm fields would sustain milder or at least reparable damages but a few would suffer serious, possibly unrecoverable losses. Responses in the short and long term would have depended on many factors and likely shifted the balance of power between households and communities (ibid.). On the other hand, if they were not too severe, more frequent El Niño rains would have aided crops and greened up the normally dry desert scrub surrounding the irrigated floodplain. This would have allowed people to take advantage of increased grazing for camelid herds in the middle valley; as it did in early historic periods (Rostworowski 1981:53), and as it happens today with European-introduced livestock such as sheep and goats. In prehistory more forage due to

wetter conditions may have increased populations of wild animals, allowing agriculturalists to supplement diets with small game. Also, a broader distribution of forage may have shifted grazing opportunities for deer further down the valley to areas they would not normally have been found.

## 2.4 Environmental zones and diversity

Unique environmental and topographic conditions played a significant role in cultural developments in the coastal valleys of Peru. Significant changes in elevation over the relatively short distance from the coast to the highlands create different environments within close proximity of one another. Although the Moche River basin is not large, due to major changes in elevation and climate over its course, it contains diverse environmental zones that have significant and varied impacts on people and subsistence regimes (ONERN 1973:54-67). The National Office for the Evaluation of Natural Resources (ONERN) divides the Moche River basin into five environmental zones based on differences in climate and natural vegetation, including discussion of potential for agricultural development (ONERN 1973:54-67) (Table 2.4.1). These correspond roughly to the more general scheme created by Javier Pulgar Vidal (1972) that uses *Quechua* terms to classify environment and ecology for the coast, sierra, and jungle environments of the Central Andes. As a more general scheme, Billman (1996:29) divides the Moche valley into lower, middle, and upper valley zones based on the ONERN (1973) designations (Figure 2.4.1).

Table 2.4.1. Environmental designations by ONERN (1973), Pulgar Vidal (1987), and Billman (1996).

ONERN (1973)		Vidal (1972)		Moche Valley (Billman 1996)	
0–900 masl	premontane desert	0–500 masl	<i>Chala</i>	Lower valley	0–300 masl
500–1,800 masl	premontane scrub desert	500–2,300 masl	<i>Yunga</i>	Middle valley	300–800 masl
1,600–2,800 masl	low montane thorny steppe			Upper valley	800–4,200 masl
2,600–3,700 masl	humid montane grassland	2,300–3,500 masl	<i>Quechua</i>		
3,700–4,200 masl	very humid montane grassland	3,500–4,000 masl	<i>Jalca /Suni</i>		
		4,000–4,800 masl	<i>Puna</i>		

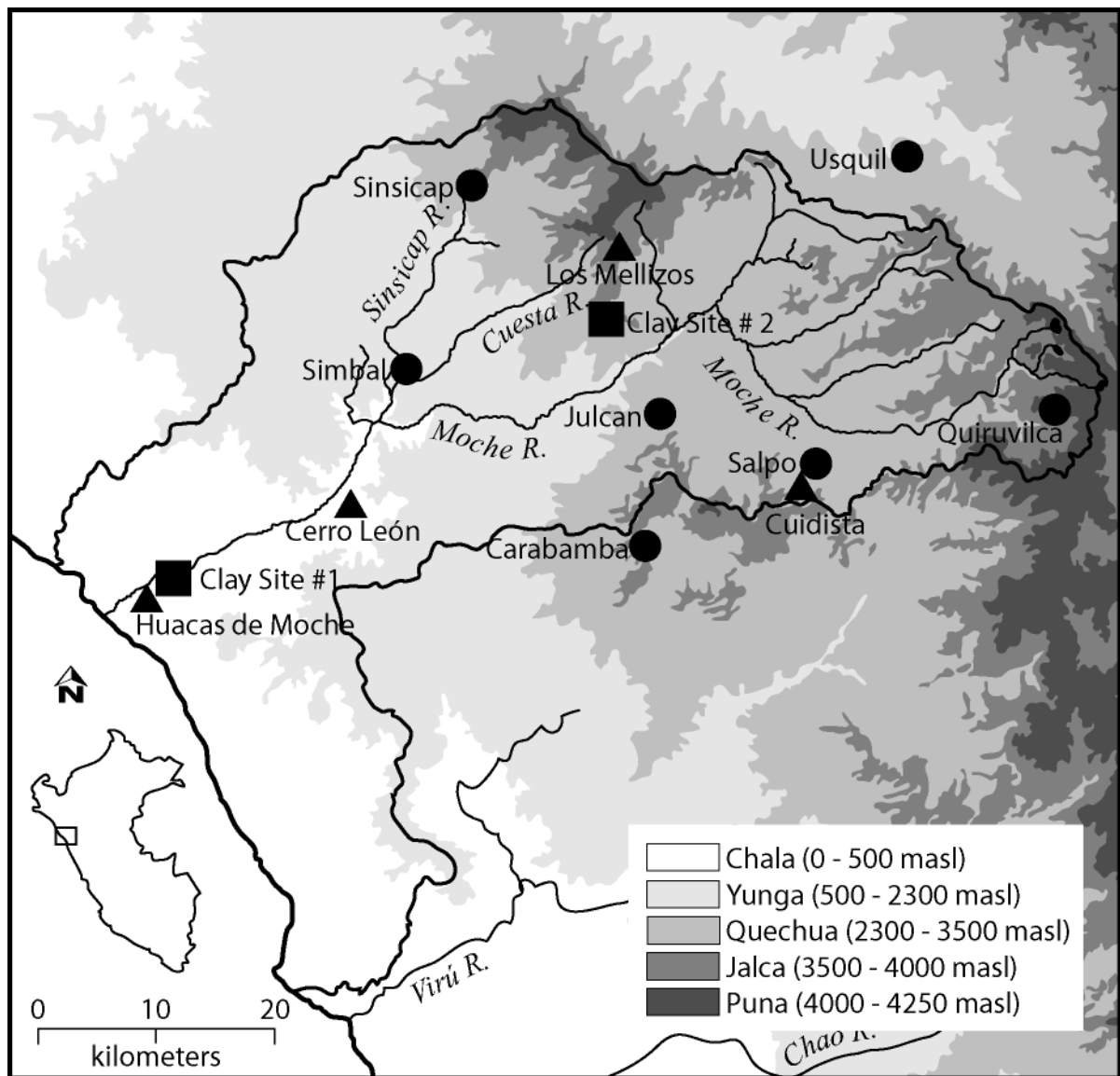


Figure 2.4.1. Natural zones of the Moche watershed with sites mentioned in text.

The lower valley desert is a broad alluvial fan ranging from sea level to approximately 500 m above sea level. In prehistory as well as the present, people living here had direct access to marine resources and the greatest amount of arable land (made possible only by long irrigation canals with headgates in the middle valley). The *chala*, is Vidal's term for the zone from the Pacific coast to about 500 masl. This zone is rain shadow desert with river valleys running perpendicular to the shoreline. The Humbolt current brings cold water species to the Moche valley except during El Niños

when warm water species shift down from the north Irrigation agriculture can take place year-round but the longer canals needed to reach out into the broad floodplain developed later in time (Billman 2002; Sandweiss and Richardson 2008; Vidal 1987). The earliest irrigation took place in the next inland zone where the floodplain narrows.

The middle Moche valley comprises the foothills of the Andes from 500 to 800 masl. The desert scrub environment in the middle valley has much less valley bottomland available for irrigation agriculture than the lower valley. Vidal (1972) refers to this next inland zone as the *yunga*, but the term *chaupiyunga* is also used (Dillehay 1976; Netherley 1988; Rowstworowski 1988). Netherley (1988:264) says that *chaupiyunga* is a 16<sup>th</sup> century term from the *Quechua* language meaning “between hot and cold.” It describes the region from roughly 300 to 1,800 masl at 9° South Latitude. In the Moche valley, the *chaupiyunga* encompasses the zone roughly from Cerro León up the Moche, Sinsicap, and Cuesta valleys into the upper Moche valley. A greater variety of plants can grow here under irrigation than in both the lower and upper valleys. In the period immediately before the arrival of the Spanish, this region was known as especially well-suited to growing the Trujillo variety of coca (*Erythroxylum novogranatense* var. *truxillense*), *ají* peppers, and maize. Netherley (1988:264) notes that pressure from highland groups for access to the *chaupiyunga* was probably always intense, because for them it was the only zone in which such crops could be grown on a large scale<sup>4</sup>.

The upper Moche valley (800 to 3,700 masl.) has virtually no arable bottomland for cultivation. Significantly fewer cultigens can grow in the upper valley because of the climate and topography however the highlands still provide great quantities of pasture and farm land. Dry land farming (because of increased amounts of rainfall over lower elevation sites) and llama herding are a major part of past and present lifeways, although in many areas canal irrigation was and is practiced. The lower part of the upper valley includes the agriculturally productive *quechua* zone (2,300 to

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<sup>4</sup> However, I have seen Trujillo variety coca growing in shaded areas of kitchen gardens on rural farmsteads as low as 260 masl in the Moche valley. It is possible that many families could have had one or two shrubs for their own use in many areas of the lower and middle valley, under the right conditions.

3,500 masl). The zone has seasonal rainfall and some irrigation too. Especially notable in the Moche watershed is the area around the town of Sinsicap which is in a valley at the lower limit of the *quechua* zone, where large areas of sloping farmland are irrigated by numerous spring-fed canals (Billman personal communication 2011). In contrast to the south where agricultural terracing is common, northern Peruvian *quechua* farmers do not terrace hill slopes (Sandweiss and Richardson 2008:96). The *quechua* is the upper limit of maize production — its highest areas are cold enough to freeze at night while daytime temperatures can be quite warm. This significant diurnal variation limits the variety of agricultural crops that can be grown but makes the production of freeze-dried potatoes (*chuño*) and dried llama meat (*charqui*) possible (ibid.). The *quechua* is the first of the upper elevation zones where humans face potential issues with oxygen saturation. Sandweiss and Richardson (2008:96) note that beginning at about 2,850 masl, several generations may be required for inhabitants to fully adapt to the decrease in oxygen.

The eastern limits of the Moche watershed include Vidal's *jalca* (called *suní* in southern Peru) and *puna* ecological zones. The *jalca*, a steep, dissected region above the *quechua*, is a more difficult environment for agriculture than the *quechua*. However herding is common and several crops can still be grown such as chenopods, *tarhui* (a high protein lupine or legume), fava beans, and tubers such as *oca* and *ulluco*. The *puna* environment is the highest zone in the Moche watershed, extending from 4,000 to nearly 4,300 masl at its maximal elevation near Señal Cerro Tuanga (Fariss 2008:8). The *puna* is lower relief grassland dotted with small lakes and ponds at the continental divide in the highest part of the Moche river watershed. Although there are no wild camelids in the northern Peru today, they were present in the *puna* in prehistory and for some time after Spanish contact (Bonavia 2008:247–249). Camelids would have been an important year-round source of food for *puna* residents. Wild grasses for grazing camelids would have been one of the *puna*'s most important plant resources. Because of cold average annual temperatures (0° to 7° C), crops that can be grown in the *puna* are limited to varieties of potatoes and chenopods.

The compressed nature of ecological and topographic change in the coastal valleys of Peru is remarkable. Brush (1977:10) describes different types of zonation, compressed, archipelago, and extended, as having a profound effect on social and economic organization in the Andes. The Moche valley lies between the compressed (3,500 m of elevation gained in about 40 km) and extended (3,500 m of elevation gained in over 300 km) zones. Although gradients are steep, in compressed zones modern smallholders can move between multiple ecological zones on almost a daily basis and there is no need for permanent migration; only short-term seasonal movement akin to transhumance (Brush 1977:11). In contrast, extended zones have such widely separated zonation that modern populations are highly specialized in the subsistence of a single zone and travel periodically to exchange goods (Brush 1977:14). For the Moche valley in prehistory, travel between adjacent zones without resettlement, permanent migration, trade and exchange, or any combination of strategies would have been feasible for populations living at different elevations.

Although at first the ecological zones in the Moche valley appear nearly barren, there is an incredible variety of food resources that are potentially available in an environment that in its natural state is marginal for agriculture. Along with rich marine and fresh water resources, naturally occurring terrestrial resources, as well as resources possible through the development and spread of domestication and irrigation technology the Moche river watershed provided ample opportunities for groups to amass surplus and thrive. In the middle Moche valley *chala* zone, people at or near Cerro León would have had access to the ocean and been able to travel well into the *chaupiyunga* zone within a day's journey on foot<sup>5</sup>. Travel to the Moche valley *quechua* zone or into the middle and upper Virú valley might have been a journey of approximately a day and a half. Although the mobility of people in prehistory is often under-considered by archaeologists as an essential element of social complexity, it is worthwhile to consider that the occupants of Cerro León were perfectly situated for intra- and inter-valley movement as a common element of daily existence.

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<sup>5</sup> This is defined by travel at a pace of 15 to 20 miles or 32 kilometers in a full day (8 to 12 hours) of walking (Brush 1977; Topic and Topic 1983:239).

## 2.5 Cerro León community setting

Cerro León was designated MV-225 as part of a valley-wide site numbering system following Moseley's lower Moche valley survey conducted during the Chan Chan-Moche Valley Project (Billman 2002:372). The site of Cerro León is located 15 km inland from the Pacific coast on an isolated hill on the south bank of the Moche River (Figure 2.5.1). Billman (1996) identified three clusters of highland EIP sites in the middle valley, Cerro León being the largest site in the cluster with the same name. At this point inland, the elevation of the Moche River is about 200 masl. At the archaeological site, well outside of the floodplain, the elevation of Cerro León is 250 masl at the base of the hill and 395 masl at the summit. The closest source of drinking water for residents of the site may have been the irrigation canal to the immediate west of the hill. There is no indication that a natural spring was ever flowing on or near Cerro León.

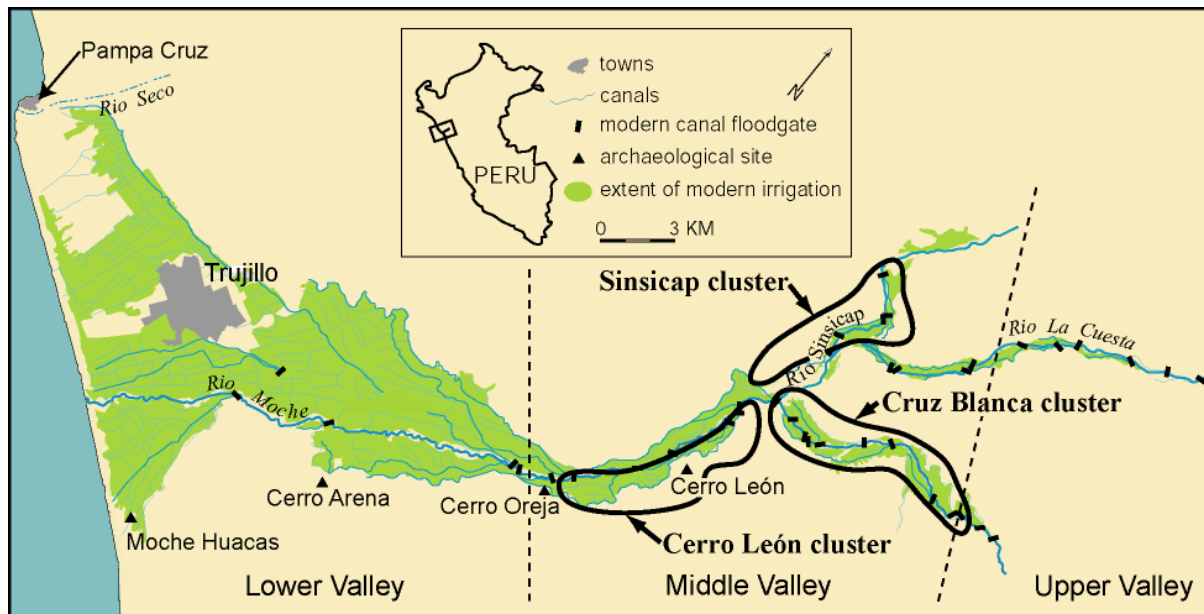


Figure 2.5.1. Cerro León and the three Highland EIP clusters in the Moche valley.

Cerro León was in a prime location because of its defensive, hill-slope setting and its location near irrigation canal headgates that supply water to the lower valley. Brian Billman's (1996:276–278)

survey indicates that Cerro León was one of the largest of 114 sites with highland EIP pottery in the middle Moche valley, possibly one of a group of three autonomous polities vying for resources in the region during this time frame. Of the three site clusters, Quebrada del León, Cruz Blanca, and Sinsicap, the Quebrada del León cluster is the largest. These clusters were separated by unoccupied buffer zones and possessed either a three-tier (Cerro León and Cruz Blanca clusters) or a two-tier (Sinsicap cluster) settlement hierarchy (Billman 1996:278).

Christopher Brennan (1980) and John and Theresa Topic (1983) noted the presence of prehistoric roads that passed near the site of Cerro León, potentially providing relatively easy access to the upper Moche and Virú valleys, the Carabamba plateau, and the Otuzco basin. These locales in the adjacent highlands provide links to more distant centers in highland La Libertad as well as the Cajamarca and Callejon de Huaylas regions (Topic and Topic 1983:257). The Quebrada del León at the base of Cerro León originates in the upper limit of the middle Moche valley in the *yunga* zone near the modern town of Poroto.

The people of Cerro León settled along important canal networks that served sites en route to the coast on the south side of the Moche River. Cerro León is less than 5 km up-valley from Cerro Oreja, the paramount Gallinazo phase site in the valley. The site of Moche is located approximately 15 km down-valley from Cerro León on the same canal system. Moche sat at the terminus of the irrigation canal network on the south bank of the river. Cerro Oreja's residential areas have yet to be dated, but archaeologists estimate that Moche leaders likely established the Zona Urbana and Huaca de la Luna sometime during Cerro Oreja's apogee and decline (Billman 1996; Brennan 1980:10; Shimada 1994:164; Uceda et al. 2008:214-215; Topic and Topic 1983a:255).

Geologically, Cerro León lies in the Quebrada de los Chinos hydrologic basin, comprised of Cretaceous/Tertiary granodiorite bedrock intrusives that form part of the Peruvian Coastal Batholith discussed earlier in Section 2.2 (Cobbing et al. 1981; Huckleberry and Billman 2003; Pitcher 1978; 1997). In this region, the batholith intruded into metamorphosed shale and sandstone as well as andesite and pyroclastic rock of the Jurassic Chicama and Casma Formations (Huckleberry and



Billman 2003:508; Pitcher 1997:235). The valley bottom below the site is filled with unconsolidated debris flow deposits from past flooding events. These form discontinuous terraces that have been cut into by many now dry drainage channels (Huckleberry and Billman 2003:508).

In terms of climate and environment, Cerro León is at 8° South Latitude, near the division between the lower and middle valley environmental zones but within the *chala* or pre-montane desert zone of irrigation agriculture. Irrigation-fed agricultural fields in the vicinity of Cerro León are capable of supporting year-round intensive agriculture. However the site is located in the narrow valley neck, 5 km up valley from where the floodplain broadens significantly on the final leg of its journey to the coast. In this *chala* zone residents of Cerro León could have grown fruit trees, maize, peppers, beans, yucca, and squash in two growing seasons (a longer and a shorter) for maximized, year-round production. Although not fully in the *chaupiyunga* zone which is ideal for coca production, Cerro León is located at the transition to it. It is possible that residents could have had easy access to land ideal for raising coca and/or been in a critical location to control its distribution. As noted earlier in this chapter, a few modern farmers cultivate coca in the vicinity of Cerro León as a kitchen garden plant.

Cerro León's occupation covered more than 10 ha and is divided into twelve site areas based on concentrations of architecture (Briceño and Billman 2009:23) (Figure 2.5.2). The bulk of residential occupation was on the north side of the hill (Areas 1, 2, 3, 4, 5, and 7) with other, smaller clusters of architecture at the base of the east (Areas 6 and 8) and south (Area 9) sides of the hill, and a sparse occupation close to the summit (Areas 10, 11, and 12). The site's two main residential areas, Area 1 and Area 2, are situated about 50 m above the base of the hill and lie on the east and west sides of a large *quebrada* chute. Potential functional distinctions between the areas of occupation are discussed in the next section.

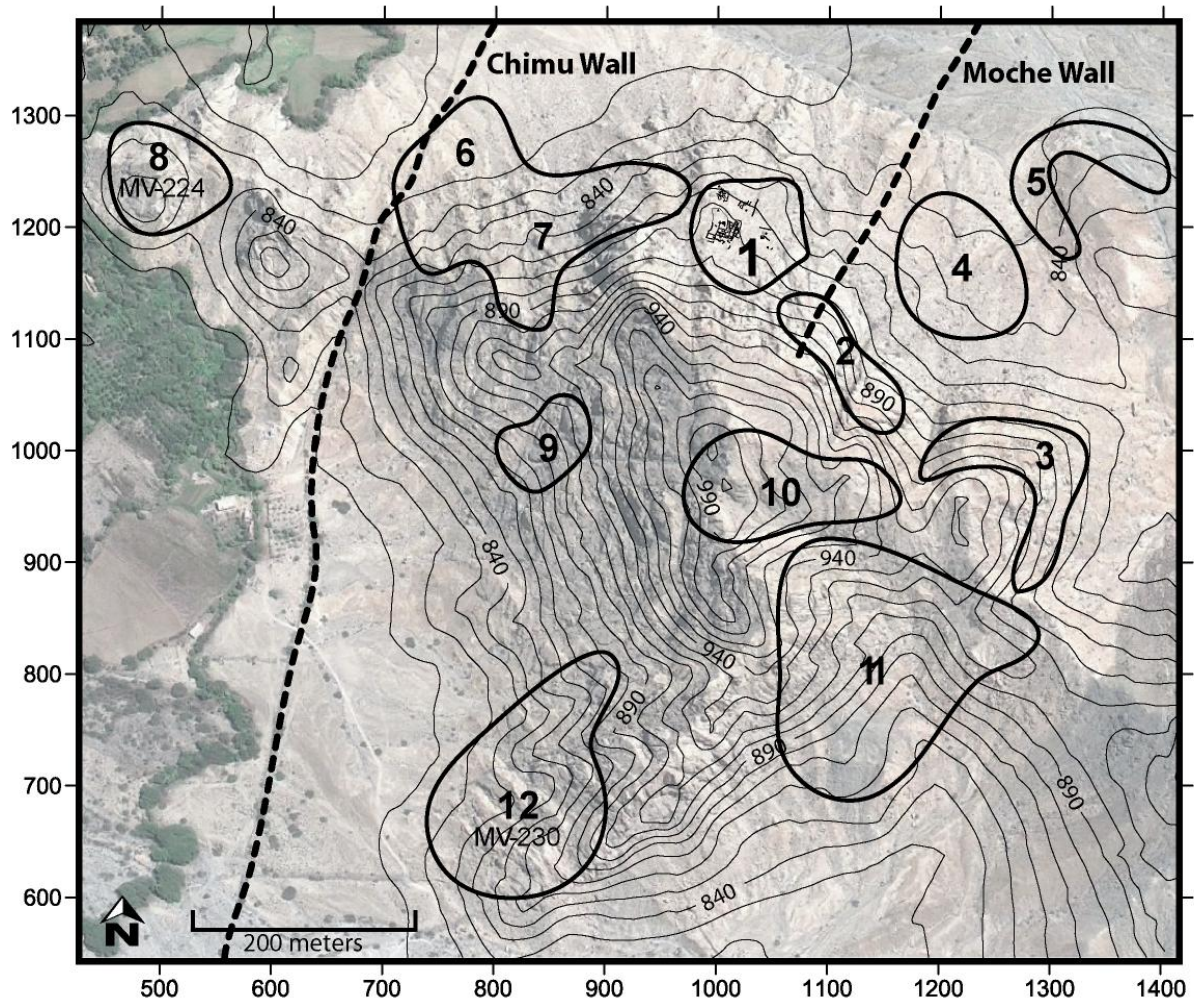


Figure 2.5.2. Cerro León (MV-225) and its twelve site areas, Compounds 1, 3, and 6 in Area 1.

## 2.6 History of mapping and excavations at Cerro León

The Cerro León hill is isolated which offered excellent views and a defensible location for settlement yet, conveniently, it is immediately adjacent to prehistoric canals and agricultural fields. Because of the terrain (e.g. massive bedrock outcrops, debris-filled quebrada chutes, and steep drop-offs), the EIP occupation is clustered in different areas, mostly on the north and east hill slopes that face up-valley. Several factors made Area 1 the best option for excavations. Although it was clearly heavily modified by the original occupants, Area 1 had the largest areas of level terrain for occupation. It also had the best views up the valley and was protected by limited access from the base

of the hill 50 meters below. The upslope limit of habitable terrain in Area 1 is a large outcrop of steep bedrock, making access from the other side of the hill extremely difficult. Because of the large, open areas of level terrain, Area 1 suffered much less damage from colluvial activity and erosion than other site areas. Most of the damage to Area 1 was caused by wall collapse, runoff and pooling of water from flood events, and modern looting.

Most other areas with domestic occupation (Areas 2, 3, 6, and 7) did not have the advantage of relatively large, flat spaces for construction that Compounds 1, 3, and 6 in Area 1 did. Areas close to the base of the hill (Areas 3 and 11) were sparsely occupied and damaged by erosion and colluvium. Areas 6 and 7 were smaller terraces with highland EIP domestic occupation that, in addition to erosion, were heavily damaged by a later Moche cemetery as well as some of the most severe looting activity at the site. Areas 9 and 10 near the summit had only small spaces for domestic occupation associated with defensive features (Fariss 2008). Areas 4 and 5 are at the base of the hill and have different architectural features that do not appear to have been mainly for domestic occupation. Area 4 contained many grouped *batanes* (grinding stones) as well as large storage bins. Area 5 had expedient hearths, camelid bones, and possible circular stone-walled structures. Currently Area 5 is interpreted as a possible camelid corral area. Area 4 may have been for communal processing and storage of agricultural products. In both areas, severe erosion precluded intensive excavation.

Excavation at Cerro León focused on Area 1. In Area 1, at least five residences were present (Compounds 1, 3, 5, 6, 7, and 8). Compound 1 had the most prominent position on the largest and most extensively modified terraces of the residential group. Compound 1 is by far the largest residence, being five times the size of Compound 3 and nearly three and half times the size of Compound 6 (Table 2.6.1). Residences in Area 1 were separated from others by natural and cultural features including *quebrada* chutes, steep drop-offs, bedrock outcrops, and large retaining walls. It is clear, based on size, location, and functional interpretations, that Compound 1 served a special social or ceremonial purpose in the surrounding community and that other residences, especially their

nearest neighbors, had some kind of relationship to the occupants and activities of Compound 1. The main point of entry into the Area 1 residential group is either through Compound 1's large patios via the western *quebrada* chute or up the eastern *quebrada* chute that terminated in a midden dividing Area 1 from Area 2.

Table 2.6.1. Surface collected and excavated residential compounds, Area 1, Cerro León.

Compound	Total area (m <sup>2</sup> )	Surface coll. area	%	Excavated area	%
1	480	511.81	100+	336.9	70
3	65	141.5	100+	78.6	100+
6	137	137	100	82.10	60
7	89	89	100	0	0
8	18	18	100	0	0

Cerro León was first visited by John and Theresa Topic during their fortifications project, carried out in the late seventies and early eighties. The Topics identified a large occupation on Cerro León but no further investigation was carried out (Topic and Topic 1982a; 1982b; 1983; 1987). As a result of his survey, Brian Billman (1996) selected Cerro León (MV-225) as one of the HEIP sites in the Moche valley with the greatest potential to address the timing and nature of highland-coastal interaction. In 1999, field schools for the Moche Origins Project (MOP) had just finished excavating a sample of middle Moche phase rural households at MV-83, near the modern settlement of Ciudad de Dios on the north bank of the river in the middle Moche valley. In 2000, preliminary testing was first carried out at Cerro León and consisted of excavation of a 1 x 1m unit in order to date construction of a large wall that crosses the quebrada. Setting of site datums also began at Cerro León in 2000.

Before the excavation program began, MOP team members obtained initial radiocarbon dates for Cerro León from targeted subsurface testing in Area 2, a residential compound adjacent to Area 1. Carbonized maize from sealed domestic trash provided a range of dates from A.D. 1 – 330, calibrated 2-sigma range (Huckleberry and Billman 2003:510). The dates indicate that the occupation of Cerro León occurred during a temporal crossroads in north coast sociopolitical development; within the

Gallinazo-Early Moche phases (ca. A.D. 1 to A.D. 400) in North Coast chronology (Billman 2002:391; Huckleberry and Billman 2003:519). Occupation of Cerro León may overlap with later Gallinazo phase occupation of Cerro Oreja as well as the changes in settlement patterns and material culture that indicate the inception of Moche sociopolitical and ideological influence centered at the coastal site of the Huacas of Moche.

Investigation by the MOP at Cerro León, conducted between 2002 and 2008, concentrated on a group of three large residential compounds (Compounds 1, 3, and 6) in Area 1 of the Cerro León site complex (Figure 2.6.1). We chose Compounds 1, 3, and 6 because they were the best-preserved residential compounds at the site. Additionally, with dense domestic trash and evidence for structural modifications, they would likely have been some of the longest occupied at the site.

Surface collection and excavation began in 2002, focusing on the largest and best preserved of the residential compounds in Area 1 in what appeared to be the main habitation area of the site, designated Compound 1. The main portion of the compound, later determined to have constituted the oldest part of the residence was the focus of effort in this first field season. Terminal occupations of the north half of Feature 5, as well as several storage or special purpose rooms to the south were explored. The supervised student crews also began excavations on the residence's largest interior patio, Feature 18.

Another, smaller residential compound (Compound 3) in Area 1 was divided into units based on visible architecture and surface collected during the 2002 field season. A single small residence in Area 2 was included in the 2002 field investigations. Compound 2 was located just east of the large quebrada chute separating the main habitation area from other smaller clusters of residential occupation. This small and poorly preserved residence in Area 2 abutted up slope bedrock outcrops. The compound was sketched in planview and surface collected but no further work was carried out at Compound 2.

In 2004, the MOP conducted its most ambitious set of surface collections and excavations. This season saw the near complete excavation of residential Compound 3, the smaller residence down

slope and to the north of Compound 1. Excavations in this sector, led by Julio Rucabado Yong, focused on determining the limits of the residential space concentrated along the western bedrock outcrop that formed a natural exterior wall, and exploring the full sequence of building and remodeling in six of its nine definable rooms and patio spaces.

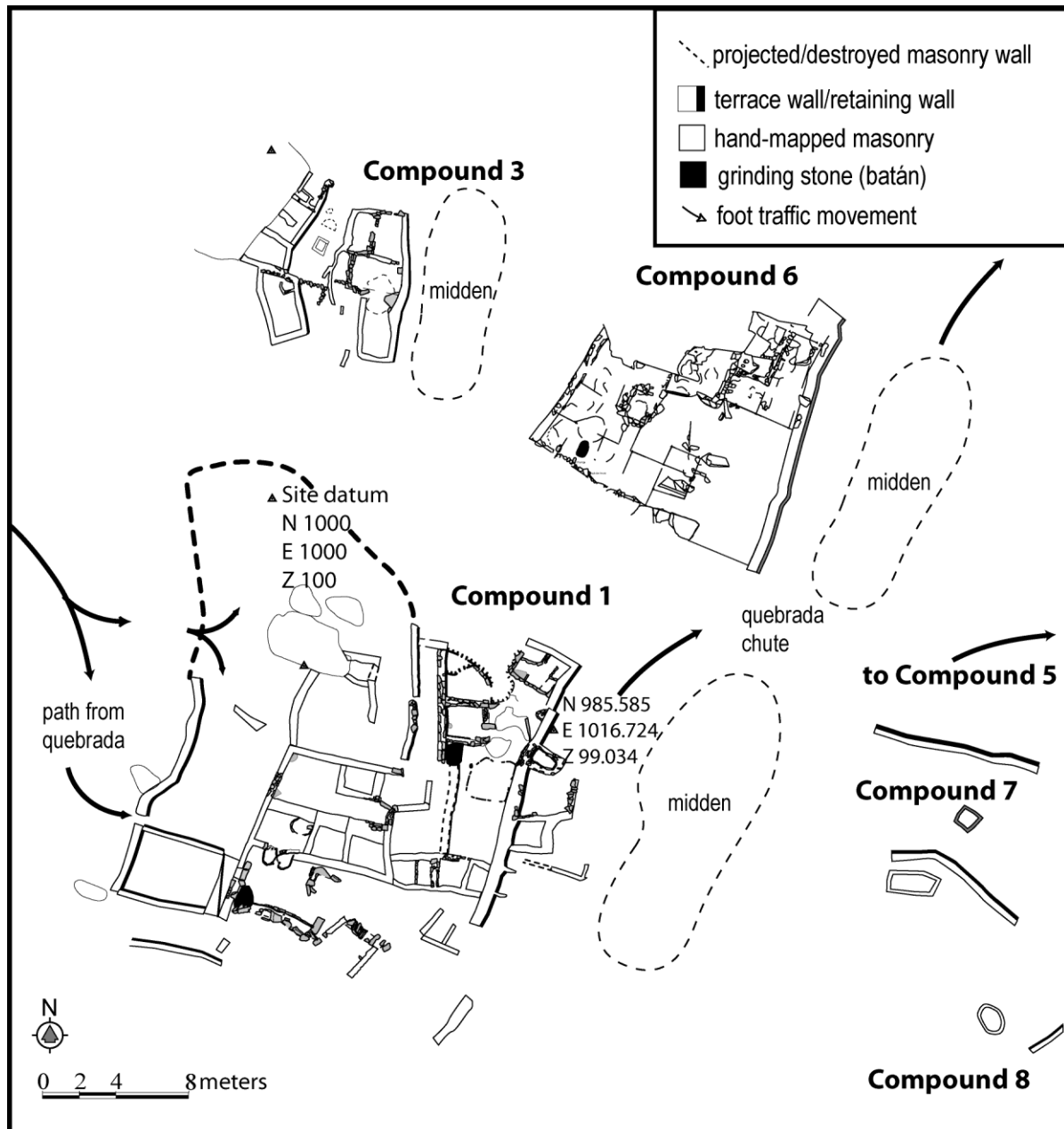


Figure 2.6.1. Schematic of the residential compounds in Area 1 of Cerro León investigated by the Moche Origins Project.

Excavations continued in Compound 1 as well, concentrating on defining the extent of occupation and the function of the main compound as well as clarifying the sequence of renovations and additions to the eastern limits of the compound bordering the east quebrada chute and flank midden. The full sequence of construction and remodeling of the Feature 5 kitchen was explored down to sterile deposits in the southwestern quarter of the large room. South of the large kitchen and several specialized storage spaces near the up slope terminus of the residential compound, crews worked to define a complex series of patio and special use areas possibly associated with public or ceremonial use.

Finally, the 2004 field season included an ambitious mapping project by MOP staff and volunteers. This included mapping of all of the site's visible architecture. In total, 11,000 points were shot with the total station over all twelve of the Cerro León site areas. This thorough coverage determined that while some areas of the site were in a good state of preservation, many others had been so destroyed by natural and cultural processes such as wall collapse, El Niño rains, and looting that they could not be accurately mapped or safely excavated (Fariss 2008).

Archaeological excavations in the shorter field seasons of 2005, 2006, and 2007 concentrated on completing excavation of the smaller Compound 3 residence and working to near 70% completion of the Compound 1 residential space. Compound 3 was excavated to its eastern terminus, the boundary of the residence being defined by an area of midden with no visible architecture. The project crews explored the patio Features 18 and 32 with complete coverage and some deeper cuts in buried trash deposits underneath their final occupation surfaces. Additionally, crews finished excavating the Feature 5 kitchen down to the earliest intact floor in the southeast, northwest, and northeast quadrants.

Surface collection and mapping of additional residential compounds in Area 1 took place in 2006 and 2007. In preparation for the 2008 field season, Compound 6 was divided into surface units and collected. Other intermediate-sized residential compounds in Area 1 adjacent to Compound 1 were also mapped and surface collected, including Compounds 4, 5, 7, and 8. During this time frame

the project also hired a professional topographer, to complete a topographic and architecture map of the concentration of habitations on the north side of the hill. The AutoCAD map generated by his efforts supplements the finer scale planview and profile maps executed by students and supervisors for the residential architecture. Spatial information on the distribution and physical attributes of grinding stones (*batanes*) as well as architectural features was mapped by Barker Fariss in 2007.

The final field season in the Area 1 residential complex at Cerro León focused on excavation of Compound 6, the third of three residences on the natural and artificially modified hill terrace that includes Compounds 1, 3, and 6. Compound 6 is intermediate in size between Compounds 1 and 3 but suffered more extensive looting and post-abandonment destruction than the other residences in Area 1. Excavations focused around the perimeter of the compound in two patios that comprised the east and west termini of the compound and in rooms along the northern edge, defined by a bedrock outcrop. Surprisingly, areas that we thought were more intact had turned out to suffer substantial looting damage, but the compound perimeter rooms were relatively less disturbed than had been anticipated. Although excavations only reached around 60 percent completion of the residence, the chances that a significant proportion of the unexcavated area remains intact are fairly low.

Two M.A. theses have been produced by students working on the MOP at Cerro León and offer important results indicating patterns of lithic production and use of stone tools at the site (SurrIDGE 2010), as well as potential functional organization of the site (Fariss 2008). Barker Fariss (2008) recorded architecture and the presence or absence of *batanes* to interpret sociopolitical organization and function of the different site areas. In his interpretation, the occupants of Cerro León invested significant planning and labor in site defense (Fariss 2008:42). The bulk of occupation was on the north side of the hill, leaving the south side vulnerable. Residents of the site compensated for this potential weakness by incorporating defensive features including tall walls, breastworks, and parapets in Areas 6 and 8 (refer to Figure 2.5.2 for site areas). Areas 9 through 12 were clusters of small residences with bastion features several meters above. In these areas residents located structures in ravines that could have served as easy access routes for raids up the south side of Cerro



León. On the north side of Cerro León, Fariss (2008:50–51) interprets “elite” (Area 1) and “middle class” (Areas 2 and 3) residential areas higher on the slopes and corporate features including areas for processing agricultural crops and camelid corals at the base of the hill. Few (Areas 9 to 12) or no (Areas 6 and 8) *batanes* were present on Cerro León’s south side, while elite (Area 1) and corporate (Area 4) spaces contain the highest concentrations of the largest granite and granodiorite *batanes* at the site (Fariss 2008:51). Smaller, Andesite grinding stones are interpreted as work surfaces for metal craft production (Fariss 2008:39–40). Such implements are found in Areas 1, 2, and 3.

Evan Surridge’s (2010) study of the chipped stone artifact assemblage provides insight into the sources of stone accessed and the intensity of production for certain tool types in which Cerro León’s Area 1 residents engaged. Mudstone, a distinct, easily-worked sedimentary rock, is the dominant material for paddle-shaped hoe tips as well as other tools and beads at Cerro León. The nearest sources for this sedimentary rock are up-valley and were surrounded by HEIP sites with pottery assemblages like Cerro León’s (Surridge 2010:36). When compared to significantly lower use of fine-grained igneous stone for tool-making at the site, it appears that Cerro León may have monopolized mudstone sources either for producing surpluses of tools for exchanges or possibly to intensify their own agricultural production tasks. The ratio of mudstone debitage to hoes and other tools is extremely high at Cerro León, but since the material is relatively soft, it is difficult to determine if the debitage is predominantly from production or maintenance activity (Surridge 2010:33). Surridge’s (2010:37) study possibly links Cerro León’s stone tool industry to intensive agricultural production through extremely high discard rates and extensive evidence of heavy use on mudstone hoe tips.

## **2.7 Discussion**

The Moche River watershed, as part of the Central Andes, was shaped by dramatic forces of geology and climate. The landscape that resulted from these processes produced significant variation in elevation over short distances affecting precipitation, temperatures, and environmental zonation, as

well as the capabilities of humans to engineer irrigation and agricultural systems or manipulate plant and animal domestication and reproduction. The geology and geomorphology of the Moche River watershed were also important to human settlement and interaction as the sources of raw materials for a variety of goods that were important to the domestic and political economies of groups throughout the occupation of the region. In particular, geological resources and geomorphological processes provided raw materials that give clues to the source regions of resources such as pottery clays and tempering materials.

Climate and environment also affected Moche valley residents' ability to produce items that were mundane and abundant as well as valued items that were more difficult to produce or procure. The distribution of physical features of the landscape, climate, and environment allowed people in all environmental zones of the Moche watershed to maximize their access to and production of resources. However the greatest potential for access to some of the most valued goods (i.e. coca and maize) would have been in the warm middle valley, with reasonable access to the coast and the *chaupiyunga*. This would not have come without some risk for people who wanted to settle at sites in the middle Moche valley, both in terms of the potential for damaging flooding during an extended period of increased precipitation, as well as the constant need to maintain some control over access to land, irrigation networks, and products. Another vital consideration would have been your group's ability to negotiate and justify claims to such resources.

During the EIP, the scenario of vying for some form of access to the most productive areas for valued resources must have been common to groups along the Peruvian Central Andes and coast. In the next chapter, I draw on the work of several scholars to demonstrate that this was certainly the case elsewhere in Peruvian coastal valleys in later time periods. Cerro Leonian's knowledge of and interaction with their surroundings led them to risk potential conflict with their neighbors in order to take full advantage of the resources that Cerro León and the middle valley had to offer. However the social, economic, and political payoffs potentially available with intensive irrigation agriculture in the transition zone between the *chala* and *chaupiyunga* must have been well worth the risks.

For my work in the middle Moche valley, I want to discover who these people were, how they lived their daily lives, and especially what strategies they used to connect themselves to the people and places they deemed most advantageous to their survival and prosperity. The analyses of material culture and architecture I carried out for my dissertation add detail to studies already completed for Cerro León. I focused on Compounds 1, 3, and 6 in Area 1 and my results demonstrate that the three dwellings exhibited differences resulting from a combination of factors. These included: the gendered and possibly ethnic makeup of household members, status distinctions, the length of occupation of each residence, the position of each in the household lifecycle, and the role of each household in the social, political, and economic life of the community and the region.

The objects and contexts related to everyday living, including daily meals and large-scale commensal events that are the focus of my study are ideal avenues to explore these issues. They are also inextricably tied to geology, climate, and environment of the site and region in the way that seasonality, the availability of natural resources, and positive or negative effects of environment on production were experienced by Cerro León residents and their neighbors. Therefore in the next chapter, I examine previous research on the north coast, not only to explore other accounts of highland-coastal interaction, but to focus on how other scholars treat households as well as issues surrounding the identities of household members and what material culture and activities reveal about social organization and interaction.

## **Chapter 3 THE NORTH COAST OF PERU IN THE EIP**

### **3.1 Introduction**

In this chapter I present a history of research on the Peruvian north coast EIP. Rather than merely summarize a body of research, especially for early to mid-twentieth century studies that have seen previous efforts at synthesis (see Quilter 2010, the 1999 edited volume by Billman and Feinman, and Castillo B. and Quilter's introduction to their edited volume 2010 for example), I focus on the themes pertinent to my dissertation project as well as research conducted within the last two decades. I examine household archaeology, social identity, foodways, and interaction between highland and valley people throughout the north coast EIP. I then bring together these various topics in a summative discussion that provides the rationale for the theoretical and methodological perspectives I have chosen to implement in my dissertation project. My goal in presenting previous research organized by the categories of household archaeology, identity, foodways, and highland-coastal interaction is to demonstrate that such disparate topics can be integrated not only to re-address the questions most often asked about EIP sociopolitical development from a new perspective but to fill in gaps in our understanding of aspects of EIP sociopolitical organization that are underrepresented in current archaeology of the Peruvian north coast. Locations of sites discussed in this chapter are indicated on Figure 3.1.1.

The past decade has seen major change in the accepted chronology of the Peruvian north coast EIP (400 B.C. – A.D. 800)<sup>6</sup> accompanied by change in scholars' ideas about social and political organization and its connection to material culture (see for example volumes edited by Millaire and Morlion 2009 and Quilter and Castillo Butters 2010) (Table 3.1.1). The current dissatisfaction with

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<sup>6</sup> These dates are from Billman 2002:378, Table 1, however according to Moseley (2001:173), based on the Ica valley sequence, the EIP dates roughly to 200 B.C. – A.D. 600.

the status of our knowledge for this period of increasing complexity is ushering in an expansion of research questions and goals. Indeed the scholars responsible for the groundbreaking studies upon

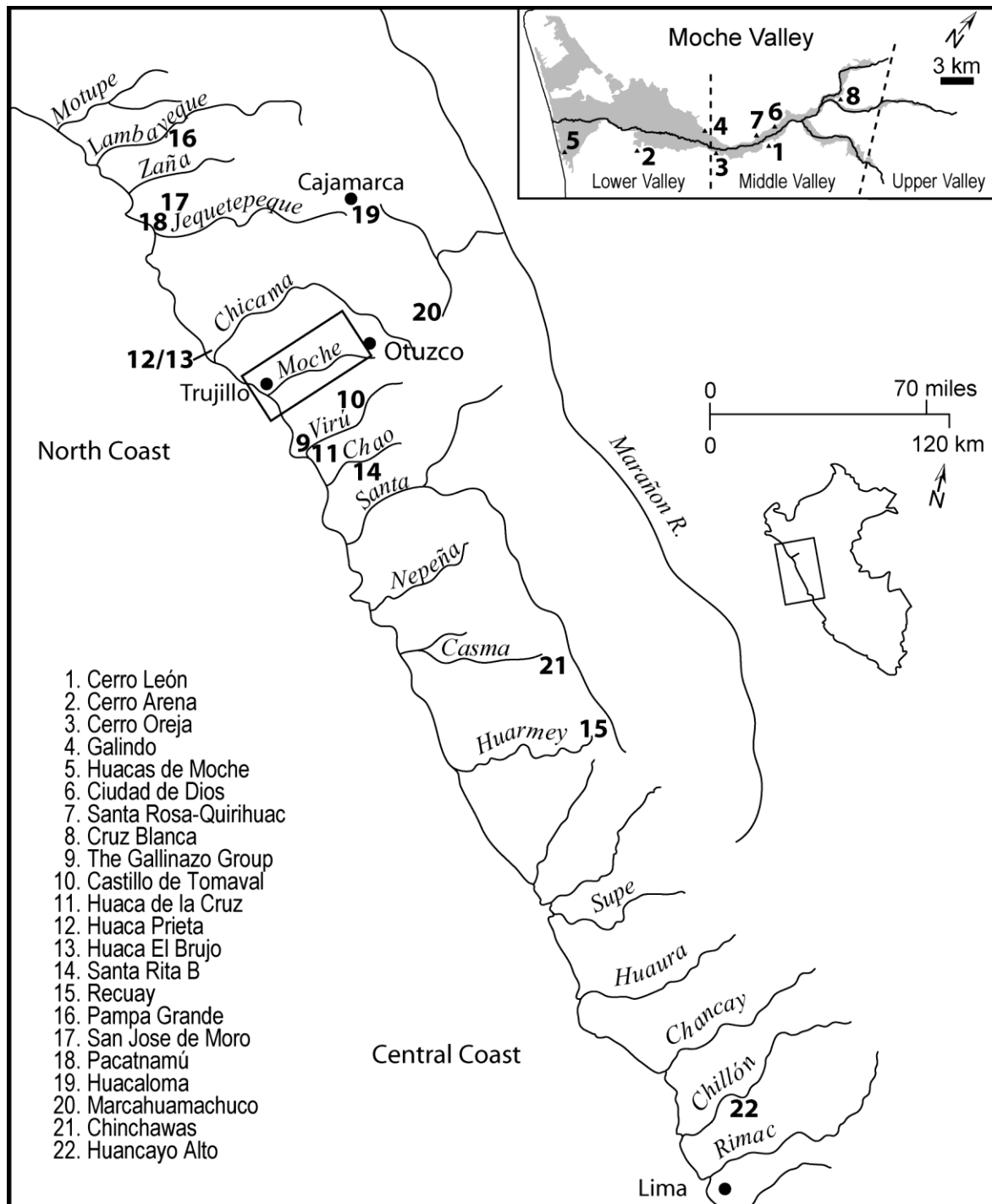


Figure 3.1.1. The north and central coast of Peru with sites discussed in Chapter 3.

which we have relied for more than half a century, including Rafael Larco Hoyle, Gordon Willey, James Ford, Wendell Bennett, Donald Collier, William Duncan Strong, and Clifford Evans Jr., saw the inherent weakness of relying on regional survey, surface collections, and limited excavations. They urged that their work serve as a preliminary means of informing future investigations so even today understanding the EIP is a work in progress (Strong and Evans 1952:16, Willey 1953:10-12).

Table 3.1.1. Current chronologies for the Moche valley EIP (400 B.C. – A.D. 600) and Middle horizon (A.D. 600 – 1000).

Huacas de Moche sequence <sup>7</sup>		Local Moche valley sequence <sup>8</sup>	
Early Chimu	A.D. 800-?	Early Chimu phase	A.D. 900-1000
Phase V	A.D. 650-800	Late Moche phase	A.D. 800-900
Phase IV	A.D. 450-700	Middle Moche phase	A.D. 400-800
Phase III	A.D. 300-450	Early Moche Phase	A.D. 200-400
Phase I/II/Gallinazo	A.D. 100-300	Gallinazo phase	A.D. 1-200
Gallinazo phase	100 B.C.-A.D. 100	Late Salinar phase	200-1 B.C.
Salinar phase	?-100 B.C.	Early Salinar phase	400-200 B.C.

### 3.2 EIP residence and household on the north coast

In the first half of twentieth century north coast archaeology, researchers identified and described households in order to inventory their number, forms, and contents (Bennett 1939; 1950; Ford 1949; Ford and Willey 1949; Willey 1953; Strong and Evans 1952). With these data, researchers sought to understand chronological developments and the spatial distribution of archaeological cultures by examining broad sociopolitical processes through settlement sizes, populations, and evidence for hierarchical organization. Archaeologists now criticize these approaches as overemphasizing type sites and equating pottery styles with political and ethnic groups (Bermann 1994:10; Shimada 2004:5). However, settlement pattern survey remains invaluable not only as a first phase in understanding the social, economic, and political systems of a region and as a guide to future research but also as a necessary complement to more focused, small scale studies.

<sup>7</sup> Adapted from Chapdelaine 2003:279, Cuadro 22.3

<sup>8</sup> From Billman 2002:378, Table 1

Studies conducted on the EIP household in the latter half of the 20<sup>th</sup> century on the Peruvian north coast focused mainly on the foundations of urbanism (Bawden 1982; Brennan 1978; 1982; Chapdelaine 2000; 2001; 2003; 2008; Shimada 1994; Topic 1982). Claude Chapdelaine (2002:82) asserts that this focus stemmed from Childe's equation of urbanism with state-level societies and the desire to prove that Moche civilization constituted the north coast's first state. Brennan's (1978; 1980; 1982) work at the late Salinar phase site of Cerro Arena focuses on variation in architecture to infer the roots of later Moche urbanism.

Researchers identified social stratification and socioeconomic classes through evidence from residential architecture focusing on differences construction quality, internal subfeatures such as the presence of benches, overall size of residential compounds, the amount of storage, and the quantity of remodeling (Bawden 1982:313; Brennan 1978:127; Van Gijseghem 2001:259). Quality in residential construction deals not only with finer construction materials, greater labor investment, or attention to detail, but also the idea of permanence or longevity. Length of occupation was noted in many studies of domestic architecture as a component of the household's social, economic, and perhaps political success (Van Gijseghem 2001; Shimada 1994). Van Gijseghem (2001:266) and Shimada (1994:147) even point to the use of adobe bricks as a possible indicator of higher status, noting that the use of recycled bricks in domestic contexts may have been connected to involvement of the state in residential construction. Perhaps there was some significance attached to adobe construction in Moche society, however the ubiquity of the material and the relative ease of brick production contradicts this assertion.

Most studies of EIP houses on the north Peruvian coast include the arrangement of space at the level of the site or site sector as a marker of status, although they differ according to the specific site. The arrangement of residential architecture at Galindo places higher status families in houses on an alluvial fan closer to water and other conveniences while low status residents occupied hill slopes overlooking the site (Bawden 1982). In Chapdelaine's and Shimada's studies, the proximity of a residence to the main adobe monument(s) indicates status. Structures identified as elite residences at

the Huacas de Moche are close to the base of Huaca de la Luna (Chapdelaine 2006; Topic 1977; Uceda et al. 2004). At the Salinar phase site of Cerro Arena, higher status residences were located not only on higher ground but also closest to passes with roads leading to the Virú valley, privileging access to trade routes (Brennan 1980).

In Van Gijsegheem's (2001) study, the significance of residential location is less clear, but proximity to public patio structures may also be a factor in superior social, economic, or political status. Proximity to corporate storage features did not appear to be a marker of high status at Galindo where lower class domestic structures were mixed with architecture interpreted as larger scale storage units (Bawden 1982:177). In fact, in general for the north coast EIP, there is little in the literature that connects high status residences and greater storage capacity. It is the increasing size of the *sala* (a general "living" room in houses) that has a positive correlation with high status at Galindo (Bawden 1982:178). Large, elite *salas* often had features such as ramps and dais that suggest functions related to ceremony, hospitality, or receiving.

Production at large centers for the Moche of the EIP and Middle horizon was attached to households that were comprised of "middle class" (Chapdelaine 2001:74; 2002) or special skilled artisan status (Russell and Jackson 2001; Shimada 1994; 2001; Uceda and Armas 1997) extended families. Commodities such as fineware pottery, textiles, metal objects, and figurines that fueled the political economy of northern and southern Moche polities were produced in locales that served as both workshop and residence (Billman 2010; Chapdelaine 2001; 2002; Russell and Jackson 2001; Shimada 1994; 2001; Uceda and Armas 1997). Lack of access to farm land and absence of agricultural tools at these urban residential compounds indicate to researchers that craft producers living in these structures relied on others to produce food to provision them (Chapdelaine 2002:71; Russell and Jackson 2001:165).

The residences of common or lower socioeconomic class families have received relatively little attention except for the work of Bawden (1977), Brennan (1978), Billman and colleagues (1999; 2000), and Gummerman and Briceño (2003). Other studies note that commoners lived either on the



fringes or outside of EIP Moche Huaca centers (Chapdelaine 2001:74; Shimada 1994:175). These perspectives differ from studies begun in the 1980s and 1990s in the south Central Andes that take a “bottom up” approach focus on household organization and activities, although these authors all examine how state societies infiltrated and affected non-state ones (Aldenderfer 1993; Bermann 1994; D’Altroy et al.2001; Goldstein 1993; 2000; Janusek and Kolata 2004; Reycraft 2008; Stanish 1989; 1992; Vaughn 2004). I address the theoretical and methodological aspects of these studies more closely in the following chapters.

Outside of larger mound centers recent studies have revealed a variety of data on Moche residences and daily life (Billman et al. 1999; 2000). At the late Gallinazo-Early Moche phase settlement of Santa Rosa-Quirihuac in the middle Moche valley, small (45 to 75 m<sup>2</sup>) architectural compounds are said to have housed relatively poor nuclear families who took care of most of their own subsistence needs (Gumerman and Briceño 2003). Middle Moche phase residential patterns at the site of Ciudad de Dios, just up valley from Santa Rosa, are distinct. At Ciudad de Dios, Moche elite resided in large masonry compounds (the largest may have been 20 by 40 meters or 800 m<sup>2</sup>, Billman, personal communication 2011). At Ciudad, lower status residents appear to have built their houses with *quincha* (mud plastered cane walls). Higher status residents engaged in activities such as metal working and large-scale *chicha* beer production (Billman et al. 1999; 2000). Both high and low status households appear to have engaged in spinning to make thread as well as making small quantities of plain pottery for their own use (ibid.). Like the residential pattern at Cerro Arena, higher status extended families resided higher on the hill slopes than their lower status neighbors. Data on foodways from Ciudad de Dios and Santa Rosa are included in Section 3.4.

Finally, the organization and size of the basic social unit for most of these households correlated with socioeconomic class. Other researchers have hypothesized that extended, or multi-nuclear family households were typically present in middle and higher socioeconomic class residences, while only the poor or extremely well to do lived in basic, nuclear family households (Billman and Briceño 2008; Chapdelaine 2002:61; Shimada 1994; Van Gijseghem 2001). It appears

that in both urban and rural locations for the EIP on the north coast, larger residences built with a superior quality of construction housed extended or multi-nuclear family groups for longer periods of time. Archaeologists also infer that families used as many members, resources, and sources of labor as they could support in order to achieve long-term stability through household reproduction. Smaller, more expedient, less well-constructed residences are inferred to represent less stable economic situations in nuclear family groups. Greater post-marital mobility and less longevity in residence are also seen in the archaeology of lower socioeconomic class residential architecture. However other factors besides socioeconomic status or political power, such as differences in the domestic cycle or occupations that were only seasonal, may have been at work. Such differences in the nature of occupation could have also correlated with differences in the size and quality of construction as well as duration of occupation of residential spaces.

It is clear that modern western conceptions of socioeconomic class are not an ideal fit with prehistoric coastal Andean society. There were indeed material differences in the quality of architecture and the quantity of residential space. Distinctions based on the functions of certain types of residential spaces, variations in residential longevity, and the number of household members also existed. These differences suggest a continuum of wealth and status was represented in residential architecture during the EIP on the north coast of Peru. The excavations at Cerro León provide a view of residential patterns that suggests a variety of factors shaped the continuum of social status and wealth, including position in the household life cycle and the ability to secure, through hospitality, networks of family and friends who provided labor, resources, or trading partnerships. In this case, larger households with more members were moderately to extremely well off. It is possible that small houses may have belonged to families just starting out, not necessarily of low socioeconomic status, and probably not isolated in terms of networks of kin or resources.

### **3.3 North coast society and cultural identity in the EIP**

Because of the neo-evolutionary focus on identifying Moche society as a state, much of the work post-dating the Virú valley survey focused on social stratification and socio-economic classes of households based on the quality, location, and artifact content of residential architecture at major site centers such as Cerro Arena, Pampa Grande, the Huacas de Moche, and Galindo (Bawden 1992; Brennan 1978; Chapdelaine 1998; Topic 1982; Shimada 1994). The presence of a continuum of material traits indicating increasing wealth or status served mainly as a means of marking the presence of hierarchies that may indicate state-level complexity. Many studies also explored evidence for occupational specialization and craft production in particular households and their relationship to political complexity (Chapdelaine 2001, 2002; Millaire 2008; Shimada 1994, 2001). The elite families who controlled or directed the flow of raw materials for the production of status objects were the focus of studies related to occupational specialization. Researchers paid less attention to the identities of the craft producers themselves.

The relationship between identity and material culture has had a long and increasingly complex history for archaeology of the north coast EIP. In the early part of the twentieth century, material culture (mainly pottery but also architecture) “was the medium for dating sites” (Willey 1953:9). Diagnostic types were selected to define archaeological cultures and put them in sequence with chronology building as the main objective (Castillo B. and Quilter 2010:4–5). Archaeologists have long been aware of how much more complex the reality of EIP social and political organization is than what these preliminary typologies represented. With ever-increasing sets of chronometric dates accompanying significant overlap in pottery styles previously thought to be more sequential in nature, many are finally beginning to grapple with identifying and understanding the undercurrents of complexity. Several have designed new research programs to critically examine the complex realities of EIP culture groups, especially where Gallinazo and Moche styles and cultures intersect (see Millaire and Morlion 2009; and Castillo B. and Quilter 2010). The focus is specifically on defining or

characterizing Gallinazo and Moche cultures, and what artifact style means and represents in relationship to them.

A few studies of identity deal specifically with mortuary samples for the north coast EIP. In an effort to examine descent groups, Sutter (2009) and Shimada and his colleagues (2008) examined individuals from various mortuary populations on the north Peruvian coast. Sutter compared people at the Gallinazo phase center of Cerro Oreja in the middle Moche valley to burials from the urban zone at the Huacas de Moche and individuals buried within Huaca del la Luna in both elite graves and in the mass graves of sacrificial contexts. He concluded that the Cerro Oreja sample population and others along the north coast (Shimada et al. 2008) all belonged to a “relatively coherent breeding population” (Sutter 2009:139). Sutter also interprets Gallinazo populations as descended from Salinar populations (*ibid.*). However, while the Cerro Oreja population was not distinguishable from the urban zone individuals, there was some distance between these two groups and the elites buried in Huaca de la Luna. Although biological data by no means serve as any kind of indicator of living groups’ perceptions of descent, origins, or group membership, these results do offer another line of evidence to inform interpretations of identities based on wealth, status and ethnicity.

Gagnon’s (2006) study of oral health in Cerro Oreja’s EIP population identified not status but gender asymmetry as a possible consequence of Moche leaders’ efforts to implement social, political, and economic change in the Moche valley. Her results intersect with foodways and also highland-coastal interaction and are discussed in the next two sections in more detail, but they have important implications for gender and status identities for Gallinazo-Early Moche phase groups in the Moche valley. Changes in diet indicate that staple finance may have been one strategy that Moche leaders used to shift and consolidate power (Gagnon 2006:263–264). Work patterns may have also changed as men became increasingly involved in contributing labor to the regional polity. This involvement likely included military service, construction labor, or farming to produce surpluses for the polity. Increased involvement is likely to have disproportionately benefitted men who were compensated with more nutritious foods (Gagnon 2006:266; Hastorf 1996:478).

Similarly, Joan Gero's (2002:49) study of gender for the EIP of the northern Andean highlands also indicates a trend toward gender divergence during the EIP. Her study supports the idea that women's "symbolic and functional positions in regard to social continuity and labor process" (ibid.) were changed and did not improve under the new order of Recuay society. As women's roles became marginalized in some aspects, they emphasized or transformed those forms of domestic power still firmly within their domain such as fertility and reproduction as well as food preparation and serving (Gero 2002; Limoges 1999; Ringberg 2007). Men's roles in Recuay society associated with warfare and civic duties also became emphasized as they diverged from those of women (Gero 2002:49).

### **3.4 Perspectives on foodways during the north coast EIP**

Few studies of prehistoric foodways exist for the North Coast of Peru. Most research in the past has focused on plant and animal inventories as they relate to the timing and nature of domestication, plant remains in grave offerings, or studies of subsistence technology and its relation to political and economic organization (Bennett 1946; Bird and Bird 1980; Donnan 1995; Eubanks 1979; 1999; Gillin 1947; Gumerman 1990; Pozorski 1976; Schaedel 1989; Towle 1952; 1961). From these types of studies, however, we get a good idea of the diet of prehistoric North Coast people. My form and function analysis of Gallinazo-Early Moche phase pottery combined with careful consideration of the ethnographic and ethnohistoric literature can be used to form a preliminary assessment of how people might have prepared the foods available to them both in everyday and special contexts. More recent interest in feasting in Moche elite and mortuary contexts explores evidence for large-scale drink production as an element of political and religious practice but does not focus on the beverages or foods prepared or their significance to Moche culture.

Research on foodways specifically for Gallinazo phase sites or contexts is limited. For earlier and later phases in the EIP, the amount of information is equally so. However, a growing number of studies document the development of various north coast cultigens before and during the EIP. Studies

have focused on the timing and process of domestication of particular species of crop plants or subsistence systems and the methods and technology of growing or raising food, not on how people prepared and ate it. A few inventories of macrobotanical remains exist for coastal as well as a small number of inland sites in the Moche and neighboring valleys. I present a list of plant and animal foods in Appendix A of this dissertation. These resources were cultivated, domesticated, or gathered or hunted at the time of Cerro León's occupation. Margaret Towle (1952) was the first to study and make an inventory of the plants from two Gallinazo phase sites in the Virú valley. Besides the non-edible wild and domesticated species presumably used mainly for clothing, rope, and construction purposes, the middens at Castillo de Tomaval and Huaca de la Cruz contained maize, peanuts, varieties of beans, squashes, and a range of fleshy fruits. During this time period, an inventory of plant remains from Gallinazo phase occupations at Huaca Prieta in the Chicama valley was the only other study to identify food remains that were not part of burial offerings (Bird 1948:299). Other than identifying the plants recovered, no inferences or conclusions were made about how these plants were used or processed.

No subsequent research focused on subsistence on the North Coast until Sheila Pozorski's dissertation work in the Moche valley (1976). Her work, which examines flora and fauna from the Preceramic Period through the Late Horizon, is one of the major contributions to our knowledge of subsistence practices for the North Coast. All of her data for the EIP was drawn from the Huacas de Moche site in the lower Moche valley. None of the data she described are specifically from Gallinazo phase contexts, but rather are derived from Moche III and IV midden contexts (1976:113). More recently, Bird and Bird (1980) wrote specifically on the morphological characteristics of maize from the Gallinazo phase midden deposits excavated by Bird (1948) at Huaca Prieta in the Chicama valley.

In spite of the fact that very little subsistence data are directly available for the Gallinazo phase, we can use the information from these studies to characterize the typical foodways that the residents of Cerro León might have practiced if we view Gallinazo foodways as embedded in a regional trajectory of continuity and change for the EIP as a whole. We can expect to make revisions

or refinements once subsistence data from Cerro León are analyzed<sup>9</sup>. More recently, data derived from the Moche Foodways Archaeological Project has provided preliminary information from early and later Moche phase contexts in the Moche and Chicama valleys for both coastal and inland sites (Gumerman and Briceño 2003), but information specifically on plant remains from the Gallinazo-Early Moche phase remains limited to that of Bird (1948), Towle (1952), and Bird and Bird (1980).

Regardless of phase-specific work, the EIP in general can be described as a time of intensification of irrigation agriculture with an increase in the production of crop plants, especially maize, beans, peanuts, and squash (Bawden 1996:87; Pozorski 1976:125). Relatively complex canal systems were constructed but major expansions of the system occurred *before* and *after* the Gallinazo-Early Moche phase; not during (Billman 2002:383). This technology required some collaboration, at least on the local level, in order to construct and maintain canals (Billman 2002). Pozorski's work indicates that the inventory of plant species present does not change from the Cotton Preceramic period to the EIP but that the frequencies of certain crop plants and their morphological characteristics do change (1976:120). Both the size of specimens and the amounts of plant remains found at sites did increase over time. The greatest increase in frequency over time occurred with maize, even though squash remained the most frequent plant by volume from the excavated contexts in both earlier and later periods. Squash seed size also increased 25 percent when compared to smaller seeds from Early horizon (Pozorski 1976:122). It appears that social changes began to occur along with plant morphology and availability. Changes in gender and status gradually began to affect who consumed different types of plant and animal foods (Gagnon 2006).

Crop remains occur with more frequency than tree fruits. According to Pozorski there are two likely explanations for this (1976:125). First there is more arable land and a concomitant increase in agricultural production due to the expanding network of irrigation canals in the early EIP (Billman 2002:383). Part of this greater quantity of irrigated land was likely taken up with the production of

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<sup>9</sup> Analysis of Cerro León macrobotanical remains began in 2011. The study is ongoing and is being carried out by doctoral student Dana Bardolph of the University of California at Santa Barbara.

non-food crops like cotton and gourds. Increased frequencies of edible crops (especially maize, peanuts, beans and squash) apparently indicate an increase in the amount of land devoted to growing them or possibly intensified production during the Gallinazo-Early Moche phase when no apparent canal expansion occurred. These types of plants also adapted especially well to large, irrigated fields. Second, tree fruits decreased in frequency because they were not amenable to large-field cultivation, at least not without considerably more effort and risk. They did, however, remain an important part of the diet and were likely cultivated along the edges of fields and along canals. Also, the ability to store the field plants, possibly as dried seeds or kernels, may have made it easier to accumulate surpluses whereas tree fruits would have been less abundant and difficult to dry and store for long periods. This could also lead to differential preservation with more of the field crop remains making the transition from systemic to archaeological context.

For the other valleys where such information is available, such as Chicama and Virú, the focus on irrigation and higher frequencies of field cultigens occurred as well, but the data are sparse (Pozorski 1976:244). At other sites the same plant species are present though the frequencies differ from site to site. At Huaca Prieta, Gallinazo phase assemblages are dominated by maize and common beans (Bird 1948:300; Pozorski 1976:245). The sites of El Brujo and Gallinazo have more marine resources represented. Llama bones are more common at Castillo Tomaval and Huaca de la Cruz in the Virú valley (Strong and Evans 1952:85 and 125).

In terms of animal foods in the EIP, the diet focused primarily on land animals. Marine species are present but are less of a focus than in preceding periods. The predominant protein source at Moche was llama, which were raised specifically for meat. Llama ribs and vertebrae show signs of burning which may be evidence of roasting but limb bones were not burned. Pozorski hypothesizes that limbs may have been cut up for cooking in containers (1976:118). This sort of provisioning from sizeable herds might be a reflection of the special nature of the site of the Huacas de Moche which was a ceremonial center. This pattern differed somewhat from small farming settlements farther inland. For example at Ciudad de Dios (a Middle Moche phase site about 25 km inland), Amber



VanDerwarker (in Billman et al. 1999) found that camelids were the main source of meat and that households processed the whole animal for consumption, in contrast to obtaining dried meat (*charqui*) or leg meat. Guinea pigs are also commonly found, and their frequency increased compared to previous periods. At Moche, bony fish and *Donax Peruvianus* (a small mollusk) are the most common marine resources in the excavated materials. Larger species of shellfish are not present. Pozorski attributes their absence to possible depletion of species by over-collecting in previous periods. Where marine resources (especially fish) are concerned, the data from Ciudad de Dios also contrast with the data from Moche, representing only a minor contribution to household consumption (Billman et al. 1991).

Many scholars have begun or completed projects that focus on foodways in the hinterland of the Moche valley within the last two decades (Gagnon 2006; Gumerman 2002; 2010; Gumerman and Briceño 2003; Mehaffey 1998; Ryser 1998; Tate 1998; VanDerwarker 1999). Preliminary analyses of sites in the Moche and Chicama valleys conducted by the University of Northern Arizona show varying patterns in the occurrence of corn, beans, peanuts and squash that might be related to socioeconomic status (Gumerman and Briceño 2003). At the Early Moche phase farming village of Santa Rosa Quirihuac in the middle Moche valley beans are the most common crop, followed by maize and cotton. Maize and peanuts occur more frequently in an elite compound at the Middle Moche phase site of Ciudad de Dios also in the middle Moche valley. More varieties of maize are present here as well. Though variations between the Salinar, Gallinazo, and Moche phases have not been examined, it seems reasonable to infer that the focus on field cultigens supplemented with fruits and a variety of terrestrial and aquatic animal foods occurred throughout the region in all phases of the EIP and was determined to some degree by availability of resources and economic conditions.

As in the Andes in general, feasting practices take a prominent position in north coast EIP research. According to Gumerman (2010) and Swenson (2006), evidence for feasting occurred mainly in the form of artifacts and features such as large-volume pottery containers for brewing, storing, and serving *chicha* as well as pot rests, hearths, and large patios devoted to large-scale

preparation and consumption of food and *chicha*. Culinary equipment and contexts for production and consumption of *chicha* beer are found at Pacatnamu, Ciudad de Dios, the Huacas de Moche, and San Jose de Moro, however plant remains from the brewing process are not discussed (probably because of preservation issues) and neither are other types of feasting foods except for llama meat (Castillo 2001; Gumerman 1997; 2002; Swenson 2006; VanDerwarker 1999).

At Cerro León feasting facilities, including gathering areas for guests, large-scale food preparation areas with hearths, pot rests, grinding stones, and culinary pottery (especially large vessels for cooking, fermenting, and serving *chicha*, vessels for serving other foods like stews, and large quantities of individual serving bowls for guests) are the main material correlates of feasting. Although studies of the plant and animal remains from Cerro León are not yet complete, the identification of *jora*, the germinated corn used to make *chicha*, as well as other large quantities of high-value fauna (McAnany 2010:133) such as *cuy*, camelids (likely llama), and deer would point to the preparation of special occasion dishes as well. Finally, deposits of large potsherds of fineware individual serving bowls may indicate relatively rapid, high-volume trash disposal after a feast (ibid.).

Gagnon (2006; 2008) focuses on changes evident in the dental health of men and women from late Salinar through late Gallinazo times at Cerro Oreja in the middle Moche valley. Her study concludes that shifts in behavior at the most basic level of individuals in households led to significant alterations in gendered activities and social and health status leading up to the emergence of the Southern Moche state (Gagnon 2006:246-247). This was especially the case with corn consumption. Cooked corn would have been highly cariogenic, while *chicha* beer, having most of the sugar converted to alcohol would not have affected dental health, thus porridge and beer produced different bioarchaeological signatures. Through time women and children exhibited increases in consumption of starchy foods (i.e. more dental caries), likely in the form of maize porridge, while the diets of men showed increases in consumption of marine resources and *chicha* beer (seen in high to moderate bone isotope values for corn consumption *without* caries) (2006:247,251). Gagnon interprets the intensified and increasingly gender-differentiated use of staple foods as one line of evidence for

Moche leaders' strategies to consolidate power by rewarding participation of men in work outside the household at the expense of women's participation in social and political life as well as their overall health. Gagnon's bioarchaeological study of populations at Cerro Oreja should spur more collaborative studies on how diet connects people to available resources in pattering ways.

### **3.5 Connections between highland, valley, and coast during the EIP**

Highland-coastal interaction in the EIP has been documented by regional settlement pattern surveys for the Moche, Virú, Chao, Santa, Casma, Nepeña, and Lurín valleys (Billman 1996; 2002; Billman et al. 2004; Briceño and Billman 2007; 2009; Briceño et al. 2006; Daggett 1984; Kent et al. 2009; Patterson et al. 1982; Topic and Topic 1982; 1983; Wilson 1988). However until the study at Cerro León, this interaction had not been explored through intensive excavations supported by AMS dates. Although signs of contact are common, the tendency has been to interpret evidence as indicating trade and exchange networks and not actual in-migration or colonization of valleys by highland groups (Lau 2005; Montenegro and Shimada 1998; Schaedel 1985; Topic and Topic 1982; 1983). Terrain, vegetation, and climate differences from that of the southern Peruvian Andes and coast combine to give northern Peru a relative productive capacity that is the inverse of the south (Montenegro and Shimada 1998:256). In the north, slightly lower agro-pastoral productivity of the highland zones and significantly higher productive potential in the valleys led Murra, Rostworowski, and others to infer that coastal populations could be relatively self-sufficient without reliance on verticality strategies. However, the subsistence capabilities, goals, and strategies of prehispanic highland groups in northern Peru have not yet been fully explored (Brush 1977; Montenegro and Shimada 1998; Shimada 1994).

Some archaeologists see interaction focused on movement of raw materials or small, easily moved objects with high esoteric or ideological value such as white clay bowls (Schaedel 1985; Topic and Topic 1983; Lau 2005; 2006). Kent and his colleagues (2009) report the presence of highland Recuay and Recuay-like pottery in the middle Chao valley at the site of Santa Rita B. They also

document evidence of camelid corrals, coprolites, and skeletal remains of young animals that are unique in the Chao valley (Kent et al. 2009:176). Proulx (1982), however, entertains the possibility that Recuay potters moved peacefully into the upper Santa, Nepeña, and Casma valleys. Kent and his co-authors present the idea that llama caravans are a rarely documented but feasible explanation for the movement of goods up and down the western slopes of northern Peru, suggesting less permanent residence of highlanders at middle valley sites. Although evidence of interaction increases every field season, most of it focuses on products from the highlands found in valleys or on the coast and not the reverse. More research is needed on the presence of coastal imports at highland archaeological sites.

In the southern part of the northern Peru, Lau describes the EIP community of Chinchawas in the highlands above the Casma valley as “insular” but with connections to a center in Huaraz (Lau 2005:94). Evidence of pottery imports at Chinchawas suggests that community members did not engage in intensive trade with valley and coastal groups from the Santa and Supe valleys until the LIP (Lau 2005:89). John and Theresa Topic (1982; 1983) state that Moche and Chimu expansion was directed north and south and that neither polity ever made any significant efforts to dominate the sierra. Even though evidence currently suggests no significant inland focus, the majority of excavation has focused on coastal sites to date so the picture remains incomplete (Montenegro and Shimada 1998:259). Data provided by regional surveys points to evidence that, at least in some areas, interaction inland would have played just as significant of a role in the EIP as it did for Middle horizon, LIP, and colonial times (Billman 1996; 2002; Briceño and Billman 2008; Kent et al. 2009).

Highland-coastal interactions are well-documented for the north Peruvian coast for late prehistoric and early colonial periods; however, historic evidence differs in nature from the archaeological record. In Middle Sicán contexts in northern valleys during the late Middle horizon and LIP, archaeologists identified evidence of highland-coastal interaction, mainly in the form of coast-based copies of Cajamarca style pottery (Shimada 1987; Montenegro and Shimada 1998; Montenegro 1997; Jaeckel 1987). In contrast, late prehistoric and colonial documentation does not focus on materials like ceramics. The Chimu made efforts to connect with highland groups in the

Jequetepeque valley for a number of reasons involving raw materials extraction, political alliances against the advancement of the Inca, and access to the *chaupiyunga*, the temperate zone especially valued for growing coca, peppers, and fruit (Montenegro and Shimada 1998:258). LIP evidence of Chimu interest in the *chaupiyunga* ecozone consists of fortifications along exchange routes within and beyond this ecological zone. Colonial documents focus on control of *chaupiyunga* coca farming zones and canal headgates in upper valley and highland zones in many cases reporting that representatives of many different regions actually relocated to these areas to manage resources (Rostrworowski 1985; 1989; Montenegro and Shimada 1998; Netherly 1988). However this later evidence for interaction would leave little direct or unambiguous archaeological evidence of occupation at sites dating to the EIP.

Highland-coastal interaction in the *chaupiyunga* zone of the Chillón valley in Peru's more recent past demonstrates that it is worthwhile to consider as an explanation for the more distant past as well (Dillehay 1977; Marcus and Silva 1988; Rostworowski 1988). Ethnohistorically, the Chillón case described multiple ethnic groups from the highlands, middle valley, and coast who engaged in a variety of tactics including conquest, exchange of goods and marriage partners, or colonization in order to control a stake in the middle valley ecological zone (Dillehay 1976:390; Marcus and Silva 1988:4). Warfare was present but was often manifested only as the threat of force, with groups controlling violence through concessions, tolerance, or superficial exchange relationships (Dillehay 1976:418). The movements of groups and the power asymmetries created as groups held their ground, took the advantage, or acquiesced were complex. Dillehay (1976:423) interprets the *chaupiyunga* site of Huancayo Alto in the LIP as a multiethnic center where groups controlled redistribution of goods (especially coca) and made decisions about land, labor, and intergroup relations. Dillehay also discusses the things that were exchanged and the reasons that the flow of people and goods tended to go in certain directions. These considerations are useful for hypotheses about highland-coastal interaction in the Moche valley.

For the Moche valley, material remains of highland-coastal interactions during the EIP comes mostly from ceramics, settlement patterns, and evidence for fortifications, but also includes archaeological distributions of lithic tools and raw materials as well as bioarchaeological evidence (Billman 1996; Billman and Briceño 2008; 2009; Billman et al. 2004; Gagnon 2006; Surridge 2010; Sutter 2009; Ringberg 2003; Topic and Topic 1982; 1983; 1987). The ground-breaking work of John and Theresa Topic and their students provide the basis for all future work related to highland-coastal interaction in the Moche valley and sierra. Their survey focused on fortified sites and features in the middle Moche valley, the Carabamba Plateau between the Moche and Virú valleys, and the upper drainages of the Moche and Chicama valleys (Topic and Topic 1987).

The Topics found that sites along trade routes and at quebrada entrances, valley necks, and river confluences were likely to contain trade ceramics in the EIP. These sites had long occupations and acted as filters, controlling permeability at a regional level (Topic and Topic 1987:55). Exchange networks at all scales of interaction led to the presence of Recuay, Cajamarca, and the highlands of modern-day La Libertad at EIP sites in the middle Moche river valley (Topic and Topic 1983:251). These patterns existed, but to a lesser extent, in the middle Virú valley. The Topics (1987:55) assert that for the Moche and Virú valleys an inland boundary zone existed at about 600 masl for the EIP, Middle horizon, and LIP. This coincides with the site of Cruz Blanca and is just below the transition zone from irrigation to dry land agriculture in the Moche valley. At Cruz Blanca, their survey data suggested that white “kaolinite” wares were common enough to indicate that people from various white clay source regions in the highlands may have resided at the site (Czwaro 1983; Topic and Topic 1987). Highlanders were militarily weak in their scenario, serving as middle men between more powerful polities such as Huamachuco, Recuay, and possibly Gallinazo-Moche.

Survey by Brian Billman (1996) broadened coverage beyond locations of fortifications in the middle Moche valley to all sites<sup>10</sup>. His results indicated that over 100 sites contained such a high

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<sup>10</sup> While Billman’s survey recorded sites of all types and time periods, the focus of dissertation material was developments up to and including Moche phases. LIP and Late horizon sites were not discussed.

percentage of the Moche-Virú style highland pottery that trade was not the most likely explanation (Billman 1996:276). In contrast to the Topics, Billman (1996:283) saw the main advantage of highland EIP occupants of the middle Moche valley as military might. They invaded the upper and then the middle Moche valley in two waves to push out Gallinazo phase groups. Highland invaders controlled land, canal head gates, and trade up and down the valley. Cerro León, MV-225, is one of the largest EIP sites with highland pottery and the subject of this dissertation research. By late Moche times highland exchange networks waned and the Moche were well established in the middle valley above the confluences of the Moche, Sinsicap, and Cuesta rivers (Billman 1999:Figure 10.10).

For Billman (1996), conquest was the scenario that had the best fit to the settlement pattern data. However, it is not clear what became of highland populations after they abandoned Cerro León and the other HEIP (highland EIP) sites. Billman (1999; 2002) hypothesizes they either left, driven out by the Moche to resettle elsewhere, possibly returning to the highlands, or somehow became assimilated into Moche culture. Whatever the case, it appears most, if not all, highland EIP residents abandon middle valley sites by the middle to late Moche phases. The results of my dissertation study and other recent work (Billman et al. 2004; Briceño and Billman 2007; 2009; Briceño et al. 2006; Fariss 2008; Surridge 2010) at Cerro León indicate that highland groups may have occupied the middle valley, possibly in some cases for several generations. The primary goal in excavating Cerro León was to test whether highlanders came to reside in the middle valley by means of conquest (Billman et al. 2004; Briceño and Billman 2007; 2009; Briceño et al. 2006). In addition to conquest, hypotheses about highland-coastal interaction to test with the data from Cerro León are presented in detail in the next chapter. These include intensive exchange between resident coastal populations with highland settlements and highland migrations to the middle valley that may have taken various forms (see Dillehay 1976; Rostworowski 1988).

Evidence from bioarchaeology is somewhat ambiguous on the topic of highland occupation in the middle Moche valley. Gagnon's (2006) research on oral health for late Salinar through Gallinazo- Early Moche phase residents of Cerro Oreja showed that highland occupation of the middle Moche

valley may also have affected access to coca leaves for people buried at the site. During the early and middle Gallinazo phases coca consumption drops for both sexes (based on decreased incidence of posterior buccal bone abscesses). In the late Gallinazo-Early Moche phase coca consumption increased (i.e. abscesses increased) again but this time for high and low status men only (Gagnon 2006:255). Billman (1996; 1999) hypothesized that evidence for infiltration of highland groups into the middle Moche valley may be related to desired control of the *chaupiyunga* region where they could grow coca. Sutter's (2009:141) work on genetic distance of the Cerro Oreja populations concluded that gene flow from the highlands occurred for all Gallinazo phases but less frequently in the late Gallinazo phase. In spite of the decline, Sutter maintains that gene flow from the highlands was greater overall for Cerro Oreja than other coastal populations (ibid.). That there may have been highlanders continuing to enter in the breeding population at Cerro Oreja does not preclude the idea that they entered the coca growing zone and pushed out local populations, but with evidence of concentrations of highland style pottery at Cerro Oreja and other sites with mixed highland, Gallinazo, and Moche style assemblages, other scenarios seem possible.

### **3.6 Discussion**

A tremendous deficit of knowledge exists for the early EIP, especially for the Salinar, Gallinazo, and Early Moche phases (Kaulicke 2009:239). Donna Nash (2009) describes Andean household archaeology as heavily focused on urbanism and social stratification with less attention to subsistence or domestic economy, craft production and other topics. Nevertheless, studies devoted to understanding everyday life for EIP groups in all socioeconomic situations are increasing. By examining daily life in three EIP households that predate and possibly overlap Early Moche development, this dissertation addresses the origins of Moche society out of early sociopolitical diversity. I also explore highland-coastal interaction from a perspective that highlights the social, political, and economic connections between consumers of household goods at Cerro León and the producers of those items. This includes a detailed examination of the activities and identities of both



consumers and manufacturers of material culture in the context of all activities involved in the production and reproduction of Cerro León households.

These topics are not well-represented in the current corpus of research. Neither pre-Moche, non-urban populations nor contemporary non-Moche groups residing in rural zones of the Moche valley have been represented in the literature in equal proportion to research presented on elite urban existence. Daily life and household activities for both non-elite and elite co-residential groups from the Moche valley hinterlands will provide a broader picture of the organization of EIP society. The timing of occupation and abandonment at both rural sites and urban centers is vital to expanding our understanding of pre-Moche and early Moche social organization. Finally, “bottom-up” perspectives for the north Peruvian coast EIP like those found in the southern Peruvian Andes will also enlighten and complement studies of what was happening at the top of the social and political pyramid. Both perspectives are necessary for a complete understanding of social complexity and change.

Also, more research is needed on mobility and contact between groups in various regions that is less reliant on descriptions of pottery style to make inferences about the various ways household members may have connected with or moved around in the ‘outside world.’ How to recognize occupation versus trade in archaeological record is challenging but of paramount importance. We should recognize that movement took many forms in the Andean past and try to identify whether people came together to form trade partnerships, made marriage partnerships that created gendered diasporas, or moved themselves or their family group to a new and distant location and whether the settlement was semi-permanent, seasonal, or long-term. The question of whether we can see identity in aspects of pottery manufacture and distribution or other types of material culture is the key to avoiding overly simplistic interpretations of archaeological evidence for highland-coastal interaction.

What might these aspects of material life be and how can we recognize issues like identity and mobility that are currently equivocal in the material record? Domestic architecture and the use of residential space, subsistence technology, cloth manufacture, and foodways are all viable and underexplored avenues to understanding people and mobility in the northern Peruvian coast and

highlands. Although skeletal remains and the treatment of the dead by a social group can be informative, researchers should attempt to carry out studies of group movement and interaction without reliance on bioarchaeology, burial patterns, or grave goods. Skeletal remains are often absent from domestic sites or, if present, poorly preserved or from disturbed or ambiguous contexts. More effort should be focused on alternative methods to burials for understanding migration of groups or individuals.

Foodways are central to social reproduction in daily existence as well as in special feasting contexts, especially as concerns technology, gender, socioeconomic status, and possibly ethnic relationships at all scales including residence, community, and region. I want to examine method and theory for discussing foodways when supporting studies of food remains are lacking and without focusing only on feasting events. In agreement with Gumerman (1997; 2010) studies of foodways should establish the daily organization and production of meals first as a baseline for understanding social organization and only then determine what special commensal situations might have entailed (see also Hastorf 2003). I will focus on the technological and social aspects of food production and consumption at Cerro León to draw out differences in the ways foods are prepared, the tools used to prepare, consume, and store food items, and the social or political contexts of production and consumption and the goals of manufacturing culinary equipment as well as the intended and actual uses of culinary assemblages.

The trends of gender divergence and asymmetry detailed by Gagnon (2006) and Gero (2002) for the EIP in northern Peru warrant further investigation. Households, especially in rural settings would be ideal contexts for examining the roles of men and women and how they participated in EIP society and economy. Studies focused on gendered households would complement existing studies of mortuary contexts, public or ceremonial spaces, as well as the growing number of bioarchaeological studies of EIP populations.

## **Chapter 4 THEORETICAL PERSPECTIVES AND PROJECT METHODOLOGY**

### **4.1 Introduction**

In the last chapter, I summarized previous research on north coast households, identities, foodways, and highland-coastal interaction. I demonstrated that, for the Moche valley EIP, our understanding of social organization and complexity only beginning to take shape. In this chapter, I critically assess theoretical perspectives from the Andes and elsewhere on these topics to show how models of highland and coastal identity and interaction can answer questions about pre- and early-Moche social organization and dynamics in the Moche valley. I then outline the project methodology used to collect and interpret data about Cerro León households, their histories, activities, and social organization.

I view the theoretical and practical framework of my dissertation as a nested set of perspectives adapted from anthropology and developed specifically for archaeology. Agency-structure is an appropriate ‘point of departure’ for household studies because it examines the composite actions of individuals as they move within the wider society to which they belong (Gardner 2008:95). Agency necessitates studying small-scale social groups in order to reveal the broader social order (Wilson 2005:5). The household is an ideal forum for the recursive relationship of agency and structure where agents are responsible for the reproduction or alteration of social structure as much as that structure enables or constrains their actions. Household archaeology offers a means of connecting agency-based theoretical perspectives to practice by providing “a human face to the link between archaeological detail and larger cultural process” (Gardner 2008:99; Sillar 2000:135). Behavioral archaeology can enhance an agency-structure framework by focusing on the relationship of people and material culture as well as considering the effects of natural and cultural processes on the archaeological record (Schiffer and Skibo 2008:27). I combine these frameworks with research

concerns for foodways and identities which are at the very core of the social and biological reproduction of households in the Andean world through time (see for example Allen 1988; Weismantel 1983). I want to answer questions about who people were, what they did, and when they lived at Cerro León.

Who lived at Cerro León and why does it matter? Different sources hypothesize very different relationships between highland and valley groups. On the one hand, the residents of Cerro León and similar middle valley sites may have been native to the valley, engaged in intensive trade with militarily weak highland groups who took advantage of their connections between larger, more powerful highland and valley polities (Topic and Topic 1982). On the other, people at Cerro León may have invaded the middle valley and controlled land, water, and other resources to benefit themselves and their highland core communities (Billman 2002:391). The two scenarios have different implications for the historical trajectory of the Moche valley as well as the nature of relationships between highlands and coast throughout the Central Andes. Both hypotheses are based on different interpretations of material evidence drawn from different types of regional archaeological survey<sup>11</sup>. With Cerro León as a sample case, I use this chapter to explain the set of theories chosen to interpret the unique mix of material culture assemblages that others have reported for north coast valleys in the EIP and to find out what they tell us about what happened in the middle Moche valley in the EIP.

## **4.2 Household organization in central Andean and coastal regions**

Households are comprised of groups of individuals, sharing a residence and cooperating to carry out daily activities (Varien 1999:16). Through the relationships and interactions of its individual members, households allocate resources, organize production, and structure consumption (Hendon 2006:187). The household is the most common social unit of subsistence but at the same

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<sup>11</sup> Billman (1996) based his conclusions on evidence from full coverage survey whereas John and Theresa Topic gathered evidence from survey limited to only sites with a range of defensive features as well as those they considered as true fortifications (see Topic and Topic 1987:48-49). Billman's was local and detailed while the Topic's covered a much larger region, from Chicama to Casma and from highlands to coast.

time the most varied (Netting 1993:58; Wilk and Rathje 1982:618). In spite of variation, households have common core activities, including production, distribution, transmission, biological and social reproduction, and co-residence (Wilk and Netting 1984:5-19). These core activities have many common elements throughout the Andean present and past (Allen 1988; Brush 1977; Gelles 2000; Hamilton 1998; Mayer 2002; Sillar 2000; Weismantel 1983). For the non-state, prehistoric Andes, there is general consensus that the typical household was not a nuclear family but rather consisted of extended family or even multi-nuclear family groups (Isbell 1996; Silverblatt 1987). Most studies of non-state prehistoric households focus on the effects of control over less politically complex groups by encroaching states and empires in the southern Andean highlands (see for example Bermann 1994; Hastorf and D'Altroy 2001; Janusek 2004). Few studies explicitly examine household structure in non-state complex groups in the northern Central Andes, however (but see Brennan 1979).

Unfortunately for most archaeologists who want to use analogy to talk about prehistoric, pre-Incan Andean and coastal households, modern and historic households in rural Peru are the products of the process of *reducción* implemented on the remnants of the Inca empire by the Spanish, favoring a nuclear family configuration of the household (Mayer 2002:35; Nash 2009:220). Another factor is the rural to urban migrations of the twentieth century. These events, as well as modern outside influences, make reconstructing earlier prehistoric social organization through analogy problematic. However drawing on cross-cultural studies allows insight into those aspects of households that endure through time and space and may have clear pre-Hispanic origins. Interpreting household organization is especially challenging for archaeologists because most ethnographic and ethnohistoric sources pay little attention to material culture. I have tried to draw general elements from ethnographies of Andean households without overreaching the limits of interpretation for EIP society. I try to pay special attention to studies where material culture is discussed and I incorporate information from ethnoarchaeological research in the Andes and elsewhere.

Households are dynamic social forms, consequently researchers view changes in household composition as a developmental cycle (Goody 1958; Netting, Wilk, and Arnould 1984). Households

form, expand, decline, and in some cases cease to exist. Households are not static entities because membership in the household changes over time just as the members themselves change in their capabilities, contributions, and influences (Mayer 2002; Sillar 2000; Weismantel 1983, 1989). In many parts of the Andes, the life cycle of the household, just as the life cycle of the individual, can be described as a “lengthy process of becoming” where a new household transitions gradually to sleeping and eating in their own home or set of rooms (Weismantel 1989:58). The developmental cycle of the household affects the social network of its members as they change strategies to adjust to changing times and circumstances (Sillar 2000:38). Just as people cycle through stages of household life, household goods and the house structure itself follow cycles of production, consumption, modification, and discard or decay. Household social reproduction is powered by these varied cycles of production, distribution, and consumption of goods and people (Sillar 2000). Seasonality is another vital cyclical process that affects the social and economic organization of rural, agrarian households (Netting 1993; Sillar 2000).

Households in most agricultural societies are never completely autonomous (Mayer 2002; Netting 1993; Werner 1998). In the Andes, social groups engaged in intensive agriculture emphasize horizontal kin relationships and networks even though the vertical ties of ancestry also have appeal as sources of power and legitimacy (Brush 1977; Gelles 2000; Rostworowski 1989; Sillar 2000). For the most part, labor is the basis of relationships within and between agrarian, preindustrial households. In the Andes both the gendered division of labor within the household and reciprocal labor exchanges between households have idealized and practical components (Brush 1977; Harris 1978; Hamilton 1998; Weismantel 1983). Most if not all social relationships in Andean traditional households have material foundations and “success often means surplus” for households who manage their reciprocal relationships well (Brush 1977:141).

Cultural identities, such as gender, status, and ethnicity, comprise major structural features of society. Identity is a sense of belonging, based on “how we perceive ourselves and how others perceive us” (Diaz-Andreu and Lucy 2005:3). Cultural identities are recursive as well. They provide

locales where society organizes individuals and individuals in turn organize societies (Holland et al. 1998:287). Like individual and household life cycles, identity formation and maintenance is a continual process. The process of identity formation involves social interaction and creates difference (Diaz-Andreu and Lucy 2005:3). Multiple identities based on age, gender, origins, wealth, and religion intersect in households.

In the Andes new households are traditionally created through marriage which increases one's network of resources and relationships (Brush 1977; de la Cadena 1997; Sillar 2000). Age- and gender-based divisions of labor are cultural ideals, although the realities of work on a day-to-day basis are flexible (Netting 1993). According to Skar (1981:41), Andean women are widely reported to exert exclusive control over storage and distribution of agricultural products. Women are considered responsible for the preparation of daily meals in traditional Andean households (Hamilton 1998; Mayer 2002). They also manage food preparation and serving for supra-household events such as the *faena*, or work party communal meal. The technology of food preparation is often complex and time-consuming, even in the simplest agricultural societies, and these technologies are typically the responsibility of women (Goody 1982:69).

Food and drink structure relationships within the household and at the supra-household level on a daily basis as well as following the seasonal cycle and the household life cycle (Goody 1982; Gumerman 1997; Sillar 2000; Weismantel 1989). Shared meals simultaneously represent unity and difference within the household at daily meals and in social contexts at gatherings. Often the women providing labor or resources for such events use them as an arena to deliver powerful commentary on the actions of others through the quality of food served or the act of serving itself (Mayer 2002; de la Cadena 1997; Klaritch 2010). Other domestic domains where Andean women traditionally exerted power are procreation and fertility as well as textile production (Gero 1992).

It is often difficult to gauge social status and economic success in agrarian households because such wealth often depends on many variables and takes the form of land holdings and livestock as well as work separate from farming (Mayer 2002; Netting 1993; Smith 1987). However,

it appears that, in general, wealthier households are larger ones with extended or multi-nuclear family units in sustained, mature phases of the household life cycle (Cabrera et al. 2005; Mayer 2002; Netting 1993). Members in these larger co-residential units engage in more diverse means of obtaining land or other resources, and they have greater control over resources that are more productive. They are also more productive in their social, economic, or political connections outside the household and community and share these successes with kin or even fictive or non-kin associations (Mayer 2002; Werner 1998). Successful extended families can take control of supra-household leadership tasks and manipulate their positions of responsibility to their own advantage (Mayer 2002:38).

Ethnicity is difficult to study in the Andes because ethnohistory and ethnography focus on Andean society after Spanish contact. Socially constructed classifications of self and other based on origins are focused on the divide between indigenous populations, people of European descent, and those who have both indigenous and European origins (*mestizos*) (de la Cadena 1997; Gelles 2000; Gillin 1947). Today in the Andes there is a racialized hierarchy based on the dichotomy of European-looking, urban, wealthy, and educated in contrast to indigenous-featured, rural, poor, and under-educated (de la Cadena 1997). There is some evidence that indigenous groups in highland regions did identify difference in themselves and others based on region of origin as well as how people made their livelihood, how they dressed, and the language they spoke (Gelles 2000:44). Highland Andean religion facilitated these distinctions in that groups associated their ethnic origins with the local mountain they worshipped (ibid.).

In colonial times, it appeared that there may have been many languages along the northern Peruvian coast and in the highlands that resisted 'Quechuanisation' from the south that took place during Inca expansion (Adelaar 2004:397). Observers also noted distinctions of languages spoken by fishing communities and those spoken by inland farming communities (Adelaar 1988; 2004; Quilter et al. 2010; Silva-Santisteban 1982). Ethnohistoric records and toponyms suggest a division of the Moche watershed into highland *Culli* and coastal *Quingnam* speakers however, little information



exists beyond this as to whether speakers of these languages connected themselves to a linguistic or geographic region of origin, or saw themselves and others as belonging to distinct ethnic groups because of language differences, livelihood, or sacred local landscape features (Quilter et al. 2010:362). Scholars are uncertain that these languages or distributions existed in the more distant past, before late Chimú times<sup>12</sup>.

Based on the features of households that may have extended back into the pre-Inca past of the Central Andes presented in this section, households typically consisted of extended families that were not only multi-generational but may have included siblings or cousins and their families (Isbell 1997; Mayer 2002). Members were individuals whose interests were often at odds with others in the household, but their survival and success as a whole depended on reciprocal ties to family, in-laws, friends, or patrons that were negotiated on both individual and group levels. Spiritual life was likely framed as a series of reciprocal relations as well (Silverblatt 1987). Stem households likely branched off of a core unit gradually and may never have reached complete physical separation (Weismantel 1989; Isbell 1997). Household members connected to a place that was the locale of daily food preparation and consumption even though some members slept elsewhere or only lived there on a temporary basis. Identities most likely revolved around age, gender, origins or ancestry, and status related to ownership or access to labor and resources or leadership.

Identification of the material, archaeological correlates of the household in Andean prehistory revolves around the size and spatial layouts of residences and their internal features, especially hearths that show evidence of heavy and repeated (daily) use, grinding stones, and private- or communal-access storage spaces. The amount of renovation, repair, or additions to discrete sets of structures indicates degree of longevity and inferred stage in the household life cycle. Material goods in the residence, both everyday and special objects, were either made by household members or obtained through exchanges that most likely represented social relationships on some level. Just as

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<sup>12</sup> Quingnam is virtually unknown and Muchik is a language isolate with very deep roots on the north coast. Culli, clearly not related to Muchik, was possibly proto-Quechuan.

Surridge (2010) identified evidence for lithic tool production or maintenance in the same three Cerro León residences, other evidence of production (e.g. processing and storage of crops or waste products from metal or ceramic manufacture) must be examined. Spinning and possibly weaving were carried out in the three households and finishing stages of metal production as well (Billman and Briceño 2008). However, the scale and organization of production Cerro León residents engaged for these activities is not yet clearly defined. No evidence of pottery production was found. If objects were not connected to the byproducts of their manufacture at the site, then their origin, manufacture, and distribution must be explored in order to infer how and why they arrived at Cerro León households. The pathways of distribution out of and into the site will reveal much about the nature of production and consumption under reciprocal relations.

#### **4.3 A household archaeology approach to Cerro León**

Working definitions of the household for archaeology describe it as a group of individuals who share a residence and regularly engage in a number of basic social and economic activities (Wilk and Rathje 1982:618; Varien 1999:16). Traditionally, archaeologists studied the household as a minimal social unit and focused on its economic activities (D'Altroy 2001; Mayer 2002; Roberts 1991). However, with changing theoretical trends the household is now viewed as collections of individuals, thus more in line with agency-structure and practice paradigms (Allison 1999; Hendon 2010; Tringham 1991). Focusing on the activities of people within and between households and settlements provides depth and complexity to archaeological interpretations of broader-scale phenomena such as social relationships and the development of sociopolitical complexity (Carballo 2010; Nash 2009; Pluckhahn 2010). Households have a politicized nature in which internal relationships are inseparable from the larger structure of society including political alliances, status, wealth, and power (Bray 2003; Hendon 1996; Gero 1992; Jennings 2005). Even though household members share many internal and external goals, domestic groups remain internally differentiated in terms of identities (Hendon 1996:46; Lightfoot et al. 1998).

Archaeologists apply various configurations of middle range theories to study the social, material, and behavioral characteristics of households (Wilk and Rathje 1982:617). Archaeologists can usually only examine household social groups, their activities, and their interactions through the physical remains of residences, their contents, and location in the surrounding landscape (Allison 1999; Schiffer 1996; Wilk and Rathje 1982). Archaeologists examine key components of households, including; 1) the length of their existence, 2) their size, structure, and functions, 3) the life cycle stages through which they have passed, and 4) the reasons they may have disbanded or ceased to exist (Billman 2007; Goody 1958; 1982; Varien 1999). In the Andes, the household is the basic social and economic unit and the residence, including work areas, cooking space, and crop storage, is considered a base for subsistence production (Mayer 2002; Netting 1993). Timing and length of occupation of households at Cerro León is important because I want to know the role highland populations played in emerging regional political hierarchies and the restructuring of settlement and social organization in the Moche valley. The histories and dynamics of social groups are inseparable from the negotiation of identities in which household members engaged. Such negotiations directly connect to residences whose physical forms and contents shape and are shaped by their occupants.

#### **4.4 Modeling Cerro León households: middle range theories and research objectives**

In light of past and current research on social, political and economic formations in the Moche and other north coast valleys in the EIP presented in Chapter 3 as well as generalizations about households through time in the Andes from ethnography and ethnohistory, I developed three alternative models that I used to help interpret many aspects of the household data from Cerro León.

***Model #1: Highland groups invaded middle Moche valley and drove out local valley people in order to exercise total control over middle valley resources, especially coca.***

If groups had entered from the highlands and established themselves in the middle Moche valley in a hostile manner, there would have been little mixing of local and non-local people and consequently their material culture. Assuming they settled mainly in previously uninhabited, defensible locations, they would have used a mix of local materials and items from communities of

origin in the highlands to create a familiar material culture. A household's productive activities would have focused on products not obtainable in their place of origin, such as coca or maize, and be geared toward their own consumption needs as well as exchanged with kin and allies in the sierra.

***Model #2: Highlanders engaged in intensive strategies of trade and exchange without colonization or even short-term migrations to middle Moche valley.***

In Model #2, residents in the middle valley would have been valley natives, who favored their own material styles and technologies to construct dwellings, make and serve meals, and conduct ritual displays. We might see sites like Cerro León with many features, artifacts, and ecofacts indicating camelid caravan activity, possibly with segregated areas for camps of highland traders. Evidence for owning "exotic" highland items would show up in varied contexts but most likely occur in greater quantities or of much higher quality in elite residences. Non-local everyday goods may also have been easy to obtain in larger quantities but their function and context of use should be compared to locally available objects.

***Model #3: Highland groups forged alliances with middle valley or coastal groups that resulted in direct access to resources and some form of colonization.***

If groups from the highlands and valley had agreements about use of middle valley land and resources I would expect to see efforts at alliance formation and maintenance in order to continually reinforce cooperative arrangements with valley natives. Strategies may have involved owning or exercising usufruct rights to isolated plots of land through partnerships in trade and/or construction and maintenance of irrigation canals. This might produce marriage ties between communities with households that showed increased use of valley-produced material culture over time.

#### **4.5 Research objectives**

The material implications of these different scenarios are best examined through the daily lives of households at Cerro León because it is possible to reconstruct many aspects of a small scale group's social, economic, and political lives through inferences about their recursive relationship with material culture. My research objectives help to set the context of their daily life along temporal,

spatial, and material dimensions, keeping in mind that material correlates are affected by cultural and natural formation processes (Schiffer 1996). From these three models, I derived the following four research objectives aimed at establishing household histories, activities, inter-household variation, and external relationships.

***Objective 1. Define the spatial and temporal dimensions of Cerro León households, their occupational histories, and the impact of post-abandonment formation processes on residential structures, features, and artifact assemblages.***

An essential element in my study of households at Cerro León is establishing the individual and comparative histories of residential structures because it is important to determine which distinctions were products of position in the household life cycle and which were due to differences in status and identity. Basic research questions such as, when did residents first establish a household, how long did they stay, and when and under what circumstances did they leave allow for a better understanding of the temporal dimension of houses and households. The timing of construction, use, remodeling, and abandonment of different architectural features within a residence provides evidence for the stages of the developmental cycle through which each household passed. This helps establish the potential contemporaneity of households in the residential group and the potential for social and economic relationships between them (Billman 2003; Varien 1993).

Temporal variations in the household's life cycle are materialized through physical changes in residential architecture, namely the amount of remodeling and evidence for sequential use of rooms in houses (Billman 2003). Occupants added on to and modified the multiple, compartmentalized spaces that comprised their residences. In the prehistoric American Southwest, remodeling of residences shows a strong correlation with duration of occupation (Billman 2003:1.10; Cameron 1991:171). Remodeling at Cerro León likely had a strong relationship to the use-life of residences as well as changes in household life cycles. In some instances these changes probably took place over multiple generations of occupation. In Compounds 1, 3, and 6, I examined construction materials, basic floor plans, and room dimensions. I focused on what types of additions and modifications

residents implemented and how they were accommodated. I also examined differences in construction styles and materials that may serve as chronological markers, and the number of building or remodeling events, including building and joining of walls, number of living surfaces or floors, and use of domestic trash in architectural fill events.

Internal features, such as floors, hearths, or storage bins, as well as artifacts in context can offer supporting evidence for the duration of occupation and stage in the household life cycle at Cerro León. For example, Weismantel (1989:62) describes a correlation between the life cycle stage of a household and the kitchen equipment it has. A household in its most expanded phase will have two or more grinding stones so that multiple women can share food processing tasks, while new households, still making and eating most meals with the parental household, will have sleeping rooms nearby, a hearth that is rarely used, and no grinding stone of its own (*ibid.*). Pottery accumulation studies (Varien and Mills 1997; Varien and Ortman 2005) can be used as estimates of duration of occupation for archaeological sites and individual residences. Such studies have potential for Cerro León where excavation of three houses is nearly complete and cooking pot fragments are abundant.

Issues surrounding the occupational histories of Cerro León's residences will be clarified with absolute dating as well. Residents at Cerro León not only constructed some portion of their house compounds on deposits of older discarded cultural fill but they may have remodeled some rooms as many as four times. AMS dating of the distinct construction and remodeling episodes holds potential for detailed understanding of comparative life histories of the three residences, from pre-construction through post-abandonment phases. For example, Compound 1 has at least one context where residents constructed four superimposed living floors, while Compounds 3 and 6 may contain evidence for two to three floor filling and rebuilding events.

Abandonment should be considered a distinct process in the history of cultural deposition in the three Cerro León residences (Lightfoot 1993). The decision to leave one's residence depends on many factors and may have social or environmental causes (see edited volume by Cameron and Tomka (1993) for examples). The abandonment of structures and settlements may be planned or

unplanned and occur quickly or gradually (Lightfoot 1993; Stevenson 1982). People may move to places nearby or at a great distance and either plan to return to their original place of residence or to never go back. Variations on the circumstances of abandonment and the treatment of the residence as it is abandoned have distinct material correlates (Schiffer 1996; Schlanger and Wilhusen 1991; Stevenson 1982).

At Cerro León understanding when residents left for good and under what circumstances is important for gauging social process in the Moche valley EIP. I examine floor assemblages for the evidence of different types of refuse disposal (e.g. primary, *de facto* or abandonment refuse) that would indicate if residents changed storage and disposal habits because they knew they were leaving (Lightfoot 1993:166). I distinguish artifacts that may have been in “use” contexts from those in discard contexts because these reached the archaeological context through different processes (Schlanger 1991:469). I document items left behind in terms of quantities of useable items and their relative production costs in order to understand the decisions made about what to take during abandonment (Lange and Rydberg 1972:430; Schiffer 1996:113; Stevenson 1982:254). I also look for evidence of whether structures were modified, destroyed, or left untouched upon abandonment since such actions can affect post-abandonment site formation processes (Lightfoot 1993:168; Schlanger and Wilhusen 1993:93). Finally, in addition to natural post-abandonment site formation processes, access to the site is an important consideration when assessing how the archaeological context was affected by scavenging, reoccupation, or looting activity (Lightfoot 1993:166; Schiffer 1996:114). Because of Cerro León’s crossroads location, such post-abandonment activity was expected to be significant.

Who the occupants of Cerro León were and how they came to settle at the site is expected to affect the nature of the archaeological evidence for duration of occupation and mode of abandonment of Cerro León residences. If residents of Cerro León were highlanders who successfully raided and drove out coastal populations, they may have resided at the site a relatively short time and departed suddenly in the wake of retaliation from coastal people. Successful integration into the region may

have meant longer occupation, expanded household life histories and more gradual abandonment processes. Had Cerro León's residents been coastal groups with intensive exchange relationships with highlanders we might see longer occupations as well. Migrations of highland groups may be evident in periods of time where houses were not occupied during times when residents may have made periodic (perhaps seasonal) returns to highland home communities.

***Objective 2. Reconstruct the social, economic, and ritual activities that took place in the households at Cerro León. Explore how household members may have created or negotiated identities through these activities.***

Archaeologists have recently implemented several shifts in perspective in their approaches to studying past identities (Diaz-Andreu and Lucy 2005; Pluckhahn 2010; Reycraft 2005). Following broader trends of agency and practice, many researchers believe people form identities through activity, either created by or imposed upon individuals or groups. Moreover, people create and embed identities in social relationships and the material conditions of everyday life (Diaz-Andreu and Lucy 2005:6; McAnany 2010:103; Smith 2007:415). Since activities and relationships can have multiple meanings or different meanings in different contexts, many archaeologists suggest that it is more productive to consider two or more identities simultaneously instead of studying a particular identity, such as ethnicity, in isolation (Casella and Fowler 2005; Diaz-Andreu and Lucy 2005). The process of creating new households through marriage affects gender, status, and ethnic identities, enabling small social groups potentially to gain social and economic advantages (de la Cadena 1997). Ethnography also provides examples of gender or status guiding different types of exchanges involving food, cloth, or metal in the central Andes (Mayer 2002:59-62).

Objects play an important role in the interpretation of social organization and identity. Many archaeologists have moved toward viewing material culture as the media through which people negotiate relationships based on identities. Because objects embody a conception of the tasks for which they are used and the people who will use them, it may be more productive to consider how producers and consumers of objects are linked rather than to look for objects that mark a particular



identity (Holland et al. 1998; Shimada 2004). Multiple and shifting functions and meanings associated with objects complicate and limit archaeological interpretation but should be considered expected characteristics of the complexities of material life (Casella and Fowler 2005:4; Lucy 2005:7). In the Andes, ethnographic, ethnohistoric, and archaeological studies all demonstrate that gender, status, and ethnic identities are directly linked to foodways and sociopolitical organization at multiple scales (Allen 1988; Bray 2003; Gero 1992; D'Altroy and Hastorf 2001; Hastorf 2003; 1993; 1991; Jennings 2003; Vaughn 2004, 2005; Weismantel 1988). Objects and spaces associated with foodways are appropriate avenues to explore how individuals and groups locate themselves and others within the private and public social contexts of houses and households. Pottery especially can convey identity in a number of ways beyond superficial assessments of artifact style as an indicator of group affiliation (Arnold 2000; Arthur 2002; 2009; Gosselain 1992).

Material correlates of activity and identity are the objects and spaces people used to get things done on a day-to-day basis or on special occasions. It is easy to argue that the most ubiquitous objects in daily use at Cerro León were pottery containers for culinary activities. I focused on pottery manufacture (who made what and where it was made) and consumption looking specifically at pottery composition and manufacturing technology on the one hand and the intended and actual function of the products on the other. On initial inspection, types found at Cerro León appeared so distinct I set out to determine what might have been made by Cerro León household members and what could have been manufactured elsewhere. I then examined the pottery assemblage as a whole to determine its role in culinary and other activities that cross-culturally demonstrate links to identities such as gender and ethnicity. I focused mainly on preparation, consumption, and storage of food for every day meals and feasts, examining how the shape of different vessel classes lends insight into how they might have been used and backing up these assessments with evidence for use wear.

I then assess what went on in residential spaces identified as kitchens, patios, and storage areas based on interior subfeatures such as hearths, refuse deposits, and storage features such as vessel rests. Since primary refuse is rare, especially at habitation sites (LaMotta and Schiffer 1999:21;

Schiffer 1996:59-60), artifacts found in structures often do not directly reflect activities carried out in a structure (Wilson 2008:8). I chose to focus on the locations, depositional sequences, contents, and contexts of internal subfeatures because these are often the most direct evidence for what happened within a defined residential space. These data, in combination with an understanding of the manufacture and function of the total vessel assemblage reveals much about the connections between the makers and users of objects so essential to daily life.

The models for settlement of Cerro León by highland or coastal groups with distinct goals should display differences in the archaeological record. For example, if highland invaders occupied Cerro León, households would most likely be focused on maintaining identities shared with their communities of origin as a means of downplaying internal differences, strengthening settlements through unity (Dillehay 1976:421). One might expect to see overwhelmingly highland style material culture or highland style objects such as pottery made with local materials. If coastal groups lived at Cerro León and engaged in intensive exchange with highlanders, great quantities of imported highland goods like pottery could be present but functionally the vessel assemblage would still reflect coastal foodways and not highland materials and practices. Coastal or valley group identities would still be the focus of ceremony, ritual, or burial practices as well. If Cerro León was composed of coastal and highland people, cohabiting or intermarrying, a mix of both everyday and special objects and practices would be present in many households.

***Objective 3. Investigate variation in the organization of activities in the residential compounds at Cerro León. Define the ways household structure reflected or influenced community structure through variations in spatial structures and activities.***

The spatial organization of the residence shapes and reflects the social order of communities and polities making it an appropriate unit of analysis for studying social organization (Mayer 2002; Sillar 2000; Varien 1994; Weismantel 1989; Wilk and Netting 1984). Often the basic physical structure of residences is relatively easy to identify in the Central Andes because they are spatially discrete spaces with kitchens, storage spaces, and patios (Bawden 1982; Brennan 1978; Janusek 2005; Moore 1988; Stanish 1989; Vaughn 2005). Indeed, the multi-room and patio residences at Cerro

León are in close spatial proximity but have natural and culturally constructed boundaries such as *quebradas*, terraces, and retaining walls, marking them as discrete units. In building or remodeling their homes, people made choices about construction materials, traffic flows, and the activities that would take place within naturally and culturally defined spaces. The sizes, shapes, and positions of spaces certainly affected the social dynamics between household members as well as between the three households in this residential group. Renovations are often responses to changes effected in domestic group dynamics, such as the expansion of the number of members through marriage, births, and adoptions or the contraction through marrying out, defections, or deaths (Steadman 1996:73).

The house, as a continuum of private and public space, is a locale for many types of social and political encounters related to status (Hendon 1996; Vaughn 2005). I explored whether these encounters may have created obligations or asymmetrical relationships between different households at Cerro León. If such asymmetries did exist they may have highly varied archaeological correlates. For example, communal ceremonies or feasting, community-level storage capability, special ancestor status of individuals, or specialized production activities may have been contained within and controlled by particular, higher status households. Households shared most activities in common, but differences may have existed in the scale at which they carried them out. Status related to position in the household life cycle, socioeconomic differences, or political or ceremonial responsibilities may play a role in variation between Compounds 1, 3, and 6.

I examined the size of rooms and houses, their construction techniques, and the presence or absence of certain features to interpret differential social status, family and political structure, and reciprocal obligations between the three Cerro León residences (Wilson 2005:86). The size of a room or structure may relate to function, the size of the group using the space, the socioeconomic status of household members, or to all three. The amount of compartmentalization in residential spaces, as well as the level of consistency in different functional spaces between houses has been hypothesized to be related to the degree of complexity in a society's social organization (Kent 1990:150; Steadman 1996:71). In addition to size, the type of construction material and techniques,

and the overall quality of construction are potential indicators of differential socioeconomic status relating to the complexity of the household (Blanton 1994:117-119). Finally, the interior features of rooms and houses provide the clearest picture of room function(s) and activities (Allison 1999; Schiffer 1996).

Other considerations that might lead us to a better understanding of comparative social organization of households at Cerro León are the location of residences on the landscape and their access to potential communal resources such as pathways, water, fields, middens, storage facilities, or additional security features such as fortifications or redoubts. The location of the residence within the settlement is an important indicator of status in the Central Andes and elsewhere in the prehistoric Americas (Bawden 1982; Brennan 1978; Feinman and Nicholas 2002). The nature of trash disposal in household, local, or communal middens can reveal patterns in extended family-group consumption, especially in local middens shared by residences in close spatial proximity (Beck and Hill 2004). Often midden contents may provide less skewed interpretations of consumer behavior for households than floor assemblages (LaMotta and Schiffer 1999).

Relating these different organizational features to interpretations of the models presented in the previous section is a challenge. Patterns may overlap for the different scenarios about who settled Cerro León and why. If invaders from the highlands established settlements here, one might expect to see such features as restricted access to residences and storage facilities predominate over proximity to unprotected resources such as fields and water, especially for higher status households. Defending the house and storing less perishable food surpluses such as seeds would have been of paramount importance to households that were continually on guard against raids or sieges. If Cerro León was a community of valley natives engaged in intensive trade with highland groups, the households with the most resources might be located as close as possible to conveniences such as water, fields, trade routes, and storage facilities, while lower status houses were located further from conveniences. Less attention might be paid to protection when choosing a house site. Such houses might contain more space and facilities for hosting exchange partners as well. In the colonization or migration scenario

some protection for non-local groups might be a concern, but access to resources such as farm land might be privileged. Also, storage would have a close connection to up-valley transport routes as individual households sought to maintain close ties with home communities in the highlands.

***Objective 4. Examine the evidence for external relationships between the residents of Cerro León and groups outside the settlement complex.***

Providing a picture of what each household offered to, and gained from, others at Cerro León and beyond allowed me to answer broader questions about the role of households in the larger social system (Allison 1999; Hendon 1996; McAnany 2010:140). Currently, regional settlement system data shows us that the beginning of the EIP marked dramatic change in political power and authority compared to Initial period patterns. Power and authority became concentrated in multiple clusters of settlements heavily focused on defense and alliance formation in the wake of intensified interaction between coast and highlands (Billman 2002:394). Models of Andean domestic and political economy for the early part of the EIP hypothesize intensifying irrigation agriculture both for subsistence purposes as well as for surpluses that households or communities exchanged for communal labor efforts or other commodities (Billman 2002; 2010). The Gallinazo-Early Moche phase of the EIP was a period of regional group autonomy on the Peruvian north coast and in the highlands (Isbell and Silverman 2006; Lau 2006; Moseley 2001; Topic 1982). Although many agree that this regionalization corresponded to the sociopolitical organization of chiefdoms, we have little direct archaeological evidence from settlements in the Moche valley of the nature of individual or corporate leadership or how social, economic, or political inequality was instituted. Nor do we yet understand how such inequality corresponded to variation in the activities of households related to reciprocal obligations, trade, or exchange during the EIP (Shimada 1994; Benson 2010:35).

A major part of my research goal is devoted to understanding how movements of people or goods fit into social and political interactions because they are vital elements in processes leading to complexity. As with objective #2, establishing who producers and consumers were, what was exchanged, and the nature of exchange relationships is key to this research goal. Objective 4 focuses

on exchanges of pottery and other products to examine how Cerro León households gained access to both ordinary and special goods that they did not produce themselves. Also, did access to goods or labor relate to strategies employed by household members in a process of elite identity formation or the negotiation and maintenance of ethnic identities?

The material correlates of exchange in an agricultural settlement like Cerro León consist mainly of goods consumed in Cerro León households that residents obtained from elsewhere. Material correlates explored for pottery discussed in objective #2 are equally useful for this research objective. However, attention should be paid to the scale of the exchanges that may potentially have taken place for objective #4. Artifact richness and diversity measures may be important as indicators of the standardization of production or the political or economic control exercised over manufacture and distribution of objects (Arnold 1975; Rice 1981). Although pottery is the focus of this analysis other items are explored when relevant. Obvious items might be foods like marine resources and deer remains, or perhaps less obvious, llama or other faunal remains absent of evidence for all stages in the animals' life cycles. Evidence obtained from petrographic or chemical analysis of objects such as lithic resources or metal when compared to resources available near the site are also indicators that items were acquired through exchange (Shimada 1994; Smith 1999).

As discussed for objective #2, a demand for imported goods would have been related to production in that Cerro León residents likely produced and stored food or other material surpluses intended as a medium of exchange for imported goods such as pottery. Storage facilities, either within residences or in communal features would be necessary to keep surplus goods until they are ready either for exchange or consumption. Another line of evidence is the material remains of facilities related to feasting and larger-scale gatherings because these events provided a venue for exchange in addition to their many other possible functions (Vaughn 2006; Wesson 1999). Non-food items manufactured for exchanges might also have been produced in quantities beyond what was necessary for use by a household's residents. Evidence for such products would be items like tools, ornaments, or pottery found in various stages of manufacture in the archaeological context. There

might also be waste material, as in the case of lithics (SurrIDGE 2010), from the process of manufacture. Such production may have taken place away from houses, which would be problematic, but evidence for producers working in their homes is common in complex societies in many regions including the central Andes and the Moche valley (Costin 2001; 2007; D'Altroy 2001; Hendon 1996; Hirth 2009; Vaughn 2006).

A model of the exchange relationships of highland invaders may produce evidence that virtually all movement of goods or labor into or out of Cerro León flowed back up to highland core communities with little or no evidence of exchanges with usurped coastal groups. However if highlanders managed to stay in the middle valley for any length of time, relationships with coastal people could become less hostile. Intensive exchange of a native middle valley population at Cerro León with coastal and highland groups might entail the presence of many items not obtained at or near the site, but the organization of domestic spaces would emphasize more publicly oriented communication with people outside the household (Blanton 1994:10). There may also be greater disparity between higher status households that are better able to engage in long-distance exchanges and lower status residences that have little evidence for the ability to participate in such relationships. Households and communities in the Andes have a deep history of fulfilling biological and social subsistence needs by tapping into as many production zones as possible but strategies of 'verticality' were not necessarily the only option (Brush 1977; Mayer 2002; Murra 1975; VanBuren 1996). In the Moche valley, groups from the sierra sought to gain some presence or connection either in the upper or middle regions of middle valley but apart from colonial documents (Netherly 1988), when and how these strategies were in place has yet to be explained.

#### **4.6 Project Field Methods**

It is important that the project methodology be designed to complement the body of theory used by many researchers to answer questions about a site. The field and laboratory methods presented in this section were designed by Billman for the MOP. Although the MOP methodology

was designed to be flexible, it was mainly focused on household archaeology and the most detailed retrieval of material and information from residential archaeological contexts that is possible. The full coverage and intensive collection and recording strategies described here were designed to allow all specialists to obtain representative samples for current and future studies.

### *Field methods*

The main goal of the Cerro León archaeological excavation was to understand the dynamics of households in the Moche valley before and during the expansion and decline of the Southern Moche polity and to gauge the effects of highland interaction with valley and coastal populations (Billman et al. 2004). The MOP works under a system of Provenience Designation (PD) derived from contract archaeology in the southwestern U.S. (Billman 1990) to assign a unique number to each context subject to collection and/or recording within a project or site complex, assigned in sequence from one to n. For example, if a patio is excavated in quadrants, the patio is given a single feature number, but each level of each of the patio is given a unique PD number. Within each PD if artifacts or samples of any kind are collected, they are divided for processing and storage by type and assigned a field specimen number in sequence within that PD (e.g. 156.06 equals the 156<sup>th</sup> PD assigned, Field Specimen 6). All contexts studied with the PD system have a narrative description, a sketched locator map, coded information on context type, methods used for collection, and the condition and formation processes of the context along with reference information on photographs, drawings, and additional paperwork. All forms used in the field are included in Appendix A. The PD system can be cumbersome but has the benefit of being flexible and context-specific, aiding in data recording and analysis.

In the field, the directors and project supervisors determined appropriate strategies of surface collection and excavation based on specific sets of research questions. All contexts to be excavated were first 100% surface collected, but additional strategies of surface collection were implemented where appropriate to obtain representative samples of artifacts, especially pottery and lithics. At



Cerro León directors proposed to surface collect a sample of residential compounds in each of the habitation areas of the site. Surface and excavation units were assigned different sets of numbers in the PD system because collection strategies may differ and so that they may be easily distinguished in analysis. The MOP always follows surface architecture when visible for the designation of surface and excavation units. If spaces are large, they are subdivided in an appropriate manner. Usually this entailed halving or quartering large contexts. Larger terraces with no discernible architectural divisions were divided into four or eight equivalent units. The boundaries of all collection units were marked with mason's twine and 7-inch gutter spikes.

Excavation followed cultural processes of deposition and subtraction wherever possible, not only to record sequences of events, but to interpret contexts and "social strategies of cutting and layering strata" (McAnany and Hodder 2009:2–3). Where cultural levels were not visible, excavations began with a test trench to expose stratigraphy. Contexts were halved or trenched depending on axis, size, and shape. The first portion was excavated and recorded fully as a single PD context. The unexcavated portion was then excavated in cultural levels as separate PDs based on the information gleaned from the other excavated portion. Since we excavated mainly in remnants of stone architecture, first we removed the fallen wall stones from the surface of the context and then began hand excavation with trowel and brush techniques. Architectural fill consisted of wall fall and was usually excavated in a single level down to approximately 10 cm above an associated occupational surface. The subsequent 10 cm of fill above the floor was removed as a separate level of floor contact artifacts, designated as "floor fill". If post-occupational features (e.g. hearths or surfaces that had been exposed and collected water lain sediments from past El Niño events) were found while excavating the architectural fill level, these were collected as separate contexts from the architectural fill. Interior subfeatures such as hearths, pits, benches, or bins were given a subfeature number as a suffix of the larger feature number. For example the first hearth found while excavating the Feature 5 room was designated as Feature 5.01. Numbers for subfeatures were given in sequence as the subfeatures were encountered in excavation.

Temporary datums or excavation datums were used by each excavation crew to keep vertical controls of all contexts excavated. Elevations from below or above the temporary datum were recorded at the top and base of all contexts excavated. These temporary datums were recorded in a master log and mapped with the total station during the course of excavations. Once a context was excavated to a living surface, often a 'plaster' or packed fine sediment floor or a trampled surface, a cross-section was drawn and photographs taken in order to prep the excavation of the remaining portion. If artifacts or features were encountered at floor contact, these were recorded in a detailed hand-drawn planview map, photographed, and either left in place or marked with a small labeled nail until mapped with the total station and plotted on a planview. An appropriate-sized sample (usually at least two cups) of the floor material itself were also systematically removed for pollen, phytolith, or chemical testing.

One of the main goals of the MOP archaeological project is collection of all artifacts and organic remains larger than 1/8 inch within excavated contexts. With the exception of soil or other samples collected whole, *all excavated deposits are passed through 1/8-inch metal mesh screen*. Excavators also collect a 5-liter soil sample for flotation from every excavated level. If subfeatures were not 5 liters in volume, an appropriate sample, often the entire feature, was taken. Artifacts and samples were bagged by type in the field and recorded on the field form for processing in the laboratory.

#### *Laboratory Methods*

Laboratory processing ran concurrent to excavations and continued after field work until all processing was completed. Collections were readied for curation or analysis and were turned over to the INC for storage. Pottery without residues or fragile paints was washed in plain water as were lithics. When dry they were placed in clean plastic bags tied with their original field tags. Other materials, both organic and inorganic, were gently brushed clean with a dry toothbrush or soft bristled paintbrush. Samples of carbon or coprolites were simply cleaned of other debris and placed in clean

plastic bags. All material types once processed awaited analysis by archaeologists specializing in the different material types. With the aid of Peruvian assistants and other project participants, I processed the pottery collections from all field seasons at Cerro León and performed the analysis on this material type. Analyses are described in detail in Chapters 6 and 7, but I outline basic collection procedures here.

Ceramic data collection took place in small segments after field work was completed each field season. The largest segment of work took place from January to the end of August 2009 with the aid of an off campus dissertation research grant from the University of North Carolina - Chapel Hill. At first alone, and eventually with the aid of a trained Peruvian assistant, I classified and weighed all pottery from excavated contexts from the six field seasons of excavation at Cerro León. I collected data for every pottery sherd over ½ inch in size. Sherds less than ½ inch were weighed in bulk. Based on a preliminary type-variety classification for Cerro León developed by Brian Billman and myself, I collected and recorded information on the following variables: type, variety, form, part of vessel represented, evidence for use wear, count, and weight. With the permission of the National Institute of Culture (INC) in Trujillo, I removed all collections from storage one or two field seasons at a time. This was as much a condition of limited lab space as a condition of the Institute of Culture. I had to return completed field seasons before I was able to extract the next ones. I also selected samples of diagnostic rim sherds for export to make slides and conduct petrographic analysis. These were also submitted for approval to the INC. The methods associated with thin sectioning and analysis are described fully in Chapter 6. When data collection was complete, I made photo copies of every page of hand-recorded data and gave them to our Peruvian project director Jesús Briceño Rosario, who passed them on to the INC.

In addition to basic variables I focused on pottery vessel form as it relates to primary function with supplemental information gathered on use-alteration where applicable. I numbered and labeled every rim sherd and provided them with unique sequentially assigned vessel numbers (called the vessel identification number or VIN), based on PD and field specimen (FS) numbers. I made profile

drawings of nearly every rim sherd that had 5% or more of its diameter present<sup>13</sup>. I also photographed all sherds with decoration, evidence of use wear, vessel parts that may be chronologically sensitive such as cooking pot handles, whole specimens, spindle whorls, beads, worked sherds, or any unique item. Methods for this functional analysis are based on a pilot study conducted on surface collections at the site but will target excavated occupational surfaces and fill above these surfaces (Ringberg 2004). Details of the analysis are presented in Chapter 7.

#### 4.7 Discussion

In this chapter I summarize my approach to Cerro León based on an agency-structure framework. This paradigm is well-suited to studying small-scale scenarios because the cumulative daily activities of individuals are where change occurs. Identities such as gender and ethnicity require that I treat the evidence for these cumulative actions as the products of multiple, varied actors within households (Hendon 2009:172). Houses and households are an ideal venue for this approach because they are simultaneously private and public interfaces between individuals and their broader social world. Material culture, including the residence and all its contents and surrounding features provide the parameters for repeated, shared actions. The activities of EIP households focused on getting and using food. Foodways served as a vehicle for the organization of kinship and political networks as well as the ritual life of non-state complex societies (Welch and Scarry 1995:398).

Based on regional survey (Billman 1996; 2002; Topic and Topic 1982; 1987), we know that highlanders were involved, either directly or indirectly, in the agriculturally productive *chaupiyunga* zone of the middle Moche valley. However, we need to excavate sites like Cerro León to determine exactly how they were involved. Modeling invasion, exchange, or peaceful colonization scenarios gives us guidelines for developing middle-range theories and methods to make inquiries about and infer from material remains who lived and worked at Cerro León and similar sites in the Moche

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<sup>13</sup> With such a large collection, it became impractical to draw all profiles of 5% orifice diameter. Angled-rim ollas in particular were all drawn at first, but profile shapes were so redundant that after a while only ollas with larger percentages of rim present or those with unique profiles were drawn.

valley. Highland invaders would have focused their efforts on their own protection and intensive production of crops and other resources only available in the *yunga* and *chaupiyunga* zones. They would have maintained an exclusively highland identity with reciprocal ties only with home territories and groups in the sierra, obtaining material culture from the highlands or producing highland-style material culture with valley materials. If valley natives occupied Cerro León, they would have specialized in agricultural production and likely would have engaged in intensive exchange relationships with both coastal and highland groups. Stronger identity with coastal populations would have been emphasized, especially in private daily life and probably also in more public, formal settings where they interfaced with highland outsiders. If highland groups had peacefully colonized the middle Moche valley, I might expect to see houses and households with mixed or hybridized material cultures depending on the gender and ethnicity of household members (Lightfoot et al. 1998).

The above models would have also produced distinct patterns in household lifecycles, suites of material culture, and most likely their abandonment processes. The way to study and identify these scenarios is to look at the materials and contexts of residences through household archaeology. The models and objectives presented in Chapter 4 are implemented in Chapters 5, 6, and 7. The temporal, spatial, and functional aspects of Cerro León residential space are the focus of Chapter 5. Cerro León residences are examined as a category of artifact whose use-life was in a close relationship with the life cycle of the household with which it was associated. Within these socially constructed spaces, household members at Cerro León created identities through their daily activity.

Chapters 6 and 7 focus on the pottery assemblage from the three households at Cerro León. In Chapter 6, I present data, analysis, and interpretation of the manufacture and exchange of culinary pottery encountered in the discard assemblages of three of Cerro León's residential compounds. Chapter 7 offers a look at the functional significance of Cerro León's sample culinary pottery assemblage as well as the functions and use lives of other ceramic and non-ceramic artifact categories. I demonstrate in these three data-oriented chapters that multiple and varied material

culture correlates support an interpretation of the social organization and identities of Cerro León's household members as a complex set of actors that most likely comprised both highland- and possibly valley-based populations.

## **Chapter 5 RESIDENTIAL ARCHITECTURE AND HOUSEHOLD ORGANIZATION AT CERRO LEÓN**

### **5.1 Excavation goals and methodology**

The main goal of the project's excavation strategy is to reconstruct daily life and the occupational histories of three main houses at Cerro León. Varien defines the household as "a group of individuals who share a residence and cooperate regularly in a number of basic economic and social activities" (Varien 1999:16). The first goal for this project was to identify the residence at Cerro León in the context of the larger settlement. Second, we sought to document the variability between residences. Through careful excavation, we then attempted to establish residential histories. We then investigated the changing relationships between people and residential space in Compounds 1, 3, and 6. These efforts allowed a clearer understanding of the relationship of house and household, the social and economic organization of each household, and the relative sequence of occupation and abandonment of each residence. Comparing the houses and households to each other also allowed for insights into the gendered use of space and differences in social status for each household. These excavations offer an underrepresented data set in Andean household archaeology, namely the complete or nearly complete detailed excavation of entire residences.

### **5.2 Structure identification**

The nature of hill-slope residential settlements in the north Central Andes can make identifying discrete houses somewhat of a challenge on the ground. Residences are closely packed on terraces and one "house" may occupy several terraces, thus making it difficult at times to identify discrete boundaries. It is also difficult to determine how the physical space of the house corresponds to the group of individuals that made up the household. The type of architecture typical of Cerro

León and many other settlements in the Central Andes is often referred to as agglutinated<sup>14</sup> architecture (Pozorski and Pozorski 1986; Topic 1982; Willey 1953:77). As the term implies, the house is a group of connected rooms and other spaces that are modified or added on to accretionally as the needs of the household change over time. Although Cerro León might be described as an agglutinated settlement, there do appear to have been both natural and cultural breaks dividing individual residences.

Table 5.2.1. Total area surface collected and excavated in residential Compounds 1, 3, and 6.

Compound	Total area (m <sup>2</sup> )	Surface coll. area	%	Excavated area	%
1	480	511.8	100+*	336.9	70
3	65	141.5	100+*	78.6	100+*
6	137	137.0	100	82.1	60
Total	682	790.3	100+	497.6	73

\*Areas outside of compound walls were surfaced collected. This was done either to obtain samples or to prepare areas for future excavation.

Mapping and excavation demonstrated that Compound 1 was by far the largest agglutinated structure in Area 1 and probably in the entire settlement (Figure 5.2.1). Although more than half of the sprawling residence has been excavated, large patio areas (including Features 11, 13, and 32) as well as the southern margin of the compound have not been completely excavated. The compound's southern margin was severely disturbed by erosion and is mostly buried by meters of colluviums from higher up slope. Compound 6 was more than two-thirds excavated but the remaining portion was not studied because of significant looting. Compound 3, the smallest residence, is one fifth the size of Compound 1 and was the only residence that was completely excavated.

The spaces between Compounds 1, 3, and 6 had somewhat fuzzy boundaries because they contain several meters of colluvium. The colluvium has covered and mostly destroyed retaining walls that may have been shared and maintained by all three residences but were narrow and served as erosion and landscape control and not for occupation. Compound 1's eastern and western sides

<sup>14</sup> Willey (1953) uses the term to describe settlements but it is applicable to structures as well. The agglutinated village becomes common in the Puerto Moorin (Salinar) phase in the Virú valley. I have not studied the history of the use of the term to describe architecture in the Andes but it becomes common after the Virú valley work.



terminate in quebrada chutes that also served as access to Area 1 up from the Quebrada del León (the western being the main route of entry up to the Area 1 residences). As previously mentioned,

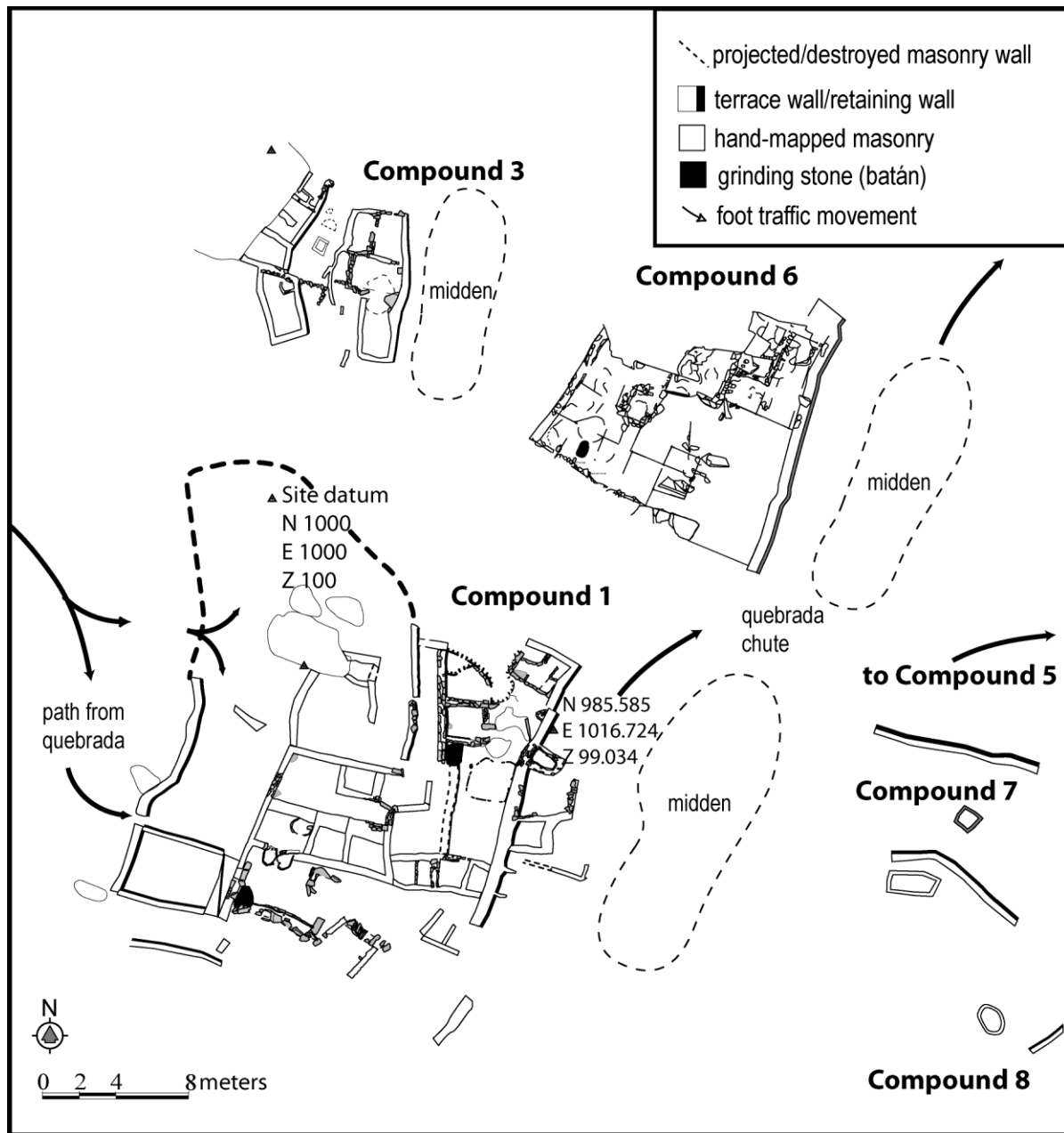


Figure 5.2.1. Schematic of residential Compounds 1, 3, and 6, Area 1, Cerro León.

Compound 1's southern boundary was difficult to identify. Small terraces dot the steep slope up behind the compound but most of the area is bedrock outcrop. These small terraces do show evidence of occupation but it is unclear what their relationship to Compound 1 may have been.

In Area 1 the spatial boundaries of Compounds 3 and 6 were easier to identify than those of the sprawling, multi-level Compound 1. Perhaps this is largely because of their smaller size and that Compounds 3 and 6 had at least one naturally defined break in the form of bedrock outcrop bordering relatively steep drop-off zones unsuitable for habitation. For Compound 3, the north and west perimeter of the compound had steep drop offs. To the east lay one of Compound 3's midden spaces in an area without architecture visible on the surface (Briceño and Billman 2007:65). In Compound 6, the northern boundary is bedrock while the east and west boundaries were well-defined thick walls. On the west, outside the wall was space without architecture that eventually terminated in the Compound 3 midden. It is likely this midden was shared although there is less trash accumulation outside the western Compound 6 wall. Outside Compound 6's eastern wall, there is a drop off of roughly 1 m down to the large quebrada chute that contains Compound 1's eastern flank midden. The southern boundaries of Compounds 3 and 6 were a bit harder to identify but they share a steep change in terrain that was terraced apparently for containment/erosion purposes leading up to Compound 1 (Briceño and Billman 2009).

The architectural sample at Cerro León was more than sufficient to conduct a study of space and function. The total number of rooms in the three residences was 33 and the number of patio and terrace spaces was 15. Excavations also recorded a total of 82 interior subfeatures. The Cerro León residences that we studied contain similar elements. Each house has a kitchen or cooking space, almost always walled and roofed with a large main hearth that shows evidence for repeated use over time. Each residence has a minimum of one patio for conducting daily activities in open space. All homes have at least one walled and roofed storage space that was often, although not always, too small to sleep in, but well protected from the elements and pests. Each residence has a midden space adjacent to it which it appears was either for their use alone or probably shared by two or more households. Most houses have at least one large *batán* and *chunga* (large rocker stone or pestle) for processing grains, seeds, or other food items. The rooms and dimensions by type are listed in Tables

5.2.2, 5.2.3, and 5.2.4. The criteria used to identify and interpret different functional spaces within Cerro León residences is detailed in the following section.

Table 5.2.2. The functions and dimensions of Compound 1 structural features.

Feature	Function	Length (m)	Width (m)	Floor Area (m <sup>2</sup> )
<b>5</b>	<b>Kitchen</b>	<b>6.55</b>	<b>3.93</b>	<b>13.56</b>
5.01	Vessel support (depression)	0.23	0.16	0.02
5.02	Vessel support (rock ring)	0.36	0.30	0.08
5.03	Hearth - post occupation			
5.04	Hearth			
5.05	Hearth	0.36	0.60	0.18
5.06	Ash-filled pit	0.85	0.86	0.54
5.07	Hearth	0.66	0.42	0.23
5.08	Hearth	0.69	0.31	0.16
5.09	Vessel support (depression)	0.61	0.54	0.25
5.10	Hearth	0.53	0.33	0.15
5.11	Ash-filled pit	0.27	0.66	0.13
5.12	Ash-filled pit	0.65	0.45	0.21
5.13	Hearth			
5.14	Post hole	0.13	0.13	0.01
5.15	Ash-filled pit	0.24	0.20	
<b>6</b>	<b>Storage</b>	<b>1.87</b>	<b>1.52</b>	<b>2.83</b>
<b>7</b>	<b>Sleeping/Corridor</b>	<b>3.19</b>	<b>1.30</b>	<b>4.44</b>
7.01	Hearth	0.49	0.45	0.23
<b>8</b>	<b>Special use</b>	<b>2.76</b>	<b>2.53</b>	<b>7.92</b>
8.01	Hearth - post occupation	0.65	0.65	0.44
8.02	Hearth - post occupation	0.77	1.07	0.90
8.03	Cist/burial	0.93	1.09	0.76
8.04	Vessel support (depression)	0.51	0.38	0.16
8.05	Hearth	0.42	0.30	0.11
<b>9</b>	<b>Special use</b>	<b>2.84</b>	<b>2.25</b>	<b>6.70</b>
<b>10</b>	<b>Special use</b>	<b>2.98</b>	<b>2.60</b>	<b>7.66</b>
10.01	Hearth	0.23	0.23	0.05
10.02	Burial ? (dog or fox)	0.20	0.22	0.03
<b>11</b>	<b>Patio</b>	<b>8.80</b>	<b>7.14</b>	<b>43.00</b>
<b>12</b>	<b>Kitchen</b>	<b>3.66</b>	<b>1.99</b>	<b>7.10</b>
12.01	Hearth with vent	0.31	0.28	0.08
12.02	Hearth	0.19	0.14	0.02
12.03	Hearth	0.35	0.20	0.06
12.04	Hearth	0.21	0.12	0.20
12.05	Ash-filled pit	0.41	0.39	0.14
12.06	Post hole	0.16	0.11	0.01
12.07	Post hole	0.13	0.10	0.01
<b>13</b>	<b>Patio</b>	<b>4.15</b>	<b>5.90</b>	<b>19.17</b>
<b>14</b>	<b>Patio</b>	<b>3.33</b>	<b>2.78</b>	<b>9.28</b>
<b>15</b>	<b>Storage</b>	<b>1.54</b>	<b>0.94</b>	<b>2.78</b>

<b>16</b>	<b>Storage</b>	<b>1.59</b>	<b>1.59</b>	<b>1.50</b>
<b>17</b>	<b>Storage</b>	<b>3.17</b>	<b>1.05</b>	<b>3.18</b>
17.01	Bin/trough	0.79	0.29	0.11
<b>18</b>	<b>Patio</b>	<b>9.65</b>	<b>2.73</b>	<b>25.63</b>
18.01	<i>Batán</i>	1.30	0.86	1.03
18.02	Hearth			
18.03	Hearth	0.50	0.21	0.10
18.04	Hearth			
18.05	Vessel support (rock ring)	0.72	0.48	0.25
<b>19</b>	<b>Storage</b>	<b>1.65</b>	<b>1.57</b>	<b>2.67</b>
19.01	Hearth			
<b>20</b>	<b>Storage</b>	<b>1.31</b>	<b>1.05</b>	<b>1.29</b>
<b>21</b>	<b>Uncertain function</b>	Indet.	Indet.	Indet.
21.01	Hearth	0.50	0.24	0.10
<b>22</b>	<b>Patio/terrace</b>	<b>3.08</b>	<b>8.51</b>	<b>25.69</b>
22.01	Cist/burial	0.66	1.02	0.55
22.02	Hearth	1.51	0.46	0.60
22.03	Semi-circular wall	1.71	1.53	1.81
22.04	Cist/burial	0.96	0.79	0.66
22.05	Hearth	0.67	0.54	0.33
22.06	Ash deposit	0.22	0.29	0.05
22.07	Ash deposit	0.42	0.30	0.13
22.08	Ash deposit	0.45	0.33	0.15
22.09	Hearth	1.22	0.74	0.83
22.10	<i>Batán</i>	1.04	1.05	0.97
22.11	Hearth	0.71	0.56	0.30
<b>23</b>	<b>Patio</b>	<b>1.88</b>	<b>2.30</b>	<b>4.08</b>
<b>24</b>	Cist/burial	1.67	0.77	1.15
<b>31</b>	<b>Patio</b>	<b>2.71</b>	<b>2.64</b>	<b>7.48</b>
<b>32</b>	<b>Patio</b>	<b>7.48</b>	<b>4.79</b>	<b>38.24</b>
<b>35</b>	<b>Room – Unknown</b>	<b>2.05</b>	<b>3.91</b>	<b>9.77</b>
<b>36</b>	<b>Patio/terrace</b>	<b>3.90</b>	<b>5.98</b>	<b>23.32</b>
<b>37</b>	<b>Patio</b>	<b>1.24</b>	<b>2.68</b>	<b>4.28</b>
<b>40</b>	<b>Cooking/semi-open</b>	Indet.	Indet.	Indet.
<b>41</b>	<b>Cooking/semi-open</b>	<b>2.50</b>	<b>1.20</b>	<b>4.97</b>
41.01	Hearth	0.30	0.35	0.08
41.02	Hearth	0.40	0.31	0.11
41.03	Hearth			
<b>42</b>	<b>Staircase</b>	<b>4.40</b>	<b>1.10</b>	<b>4.84</b>
<b>43</b>	<b>Patio/terrace</b>	<b>6.40</b>	<b>2.20</b>	<b>18.50</b>
<b>44</b>	<b>Patio/terrace</b>	<b>2.90</b>	<b>5.00</b>	<b>15.00</b>
<b>47</b>	<b>Room - Unknown</b>	<b>1.00</b>	<b>1.40</b>	<b>1.40</b>
<b>49</b>	<b>Storage</b>	<b>1.65</b>	<b>1.65</b>	<b>2.50</b>
49.01	Hearth			
49.02	Hearth			
<b>52</b>	<b>Storage</b>	<b>1.02</b>	<b>0.83</b>	<b>0.87</b>
<b>53</b>	<b>Storage</b>	<b>1.31</b>	<b>0.86</b>	<b>1.26</b>
<b>54</b>	<b>Workshop</b>	<b>1.85</b>	<b>2.37</b>	<b>3.11</b>
54.01	Hearth	0.77	0.43	0.23

54.02	Hearth	0.82	0.68	0.48
54.03	Hearth	0.69	0.43	0.27
<b>55</b>	<b>Bin</b>	<b>0.45</b>	<b>0.70</b>	<b>0.32</b>
55.01	Ash/charcoal deposit			

Table 5.2.3. The functions and dimensions of Compound 3 structural features.

Feature	Function	Length (m)	Width (m)	Floor Area (m <sup>2</sup> )
<b>25</b>	<b>Kitchen</b>	<b>2.27</b>	<b>1.45</b>	<b>3.10</b>
25.01	Hearth – post occupation	0.23	0.31	0.06
25.02	Bin	0.72	0.38	0.24
25.03	Bin (?)			
25.04	Hearth			
<b>26</b>	<b>Unknown</b>	<b>2.50</b>	<b>1.00</b>	<b>2.30</b>
<b>27</b>	<b>Storage</b>	<b>2.01</b>	<b>1.23</b>	<b>2.27</b>
27.01	Banquette/ledge			
<b>28</b>	<b>Storage</b>	<b>2.29</b>	<b>1.65</b>	<b>3.64</b>
28.01	Niche			
28.02	Banquette/ledge	1.46	1.08	1.52
<b>29</b>	<b>Kitchen/sleeping</b>	<b>1.62</b>	<b>0.93</b>	<b>1.73</b>
29.01	Bin	0.69	0.68	0.40
<b>30</b>	<b>Storage</b>	<b>3.83</b>	<b>1.74</b>	<b>6.52</b>
<b>33</b>	<b>Cist</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>
<b>34</b>	<b>Unknown/patio</b>	<b>2.32</b>	<b>1.65</b>	<b>3.89</b>
<b>38</b>	<b>Room/unknown</b>	<b>1.87</b>	<b>1.05</b>	<b>1.90</b>
<b>39</b>	<b>Patio</b>	<b>1.60</b>	<b>0.80</b>	<b>1.28</b>
<b>45</b>	<b>Vessel support (depression)</b>	<b>0.60</b>	<b>0.60</b>	<b>0.30</b>
<b>46</b>	<b>Vessel support (depression)</b>	<b>0.50</b>	<b>0.50</b>	<b>0.13</b>
<b>48</b>	<b>Cist</b>	<b>0.90</b>	<b>0.90</b>	<b>2.59</b>
	Terrace 25, 26, 29	4.02	1.98	8. 67

Table 5.2.4. The functions and dimensions of Compound 6 structural features.

Feature	Function	Length (m)	Width (m)	Floor Area (m <sup>2</sup> )
<b>51</b>	<b>Patio</b>	<b>6.99</b>	<b>5.00</b>	<b>32.83*</b>
51.01	Hearth	0.35	0.24	
51.02	Hearth	0.56	0.32	
<b>65</b>	<b>Storage</b>	<b>1.80</b>	<b>1.40</b>	<b>2.26</b>
65.01	Vessel support? (depression)			
<b>56</b>	<b>Storage</b>	<b>1.46</b>	<b>1.09</b>	<b>1.46</b>
<b>57</b>	<b>Storage</b>	<b>1.95</b>	<b>1.18</b>	<b>2.23</b>
57.01	<i>Olla</i> base in ash dump			
57.02	Ash dump			
<b>58</b>	<b>Kitchen/sleeping</b>	<b>2.83</b>	<b>2.88</b>	<b>6.92</b>
58.01	Hearth	0.46	0.89	0.30
<b>59</b>	<b>Corridor</b>	<b>1.15</b>	<b>5.41</b>	<b>3.78</b>

59.01	Ash-filled pit	0.40	0.39	
59.02	Ash deposit	0.43	0.36	
<b>62</b>	<b>Patio</b>	<b>5.62</b>	<b>4.41</b>	<b>15.15*</b>
62.01	Hearth			
62.02	Hearth			
62.03	Hearth			
62.04	Hearth			
62.05	Hearth			
62.06	Ash deposit			
62.07	Hearth			

Kitchens. The daily-use kitchen/living spaces was enclosed on four sides and roofed for protection from the elements and pests. Walls were full height and either stone or *quincha* (cane and mud) construction. The mean floor area of kitchens is 7.7 m<sup>2</sup> and they vary from 3.1 to 13.6 m<sup>2</sup>. The kitchen's defining interior features are intensively used hearths and associated ash deposits, both of which usually contain abundant residual carbonized food remains. Hearths are located along the wall or in the corner of a room and all have abundant carbonized food remains (Figure 5.2.2). The open space around the hearth allowed for movement in meal preparation, seating during or after meals, and probably sleeping. Often kitchen hearths have associated ash pits, indicating multiple hearth cleanings (Figure 5.2.3). Floors are usually plaster or sometimes bedrock depending on the natural terrain. Plaster floors are well made and have abundant primary residual refuse embedded in them.

Formal, enclosed kitchens have a few other interior features besides hearths and ash pits. Interestingly, these vary from kitchen to kitchen indicating that each household designed cooking space that suited its particular needs. In the Feature 5 kitchen of Compound 1, we found several vessel rests. Two of these were circular depressions in the floor, one was a ring of stones and the fourth was a tabular stone jutting out of the corner of the masonry wall over the Feature 5.05 hearth. In the Feature 12 kitchen, one of the hearths has a long, narrow vent leading out from it. In the Compound 3 kitchen spaces, bins are present. Related to the formal kitchen are cooking spaces that may have been semi-open but sheltered. These semi-open kitchens usually these have low stone foundations that supported *quincha* walls.



Figure 5.2.2. The rock outcrop hearth, Feature 58.01, in the Feature 58 kitchen, Compound 6.



Figure 5.2.3. Numerous ash pits and burned areas in the northwest corner of the Feature 5 kitchen.

Patios. Patio spaces show a wide range of variation in the Cerro León residences both in terms of size as well as subfeatures. Patios have a mean floor area of 18.2 m<sup>2</sup>. They also have the broadest range of size variation of any functional space, from 1.3<sup>15</sup> to 43 m<sup>2</sup>. Residents often constructed patio space on artificial terraces with retaining walls. These daily use patios were unroofed or partially roofed to protect from wind but took full advantage of daylight. Patios were usually at least partially enclosed by walls. Usually a *batán* and *chunga* are located on a patio, and the *batán* is often so large as to be a literally immovable feature of patio activity. Many smaller, more portable versions of this essential tool were also found at Cerro León. These may have been used for a variety of purposes and evidence indicates some of the smaller-sized examples were used for metal finishing or pigment grinding and mixing. In addition to grinding stones, patios contain a number of expedient hearths represented by oxidized patches. These oxidized patches usually appear on compacted surfaces or sometimes flat areas of exposed bedrock because patios at Cerro León did not have plastered floors. These hearths were probably used for single or short term, periodic tasks. Patio spaces occasionally contain vessel supports, post holes, and ash deposits as well.

Terraces. Functionally closely related to the patio at Cerro León in Compounds 1, 3, and 6, terraces served as ways to maximize useable residential space and facilitate movement on uneven terrain. Terraces have a slightly smaller mean floor area of 15.9 m<sup>2</sup>, but this could be due to the small sample sizes of these functional spaces. They provided open work and storage space or places to accumulate refuse or recyclable materials for daily activity. Other terraces served more formal public purposes as gathering spaces (Figure 5.2.5). Unlike the patio, however, residents paid less attention to enclosing all sides of terraces and it is less clear if roofing parts of terraces was undertaken. It is likely that it was not.

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<sup>15</sup> Feature 39, measuring 1.3 m<sup>2</sup>, was an unusually small open space that may have been part of a larger patio earlier in Compound 3's occupation.





Figure 5.2.4. The western patio Feature 51 in Compound 6.



Figure 5.2.5. Terraces 43 and 44 above Patio Feature 32, an entry point into Compound 1.

Storage spaces. Storage spaces have some of the thickest walls in the Cerro León compounds. Their walls are stone and are often covered in thick silt/clay plaster. Storage spaces at Cerro León have a mean floor area of 2.8 m<sup>2</sup>. In many cases, the entry into a storage space must have been above ground level because storage rooms have high foundations or walls on all four sides but in some cases access was lower (Figure 5.2.6). Unlike kitchens, the floors of storage spaces were usually free of debris, show less remodeling, and have no hearths. The only other interior subfeatures were bins (Features 55 and 17.01 in C. 1 and F. 25.01 and 29.01 in C. 3) and vessel rests (Features 5.01, 5.02, 18.05, 46, 46, and 65). Some spaces interpreted as storage are large enough to sleep one or two people. In one storage and sleeping space a bench (Feature 28.02, the only example found to date at Cerro León) and a stone lined niche (F. 28.01) were built in to the room.



Figure 5.2.6. Storage Features 53 and 52 in Compound 1.

Corridors and Staircases. Passageways were multi-functional spaces in Cerro León residences. The mean floor area of these spaces is 5.2 m<sup>2</sup>. For my study, corridors and staircases were defined as

spaces with high length-to-width ratios (over 2.5, see Table 5.2.1, Feature 42 and Table 5.2.3, Feature 59). They primarily served as routes between or entryways into rooms or patios, sometimes providing steps and landings as they passed through multi-level spaces. Corridors were used for a variety of things and often contained evidence for guinea pig runs, storage, or trash accumulation. Some areas referred to as terraces may have served as corridors or areas of outdoor storage and provisional discard such as the narrow passage north of the Feature 14 patio and west of the Feature 12 kitchen in Compound 1.

Tombs. Several small square or circular cists lined with upright stone slabs were interpreted as burial cists. Human burials were removed from the burial cist features, perhaps at abandonment of the residences. Cists/tombs in Compound 1 (Features 8.03 and 24) and Compound 3 (Features 33 and 48) probably contained human burials that, at some point during occupation or abandonment, were removed. Each of the four cists were interpreted as human burial contexts because they contained very small remnants of human bone<sup>16</sup> as well as some special items such as a crystal projectile point in cist 8.03 and fragments of metal in cist Feature 48. However, articulated camelid skeletons in Features 22.01 and 22.04 remained intact. All of the Feature 8, 9, 10, and 22 are considered to have served as a complex devoted to ancestor-related activity (Briceño and Billman 2009:97).

Other enclosed living and working spaces. Some (n=6) enclosed spaces were difficult to interpret as to a specific function. These show a great deal of variety but share common elements as well. First and most obvious, they are enclosed on four sides and roofed. Second, they are large enough so as not to preclude one or two people carrying out some kind of activity or using the space for sleeping. Third, they have a variety of interior subfeatures including expedient hearths or burned patches, bins, or vessel rests but none contain benches. Finally, floors were constructed in a variety of ways and often remodeled at least once. Quality of floor construction varies from fine sediment plaster over trash and construction fill, to packed earth, or modified bedrock often covered with plaster or mud.

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<sup>16</sup> Human phalanges were identified by Celeste Gagnon for Feature 8.03 (Brian Billman, personal communication 2011).



Figure 5.2.7. Feature 48, a circular, slab-lined cist tomb in Compound 3, patio Feature 34.

### 5.3 House construction techniques

House construction techniques and materials varied at Cerro León as did the quality and amount of labor invested in houses. Earth moving and terrace construction were common. Usually builders constructed terrace edges with a single course of stacked-block stone walls backed by fill. Although the earliest terraces contained no trash in their fill, all subsequent constructions used domestic trash in order to level the terrace surface. Terrace fill in houses and house additions constructed later in the occupation often contained re-deposited domestic trash. Similarly, *batanes* and *chungas* were recycled and used in masonry construction. Various stone masonry techniques using on-site granitoid materials and included:

- double-faced-and-filled wall construction using worked stone
- double-faced-and-filled wall construction with unworked stone (with and without mud/clay mortar)
- double-faced-and-filled wall construction with smaller chinking stones,
- stacked rubble,
- thick-walled dry masonry, usually made with unworked stone,
- fine, horizontally-laid chinking stones



Pavement stones were not used, but several instances of flat stones marking a doorjamb and some instances of flat-faced stones used for steps are found in different areas of Compounds 6 and 1 respectively.

Clays, sand, and fine silts were also common construction materials. Cane-impressed, rectangular adobe brick construction was relatively rare at Cerro León but a few of these bricks were found in Compound 3. A single very weathered adobe brick (no visible cane marks) was found in a patio space in Compound 6 as well. The paucity of adobe bricks likely indicates a conscious choice on the part of residents not to use adobe brick in construction. Floor materials are varied. The finest were constructed of compact, well-sorted silt and very fine sand. The floor plaster lipped up onto the walls to create a smooth transition from floor to wall (referred to as *media caña*). These floors have a pale buff color and bear an often frustrating resemblance to the fine, compact El Niño sediments that pool on site and in many low areas of the quebrada de los Chinos at the base of Cerro León after rain events. Probably residents sought these compact, well-sorted, fine sediments to bring up the hill to create floors for their residences.

Often a floor consisted of a use-compacted surface without any plaster. These were created over time by foot traffic and daily activities. Other floor materials are modified bedrock, sometimes smoothed or ground down and then covered with plaster or compacted earth, or compacted earth over fill containing trash. Unlike Cerro Arena, well-sorted coarse sands or small water-worn pebbles were not brought up to the residences and used to create entire floors such as those Brennan (1978:127 and 387) identified at Cerro Arena. Small, rounded river pebbles in Compounds 1, 3, and 6 were not found in quantities that would have covered an entire floor. However, small river pebbles were brought up with sediments used for floor material in smaller quantities.

Organic materials were used in house construction but no uncarbonized construction material has survived the moister conditions of the middle valley climate. Cane and daub (*quincha*) walls were used with low, usually single course, masonry foundations. Daub (packed clay or mud), either burned or unburned was recovered from many contexts in all three residences, sometimes with cane

impressions evident. Wooden posts and timbers were probably frequently used for wall and roof supports but very few post molds are found in the ground at Cerro León. This may be because posts were placed between the faces of double-faced walls, providing sufficient support without the necessity of digging a post hole in ground where it was difficult if not impossible to do so. Placing posts between wall faces has been observed in abandoned modern domestic structures and is still common practice in rural domestic architecture of the Moche valley. Supports for roofs were probably also laid on top of stone walls or lashed to wooden supports emplaced in walls.

Wooden posts and beams were probably so valuable that they were either removed when residents left Cerro León or were among the first things scavenged from the site by other middle valley residents. Post holes found at the site were in the Compound 1 Feature 5 and Feature 12 kitchens and the Compound 6 Feature 62 patio. The Feature 5 kitchen and Feature 62 patio spaces were large enough to necessitate a central support for a roof or *ramada* respectively. At 7.1 m<sup>2</sup>, the Feature 12 kitchen was a bit small for two posts but they may not have been contemporary or they may have been part of some variation in construction to accommodate a special room or roof feature. Residents likely also used some sort of thatch as roofing material as well, although some storage spaces may have used *quincha* or clay packed cane for roofing in order to make them weather-tight and pest resistant. Woven cane mats could have been used for roofs and walls on patios or terraces too. These would have provided shade but allowed air to pass through.

#### **5.4 The archaeological context at Cerro León: site formation processes**

During the construction, habitation, abandonment, and post-abandonment stages of a residence, complex sets of processes account for the creation of the archaeological context (Schiffer 1996; La Motta and Schiffer 1999: 20). The processes of reuse are especially important to the creation of site histories (Schiffer 1996:28). That nearly half (46 %) of the pottery in the entire excavated assemblage of the three residences is from the context of architectural fill demonstrates the essential role of reuse and recycling at Cerro León (Table 5.4.1). Although as a composite, this

wealth of information can give a relatively complete picture of how pottery was used over the course of the Area 1's occupation (see Chapter 7), it provides very little in the way of specific information on objects and their original contexts of use for specific phases of the household lifecycle. The sequence of construction and the nature of interior subfeatures of rooms and houses are the best indicators of the context of activities and life cycle stages the archaeological record has to offer.

Table 5.4.1. Bulk pottery weight for excavation contexts at Cerro León, Compounds 1, 3, and 6.

CONTEXT	Weight (g)	%
Architectural fill above the floor	597,845.5	46.51%
Fill within 0-10 cm above the floor	194,478.2	15.13%
Floor contact <sup>17</sup>	16,193.5	1.26%
Subfeature fill	25,218.0	1.96%
Extramural non-feature fill	17,479.7	1.36%
Non-feature subsurface fill	21,870.2	1.70%
Trash deposit/midden	23,321.8	1.81%
Mixed from two or more features	13,756.3	1.07%
Indeterminate feature fill	34,193.9	2.66%
Mixed feature fill and non-feature subsurface	40,985.4	3.19%
Subfloor fill	16,528.0	1.29%
Full cut	2,564.3	0.20%
Looter hole/looter backdirt	255,434.7	19.87%
Embedded in floor	6,649.1	0.52%
Other	18,793.9	1.46%
<b>Total weight (g)</b>	<b>1,285,312.6</b>	<b>100.00%</b>

During the habitation phases of Compounds 1, 3, and 6 accumulations of secondary refuse occurred in most of the lived-in spaces of the residences. This is due to re-deposited trash, what Schiffer (1996:113) would call “reclaimed refuse.” This is found as wall fill or terrace construction fill (Billman, personal communication 2011). Primary refuse was deposited underneath later additions to residential space in Compound 1, in the sub-Floor 1 layers of compacted trash in the Feature 5 kitchen, and in the midden deposits south of Compound 1 (Billman, personal

<sup>17</sup> The figure for floor contact includes pottery in contact with earlier occupation floors as well as the final occupation of the residences for Compound 1.

communication 2011). Additionally, primary residual items (micro-artifacts or bits of refuse trampled into the floor or too small to be swept away in cleanup) are present on some floors, especially in kitchens (Schiffer 1996:62).

Much of each household's refuse was taken to one of several middens associated with Area 1 (see Figure 5.2.1), depleting the rooms and patios of activity debris in the home but keeping it closely associated with the households that produced it (Schiffer 1996:60). As mentioned above, much refuse was reused, often after burning it, as construction fill (a mix of sediments or soils and trash). Although there is no way of knowing for certain if the trash produced by Compounds 1, 3, and 6 was recycled back into the compounds, proximity, convenience, and habit could be used to make the argument that much of it did.

The breakdown of pottery present in all excavated contexts in the three Cerro León households provides an enlightening picture of the actual proportion of the total artifact assemblage related to the final phase of occupation and abandonment (Table 5.4.1). The proportion of pottery fragments found lying in contact with the final occupational surfaces of the houses excavated at Cerro León is about one percent of the total pottery artifact assemblage (Floor Contact in Table 5.4.1). Other artifacts included lithic debitage and tool fragments, a few flake tools, a single stone bead, a *chunga*, and bone and carbonized plant remains. These items are *de facto* refuse— things probably left in their activity area at the time of abandonment (Schiffer 1996).

Several lines of evidence in all three residences suggest that the process of abandonment was planned and that household members likely had no anticipation of returning to their homes (LaMotta and Schiffer 1999; Schiffer 1996; Stevenson 1982). Many of the items left behind constitute things too large to reasonably move, such as large *batánes* and *chungas*. Other items left behind include a minimal number of broken or reasonably low-replacement-value items such as plain, cooking and storage vessel fragments and many stone tools and tool fragments.

In all three compounds large pottery sherds were found at floor contact but no whole vessels were recovered from the excavation area (South 1979). Nearly 75 % of the floor contact pottery



fragments were Castillo plain *olla* or jar forms (Table 5.4.2). This is notable because over 60 % of the total pottery assemblage by weight is highland-produced Cerro León wares. With 92 % of the fine ware assemblage in the excavated areas being highland Cerro León, Otuzco buff, or white paste wares, it is also noteworthy that only a single sherd of Cerro León polychrome was found among floor contact refuse. Cerro León plain and burnished potsherds were distributed among several features of Compound 1, including Features 5, 8, 12, 22, and 32 (Table 5.4.3) but make up only 18.1 % of abandonment floor contact refuse.

Table 5.4.2. Pottery types in floor contact contexts for Compounds 1, 3, and 6, Cerro León.

TYPE	C. 1	C. 3	C. 6	Total (g)	%
Cerro Leon Plain	1,342.7	6.6		1,349.3	8.99
Cerro Leon Burnished	1,364.3			1,364.3	9.09
Cerro Leon Red-Slipped	524.3			524.3	3.49
Cerro Leon Polychrome	4.9			4.9	0.03
Buff Paste	52.9			52.9	0.35
Castillo Plain	7,568.6	3,617.5		11,186.1	74.55
Castillo Incised	319.3		204.6	523.9	4.85
Total	11,177	3,624.1	204.6	15,005.7	100

Table 5.4.3. Pottery type distribution in floor contact contexts for Compound 1, Cerro León.

	Fea. 5	Fea. 8	Fea. 12	Fea. 18	Fea. 22	Fea. 32	Total (g)
<b>Floor 1</b>							
Cerro Leon plain	966.2	41.7	50.0		221.8	63.0	1,342.7
Cerro Leon burnished	1,031.5	34.8	51.1		208.1	38.8	1,364.3
Cerro Leon red-slipped	431.8	7.2	2.0		44.2	39.1	524.3
Cerro Leon polychrome			1.6			3.3	4.9
Otuzco buff paste			8.1		44.8		52.9
Castillo plain	6,188.0	956.2	48.0		371.2	5.2	7,536.6
Castillo inc. v. punctate	25.90			293.4			319.3
<b>Floor 2</b>							0
Cerro Leon plain						134.5	134.5
Cerro Leon						18.1	18.1

burnished							
Cerro Leon red-							
slipped					55.2		55.2
Cerro Leon white-							
on-red					50.2		50.2
Castillo plain					8.3		8.3
<b>Floor 3</b>							
Cerro Leon plain	291.0				13.8		304.8
Cerro Leon							
burnished	121.6						121.6
Cerro Leon red-							
slipped	62.0						62.0
Cerro Leon white-							
on-red	3.0						3.0
Castillo plain	19.1						19.1
Castillo inc. v.							
punctate	4.2						4.2
<b>Total</b>	9,144.3	1,039.9	160.8	293.4	890.1	429.5	11,958.0

There is evidence that a period of “draw down” occurred in which maintenance standards seem to have dropped and households worked less and less at keeping areas clean. Draw down is a process that shrinks systemic inventories and affects the *de facto* assemblage, especially when abandonment is not sudden but anticipated (Schiffer 1996:97). *De facto* refuse is usually depleted at abandonment except in cases of catastrophic or ritual abandonment (Schiffer 1996:97). This is certainly the case in the Cerro León houses where *de facto* refuse is roughly one percent of the pottery assemblage. Also, there was no evidence for ordered arrangements of *de facto* refuse nor were there any curated useable items or caching behavior evident in the three residences. These might have indicated that Cerro León residents did intent to return at some point (Stevenson 1982:254).

Kitchen contexts also showed draw down behavior of residents through increased quantities of ash and hearth sweepings. In the Compound 1 Feature 5 kitchen ash filled pits take up more than one quarter of the floor area of the room and the Feature 58 kitchen in Compound 6 contained dozens of liters of ash, charcoal, and food debris. In Feature 28, Compound 3, the hearth Feature 28.02 was filled with trash as was hearth Feature 22.02 in the Compound 1, Feature 22 patio. In Compound 3, Feature 25, the bin was filled with ash and hearth cleaning material probably associated with the

Feature 25.04 hearth. Although this could have been the intended function of the Feature 25.02 bin, since uncarbonized maize and *mate* (gourd) remains were found at its base it could have originally served as temporary storage for the kitchen.

Evidence of removal of burials during the abandonment processes may point to occupation of Cerro León by an intrusive group, such as highlanders, who took their ancestors with them when they left. In addition to the above signs of draw down, the cist tombs (Features 8.03, 24, 33, and 48) in Compounds 1 and 3 were cleaned out of most of their contents. This was not attributed to looting behavior after abandonment mainly because looters only remove artifacts that are whole or have high portability and value such as fine pottery, beads, or metals—never bones. However, in Cist 8.03 a crystal projectile point was left behind and in Cist 48 beads, copper fragments, and a few fragments of human bone, including phalanges were found. These small, items may have been purposefully cached in the tombs upon abandonment, but could also be considered “loss refuse” (Schiffer 1996:76–79), items misplaced and forgotten by residents and missed by looters centuries later.

Some caveats to the planned abandonment/no return anticipated scenario exist, however. There are some aspects of this scenario for which it is difficult to find clear evidence. For instance, it is difficult to assess whether refuse accumulated in areas that would have normally been kept free of it as abandonment approached since there is no clear pattern of clustering of refuse in areas that were not likely to have been used on a daily basis (Stevenson 1982:246). This may be due to the heavy damage to the site sustained through post-abandonment formation processes such as erosion, weather and rain events, wall collapse, encampments, scavenging, and especially looting. Considering the travel and trade routes near the settlement and the proximity of the site to the valley floor, traffic in the area was likely very high. The proportion of material that might have been scavenged for use elsewhere immediately after residents left may have been high as well.

Post-abandonment site formation processes at the three Cerro León residences provide information about what happened to the area after the original occupants left it. The residences at the base of the northwest side of the hill were superimposed by interment of individuals from Moche

phases in a small cemetery. Looters caused severe damage to Areas 6 and 7, the areas also disturbed by the Moche interments, and have not been excavated. There was a minor Chimú presence at Cerro León in a small portion of Compound 1. In Features 8 relatively elaborate hearth features were found (Subfeatures 8.1 and 8.2) well above the plaster floor associated with the cist tomb (Feature 8.03) and the latest phase of occupation. This was probably associated with pieces of a Chimú blackware bottle, most of the fragments of which were recovered from post-occupational levels in the adjacent Feature 9 special-use room. A couple of sherds were found in the adjacent Features 8 and 10 as well. In all, excavation recovered 20 fragments of blackware weighing 97 g (Figure 5.4.1). This Chimú presence is interpreted as a brief encampment that may have been visited more than once (Schiffer 1996:100).



Figure 5.4.1. Chimú Blackware sherds from the post-abandonment encampment, Compound 1.

Although people didn't resettle here in great numbers for a significant period of time, Cerro León was used quite often as a temporary camp site, probably by people passing through or herders in prehistoric as well as historic times. This likely occurred frequently during light to moderate El Niño

events when hill slopes offered grazing opportunities for herds. There are several expedient hearths marking brief visits in the fill above original occupation floors (Features 5.03, 8.01, 8.02, and 25.01). As is evident from the proportion of looted contexts with ceramic materials in Table 5.4.1, looters made temporary camps in Cerro León's abandoned structures frequently through time, probing and digging up floors and even moving and re-stacking wall stones to carry out their work. Plastic soda bottles and cigarette butts offered telltale signs of the looters' presence.

Natural formation processes probably began taking their toll on the preservation of the site almost immediately after abandonment occurred. There is evidence that roofing material was gone (either through natural decomposition or through scavenging processes) fairly quickly from roofed areas of the site. Pooled El Niño sediments are common both at and near the last occupation level in many contexts. Low areas filled with silt and water runoff from rain events from abandonment to the present. Additionally, wall fall events have occurred over the entire site, especially in Area 4 (Fariss 2008:28). Looters engaged in constant activity at the site as well, being especially active between 1981 and 2000, before the MOP began its project at Cerro León (Briceño and Billman 2009). In 1991 little looting occurred, but between 1992 and 1996 the site was targeted by groups of looters.

## **5.5 Variation in structure size and function**

Floor areas in the three residential compounds at Cerro León varied in size from 0.9 m<sup>2</sup> to 43 m<sup>2</sup>. The sample of rooms is too small (n=50) to determine any sort of pattern in the modal distribution of room sizes, however there does appear to be some evidence to suggest that room size was determined by intended function. The boxplot in Figure 5.5.1 presents the floor areas of different spaces based on interpretations of function. Patios and terraces are the largest. These are spaces that would have accommodated many people for work and socializing in the open air and light. All other enclosed, presumably roofed spaces are significantly smaller in size but have a noticeable range of size variation. The kitchen space is the next largest. These specifically refer to areas that are

obviously indoor, roofed spaces with full height walls on at least three sides and containing hearths that show repeated, intensive use and cleaning.

Table 5.5.1 presents the proportions of different function spaces for each residential compound.

Compound 1 has the greatest amount of diversity in its compartmentalized spaces, but Compound 3 has the greatest proportion of rooms within its boundaries. Compound 3 also had the highest proportion of rooms where function could not be ascertained. Perhaps this was because there were more small rooms with ambiguous interior subfeatures packed into less space than in either of the other two residences. Another factor may be the uncertain function of Feature 34. Once the Feature 48 cist had been constructed in the middle of the patio, did it continue functioning as a domestic patio space or did it become mortuary space like the block of rooms in Compound 1?

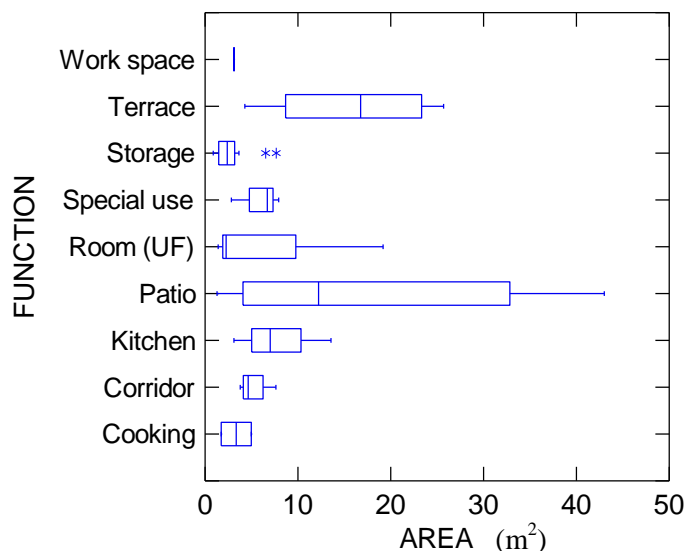


Figure 5.5.1. Boxplot of area in meters<sup>2</sup> for rooms at Cerro León classified by inferred function.

Compounds 1 and 6 share more similarities in terms of proportion of space allotted to rooms for specific purposes. Compound 1 and 6 have roughly the same proportion of kitchen and storage

space. However Compound 1 may have more storage to the south on the steep hill slope behind the main compound. Compound 1 has significantly more patio and terrace space than either of the other two compounds. Although Compound 3 has little patio space, it does have the large, central terrace that appears to have been multi-functional work and storage space, as well as a possible mortuary space (Feature 33). Compound three has much more space devoted to kitchen and sleeping area as well as storage. One thing that is important to keep in mind is that all rooms may not have been in use at the same time throughout the occupation of the residences, nor is it certain that each room was used only for the main function we identified.

Table 5.5.1. Distribution of functional spaces in Compounds 1, 3, and 6, Cerro León.

Function	Compound 1		Compound 3		Compound 6	
	m <sup>2</sup>	%	m <sup>2</sup>	%	m <sup>2</sup>	%
Cooking/semi-open	5.25	1.09%				
Kitchen/sleeping	20.66	4.30%	8.37	12.89%	6.92	5.05%
Patio	151.16	31.49%	3.58	5.51%	54.98*	40.13%
Terrace	82.51	17.19%	19.5	30.00%		
Sleeping/Corridor	4.44	0.93%				
Burial Cist/Special use	23.43	4.88%	3.59	5.52%		
Storage	18.88	3.93%	7.4	11.38%	5.95	4.34%
Stair/Corridor	4.84	1.01%			3.78	2.76%
Other (vessel supports & bins)	0.32	0.07%	0.43	0.66%		
Workshop	3.11	0.65%				
Uncertain	22.32	4.65%	22.12	34.03%	9.45	6.90%
Unexcavated	143.08	29.81%			55.92	40.82%
Total excavated area	480	100.00%	65	100.00%	137	100.00%

\*much of C.6's patio area may be in the unexcavated areas of the dwelling, these results are based only on excavated area. No room foundations are evident in this southeastern portion of the compound and the southern half contains many large boulders. It remains possible that some or all of this area was patio or storage space.

## 5.6 Residential group organization, social identities and intra-residential social relationships

Daily life at Cerro León centered around daily subsistence and craft production, ancestor-centered ritual, and hosting public, large-scale events. Compound 1 was by far the largest and most specialized set of spaces in Area 1. It was the only residence that provided venues for a full spectrum





### *Compound 1 residential group*

#### Public gathering sector

Compound 1 is the only residence to have this type of public space. Proportionally, it makes up 43 % of the entire residential compound. Access to this large open space with its commanding view up the Moche River valley was up the *quebrada* chute to the west. This chute is one of only two ways to enter Area 1 from the Quebrada del León. At the top, Feature 32, along with Feature 11 make up the largest flat, open air space of the entire area and probably for the whole site.

These patios would have offered an impressive but tightly controlled point of entry into Compound 1. Emphasizing this point were the placement of several massive, evenly spaced upright stones on both sides of the *quebrada* chute entry point at the base of the hill. The retaining walls at the south end of Feature 32 defined the patio and the terrace Feature 44. The Feature 44 terrace walls were particularly well made of small laterally laid stones creating an almost mosaic-like appearance that was clearly intended to be seen as one entered the compounds large patio space. These open spaces west and south of the core of the domestic compound have been interpreted as well-suited to receiving and hosting large-scale gatherings. The Feature 22 terrace would have provided ample space for food preparation as well as for guests.

The fact that Compound 1 is the only house in Area 1 (and probably in the entire settlement) to have this type of space for receiving and hosting potentially great numbers of guests indicates its special, high status in reciprocal social, political, and economic relationships within and beyond the settlement. That nearly half of an already very large residence is devoted to this special hosting activity emphasizes its central role in all aspects of Cerro León social life. Although the prestige of claiming this space as part of the residence was unique to the Compound 1 household, the responsibility of maintaining it and preparing for the events that took place there was most likely shared by neighboring households, including those residing in Compounds 3 and 6. It is likely that households elsewhere in the settlement and possibly outside of it engaged in relationships with

Compound 1 residents that periodically involved contributing to preparations for Compound 1's public events.

The public sector, as a gendered space at Cerro León, was likely shared by men and women, perhaps in contrast to many later venues such as Moche feasting and ceremonial platforms that were constructed apart from residential space (Castillo 2001; Swenson 2006). Elite families at Galindo built larger *salas* in their homes that likely functioned in part as a space to receive guests, but these were not large enough to hold public gatherings (Bawden 1982). At Cerro León women were likely involved in feasting and other events because they took place within the residence, even if they participated mostly at the margins of the public space in outdoor cooking and food preparations locations or as servers. Men and women were probably equally involved in gathering resources for feasting events, but ideally each gender was associated with different tasks. For example men may have provided game or camelids and organized and butchering and roasting activities while women prepared beer and cooked foods such as stews (Goody 1982). Gendered activities may have been located in different areas of the public sector. In contrast, Moche women probably made preparations for similar events but may have done so totally apart from, and without being included in, the events.

Ethnic identity and public ceremony is more difficult to assess from the architectural layout and characteristics of Cerro León. One possibility of ethnic display for the public sector is the fine, detailed stonework of the Feature 44 terrace walls (Figure 5.6.2) and the strategically placed large upright stones that mark the path up to the public space from the base of the hill. The choice not to use adobe bricks could possibly be related to ethnicity. Another expression of ethnic group identity or solidarity may simply have been the large open space of the public patios and the commanding view up the valley from them – the ultimate expression of the “home court advantage” impressed upon one's guests. Visitors would have been able to see, hear, and smell activities in the large, open-air cooking facilities of terrace Feature 22 from the adjacent terrace Features 43 and 44. As I discuss in Chapter 7, the enormous cooking pots and brightly colored serving wares for food and beer would also have caught the attention of guests. Groups may have consciously or unconsciously displayed

identities based on highland or coastal origins during events on these large terraces at Cerro León through displays of pottery, clothing, and other social media such as music or dance.



Figure 5.6.2. Fine, detailed stone work in the Feature 44 receiving area, Compound 1.

#### Private residential core sector

Access to private residential space, including the smaller rooms for cooking and storage as well as the smaller interior patios would have been circuitous; around a large outcrop of boulders central to the Feature 11/32 patio. Once past the boulders, household members would have entered a smaller, multi-leveled, enclosed, and more compartmentalized series of rooms and patios, most of which were divided by full-height stone walls. Although there likely was a more intimate feel to these rooms and patios, with walls reducing visibility and sound, the residential sector still comprises nearly half (47 %) of the entire compound. These smaller spaces were more protected from the wind, while roofed areas would have offered shade and regulated temperatures. Open areas permitted light, and judging from artifacts recovered, were work spaces for spinning, plying, weaving, metal working, patio groups (Figure 5.6.3). The larger, western group centers around the Feature 5 kitchen and patio

Features 13 and 14. The eastern, Feature 12 kitchen used the long Feature 18 patio. Each sub-group had at least two storage spaces as well.

The enclosed kitchens in Compound 1 (Features 5 and 12) would have been walled and roofed. With a small cooking fire in the corner they would have been dark, smoky, intimate spaces where individuals or small groups prepared daily meals, ate and rested. Guinea pigs clearly had the run of these smaller enclosed spaces. The Feature 5 kitchen was especially private being at the end of a long passage through Features 23 and 7. However, large upright stones on either side of the entry to the Feature 23 room clearly mark the passage leading to the kitchen and living space. The Feature 12 kitchen is smaller and opens out onto the Feature 18 patio. This sub-group also has additional semi-open cooking space on the exterior north wall of the kitchen across from a room interpreted as a workshop for metal finishing activities.

At least some portion of the patio Features 13 and 14 were probably roofed to provide shade but still be open enough to allow light and workspace. A wall separated the Feature 14 and 18 patios but the floors of the two spaces were at slightly different elevations. Although severely looted, evidence of a passageway with steps connecting Patios 14 and 18 became evident after excavation. While the rest of the compound's rooms are relatively closed off from outdoor activity, it was the more open patio spaces that shared a wall and offered more opportunities for communication, cooperative tasks, and social activity within the private residence. The western and eastern halves of the Compound 1 residence each had a large *batán* for food processing.

The private residential sector of Compound 1 was most likely the space in the house where men and women interacted most closely. In contrast, many aspects of public and mortuary practice were probably organized much more rigidly by gender and kinship. However private domestic roles and daily activities were still divided based on gender ideals. In a farming community like Cerro León, women spent the bulk of their time in and nearby the house while men probably spent a larger portion of their day outside of it. Women's main domain was the kitchen and storage spaces nearby, but patios were shared spaces where men and women worked and interacted with one another.

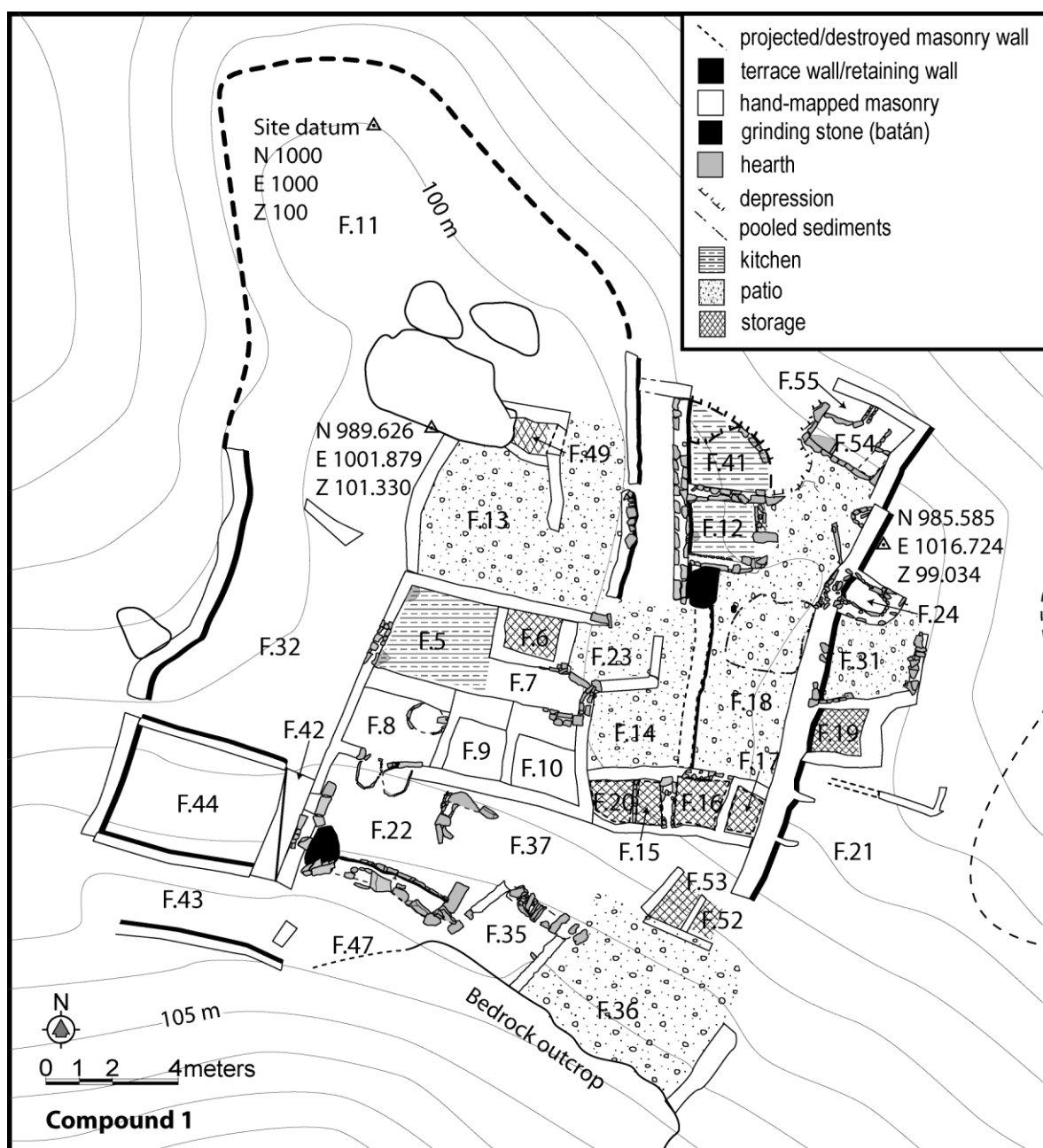


Figure 5.6.3. Kitchen, patio, and storage space in Compound 1.

#### Restricted access mortuary sector

The mortuary sector at Compound 1 comprises ten percent of the space of the entire residence. As is discussed in more detail in the section on occupational histories below, mortuary

space took over living space gradually, increasing from a single room of 7.7 m<sup>2</sup> to multiple chambers and patio space totaling just over 49 m<sup>2</sup>. This restricted space bordered both the public sector and the private residential space; lying between the two but not easily accessed from either. One other small mortuary area is somewhat isolated from the main mortuary group, but still on the margins of the private residence. The Feature 24 cist, Feature 34 patio and the Feature 19 storage rooms on the east side of the eastern Feature 18 patio wall could have been associated with the eastern sub-group of Compound 1, but this remains unclear.

Since all of these mortuary spaces were well cleaned out, it is difficult to determine exactly how they were used. It is interesting that there were no subfloor burials at Cerro León. Here, special rooms or chambers were constructed to accommodate the remains of the dead. In other regions, such as Recuay (Gero 1992) and the Urban Zone at the Huacas de Moche (Chapdelaine et al. 2008) women and men were placed in subfloor burials. We can't know for sure but being within the residence, it is likely both men and women were part of ancestor ritual at Cerro León.

Whoever the persons interred in the mortuary contexts at Cerro León were, it is clear that they received special status. Elsewhere at Cerro León and other highland EIP sites in the middle Moche valley, many burials are found outside of residential compounds. Like the cists inside of Compounds 1 and 3, these are circular, stone-line cists but smaller and shallower. They are located on hill slopes above or outside of habitable areas. Many are tucked under bedrock outcrops but some are out in the open. More often than not, the bones remain, scattered across the ground surface by looters. Pottery fragments on the ground surface indicate that many cists probably contained offerings. The mortuary area inside Compound 1 was special not only because it was inside but because of its fine construction, the especially thick walls with no ground level entrance, the camelid offerings, and possibly other special objects such as the crystal projectile point and the well-made *piruru* spindle whorl. The person or people interred (it is possible there was more than one, although there is no solid evidence for multiple individuals) received special ancestor status as more and more space was devoted to mortuary activity over the occupation of Compound 1.

### *Compound 3 residential group*

#### Private residential sector

In Compound 3 kitchen and living spaces were mainly on the highest terrace, tucked up against the bedrock that provided a natural wall and windbreak (Figure 5.6.4). The largest of these rooms, Feature 29, probably served as both kitchen and living/sleeping space for family members. These space would have been occupied most of the time by women preparing daily meals and watching children. The lower, open terrace and patio had a convenient, adjacent midden area in the space between Compounds 3 and 6. Men and women probably used these spaces to carry out a variety of household tasks, similar to those conducted by Compound 1 inhabitants. Compared to Compound 1 the sizes of individual rooms were not significantly different but the patios and terraces were much smaller.

#### Mortuary sector

Compound 3's mortuary features may not have been considered as restricted in access as those of Compound 1. This may have been so because the cist tombs were within a residence without any large public access sector. Since the tombs were probably not normally accessible to people who weren't intimately connected with Compound 3 household members, restricting access might not have been a concern. It may have been that when the cist Feature 48 was capped after interment had taken place, the Feature 34 patio was altered and became less used for daily activities. On the other hand, daily activity may have continued with added activity surrounding the deceased. There is currently no evidence to indicate the compound was abandoned after interment.

### *Compound 6 residential group*

#### Private residential sector

Like in Compound 3 the smallest spaces were prepared in Compound 6 along the bedrock outcrop (Figure 5.6.5). This offered a wall, privacy, and a windbreak for the kitchen space as well as

nooks that were turned into protected and functional storage rooms. Compound 6 is bookended by patio spaces, but so little of patio Feature 63, the lower elevation, eastern patio was excavated that it is difficult to determine if they might have been used for different activities. There was a division between the upper (Feature 51) and lower (Feature 62) patios, in the form of two large upright stones.

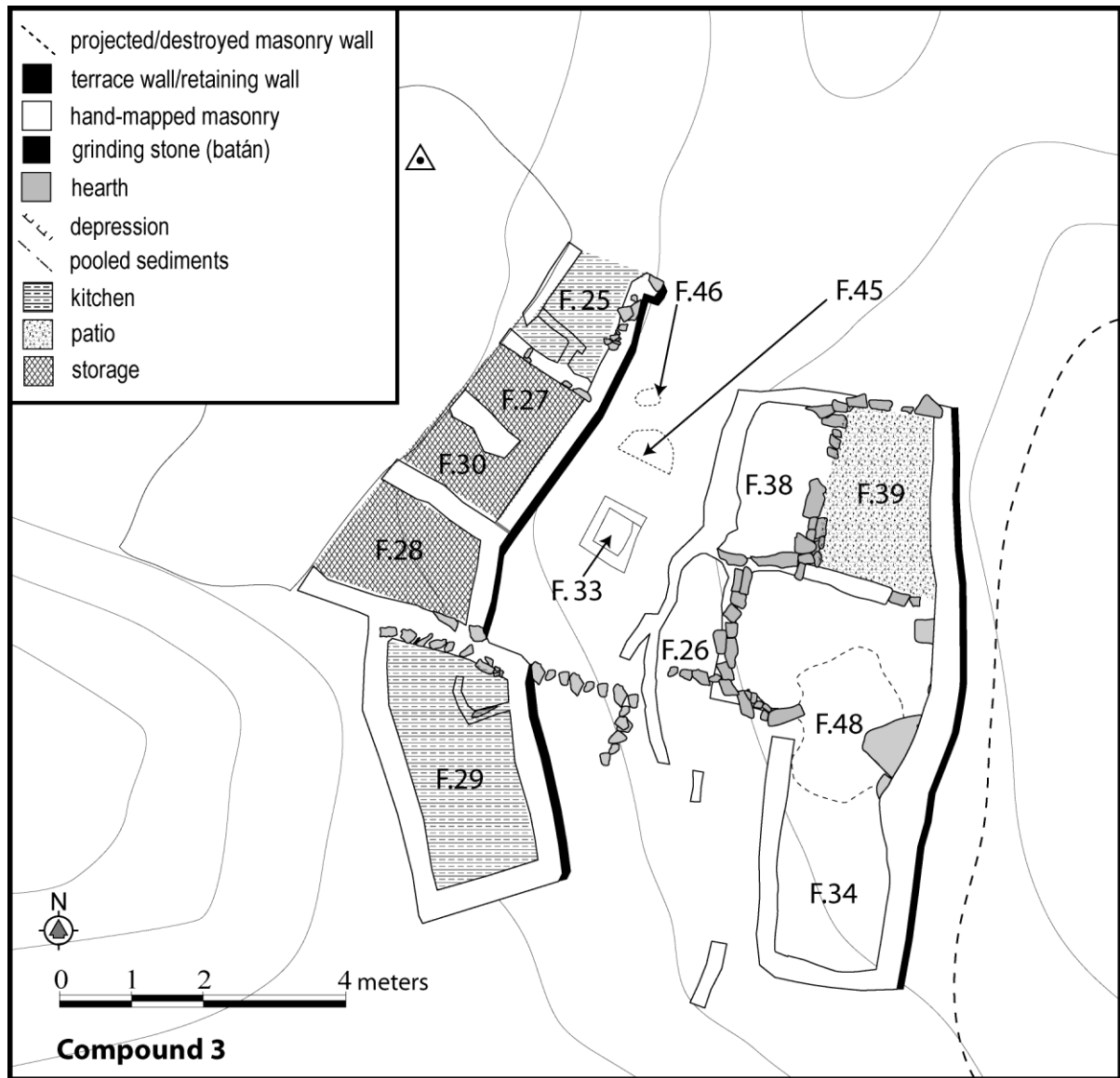


Figure 5.6.4. Kitchen, patio, and storage space in Compound 3.

One of these is off of the southeast corner of the kitchen. Traffic flowed between the two patios via the Feature 59 stair and corridor, which was also used as a guinea pig run. The upper eastern half of



the compound has the kitchen and a small, apparently free-standing storage room at the same elevation as the upper patio. The patio Feature 51 also contains the residence's only large *batán*. The upper patio may have been a space more closely associated with food preparation and cooking for daily meals and therefore a space occupied mostly by women, while the lower patio may have been designated for other tasks. The south margin of Compound 6 likely had at least two tiers of retaining walls to control erosion and provide stability as well as a pathway between Compounds 1 and 6.

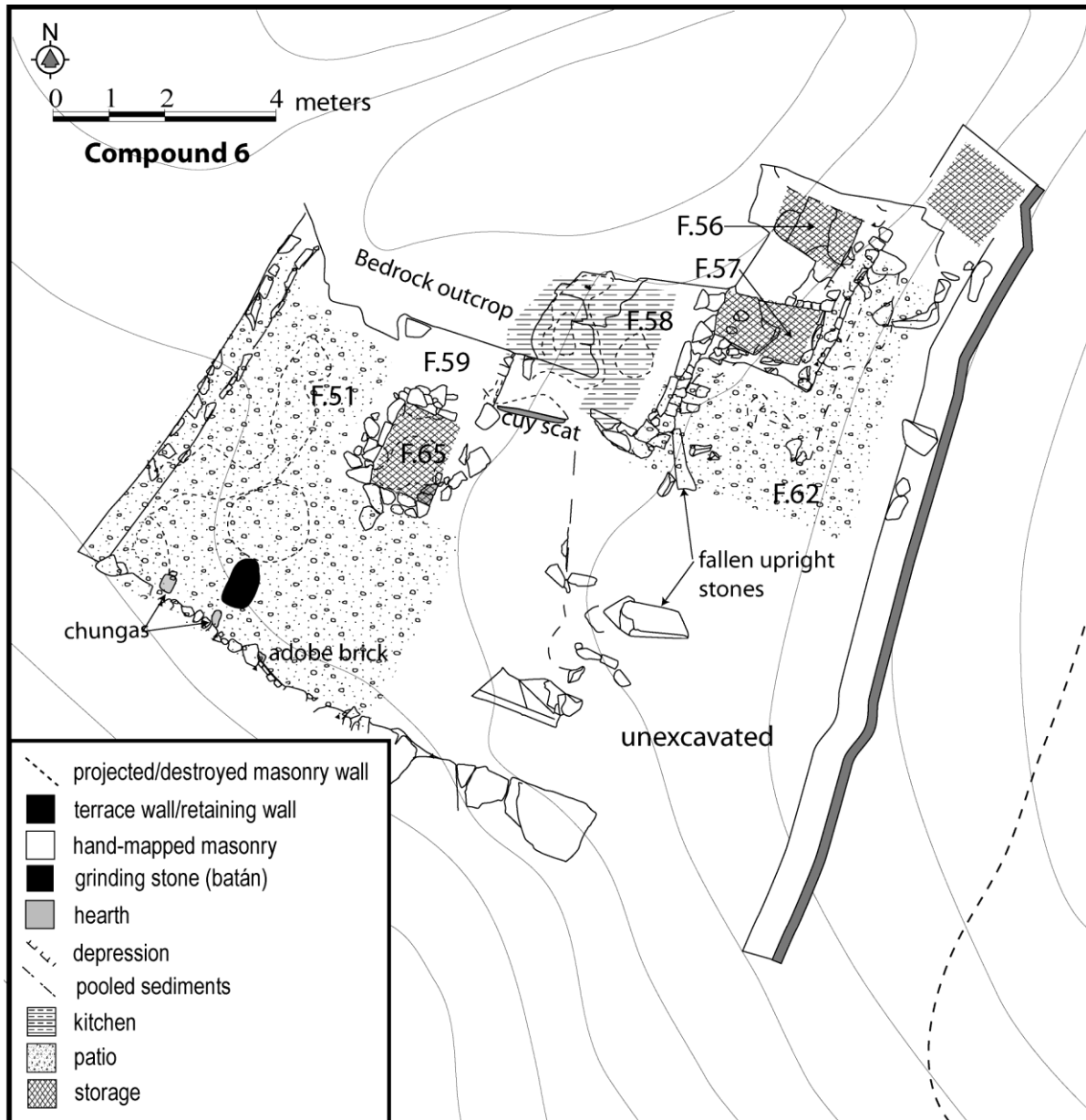


Figure 5.6.5. Kitchen, patio, and storage space in Compound 6.

### Intra-household relationships

It is clear that because of its public gathering spaces, Compound 1 residents made their home the center of supra household activity in Area 1. Because of the number of kitchen spaces and *batánes*, Compound 1 was comprised of at least two closely related family groups that each had their own space but also shared a high degree of daily contact and interaction. However, for daily existence the two groups did not necessarily have to share space or resources even though they may have done so frequently. Compound 1 residents must have drawn upon assistance from Compounds 3 and 6 and probably many other households in the settlement when a large-scale event was planned. Storage that would have accommodated food or other resources for such events does not seem to have been a priority in any of the three compounds, however. The amount of storage present in each (except perhaps for the larger proportion in Compound 3 shown in Table 5.5.1) most likely was for the use of the private residential sector's activities. Perhaps the residents of Cerro León each contributed to the feasting activity immediately prior to the event, eliminating the need for special storage. It is also possible that there may have been communal storage. This could have been in the same area where Fariss (2008) indicated the presence of several grouped grinding stones in Area 4, or perhaps somewhere else closer to or within Area 1. Regardless, Compound 1 was not equipped for storage of great quantities of food surplus. Its larger size was a factor of more household members in daily residence, larger and more numerous ritual spaces, and most significantly, ample space for large-scale gatherings.

It is difficult to assess whether or not the Compound 3 residents branched off of the Compound 1 household. Their proximity to the large household at Compound 1 obviates some kind of relationship but it is not certain that the occupants of Compound 3 were a second generation of some of the occupants of Compound 1. Certainly the Compound 3 social unit comprised a smaller group of individuals related in some way to the residents of Compound 1, perhaps a sibling or second generation family group or even someone not related but with a strong reciprocal or cooperative relationship to the main Compound 1 extended family social group.

The Compound 6 residence probably comprised a single family group, although the space could have potentially accommodated many people. There does not appear to have been enough sleeping space prepared to shelter many people. They had less of a direct connection to large-scale gatherings because Compound 6 did not possess any spaces comparable in size to those in Compound 1. The patio spaces that frame the compound are large, but they are not associated with grand entrances or views like those of Compound 1. The patios of Compound 6 look out on the midden areas east of Compound 3 and east of Compound 6 and 1. Although they may have been cooking and eating everyday meals within the residence, the occupants of Compound 6 likely contributed to food and beverage preparations for –scale events by offering labor and work space to assist Compound 1 in hosting supra-household events.

### **5.7 Estimating occupation span**

To date, there are six radiocarbon dates for Cerro León, three from Compound 1 and three from intact trash deposits in a room in the domestic residences of Area 2. The latter three were published by Huckleberry and Billman (2003). The new dates from Compound 1 are presented in Table 5.71 first, followed by the Area 2 dates and the dates from the Urban Zone (Uceda et al 2008). Two of these AMS dates are from patio Feature 32 where a test pit was excavated on the west side of the compound wall that is also the western wall of the Feature 5 kitchen. The third date is from the base of a hearth (Feature 44.01) that was located in the south-central portion of the terrace. All the dates collected for Cerro León so far are from fragments of maize cobs. The Compound 1 maize was identified by Amber Van der Warker (2011) as 6-row variety. Carbonized remains from annual plants were abundant at all three residential compounds excavated at Cerro León and were selected over wood charcoal to avoid “old wood effects” (Millaire 2010:6191; Schiffer 1996).

Although they may seem problematic, the two dates from Feature 32 are interpreted as statistically the same and with the two-sigma calibration, there still is considerable overlap for the two dates. The data likely indicate that a very short period of time elapsed between filling episodes

beneath the final patio floor. On the whole, all of the dates for Cerro León cluster fairly tightly between A.D. 1 and A.D. 400.

Table 5.7.1. Radiocarbon dates on carbonized annuals from Cerro León and wood from the Urban Zone at the Huacas de Moche.

CONTEXT	MATERIAL	CONVENTIONAL AGE	2 SIGMA CALIBRATION <sup>18</sup>
(1)MV-225-Fea. 32, Level 8, Strat. H, fill betw. Floors 2 and 3	Maize	1830 +/- 30 BP (BETA 294056)	Cal AD 134 – Cal AD 346 (0.994199)
(1)MV-225-Fea. 32, Level 5, Strat. E, a layer of use-compacted floor	Maize	1890 +/- 30 BP (BETA 294055)	Cal AD 81 – Cal AD 254 (1.0)
(1)MV-225-Fea. 44.01 hearth above Floor 3 and below Floor 2	Maize	1780 +/- 30 BP (BETA 294054)	Cal AD 240 – Cal AD 402 (1.0)
(2)MV-225-room block beneath Wall 1	Maize	1910 +/- 40 BP (CAMS-74945)	Cal AD 59 – Cal AD 254 (0.998243)
(2)MV-225-room block beneath Wall 1	Maize	1780 +/- 50 BP (CAMS-74946)	Cal AD 209 – Cal AD 425 (0.95939)
(2)MV-225-room block beneath Wall 1	Maize	1940 +/- 30 BP (CAMS-74947)	Cal AD 48 – Cal AD 237 (0.975427)
(3)ZUM-Beneath a tomb, CA # 5-2	Wood	1500 +/- 70 BP (BETA-121763)	Cal AD 428 – Cal AD 689 (0.996964)
(3)ZUM-On top of a burial, CA # 5-24	Wood	1520 +/- 60 BP (BETA-134086)	Cal AD 525 – Cal AD 664 (0.852306)
(3)ZUM-Cap of ash, CA # 12-4	Wood	1680 +/- 60 BP (BETA-121762)	Cal AD 317 – Cal AD 568 (0.938072)
(3)ZUM-Beneath a tomb, CA # 12-5	Wood	1490 +/- 60 BP (BETA-121764)	Cal AD 528 – Cal AD 688 (0.936172)
(3)ZUM-Burial in Architectural Compound 15	Wood	1630 +/- 40 BP (BETA-121761)	Cal AD 401 – Cal AD 580 (1.0)

(1) This dissertation, (2) Huckleberry and Billman 2003, (3) Uceda et al. 2008

By way of comparison, I recalibrated all the Cerro León dates along with the Moche III dates from the Urban Zone at the Huacas de Moche and compiled these in Figure 5.7.1. Compared to the Urban Zone at the Huacas de Moche, Cerro León's Area 1 occupation is earlier, or at least not later than Moche III. This supports the estimated date of middle to late Moche phase for the wall that superimposes the Area 2 residential structure where three of Cerro León's six AMS dates are from. The Cerro León dates also fall within the earlier range of Jean-François Millaire's (2010) dates from the residential sector at the Gallinazo Group. Cerro León dates are later than date from human bone

<sup>18</sup> I used Calib 6.0 Radiocarbon Calibration for the Southern Hemisphere. (Stuiver & Reimer 1993, version 6.0; Reimer et al., 2009).

from “Structural” phase graves studied by Celeste Gagnon at the nearby Gallinazo paramount site of Cerro Oreja (Gagnon, personal communication 2012).

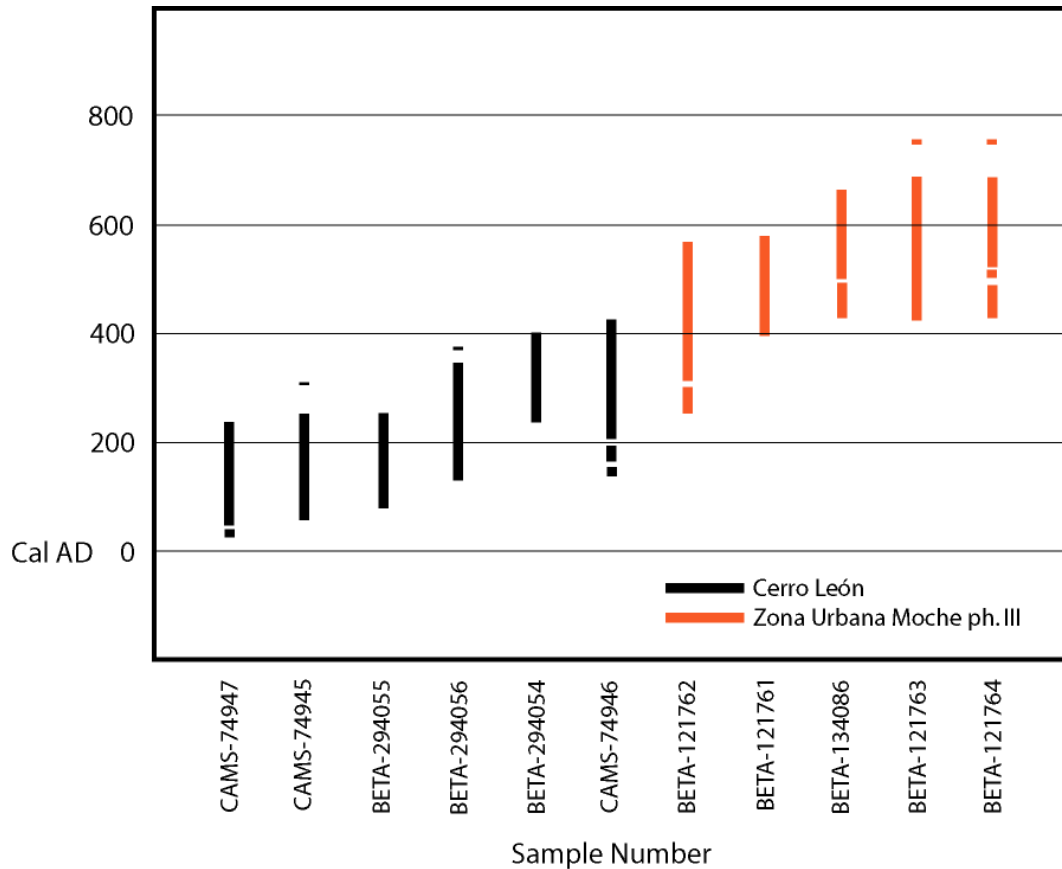


Figure 5.7.1. Graph of Cerro León and other published calibrated dates for Moche EIP sites.

Besides the radiocarbon data, the strongest argument for a lengthy occupation of Cerro León’s Area 1 is the higher volume of ceramic and other material in the levels of architectural fill. A projected occupation of two centuries for the settlement as a whole does not seem unreasonable and fits with the radiocarbon dates we have so far. Compared to Varien and Mills’ (1997) data on estimating occupation span of the Duckfoot site Cerro León’s proportion of cooking pots is slightly less (Duckfoot =62.4% and Cerro León = 58.2%). However, I tried to use their equation on the bulk weight of plain pottery from excavation and the length of occupation based on these data would have been 56 to 70 years for the three residences at Cerro León. Close to the same results were produced

when using the discard equation (Schiffer 1996:56) pioneered by Sherburne Cook (1972) on counts of cooking *olla* rims for all three compounds. The results with varied breakage rates of 3 to 4.6 vessels per year, per household were 48 to 74 years. Interestingly, both equations at least set the minimum duration of occupation at approximately 50 to 70 years. However, since the surface collected material and the adjacent midden assemblages were not a part of Cerro León's estimate, there is no way to determine without excavation what proportion of the three compounds' total discarded cooking pots remains in the middens surrounding the residences.

Another line of evidence for estimating length of occupation would be the amount of rebuilding that took place in the residences. Compound 1, depending on whether you interpret additions and renovations as occurring more or less simultaneously or sequentially, could have had a range of roughly four to eight or more stages of construction and remodeling. If these took place every generation (estimated at 25 years), that could mean an occupation of 100 to 200 years. Ideally, absolute dates from the earliest and latest stages of construction for each compound could help sort out the complex history of occupation in Area 1. The upshot of these various independent lines of evidence for estimating occupation span is that they all clearly demonstrate a multi-generational occupation of greater than a century, not a short-term or single generation occupation.

## **5.8 Interpreting the life cycles of households through residential spaces**

The Compound 1 residence may have gone through a minimum of three to five phases of construction and/or modification in its life cycle. As the physical space of the residence expanded and changed, the household passed through stages of establishment and expansion while possibly also shifting emphasis from smaller-scale agricultural tool and craft production to markedly more intensive agricultural production aimed at surplus as well as engagement in supra-household activity related to feasting. Although there is some evidence of shifts in use of space from activity area to disuse and accumulation of trash, there is little to indicate that the household entered into significant contraction or decline prior to its abandonment. When people left it, most of the excavated spaces of

Compound 1 were still actively used, serving an expanding, probably multi-generational, multi-nuclear family resident social group as well as nearby smaller satellite households.

In its initial phase, a large room served as the center of indoor activity with a built-in storage room (Feature 6) and an antechamber (Feature 7) that occupants may have used as a sleeping or additional storage space. Surrounding areas (patio Features 11, 13, 14, 22, and 32) may have served as open air work and gathering spaces but residents had constructed all of the retaining walls that defined these patio spaces in the compound's later phases of occupation. The original "great room" is an unusually large, open space for a stone structure in the EIP, measuring a total of roughly 32.4 m<sup>2</sup>, excluding the space allotted for storage Feature 6 (Figure 5.5.1). It is difficult to assess what the original social configuration of occupants might have been because so many people could have lived, worked, and slept within its walls. Exterior activity areas may have existed on all sides of the initial structure, without formal boundaries or retaining walls. Perhaps Compound 1's great room structure was one of the earliest in Area 1 or even one of the earliest permanent structures at the site. It is possible that kin and non-kin shared this large space until other constructions were ready.

Compound 1 subsequently underwent an extended period of expansion surrounding this core structure, subdivision within the core, and extensive remodeling and maintenance both within the core and in the surrounding additions. In its next phase of development, residents significantly altered the great room of Compound 1 with the addition of an unusually thick-walled room in the southeast corner (Feature 10). Another thick partition was subsequently added to create the Feature 9 room. Finally, the last section of the south end of the original great room was closed off by the creation of Feature 8. As residents added these thick, full-height dividing walls, the available space in the great room shrank until it was divided nearly in half. The renovations also shifted access to the Feature 8, 9, and 10 special-use spaces from within the core structure to either roof top access or possibly some kind of ladder entry from the higher patio Feature 22 to the south. All together, these interior rooms had walls ranging from 67 cm to 110 cm in thickness. In the largest and latest room (Feature 8) occupants of Compound 1 emplaced a circular, slab-lined cist in the northeast corner of the room. The

addition of each room probably marked a major event in the life cycle of the household but it is uncertain how much time elapsed between each addition.

During and after the addition of the Features 10, 9, and 8 rooms, the northwest quarter of the former large central living space likely served as the main kitchen/living space. A series of hearths and ash deposits in this kitchen (Feature 5), as well as at least four finely made, packed sediment floors indicate that this space functioned as one of the most heavily and repeatedly used rooms in the Area 1 suite of residences. The Feature 5 kitchen also bears evidence of flooding during its occupation. Flood damaged floors were covered over and the room continued to be used as a kitchen up to abandonment. In contrast, the floors of the ancestor-related spaces in Features 8, 9, and 10 showed little or no remodeling and, with the exception of a small amount of debris in Feature 8, were free of *de facto* refuse.

Possibly as part of the same stage of renovation as the former great room, residents of Compound 1 expanded living and work space to the south and east of their core structure. It is not yet clear if residents added these areas simultaneously or sequentially. If the additions took place sequentially, it is possible that the area to the east including two patios (Features 14 and 18) and additional storage rooms (Features 15, 16, 17, and 20) may have been the next projects undertaken by household members in Compound 1. The multi-level patio areas and rooms to the south of the core structure, including Features 22, 35, 36, 37, 52, and 53, may have been coeval with the Feature 14 and 18 patio space renovation, or may have followed it after a period of time. The definition of the south wall, shared by Features 8, 9, 10, 20, 15, 16, and 17, may have necessitated that the down slope, core area of the compound be remodeled first, followed by the development of the terrace shared by the Feature 22, 37, and 36 patios and their associated rooms.

Subsequently, a new kitchen (Feature 12), an exterior cooking space (Feature 40) and an additional work space (Features 54 and 55) may have accommodated expanding household membership as these spaces defined the northern boundary of patio Feature 18. The retaining wall shared by patio Features 14 and 18 did not have a full height partition separating the two work spaces.



Although the wall was not full height, a perishable construction may have provided some separation between the spaces. A separation might indicate that separate but related nuclear family groups shared the compound, each having their own semi-private patio and storage areas for daily use but probably having face-to-face contact on a daily basis also. Areas of patio Feature 18 are exposed bedrock in its northern half, but the southern half of the patio saw much use before occupants leveled and completed the patio. In the southern portions of Features 18 and 14 midden was found beneath the floors. This was also the case for the storage Features 15, 16, 17, and 20.

At some point the patios (Features 22 and 37) to the south of the original compound core appears to have been repurposed. This may have coincided with or come after the creation of Feature 8. Household members modified the wall that Feature 22 shares with Feature 8 to the north emplacing two camelid burials in shallow, stone slab-lined cists. A floor was created over these burials which may have served as dedicatory offerings. Upon this floor, residents emplaced a large *batán*, a pot rest, and multiple hearths indicated by large burned patches. The western wall of the compound, shared by Features 5, 8, 22, 32, and 44, was part of the earliest construction of Compound 1, but it is not clear when the areas west of the original core of the compound, namely Features 32, 43, and 44, were completed. Feature 32 shows signs of continual use and refinishing over a long period of time with at least as many occupational surfaces as the Feature 5 kitchen. The surfaces of the patio had accumulated moderate amounts of trash and were repeatedly capped and reused.

The final additions to the compound appear to have taken place on the far eastern edge of the compound on the edge of the drop off into the eastern quebrada chute that bounds Area 1. Features 19, 31, and 24 may have been added after the eastern retaining wall of patio Feature 18 was built. Features 31 and 19 are small patio and storage spaces. Although the floor of Feature 31 is bedrock, the small well-made Feature 24 cist and the Feature 19 storage space rest on fill containing trash to a considerable depth. There may have been occupation underneath and to the south of Feature 19. Wall fragments were found in this area but meters of colluvium from up slope had accumulated over Feature 21 and what exactly was here remains unclear. All fill in this area is thoroughly mixed by

looting. What is known however is that these constructions happened relatively late and seem to indicate that space was at a premium in Compound 1. Expansion took place almost to the quebrada edge with heavy modification and filling over highly uneven terrain.

Compound 3 underwent three main phases of expansion from its creation to its final configuration. These constructions consisted of private domestic space with at least one (Feature 48) or possibly two (Feature 33) burial features. Construction began with the set of rooms along the western bedrock outcrop (Features 25, 27, 30, 28, and 29) and extended eastward. Subsequently residents filled and leveled the spaces below and added the middle terrace with its square cist (Feature 33) and large vessel rests (Features 45 and 46). Finally, the more complex configuration of rooms and patio space adjacent to the Compound's midden were added to complete the residence. Compounds 1 and 3 may have been established at roughly the same time possibly indicating that their rates of expansion differed as did their economic circumstances. Whatever the case, one likely scenario is that the social group's size as well as that of the house remained relatively stable and grew slightly from establishment to abandonment of the structure.

Residents of Compound 3 emplaced the remains of at least two people in stone-lined cists within terrace or patio areas. These interments occurred sometime during expansion stages of household developmental cycles. It is likely that the Feature 48 cist was a late renovation in the household's occupation history. The residents of Compound 3 may have dug the cist into the Feature 34 patio during the occupation of the residential compound. It is noteworthy that Compound 3 also shows signs of flooding occurring sometime during its occupation. Both the middle terrace as well as Features 38 and 39 have pooled sediments that were superimposed by later floor construction and occupation. The cist Feature 33 on the middle terrace shows signs of filling with water. This cist may in fact have been emptied out before the compound was abandoned.

The most plausible interpretation is that the social group residing in Compound 3 expanded on a modest scale as did the house, but the timing of its establishment and abandonment remain uncertain. Compound 3 had likely passed its maximal stage of expansion in the household

developmental cycle. However it is possible that Compound 3 housed an older generation than either Compound 1 or 6. As mentioned in the previous section, Compound 3 had no large grinding stone or *batán*. In fact, there are no *batáns* or *chungas* recorded for Compound 3. This is especially notable considering that both Compounds 1 and 6 have one large, almost immovable grinding stone per kitchen plus several smaller grinding stones and many *chungas*. It is possible that after site abandonment, smaller grinding stones could have been scavenged or a *batán* located near the compound perimeter could have fallen down slope as part of cultural or natural post-abandonment site formation processes.

However, a more plausible explanation for Compound 3's lack of this essential household equipment lies in Compound 6. The residents of Compound 6 used well-worn *batáns* and *chungas* in wall construction and it is possible that these were scavenged from nearby Compound 3, along with other grinding equipment for daily household use, especially the large *batán* on the Feature 51 patio. Perhaps Compound 3 was abandoned before Compounds 1 and 6 and the final abandonment of the site as a whole. It is possible that the household members who lived in Compound 6 comprised a stem household<sup>19</sup> of Compound 1 or 3. Compound 6 had been in existence long enough to have established its own cooking and food preparation facilities and used them intensively prior to abandoning the residence.

Compound 6 residents appear to have set the perimeter boundaries of the residential space at the outset of construction. They did not expand beyond this perimeter in any subsequent stages of remodeling. Perhaps there was no need to expand or there was not any more space suitable for expansion. Another possible indication that Compound 6 was a late construction at Cerro León is that the space within the compound perimeters exhibited relatively little subdivision or renovation. Interior spaces received only moderate to light modifications over time in the rooms that make up its northern perimeter. Once the massive eastern retaining wall and the western double-faced compound wall were built, residents prepared the interior space with large-scale filling and leveling.

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<sup>19</sup> A stem is another nuclear family group of a lower generation (Wolf 1984:281).

Residents of Compound 6 began construction of the interior rooms along the northern bedrock outcrop. This likely started with the northeast corner of the Feature 62 patio. At some point, the small Feature 56 storage room was built. This room is one of the architectural spaces in Compound 6 that uses a worn *batán* as a wall construction stone. It appears that Features 56 and 57 were initially part of either the patio or another single larger room. This area was renovated and divided into the two smaller storage spaces in two or three stages with Feature 57 coming last. West of these rooms, the Feature 58 kitchen was walled on the east side and the south sides, leaving open an entryway on the south wall. The kitchen's east wall also contains a well-worn *batán* as part of the wall foundation. The kitchen appears to have been used heavily but not renovated during the compound's occupation.

There is evidence of heavy use of the area of the Feature 51 patio prior to its filling, leveling and subsequent use as the patio. The Feature 59 corridor and Feature 58 kitchen were likely constructed after filling and leveling of the Feature 51 patio took place. This is also true of the Feature 65 storage room. The east side of this structure has two flat stones emplaced to serve as a doorway at the same level as the latest floor of the Feature 51 patio. Additional space does not appear to have been subdivided for storage or living. As yet no burial cist has been found in the residence which could make it more likely that the household occupying the space was in the earlier stages of the developmental cycle than Compounds 1 and 3. However isolated fragments of human bone were recovered from both patio areas of the compound. Further excavation might reveal the remains of a burial cist in Compound 6. It is also possible that the Compound 6 household, being established later in the site's occupation never reached this stage in their life cycle.

## **5.9 Discussion**

The three residences had boundaries that were relatively easy to identify and constructions that indicated permanent, year-round residence for multiple generations. Compounds 1 and 3 began earlier and grew in size and complexity in an accretional manner. Compound 6 was the latest of the

three, and its residents may have scavenged *batánes* and *chungas* from Compound 3 for both construction and housework needs. Even so, there was little about the process of abandonment that indicated that Compound 3 was in disuse for any length of time before site abandonment. All available evidence indicated that the process of leaving Cerro León, at least for residents of these three houses, took place gradually and residents knew that they were going to leave before the event took place. Residents appear to have had ample time to let standards of housekeeping slip as well as time to remove high-value portable items to take with them. Abandonment cannot be interpreted as sudden or catastrophic because there is no evidence of violent destruction, burning, or sudden departure from contexts still in use.

The abandonment process at Cerro León is so important because it coincides with activity in the lower Moche valley that marks the beginnings of the coalescence of power and authority of the Southern Moche polity. Billman (2002:395) raises the important question, ‘were highland populations expelled or assimilated?’ In the generations that followed the highland EIP abandonment of Cerro León and many other middle valley sites, the Moche concentrate populations at large sites in the lower and middle valley and begin major reclamation of land and expansion of canals on the north side of the river. Were highlanders drawn in to this process or were they pushed out of the middle valley and back into the sierra? If they were assimilated, they must have dropped all ties to communities and kin, as well as culinary and cloth-making practices associated with the sierra of La Libertad. Further investigation into the settlement pattern during the late EIP in the middle valley as well as in highland La Libertad may provide some understanding of the settlement changes.

Accumulations research and absolute dating at Cerro León indicate a span of occupation of roughly two centuries. During this time, Compound 1, probably established earliest, changed and expanded through more or less eight generations of continual occupation. Depending on whether changes in architecture were sequential or concurrent, major alterations in living space must have taken place a minimum of four times, but very likely many more. During this time, basic household activities included cooking daily meals, processing and storing crops, raising guinea pigs, making and

repairing household and agricultural stone tools, spinning, weaving, and an array of craft activity including bead production and finishing of copper household tools and ornaments. What was most notable about the expansion and change in the household group that occupied Compound 1 was the transformation of their social lives from basic daily existence to one of special ancestor-focused ritual as well as a prominent role in large-scale social and ceremonial event hosting.

The transformations in Compound 1 likely connote the occupants' transformation to a special status as a senior residence in the community. The Compound also grew to house at least two family groups, each with their own suite of kitchen, patio, and storage space. The ancestor-related status as well as the more public role connected to it must have provided Compound 1 families with a legitimizing source of influence in the community, allowing them to draw upon neighboring households, including Compounds 3 and 6 for the substantial inputs of labor necessary to host sizeable feasting events. Although all households likely had some reciprocal relations both within the community of Cerro León as well as outside of it, Compound 1 household members must have had networks far beyond the norm, including more and more influential connections with families in both lower valley and highland communities.

Residences were compartmentalized allowing separate sectors for private daily life, restricted ancestor-focused ritual, and (at least in Compound 1) public gathering. Full height stone walls and roofed spaces emphasized these divisions and restricted access by limiting sight and sound between activity sectors. Gender relations in private daily life, judging from space allotments and arrangements, must have been fairly open and overlapping. Construction as a gendered activity has received little attention in household archaeology, even though the process of building and using a residence is a fundamental expression of gender complementarity. Men are assumed to have carried out most of the building tasks, while women were most associated with what goes on inside during the structure's occupation. The reality was more complex, and allowed each gender to exert power in different situations (Diaz-Andreu 2005:17).

At Cerro León, women likely had influence over kitchens and storage spaces for households' daily needs. Many highland-style, potsherd disk spindle whorls were found on patios, especially the spacious, private patio Feature 18 in Compound 1. This indicates that women, or perhaps the young and elderly of both genders, commonly used these open, well-lit spaces for spinning and possibly weaving activity. Large *batanes* are located on patios also, indicating that many food preparation tasks were carried out by women on patios. Men's daily tasks in the house probably dealt with creation and maintenance of tools for construction and agriculture (although women likely made and repaired stone tools for their own use as well). Patios would have provided ideal workspace for such tasks. There also appear to have been rooms or semi-open spaces in Compound 1, such as the Feature 54 room, that were geared toward activities related to metal finishing. Metal work, consisted mostly of small copper tools such as tweezers, needles, and fishhooks, as well as copper ornaments. However, it is not known if metal work or the production of mudstone beads was a gendered activity.

We don't currently know what role gender played in access to ancestor spaces at Cerro León. It is also unclear how gender relations operated within the realm of feasting or public-use spaces associated with Compound 1. The large, outdoor cooking space on Terrace 22, which is directly associated with the camelid offerings beneath its floor, as well as visible from the more formal public gathering spaces of Terraces 43 and 44, was an enclosed space that women occupied as they made preparations for feasting activity. Women may have been responsible for serving food and drink at large assemblies. Certainly people occupying Feature 22 during a gathering could hear activities in the patios and special-use rooms on the terraces below to some degree. It is possible that men and women occupied the same public spaces during events. They may have been segregated on different patios of the public area, or one or the other gender may have been excluded during certain events.

The construction of space at Cerro León offers potential for the study of ethnic identity also. The variety of fine stone work, the presence of certain features such as stone niches and circular, slab-lined cists, and the near total absence of adobe brick in Area 1 may indicate highland cultural preferences in construction techniques, socioeconomic status differences, or some other factor.

However, comparative studies of Gallinazo phase residential architecture from elsewhere in the middle Moche valley are needed. The above characteristics, combined with the characteristics of the burial and public space in Compounds 3 and 1, do suggest that variation in the expression of group identity through residential structures and the use of space existed. Burials in the neighboring, possibly contemporaneous, site of Cerro Oreja were in a large cemetery at the base of the hill, below and apart from the residential occupation (Carcelén 1995). If Cerro León and Cerro Oreja are indeed contemporary, differences in burial practices and their links to culture and identity would be productive topics for further investigation.



## **Chapter 6 THE CERRO LEÓN POTTERY ASSEMBLAGE: ORIGINS, MANUFACTURE, AND DISTRIBUTION**

### **6.1 Introduction**

In this chapter I discuss the manufacturers of pottery found at Cerro León. I reconstruct their choices of raw materials and the techniques they use to make vessels in order to examine their identities and the way they organized production and distribution of their products. I focus on geographic and technological typologies of the pottery manufactured for consumers at Cerro León. In Chapter 7 I present a functional pottery typology to understand how residents made use of pottery as an abundant and essential product in their daily lives. I believe that a small proportion of pottery manufacture may have taken place at or within 5 km of Cerro León and that the bulk of the excavated assemblage came from elsewhere in the valley and sierra. I have divided this chapter into two parts. The first deals with raw materials for pottery making. I explore possible sources both near to the site and farther away in the Moche valley watershed. The second part focuses on the Cerro León pottery assemblage itself. I present the typology based on macroscopic and petrographic examination of potsherds as well as identification of manufacturing techniques. I define the four pottery wares identified in our excavations at Cerro León including Cerro León (named for the site), plus Castillo, Otuzco, and Quinga wares. I discuss their physical properties and possible geographic origins. I then place the assemblage recovered from Cerro León in its regional and chronological context.

Our excavations in Area 1 were intensive and the entire hill was carefully surveyed and mapped. However, our studies produced no direct evidence of on-site pottery production. Still, it is possible and productive to understand the goals and procedures of people who made pottery without focusing on a particular production site. I examine the assemblage through petrographic analysis of thin sections to lend support to paste identifications that are the basis for my geographic typology, and

to examine evidence for region of raw materials extraction for different pottery types in the assemblage. I explore evidence for manufacturing technologies as a means to distinguish production group identities and how they connect to region of production. Although there is no simple relationship between the manufacture of pottery and the social, political, and ideological aspects of production, exploring all aspects of the life-histories of pottery can provide meaningful connections between manufacturers and consumers (Arnold 2000:106; Shimada 2004:5).

## **6.2 Raw Materials Survey**

No previous pottery raw materials surveys exist for the Moche valley. No known raw materials studies have taken place in the middle Moche valley or surrounding region except for the ONERN (1973, see Anexo III, Geologia) petrographic study of parent material and potential commercial mineral resources surveys. Dean Arnold (1993), Isabelle Druc (1998; 2001) and Gabriel Ramon (2007) have explored modern potter's methods for gathering raw materials for potting in the northern Peruvian highland and coastal regions. Their studies do not cover the Moche valley, but I used them for insights into search criteria and locations. Additionally, I consulted general texts on geomorphology and clays (Easterbrook 1999; Velde and Druc 1999).

### *Raw materials survey methods*

I followed Deal's (1998:37) guidelines and established a 5-km distance from Cerro León for my survey of potential raw materials for pottery manufacture. Initially I assumed that most prehistoric potters would obtain raw materials from as close to home as possible for the manufacture of everyday pots. However, I did pay attention to Druc's (2001:98) caveats to this general assumption and considered that some potters went much farther or may have frequently traded for clays and especially pigments for slip and paint. In conducting my survey I sought information and advice from modern potters both in the lower and upper Moche valley. To the best of my knowledge, there are no modern pottery producers residing in the middle Moche valley.

My raw materials survey methodology was originally intended to fully cover a radius of 5 km out from Cerro León (Figure 6.2.1). The reality is that more than half of this area is comprised of foothills of the Peruvian Coastal Batholith and the Quebrada de los Chinos basin. These areas were examined but not fully surveyed because they comprised either intrusive rock or massive debris flows of coarse sands, cobbles, and boulders that are not suitable for clay deposits. However, I did take samples of sands for grain mounts for my petrographic study. Not all of these were processed. The south bank of the Moche River was surveyed only along the margins of the floodplain because most of the floodplain itself was in sugarcane cultivation. The north side was treated equally except for the area within the survey boundaries that was down river from Cerro León, opposite Cerro Oreja where the valley floor begins to expand. This area has a reputation as a locale for robberies, and I was told not to go there and could get no local resident to agree to accompany me.

Other clay and raw materials locales were visited that were not within the survey radius if they had good potential as quality raw material. Relatively deep floodplain margin deposits near the Huacas de Moche have long been used by artisans who make reproductions for sale at the Huacas. Profiles in stratigraphic cuts had several potsherds<sup>20</sup> at the base of and between deposits indicating they contained evidence of prehistoric use. I collected raw materials from this locale as well as in the sierra near the modern pottery producing villages of Huacaday and Santa Cruz and a modern clay mine near the EIP site of Cuydista above the modern town of Salpo (refer to Figure 6.2.1). I consider the systematic and opportunistic sampling strategies as two different means to the same end and will continue both strategies for fuller coverage of the middle and upper regions of the Moche valley.

### *Raw Materials Survey Results*

In light of the methodological limitations of my systematic study highlighted above, I concentrated my survey along the Moche River floodplain margins on the north and south banks of the river. I achieved relatively complete coverage on the north bank from directly across from Cerro

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<sup>20</sup> These sherds were mostly plain wares, some red-slipped, but unfortunately none were diagnostic.

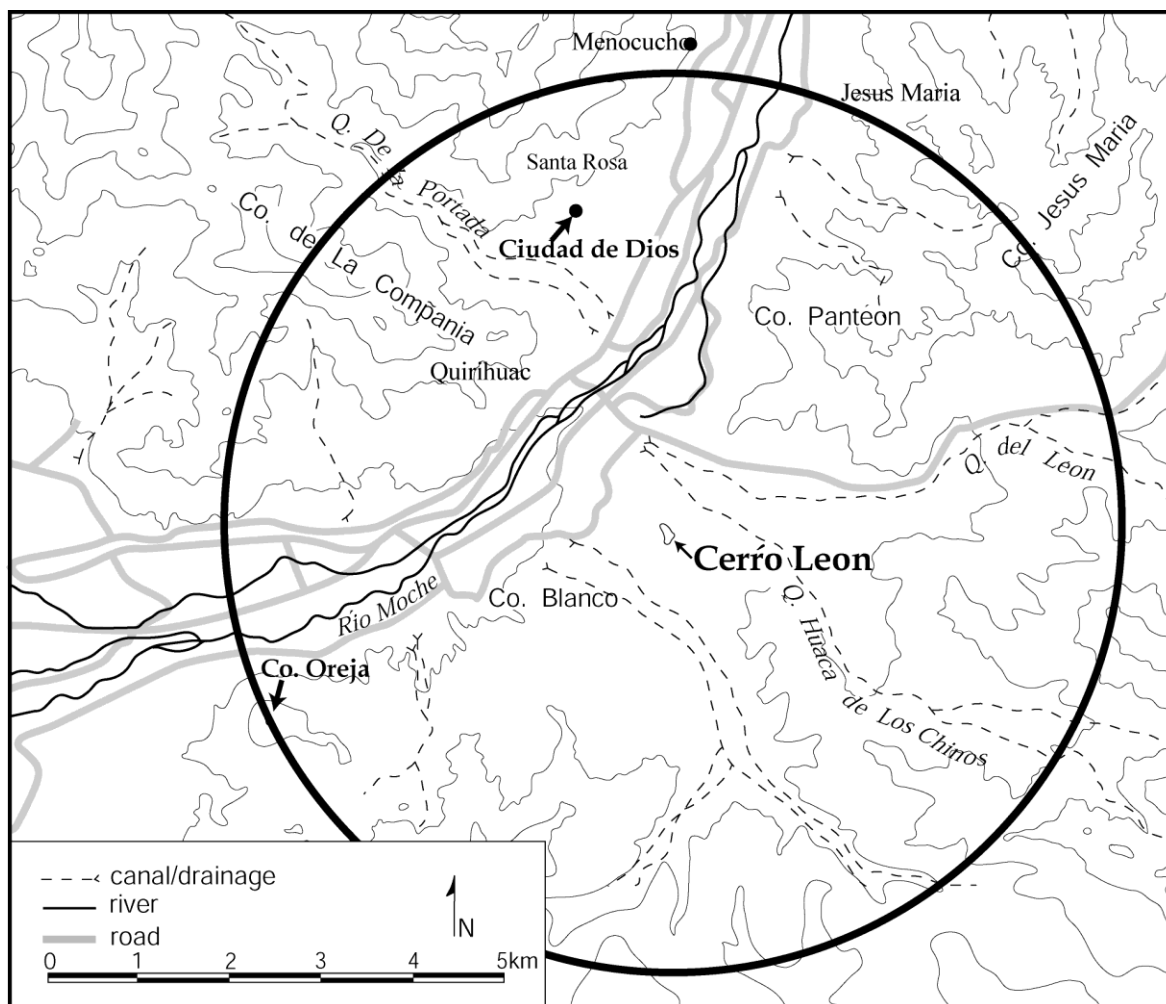


Figure 6.2.1. The clay survey area around Cerro León.

León up to the modern village of Menocucho and on the south bank from Menocucho down river to the EIP site of Cerro Oreja. However I rarely found what I would have considered to be clay sources of decent size or quality in this part of the middle valley.

Frustrated, I went to local replica makers at the Huacas de Moche and Huaca El Dragon in the lower Moche valley. At Huaca de la Luna I met Mr. Urbina and talked to him about the source of his clay. He introduced me to Mr. Manuel Cortijo. Mr. Urbina said that Mr. Cortijo collected clay from a large source near the Huacas for many of the replica makers who sold their products in the artisan's booths at the site. He agreed to show me the location of the clay, how he collected it, and his selection criteria (Figure 6.2.2, clay site #1).

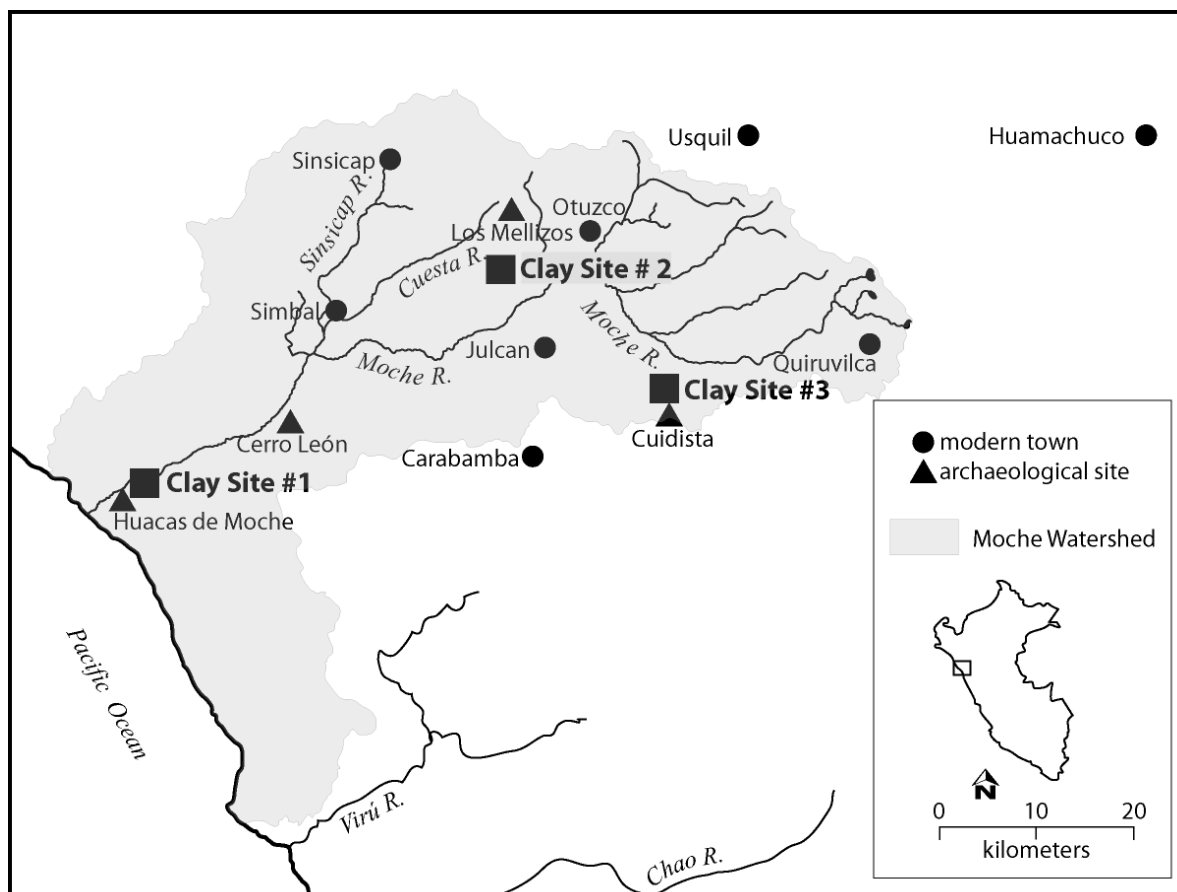


Figure 6.2.2. Sites and locales of clay collection for the raw materials survey.

The Moche clay source is on the south bank of the river on the floodplain margin, approximately 1 to 1.5 km up valley from Huaca de la Luna. The deposit is comprised of several alluvial deposits from several flooding events built up over time, some being several meters thick (Figure 6.2.3). The source has clearly been used for millennia since many potsherds from several time periods are seen in the many strata comprising the deposits. The fine clays settle out at the tops of the depositional events and are easy to identify by their smooth texture and fine, medium, and large vertical drying cracks (Figure 6.2.4). Mr. Cortijo indicated to me that some clay strata are a better quality for pottery than others and demonstrated how he tested for this by looking at the clay's friability (very crumbly clays were not as good) and how well it produced a shiny surface when rubbed with his thumbnail (a shiny surface indicates alignment of many fine clay-sized particles).

Even though the extensive deposits appear to be relatively good quality secondary clays, Mr. Urbina still levigated<sup>21</sup> them for several days or sometimes weeks to remove impurities and improve workability.



Figure 6.2.3. Clay deposits near the Huacas de Moche.

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<sup>21</sup> Levigation is soaking the clay in water and mixing it periodically to let coarser particles settle out (Rice 1987:118).



Figure 6.2.4. Detail of clay strata in deposits near the Huacas de Moche.

Seeing the enormous alluvial deposits, of course, made me realize that I would never find anything comparable in the middle Moche valley. Several factors explain this. In terms of geomorphology, in the narrow middle valley the river is braided with wider, shallower channels and low rocky banks creating sandy surrounding deposits with low silt and clay content (Easterbrook 1999:128). The water in the river moves too quickly in the middle valley both in normal conditions and in flood events to leave fine sediments to form along the river banks. Additionally, runoff in arid environments is more concentrated and delivers a coarse sediment load (*ibid.*). In the river and in the Quebrada de los Chinos, dry river beds with intensive braiding indicate rapid deposition of coarse debris loads and this means no clays will be found. Even though away from the present and recent channels there are likely to be stream terraces where finer sediments would have built up, these areas are almost constantly in cultivation and they are highly susceptible to scouring by floods from strong El Niño events. If deposits from the EIP remained in place they are likely buried deeply, but none I

observed none in the exposed deep profiles at the mouth of the Quebrada del León on the Moche river floodplain margin near Cerro León.

This does not mean that decent quality clay for potting was unavailable to potters working in the middle Moche valley. There was clay in adjacent areas. However, the large alluvial deposits of the lower valley would have been about 15 km away from Cerro León, nearly a three hour walk in each direction. ONERN (1973:87) reports large-scale modern production zones for tiles and bricks in alluvial zones amidst cultivation in the lower Moche, Virú, and Chao valleys. In terms of local sources close to Cerro León, canal banks could have been utilized by potters as collection sites. I explored this possibility near Cerro León and although canal banks seemed like the most likely option, these sources did not appear sufficient to produce an assemblage of the large size and consistent, uniform quality found in the two main pottery wares recovered from Cerro León.

Within the 5-km surrounding Cerro León, the site's inhabitants likely managed small-scale production with clay sources along canals and on smaller floodplain terraces the immediate vicinity of the settlement. For larger-scale manufacture people at Cerro León who wanted to make their own pots would have needed time to collect clay from more distant source locations up or down the valley. Trade for clays or finished pots with people living nearer to clay deposits would have also been a viable option. In the end, if Cerro León residents could get pots elsewhere from people whose seasonal schedule or easier access to raw materials facilitated increased manufacture, this would have been the best means of obtaining the quantities and types of pots they needed. This point is especially valid since the opportunity to intensify agricultural production and double-crop in the middle Moche valley *yunga* and *chaupiyunga* zones would have made scheduling time for pot-making a lower priority for most middle valley farming households like Cerro León. Since there are two growing seasons in the middle valley, the shorter season may have been the most convenient for pottery manufacture. However, people could have made pots part-time at any time of year in this zone because of the dry climate and availability of water from canals and fuel from dung or wood.



Farther up the Moche valley, climate and terrain have led to increased frequency of secondary clay deposits as well as many locales of primary clay formation. Trujillo-based replica makers working at Huaca El Dragon chose to import highland clays to make replicas. Mr. Angel Tamay Flores, a second generation member of the family of replica makers told me the family had connections near Huamachuco in highland La Libertad. The family made periodic trips to Huamachuco with a pickup truck to bring back clay. He said they knew of the clay source near Huaca de la Luna but chose not to use it because highland clays were superior quality, more abundant, and worth the long trip.

For other sources further up the valley, I also turned to information from vendors in markets that sold handmade pots. Through them I learned about modern producers in Huacaday and Usquil. Huacaday is roughly 35 km up valley from Cerro León and the Topics (1987:52) recorded many EIP and later sites in the region. Usquil is much farther northeast in the upper Chicama. I visited Mr. Fidel Reyes in Huacaday and asked him about his clays and he said that he walked about a half hour from his house in town to obtain clay from land near his fields (refer to Figure 6.2.2, clay site #2). He also informed me that other potters in Huacaday and in the nearby, smaller settlement of Santa Cruz collected clay from sources relatively close to their homes. Apparently, good-quality clay is abundant in the more eroded slopes in the montane humid grassland zone of the upper Moche valley (ONERN 1973:55). Modern potters at this elevation (approximately 3,000 masl) pot only during the dry season, from June or July to August. Farm duties lighten up significantly, weather conditions are good, and fuel from dry plants is abundant. Mr. Reyes spends weeks working part- to full-time to prepare thousands of vessels that he will fire in a few large-scale firing events in late July or August. Often these firings become festive occasions with family and friends offering help and food.

Across the valley floor, on the western slopes of the Carabamba plateau, I encountered a father and son mining white and red clay below the EIP site of Cuydista and above the modern town of Salpo, farther up the valley in the same zone (Figure 6.2.2, clay site #3, Figure 6.2.5). The son referred to the white clay as “kaolin,” a fine, aluminum-rich primary clay (Figure 6.2.6). However,

after requesting a sample to bring to the U.S. and testing it with x-ray diffraction, I found it had an atomic distance reading identical to illite, a clay that can be white in primary context that, unlike kaolin, contains potassium. Illite has a composition and structure similar to muscovite and illites are referred to as mica-like clays (Nesse 2001:255). Small pockets of clays suitable for industry are nearby in this region as well (ONERN 1973:87-88).



Figure 6.2.5. Small-scale clay mining near the archaeological site of Cuidista, upper Moche valley.

In sum, my survey found that although the middle valley has small amounts of suitable potting clays, modern populations, and undoubtedly past groups, could seek out clays or pots in abundance down valley or up valley. Down valley the Moche valley widens into a broad fan. Along the margins, the thick clay deposits near the Huacas de Moche lie within 12 to 15 km of Cerro León. Up valley, the clay survey demonstrated that there would have been many small villages near the



Figure 6.2.6. White (illite) clay deposits in clay mine near Cuidista.

transition from *chaupiyunga* to *quechua* zones in the highlands with relatively easy access to clays within about 30 km of Cerro León. Raw materials include red-brown clays as well as fine white clays that were suitable for potting. Additionally, the region relies on rainfall agriculture so most farmers have to find other sources of livelihood during the dry season. People who chose potting could devote potentially all of their time to it in the months of July and August when conditions were right for large-scale firings. Sites in this highland region are 30 km and farther from Cerro León making a two day journey via llama caravan a plausible means of bringing large quantities of pottery down to the middle valley as potential goods to trade for other products such as maize, coca, or other products.

### **6.3 Cerro León Pottery Typology Background**

With the knowledge of resource availability gathered during the raw materials survey, I studied the pottery assemblage to discover where and how it may have been produced. The quantity of material from the three residential compounds is immense. We recovered 147,788 pottery fragments over ½-inch from excavation contexts, weighing 1,315.13 kg. The project stored all material from Cerro León at the Ministerio de Cultura facility at Huaca El Dragón in Trujillo. I

removed ceramic material from this facility in groups by field season over a period of seven months for analysis in a lab space in Huanchaco, Peru from February to August 2009. All pottery fragments were studied by provenience and sorted on the basis of paste, vessel shape, surface treatment, part of vessel represented, and evidence for use-alteration. I returned all collections to the El Dragón storage facility except for samples exported to the U.S. for petrographic analysis. I received permission from the Ministerio de Cultura in Lima (then known as Instituto Nacional de Cultura) for export of fragments for thin sectioning in the United States.

In this section I present the methods and then the results for three micro-studies that focused on the origins and manufacturing technologies of the Cerro León pottery assemblage. These include: 1) macroscopic paste and temper identification, 2) qualitative petrographic analysis, and 3) identification of manufacturing techniques. The following section presents the pottery typology based on these micro-studies. Five main ware categories were identified and their names and descriptions are summarized in Table 6.3.1.

Table 6.3.1. Summary characteristics of the four pottery wares found at Cerro León.

Ware	Macro. Paste	Petrography	Manuf. Tech.
Castillo	oxidized, pink- or orange-brown paste	variety of rock types as temper: mainly igneous extrusive and metamorphic but occasionally igneous intrusive	slab body with paddle and anvil; coil for necks and rims; some mold-made bottles
	rounded black, white, and clear sand temper grains	clay body has large shrinkage voids	nearly all decoration is plastic
Cerro León	oxidized to partially oxidized (diffuse margin) reddish-brown paste	all igneous intrusive rock as temper with secondary reaction textures (myrmekite) and replacement textures (feldspar to epidote) common	mainly coil and scrape; some use of slab construction for vessel bases
	subangular, opaque cream and white temper grains	shrinkage voids in clay body rare or absent	decoration on plain wares is cut-out; on fine wares nearly all decoration is slip and slip paint
Otuzco	oxidized to partially oxidized (sharp margin) yellow-brown- to buff-colored paste	similar to Cerro León except much finer temper grain sizes	similar to Cerro León but scraping achieves much thinner vessel walls
	cream and white subangular temper grains; much finer than Cerro León wares	no shrinkage voids in clay body	slip and paint decoration

Quinga	oxidized white, cream, or tan paste	usually only clay-size particles but rarely quartz temper of volcanic or extrusive origin	coil and scrape or smoothing
	no visible temper grains	no shrinkage voids in clay body	decoration is slip-painted
Other	oxidized grayish-brown paste	twinned albite and quartz common with biotite and hornblend secondary; sericitization in plagioclase	indeterminate except for coils used to construct neck and rim
	mainly rounded, opaque white and clear temper grains	some shrinkage voids	no decoration identified to date

In my typology, I emphasize the concept of ware as described by Rice (1987:287) where basic sorting criteria give greater weight to vessel temper and paste and manufacturing technology. I considered these attributes as the basis of the typology, then went on to consider vessel shape and surface treatments. This ordering of criteria allowed for a consideration of pottery manufacturers, where they obtained their raw materials and the technologies they employed. It also facilitated understanding the links between manufacturers and consumers. One of my research hypotheses deals with discovering whether the families that lived at Cerro León made their own pottery. I suspected they did not and wanted to find out where their pottery came from, and how producers and consumers connected in order to gain from their relationships.

I had to find a way to work within the existing typology for the Gallinazo phase developed by Ford (1949) and Bennett (1950) for the Virú valley. Classic typologies from this era focused on chronology and were not set up to address many of my hypotheses. Aside from the focus on chronology and other issues, the Virú typology generally works well in the Moche valley (Billman 1996; Fogel 1993). Additionally I needed to expand the existing classification to include wares and types that had had been defined by Ford and Bennett as being intrusive into the valley but for which they did not have large enough quantities of sherds in their collections to describe in detail. The types already defined by Ford (1949), Bennett (1950), and Strong and Evans (1952) fit well within a single ware category and provided a framework for other wares and types defined by Billman and me for Cerro León.

## *Pottery typology methods*

*Macroscopic paste and temper identifications.* I followed Rice (1987), Shepard 1965[1985], and Rye (1981) for my analyses of paste, temper, and production techniques. For paste and temper identifications I focused on color, shape, and texture of individual aplastic grains as well as overall color and texture of the clay body. Macroscopic temper and paste identifications indicated differences between the coastal-style pottery and the highland-style vessels, although they were sometimes challenging to identify if vessel fragments were fire clouded, burned, or worn on the broken edges. Many of the characteristics that were more difficult to identify macroscopically became clear when I examined my sample assemblage under the petrographic microscope.

*Qualitative petrographic analysis.* I use the petrographic study of Cerro León pottery to address issues of classification as well as manufacture and exchange (Shepard 1965[1985]; Stoltman 2001; Druc 1998; Velde and Druc 2001). For the petrographic analysis, pieces were broken off of rim fragments and submitted to the INC facility at the Museo Nacional de Antropología y Cultura in Lima for permission to export them to the United States. Once in the U. S., these were numbered and sent to National Petrographic Service in Houston, TX for preparation of thin sections. I will return the remaining fragments of pottery and the thin section slides themselves to Ministerio de Cultura storage in Trujillo when analysis is complete.

My study, focused on the mineralogical composition of aplastic inclusions in the pastes of pottery from Cerro León, is based on a pilot study (Ringberg 2005). In order to complete my evaluation of petrographic evidence for region of production, I prepared and analyzed a total of 85 petrographic thin sections of pottery as well as a series of raw clay and bedrock samples from Cerro León and other archaeological sites or raw material collection locales in the middle and upper Moche valley (Figure 6.2.2). I used the method of thin sectioning as opposed to bulk chemical analyses because I wanted to examine point-specific data before deciding on the potential of bulk chemistry for these collections. Additionally, thin sectioning is more cost effective, I have the training to analyze

the samples myself, and, most importantly, petrographic analysis supported macroscopic observations and made macroscopic identification and classification easier. Stoltman uses Porter's study of "megascopic" versus petrographic pottery characteristics to emphasize the point that unless typologies are informed by petrographic studies they are often subjective, imprecise, or even inaccurate (Stoltman 2001:308).

I conducted the qualitative analysis of my sample of petrographic thin sections myself, receiving guidance from geology department faculty at UNC-CH and CSU-Stanislaus. I considered quantitative analysis but in the end I did not carry out point counting with the study sample for various reasons. Point counting (modal analysis) quantifies the relative volume of mineral phases in a sample, regardless of whether phases are individual mineral grains or occur within rock fragments (Chayes 1956:1). My samples contained a variety of sands and rock fragments but most were from igneous volcanic or plutonic sources. Thus, they might not have varied significantly in their relative volumes of mineral phases but obviously would vary a great deal in their processes of formation and textures. Since one of the most important aspects of my study was to record the circumstances of a rock's or mineral's occurrence in order to draw conclusions about the sources of raw materials, I determined relative volume would not provide the information I was after. I decided to collect not only information on mineral phases but also more targeted data on primary (before crystallization) and secondary (after crystallization) reaction textures to explore similarities and differences in my sample.

Identifications for the qualitative analysis were focused on "getting to know" each sample by slowly and repeatedly scanning over the slide and making basic identifications (Stoltman 1989). The identification of mineral phases is based on the optical properties of the grains in plain polarized light and crossed polarized light and the key characteristics used to make these identifications are summarized in Table 6.5.1 (MacKenzie 1980; Nesse 2000; Perkins 2000). The presence or absence of a wide variety of characteristics, including mineral phase and the circumstances of its occurrence,

was recorded for each thin section. These variables were compared and used to group the samples into petrographic categories that correlated highly with macroscopic classifications.

Table 6.3.2. Mineral phase identification characteristics (from Neese 2000:158).

Plain Polarized Light (PPL)	Crossed Polarized Light (XPL)
<ul style="list-style-type: none"> <li>• Color</li> <li>• Pleochroism</li> <li>• Shape/size</li> <li>• Crystal habit</li> <li>• Cleavage</li> <li>• Relief and transparency</li> </ul>	<ul style="list-style-type: none"> <li>• Birefringence</li> <li>• Sign of elongation</li> <li>• Extinction angle</li> <li>• Optic sign</li> </ul>

Only one previous petrographic study exists for the Moche valley (Nelson 1998). Nelson's study dealt with Middle Moche phase pottery but was conducted within the 5-km radius of Cerro León. Scholars have also conducted bulk chemistry compositional analyses of pottery and spindle whorls from the urban zone of the Huacas de Moche site (Chapdelaine et al. 2001; Uceda 1998). Using neutron activation analysis, Uceda (1998) tested pottery and molds from the urban zone at the Huacas de Moche and the same series of deposits I collected from for my clay survey 1 km north of the workshop. He concluded that workshop producers used this series of clay deposits but that plain wares from the workshop were dissimilar and likely came from a different source (Uceda 1998:104).

Although quite distant from Cerro León, studies by Druc (Velde and Druc 1999 and Druc 2001) and Druc and Gwyn (1998) of the Callejon de Huaylas region provided factors to consider when making chemical and mineralogical studies of prehistoric pottery. The results of their petrographic and ethnoarchaeological studies indicated that many pottery workshops may have existed in the surrounding region but that because of the cold, damp climate and sparse clay resources in the vicinity of the site, Chavín de Huantar was not likely a major pottery production center (Velde and Druc 1999:225).

Druc's (1998; 2001) ethnographic studies of modern pottery producing communities in the vicinity of Chavín examined the choices potters made about collection and mixing of raw materials



and how these factored in to determining locations of production. Druc (2001:4) demonstrated that complicating factors, such as sharing and mixing of spatially dispersed clays and tempering materials between potting communities, may cloud the petrographic analyst's ability to make secure determinations connecting pots to the locations of their raw materials. Druc (2001:7) emphasizes that pots best compare to other pots and that to connect finished products with unmixed and unfired raw materials is extremely difficult.

*Manufacturing technology.* Owen Rye (1981:58) describes the essential elements studying pottery vessel manufacture as the identification of attributes (any kind of intentional marks on the clay surface indicative of forming techniques) and the sequence of execution. Each stage of manufacture (Rye [1981:62] identifies primary, secondary, and tertiary) can leave marks on a vessel. Identification of manufacturing techniques is often difficult to do with completed vessels and especially collections of potsherds because each subsequent manufacture stage can potentially wipe out traces or attributes of the prior stage. However, the Cerro León assemblage was large and I had enough large vessel fragments, partially complete or reconstructable vessels, and enough samples of whole pots to find many lines of evidence for manufacture. I was also able to refer to a rich catalog of ethnographic and ethnoarchaeological studies of modern northern Andean highland and coastal potters (Druc 1998; 2001; Ramon 2007; Ravines and Villiger 1989; Shimada 1994) as well as my own experiences with culinary pottery and replica manufacturers in the Moche valley and adjacent highlands. Evidence for forming techniques was recorded where possible for all proveniences as part of my data collection process.

#### **6.4 Cerro León Pottery Descriptions**

I summarize paste and petrographic characteristics and then manufacturing and decorative techniques for each of the four main pottery ware categories found at Cerro León. Within each ware category, I also present the types identified. I provide basic information on the vessel shapes for each ware, but these are discussed more fully, in relation to pottery function, in Chapter 7. Finally, I

summarize the relationships of these wares to other pottery types identified by other archaeologists. I not only make comparisons to pottery assemblages within the Moche valley that may be roughly contemporary but compare the Cerro León wares to those found outside the valley as well. I also discuss other collections that are presumably earlier and later than Cerro León's where relevant.

### *Castillo Series*

*Macroscopic Paste and Temper Identification.* Castillo Series potsherds have a micaceous paste (small, coppery-looking grains of mica minerals). Castillo pastes show a range of paste colors due to the effects of firing. Castillo oxidized pastes range from a bright pinkish-orange to deep orange-brown. Reduced finewares are often a deep pinkish-gray color. Iron content was moderate to high for Castillo wares as indicated by the red and orange paste colors and red hematite inclusions. Overall organic content for this ware appears to be relatively low. Castillo wares rarely have deep gray or black unoxidized pastes. They also seldom exhibit the "sandwich" appearance indicating that firing in a partially reducing (oxygen poor) atmosphere was rarely practiced. When dark, unoxidized or partially oxidized pastes did occur, they were present only in smaller fineware vessels such as bottles and miniatures.

In general, Castillo plain wares are thick but not very compact and tend to crumble, perhaps due to a slightly larger average temper size. Pastes have similar characteristics for everyday pottery as well as fancier types, but the size of inclusions and firing techniques differ. Fine wares have fine pastes with small inclusions and were occasionally fired in a reducing atmosphere. Everyday pots have coarser pastes, larger inclusions, and are typically well oxidized. Aplastic inclusions in the Castillo Series have a "salt and pepper" appearance. The mix of light and dark colored minerals is made up of clear, opaque-white, gray, or black minerals. Grains are fine to very coarse and are predominantly sub-rounded to rounded, indicating that they are probably fine to very coarse sand. Although felsic (light-colored) inclusions are predominant, Castillo potsherds generally have slightly more mafic (dark-colored) mineral grains present. Because there is variation in Castillo pastes, this is

not always readily apparent, not even when a clean break is made to examine the paste. Also, the darker appearance may be due to the fact that the mineral grains in the Castillo Series pottery are predominantly clear quartz.

*Petrography.* Macroscopically, the pastes of the Castillo Series in general are much grainier than the other ware groups. Petrographically, the Castillo Series was a mix of several different rock types and mineral textures. This ware group is dominated by individual grains of zoned quartz and albite-twinned plagioclase and had a few larger grains of euhedral hornblende, brown biotite. Much of the fine, rounded quartz and plagioclase grains are part of the clay paste. Polyminerale inclusions in Castillo pastes comprised a variety of igneous textures. Extrusive (volcanic) rock types dominated Castillo pastes, but igneous intrusive (plutonic) types were present in smaller quantities (Figure 6.4.1). Epidote was present, but not common. Secondary reaction textures such as myrmekite or sericite were rare, although one or two samples do contain a single myrmekite grain. Castillo Series pastes possibly included some metamorphic rock such as quartzite as well. A few pastes contained large grains of tholeiitic basalt and possibly granite porphyry.

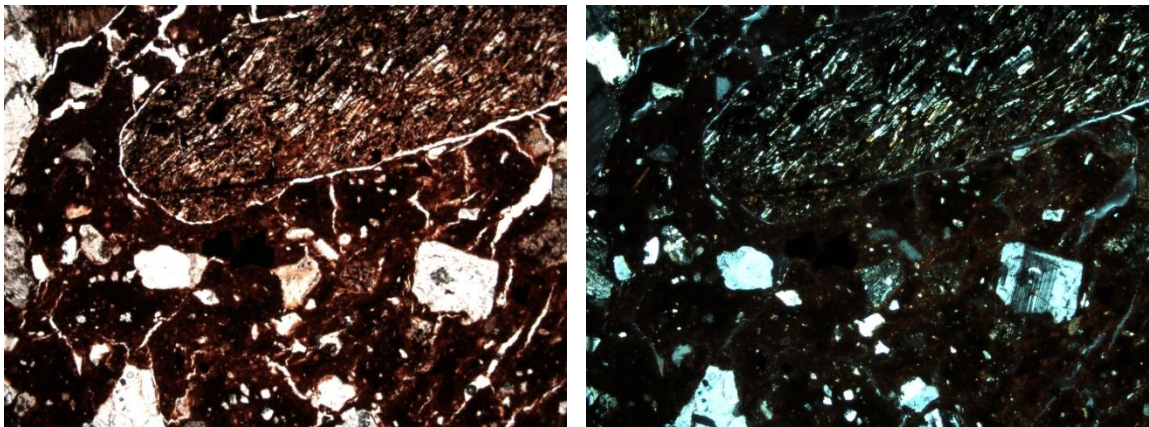


Figure 6.4.1. Igneous extrusive (volcanic) aplastic inclusion with fine, plagioclase lath (plain and crossed polars).

Although all samples with aplastic inclusions in their pastes have some evidence of secondary pores or shrinkage cracks (Velde and Druc 1999:113-114), samples in the Castillo ware group had the largest shrinkage cracks of all groups (Figure 6.4.2). This could indicate less careful clay preparation,

but probably is an indicator of greater shrinkage for this type of clay. Castillo pastes exhibit large linear voids aligned parallel to vessel walls which could indicate their construction by slabs or by paddling (Rye 1981:71 and 84). Higher amounts of quartz and the larger particle sizes of plain Castillo wares may be responsible for the shrinkage. The orientation of inclusions was difficult to determine as well because of the size of the majority of the vessel fragments in the assemblage. For Castillo potsherds orientation was mostly random. However many elongate mineral grains were oriented perpendicular to voids.

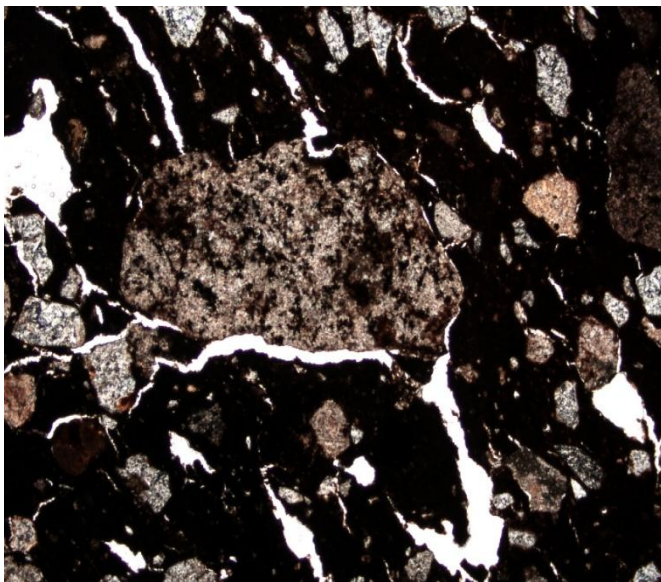


Figure 6.4.2. Shrinkage cracks in Castillo Series paste running parallel to pottery surface.

*Manufacturing Technology.* Primary forming techniques for larger vessels in the Castillo assemblage included coiling (usually for the necks and rims), slab-building, and rarely molding. Like most potters who employ hand building techniques to make pots, the many manufacturers of the Castillo pottery assemblage likely constructed larger vessels in parts, putting the different sections together when they were dry enough not to collapse. Most rims, necks, and handles for vessels appear to be created with basic coiling techniques. Many vessel body fragments bore evidence of anvil impressions, indicating that potters used paddle and anvil techniques to construct medium- and large-sized vessels. Unfortunately, no fragments were large enough to definitively determine whether

pottery built up vessels walls with slab construction or large coils. A combination of techniques was most likely used. Selective breakage patterns were difficult to determine for most of the assemblage because fragments in architectural fill and looted contexts were typically small and often eroded. However, since most of the Castillo Series vessels were composite forms, the predominant breakage pattern was above and below the reinforced neck-body juncture.

Molding is not common in the Castillo assemblage of coast-manufactured plainware vessels but some examples of bottles were present, and the assemblage contained one fragment of a mold-made hollow Moche phase figurine. Mold-made vessels included mostly simple bottles with hand built necks and mold-made globular bodies. These had very smooth exterior surfaces but the interiors are uneven and have many dragged finger marks in wet clay from pressing and smoothing the wet clay into a mold.

Secondary forming techniques take the form of casts left by the potter's tools or hands. In the Castillo Series, manufacturing techniques included paddling with a tool (likely made of wood) and a hand-held stone anvil for larger hand-built vessels. Paddles are almost always plain for pottery manufacture in the Moche valley. One rare example found in Castillo paste potsherds at Cerro León was possibly made with a cord-wrapped paddle (Figure 6.4.3).



Figure 6.4.3. Possible cord-impressed Castillo Series pottery fragments.

Tertiary forming techniques for coastal vessels are mostly smoothing or burnishing. Paddles, hands, and burnishing stones likely accomplished these effects. Smoothing was most common for Castillo vessels. Burnishing was less frequent, but occurred on smaller vessels. Burnishing facets were usually only partially obscured on finer vessel surfaces. Polishing, a final process used to eliminate facets and create a smooth, shiny surface, was uncommon in the Castillo Series vessels at Cerro León. Multiple, deep incisions made in wet clay on bowl interiors were found on two potsherds of the Castillo Series. These belong to the enigmatic “grater bowl” category of vessels found on the Peruvian north coast (Ford 1949:57). Depending on what these vessels were used for, this technique could be considered part of forming the vessel (similar to cord-marking). No evidence for use wear has ever been recorded for this vessel form, however.

Rye (1981:89) considers tertiary forming part of the clay body itself and inseparable from its qualities. Plastic decoration isn’t technically part of vessel forming techniques. However, I include decoration in this discussion because it is part of finishing a vessel as well as the whole process of vessel manufacture. Impressing, appliquéing, and modeling were the most common decorative techniques in the valley produced assemblage (Figure 6.4.4). All plastic decorations were hand-modeled or pressed into wet clay with a simple tool or fingers. Appliqués were made from coils or balls of clay. To make tool-made impressions, incisions, and punctuations, potters used a stick or sometimes other presumably organic items that produced interesting shapes. The most common plastic decoration in the Castillo Series assemblage was triangular punctuations (Bennett [1950:76] referred to this as “punched”), usually made with organics such as sticks or plant stems. Modeled appliqués, coil strips, and some incised or impressed appliqués were not common. Plastic decorative themes were either abstract (geometric or organic), anthropomorphic, or zoomorphic (birds, felines, and serpents) (Figure 6.4.5). Negative or resist painting did occur on finewares, usually in the form of stacked sets of wavy lines, but was infrequent and mostly of poor quality. Only one example of a thin, white slip-paint in a band around the lip and vertical lines on the neck is present in the assemblage.





Figure 6.4.4. Plastic decoration typical in the Castillo Series assemblage at Cerro León.

The majority of pottery fragments fit well with the classic descriptions of Castillo plain and decorated types (Bennett 1950; Ford 1949; Strong and Evans 1952). Basic shapes include *ollas*, neckless *ollas*, *cántaros*, *jarras*, bottles, and *tinajas*. One or two examples of the following shapes occur: grater bowls, *cancheros*, figurines, and *pirurus*. Surface treatments are predominantly smoothed or burnished. Types encountered include: Castillo Plain, Castillo Incised, Castillo Modeled, Valle Plain, Gallinazo Negative, and possibly Sarraque Cream (represented by the single white painted vessel rim fragment described above) (Strong and Evans 1952:261).



Figure 6.4.5. Representational themes in Castillo Modeled pottery at Cerro León.

*Discussion.* The Castillo Series, with few exceptions, is characteristic of classic Gallinazo phase vessel shapes and styles: predominantly Castillo Plain but with some Castillo Incised (v. punctate) vessels. Small amounts of Gallinazo Negative pots and a few large-capacity Valle Plain vessels also were present. The most common decorated vessels are Castillo Incised *ollas* with triangular punctations on vessel shoulders. The assemblage from Cerro León differs somewhat from that gathered through controlled surface collections at the nearby site of Cerro Oreja (Briceño et al. 2006:laminas 5 – 12). The Cerro Oreja collection from habitation terraces has a great deal more variety in vessel forms and modeled plastic decoration as well as a greater number of neckless *ollas* and face-neck jars. Elsewhere at Cerro Oreja, the cemetery excavations conducted for the Chavimochic canal produced a pottery assemblage predominated by Gallinazo Negative and Castillo Modeled vessels (Carcelen 1995). These types are rare at Cerro León.

In the lower Moche valley, near the coast, Donnan and Mackey (1978:46-47) discuss two Gallinazo burials, one at Cerro Blanco and the other at Huanchaco, that contain forms that are rare at Cerro León. In her dissertation, Fogel (1993) briefly discusses collections from the site of Pampa de la Cruz, near present day Huanchaco and other sites excavated during the Chan Chan-Moche Valley Project. Her assessment of the assemblage is that it is nearly identical to collections from the Virú valley in terms of forms, pastes, and styles with some noted exceptions, especially in ceramics from the Huanchaco site. The Pampa de la Cruz site apparently had characteristics connecting it to the Vicús region to the north. Neckless jar forms and plastic decoration were common in the coastal collections whereas neckless jars occur much less often at Cerro León. Appliquéd animal effigy lugs, common at Pampa de la Cruz, are rare at Cerro León. Gallinazo style pottery at the Huacas de Moche site were predominantly modeled and face-neck vessels, which contrasts with Cerro León's paucity of these Castillo decorated types (Uceda et al. 2009; Gamarra and Gayoso 2008).

When I examined published accounts of Gallinazo-Early Moche phase assemblages outside of the Moche valley I concluded that the Cerro León assemblage is predominantly culinary as opposed to ritual/ceremonial in character (Makowski 2009:51, Table 3.1). This is demonstrated by



taking an inventory of what is not present in the Cerro León assemblage. Stirrup spout, spout-and-handle, spout-and-bridge, and multiple chamber effigy bottles with negative painting were not recovered from excavation of the three Cerro León residences. Open and pedestal bowls and *cancheros* are also absent from the Castillo assemblage at Cerro León. The small, hollow figurines of the Gallinazo Modeled type are also absent from the Cerro León residences. However, it is apparent that each of the three residences had access to some vessels of the Gallinazo Negative type, mainly in simpler, less skillfully executed *jarra* or bottle forms.

In sum, the Castillo Series from Cerro León was simpler and less varied than assemblages found elsewhere on the north coast. Cooking vessel forms, such as the angled-neck and neckless *ollas*, are similar to those described as flaring necked jars with tapering rims (FNJTR) (Fogel 1993:31) and neckless *ollas* with thickened rims (NOWTR) by Fogel (1993:38). There are differences in paste color and temper and in the types of designs, but forms are very similar. Castillo Incised forms at Cerro León are most similar to certain jars in Bennett's illustrated examples (1950:72, Figure 20 A, C, D, and H and Figure 21 B). In spite of differences in sample size, there seem to be relatively fewer incised forms at Cerro León than at the Virú valley sites. There are differences in the types of designs as well. Incised decorations on vessels are simpler at Cerro León. Fine-line incisions and triangular-shaped punctuations are the most common decorated types at Cerro León. No circular stamping appears in the Cerro León assemblage and broad incising is rare. The samples of resist painted Gallinazo Negative pots at Cerro León were not of the high quality seen in other examples of Gallinazo Negative pottery, such as Larco's (1946) funerary vessels or those from Cerro Oreja (Billman personal communication, 2011).

#### *Cerro León Series*

*Macroscopic Paste Identification.* There are clear differences in the color and texture of Castillo versus Cerro León Series pastes although sometimes these are obscured by firing variations or erosion. Paste color in the Cerro León Series vessels was a deep brown to reddish-brown. Organic

matter content appears high in general for the Cerro León pastes, judging from the many partially oxidized to reduced pastes and the deep gray-brown to black cores produced from partial oxidation in firing techniques. Cerro León pastes range from oxidized to partially oxidized or reduced. There are far more partially oxidized pastes with Cerro León than Castillo wares. Even though pastes are more compact for Cerro León sherds they do seem to break down into smaller fragments. This may have been due to the fact that, in general, Cerro León Series pots tended to have thinner walls. This probably affected initial breakage patterns and susceptibility to trampling once broken pottery fragments were discarded.

Variation in firing atmospheres was noted among the Cerro León Series types. Many samples of fine wares had been reduction fired and possibly smudged, most likely to impart its deep, red-gray to black surfaces. Before the petrographic study was carried out, I suspected that some of these reduced vessels had a slip and some do not, indicating that potters used both methods to achieve the same deep black effect. Evidence of both slipped and non-slipped black smudging in the petrographic samples verified this. Most plain wares were oxidized completely but many exhibited darker, gray-brown cores with diffuse boundaries, indicating a less controlled, partially oxidizing firing atmosphere.

Aplastic inclusions in the Cerro León Series are predominantly opaque, creamy white minerals with relatively few dark colored inclusions. Inclusions are fine to very coarse and are sub-angular in shape. As with the Castillo Series, the Cerro León Series inclusion size varies with vessel size and surface treatment to some degree. Smaller, more finely finished vessels have much finer pastes with very fine inclusions whereas larger vessels have a full range of sizes from small to very large, poorly sorted inclusions.

*Petrography.* Although the Cerro León Series had the greatest variety of forms and decoration, within the group mineral phases were consistent. The main distinctions within the petrographic sample were related to grain size and sorting. Mineral textures in the aplastic inclusions

of Cerro León wares had many secondary reaction textures<sup>22</sup>, especially myrmekite (an exsolution or mixing texture of plagioclase and quartz formed in water-rich igneous intrusive environments), and other replacement textures (e.g. feldspar to epidote and occasionally epidote to chlorite) (Figure 6.4.6). Overall, Cerro León paste inclusions are dominated by plagioclase and quartz with lesser quantities of biotite and epidote and many examples of myrmekite. Aplatitic inclusions are predominantly subangular. Single mineral phase grains are mostly subangular quartz. The orientation of inclusions was difficult to determine because of the small sherd size of the vessel assemblage, but appeared random.

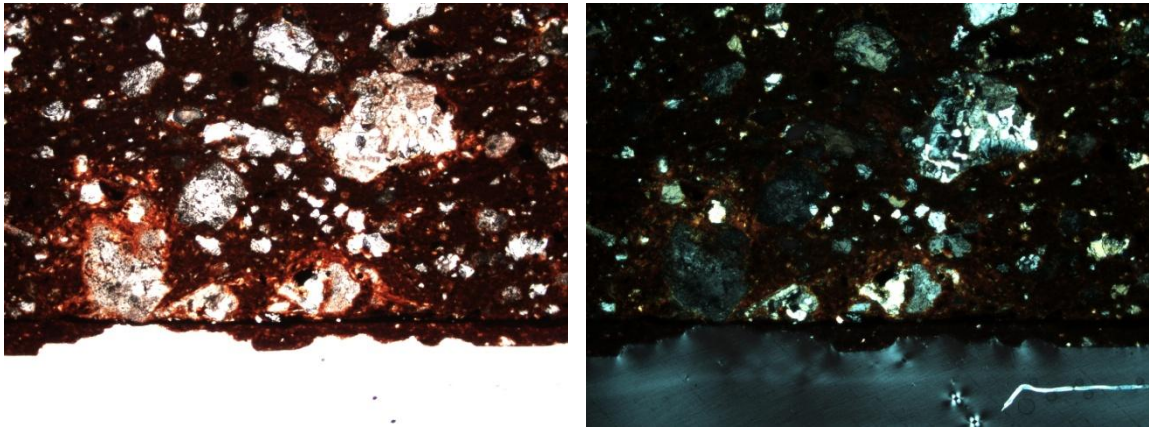


Figure 6.4.6. Typical Cerro León Series paste and temper, with large grain exhibiting myrmekite secondary reaction texture (right) and presences of slip (bottom).

Questions about slipping and smudging in the macroscopic identification of paste for Cerro León Series vessels were clarified with the petrographic analysis. Self-slip and red slip that was very close to vessel paste color occurred on Cerro León vessels (refer to Figure 6.4.6). In two cases, it was determined that red slip was present where either none was identified macroscopically or where it was uncertain if slipping and not “floating” was the finishing technique. The clay body of Cerro León samples also contained higher incidences of iron staining and concretions than the Castillo samples.

<sup>22</sup> Secondary reaction textures occur after igneous rock is solid and thus are “metamorphic” in nature (Winter 2001). Processes of crystallization don’t stop when magma becomes solid and cooling can actually take thousands of years in the large plutons of batholiths like the Peruvian Coastal Batholith.

Pastes were well prepared although, as mentioned, grain size and sorting differ among them. Microscopically, Cerro León wares had dense pastes with significantly fewer voids and less shrinkage than Castillo wares. In contrast to Castillo pastes, the larger quantities of feldspar in the Cerro León Series are much less likely to have significant shrinkage because the rate of thermal expansion of the feldspar is similar to that of clay. Fine inclusions usually occurred in smaller vessels but this was not always the case. Potsherds from larger vessels contained poorly sorted aplastic inclusions indicating that uniformity of grain sizes in pastes and tempers was not well controlled.

*Manufacturing techniques.* Primary forming techniques for larger vessels included coiling (usually for the necks and rims) and slab-building. However, Cerro León Series vessel manufacture was predominantly a coil and scrape method (Figure 6.4.7). Large- and medium-sized vessels show evidence of coil breaks. For the larger Cerro León Series pots, primary forming techniques are typically obliterated by secondary techniques, as discussed below. There is evidence that larger vessels were constructed in sections. Cántaros have flat bases made of pinched or modeled slabs of clay that were attached to vessel's body with obvious pinch marks at the join seam.



Figure 6.4.7. Evidence of scraping Cerro León Series vessels to thin vessel walls.

Cerro León ware potters also used coil and scrape to thin and shape pans or colanders. Slab construction may have been used to form the bases of pans as well. Coiling was also used to make all of the Cerro León Series fineware bowls. Coil seams are occasionally visible because manufacturers did not completely eliminate them when executing secondary techniques such as smoothing and burnishing. Some other small fineware vessels, especially unusual shapes like square dishes, were made from slabs. As with the Castillo vessels, the most common breakage pattern for composite profile Cerro León pots was above or below the neck-body juncture. Bowls tended to break either right below the lip (especially if there was some lip treatment such as thickening or an incised groove on the exterior) or perpendicular to the rim.

Scraping of vessel interior walls was the secondary technique of choice for almost all larger Cerro León Series vessels (refer to Figure 6.4.7). Scraping was multi-directional and used to thin and even out vessel walls at or before unfired vessels reached leather-hard stage. Judging from the evidence, scraping tools were semi rough-edged such as a shaped piece of wood, soft stone, gourd, or even something softer such as a tough plant fiber like dried corn husk. These tools typically leave a series of low ridges in many directions on leather hard vessel interiors. Some Cerro León Series potters scraped vessel bodies so thin that the shoulder below the thickened neck is a common breakage point. Trimming was used to make the vessel wall thinner and more uniform in bowls, pans, and occasionally close to the base of flat-bottomed storage vessels.

For Cerro León wares, perforated designs are relatively common on cooking pots and pans. Burnishing and polishing are common highland techniques for tertiary forming especially where slip or paint is applied to the surface first. Appliqué of handles occurs on highland vessels as does some modeling. Pushing the vessel surface out from the interior to form rounded ‘nodes’ occurs in highland manufacturing processes, although it is relatively rare. The modeling of representational forms or effigies occurs relatively infrequently in Cerro León ware assemblages at Cerro León (Figure 6.4.8).



Figure 6.4.8. Representational themes in Cerro León Series sculptural vessels.

Slip and paint, mostly in red, orange, white, and sometimes black, is common in Cerro León Series vessel manufacture (Figure 6.4.9). Slip is often applied when vessels are leather hard so that the slip can be burnished (and often polished) to the vessel in order to bind clay body and slip and create a smooth, finished vessel surface. Resist painting also occurs commonly in highland pottery. However unlike coast manufactured vessels highland resist techniques were used only on slipped and painted vessels.

The Cerro León Series contains a full range of basic vessel shapes in everyday and fancy pottery. *Ollas* are the most common vessel shape, followed by *cántaros*, *jarras*, pans (or colanders), and bowls. Less common in the assemblage are bottles and *cancheros*. Surface treatments include smoothing, burnishing, slipping, and smudging. Painted decoration far outweighs plastic decoration in the Cerro León Series assemblage. Red slip occurs on *cántaros* and *jarras*, and even pans, most often slip is wiped around the lip and neck of the jars and on the lip of the pan form. Bichrome,

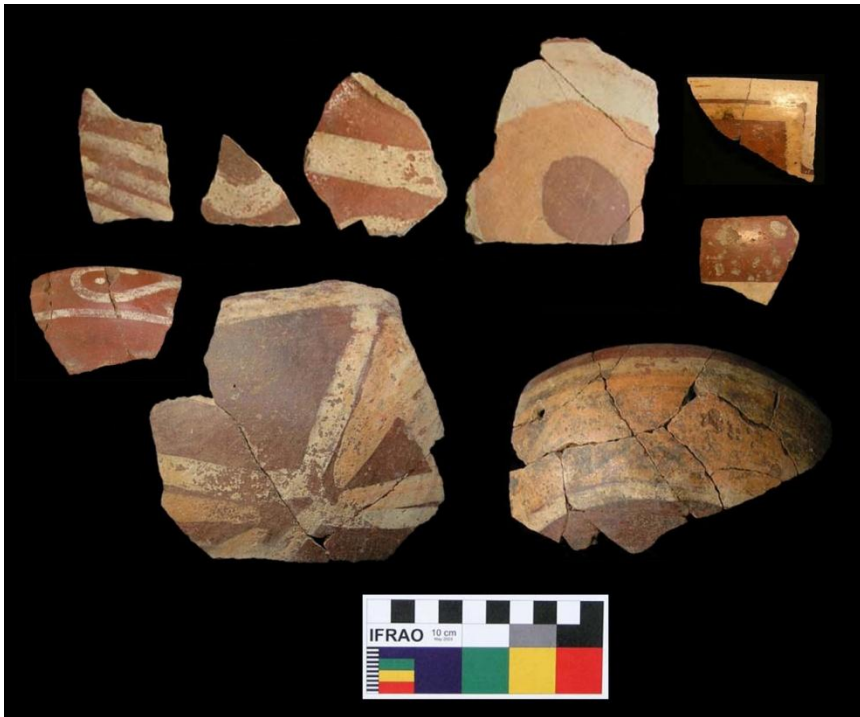


Figure 6.4.9. Slip and slip-paint common in Cerro León Series vessel assemblage.

polychrome, and resist are all common decorative techniques for the fancy pottery. When plastic decoration does occur it is usually in the form of stepped or curved cut-outs on plainware *ollas* and pans. Less common are sculptural or effigy forms of *cántaros* and *jarras*. Red slips dominate the decorated vessel types for Cerro León wares. Red slip not only on its own but also as the ground for painted decoration, which is usually executed in white or orange slip paint. Red slips for the Cerro León Series are deep purplish-red to almost maroon in color. Painted or resist decoration occurs almost exclusively as bands, or abstract, linear designs (Figure 6.4.10). Effigy vessels (presumably *cántaros*, *jarras*, or bottles although no whole or even partial vessels are present) are almost exclusively feline zoomorphic themes. Cerro León Series types include: Cerro León Plain, Cerro León Burnished, Cerro León Red-slipped, Cerro León White-on-red, and Cerro León Polychrome.

*Discussion.* John and Theresa Topic originally identified a brown paste ware in their fortifications survey of the middle Moche and Virú valleys and adjacent highlands (1982; 1983). Cerro León Ware is most likely the brown ware they refer to in their report. The Topics developed a





Figure 6.4.10. Simple and elaborate resist-painted (negative) designs of the Cerro León Series.

two-phase sequence based on their extensive pottery surface collections with Phase 2 (ca. 200 B.C. to A.D. 500) of their Otuzco region ceramic sequence corresponding to the Gallinazo and Moche phases on the coast (Topic and Topic 1982:13). Based on their survey, the Topics concluded that the brown paste vessels constituted a unique pottery tradition made locally in the middle Moche valley (Topic and Topic 1982:19). They describe the brown ware tradition as most prevalent just above the confluence of the Moche and Sinsicap rivers (ibid.).

The Topics (1982) also observed distinctions in Northern and Southern pottery styles in highland La Libertad during this EIP. The Northern style is common in the Moche-Chicama divide, the Otuzco basin and adjacent areas to the north, while the Southern style is common in the Otuzco basin, the middle Moche and Virú valleys, the Carabamba Plateau, and the Mache and Motil areas east of Carabamba (Topic and Topic 1982:14). The Northern style is absent at Cerro León but the Southern style is typical of the Cerro León Series pottery assemblage. The typical jar form is a long flared- or angled-neck jar. Cántaros from Cerro León as well as some plain *ollas* have very similar profiles to the Southern style cántaros but the Cerro León jars have a greater variety of lip treatments (Topic and Topic 1982:38).

Small open bowls are at the fancier end of the Cerro León brown ware tradition. The bowls are plain, bichrome, or polychrome painted. Bowl forms and decoration also bear a close



resemblance to those depicted for the middle Moche valley in the Topic's report though other sites reported for their survey have a greater variety of paint colors and designs than the Cerro León materials (1982:39-40). The polychrome type of the Cerro León Series pottery aligns well with what Bennett originally termed Epigonal (1939:73) and later changed to Castillo W/R/O (Bennett 1950:84). Strong and Evans refer to the same as Castillo White, Red, Orange (1952:344-347). Both refer to this painted type as being intrusive into the Virú valley although they describe its associations as unknown.

The cut-out plastic decoration of plain brown ware forms is discussed by the Topics for colanders but not mentioned for *ollas* (Topic and Topic 1982:13). They describe a colander form with angular cut-out holes as a common form during their Phase I, dating to the earliest part of the EIP (*ibid.*). The colander is especially prevalent at Cerro Campana East, located northeast of Huamachuco. A different style of colander is described by Lau as occurring in the Chinchawasi 1 phase (ca. A.D. 600 – 850) at the site of Chinchawas in highland Ancash (Lau 2001:209, 538, Figure 7.32). It is possible that the colander form occurs throughout the northern highlands and varies in form and frequency through time and space. It does not appear in Gallinazo-Early Moche phase pottery assemblages in the coastal valleys.

Thatcher's descriptions of Purpucala phase pottery from the basin of Huamachuco is similar in many aspects to the Cerro León Series (Thatcher 1975:111-112). Thatcher reports that red slip bands at vessel lips and necks are common on Purpucala phase coarse ware jars. Two-color and three-color slip paints and resist painting occur commonly on fine ware bowls, usually in red, orange, and white. Although Thatcher (1975:111-112) reported that buff and white paste vessels are common in the basin of Huamachuco fine ware bowl assemblage, there do not appear to be any of the black-smudged fine wares that are relatively common for fancy Cerro León Series bowls and jars. Thatcher does describe black fine wares for the later Middle Horizon, however. Black bowls and spoons nearly identical to the fragments of the Cerro León Series have been recovered in the Tres Rios region south of Huamachuco (Jesús Briceño, personal communication 2009).

Aplastics inclusions identified in this sample are dissimilar to the samples reported by Nelson (1998) discussed above. Krzanowski and Pawlikowski (1980) presented a thorough study of the petrography of samples from 19 sites in the Alto Chicama and surrounding regions. The pottery types in their sample comprised mostly Middle Horizon Huamachuco and Cajamarca types in addition to some produced in the Alto Chicama (Krzanowski and Pawlikowski 1980:63). The results (1980:96) showed that three of four groups contain mainly sedimentary (shale and sandstone) and igneous extrusive (andesite, rhyolite, and dacite) rock grains. The fourth group was distinctive and included fine paste, high-fired Cajamarca varieties of pottery. The igneous extrusive non-plastics of Krzanowski and Pawlikowski's (1980:86) Group III align well with the geological samples of the ONERN (1973:43) petrographic samples from the Chanchacap, Chinchango, Julcan, and Agallpampa locales since both groups have andesite and dacite (ONERN 1974:46; Krzanowski and Pawlikowski 1980:87). The area is within 25 km west of where Krzanowski and Pawlikowski's (1980:64, Figure 1) petrographic Groups II and III originated. Samples of the Cerro León Series were not similar to any of Krzanowski and Pawlikowski's groups. Although Castillo wares contained igneous extrusive rock, they were too varied to bear any resemblance to the Alto Chicama pottery types.

#### *Otuzco Series*

*Macroscopic Paste Identification.* This ware category appears to be very much related to the Castillo Series, but there are differences in paste color, size of paste inclusions, slip color, and especially firing technology (although paste and slip color may be due to firing technique). Otuzco Series paste color is a lighter yellowish-tan compared to the deeper red-brown of the Cerro León wares (Figure 6.4.11). However, there was sometimes difficulty in distinguishing between Cerro León and Otuzco wares because their paste colors grade into one another. Otuzco Series vessels are commonly fired under partially oxidizing conditions. The goal for Otuzco potters was to control the firing atmosphere so that vessels are reduced through most of the event and then oxidized at the end of firing. This technique produced a thick, black core with a sharp transition to a narrow, highly

oxidized surface. Potters do not appear to have been successful all of the time, however, and often vessel walls have a narrower, more diffuse black core.



Figure 6.4.11. Otuzco Series buff paste (left) compared to Cerro León Series red-brown (right).

*Petrography.* At the onset of analysis, because of the distinct buff paste color, I expected Otuzco wares to have a slightly different character of aplastic inclusions than the Cerro León group. However, mineralogically they are nearly identical. The main difference appears to be the size of non-plastic inclusions (Figure 6.4.12). The Otuzco Series contains much finer grains of quartz, plagioclase, and myrmekite overall than Cerro León wares. Epidote occurs in Otuzco Series pastes but when present it occurs in much smaller grains and may be part of the paste. Otuzco wares contained some larger grains but these are angular to sub-angular in comparison to the many smaller sub-angular to sub-rounded grains with more sphericity in the surrounding clay. Evidence indicates Cerro León and Otuzco Series wares were from two closely related sources.

Like Cerro León wares, almost all contain myrmekite. This secondary reaction texture is an intergrowth of vermicular quartz and plagioclase feldspar that is commonly found at junctures between K-feldspar and plagioclase in igneous intrusive parent rock (Nesse 2000:213). Although myrmekite is common in granitic rocks that cooled slowly at great depth, its co-occurrence here with epidote (in all Otuzco samples), and in some cases chlorite, is unusual. What is significant here is whether or not the epidote phases are merely part of the clay body or if they are included with the

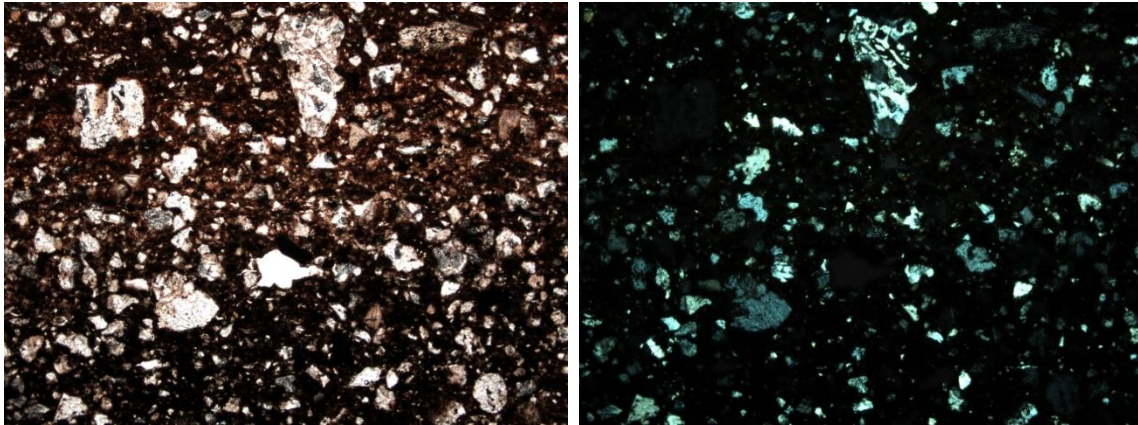


Figure 6.4.12. Otuzco Series paste and aplastic inclusions in plain (right) and crossed polars.

non-plastics as a separately added tempering material from a particular type of parent rock. Epidote is a common mineral, especially in metamorphic rocks, that withstands weathering well and so is a common accessory mineral in clays. Its presence in the clay body would not be unusual. However, in the case of Cerro León and Otuzco Series wares, a number of the large grains of myrmekite (i.e. tempering material) are partially or nearly completely altered to epidote and chlorite, so the source of this parent rock bears further investigation. It may be that the parent rock was also subject to some type of hydrothermal alteration (Inoue 1995:277-284).

*Manufacturing techniques.* Construction and decoration techniques are nearly identical to Cerro León Series vessels with a few notable exceptions. Potters carried out scraping activities to the extreme with Otuzco vessels, often producing thinner vessel walls when compared to Cerro León Series vessels. The red slips for Otuzco buff paste vessels are usually a much lighter orange-red color than their Cerro León series counterparts. As with paste color, however, there was a range of red slip colors for Cerro León and Otuzco vessels that sometimes made it difficult to distinguish between the two. Cut lip and cut-out body varieties of plain types occur with the same frequency as Cerro León Plain types. The black smudged variety of the burnished type is rare. Otuzco types include: Otuzco Plain, Otuzco Burnished, Otuzco Red-slipped, Otuzco White-on-Red, and Otuzco Polychrome .

*Discussion.* Partially oxidized buff-colored pastes are a hallmark of the Otuzco region Southern highland style described by John and Theresa Topic (Topic and Topic 1982:14). Red slipping on rims and lips as well as jar bodies is common for this buff paste ware as well; the Topics report 90 percent of buff paste wares have red slip, usually in bands around vessel lips and/or necks. They report this type as being found at several sites on the Carabamba plateau and in the Motil area, as well as many sites in the middle Moche valley. There is little doubt that Otuzco Series is part of the Otuzco region buff paste ware the Topics (1982) referred to in their survey report. The partially oxidized buff-colored pastes do appear at Cerro León but are out-numbered by similar forms made from the Cerro León Series brown paste vessels. The Topics are explicit about referring to buff paste vessels found at middle Moche valley sites as imports from the Otuzco basin (Topic and Topic 1982:17). Buff paste imports are not found in the middle Virú valley, although local middle Moche valley brown paste vessels are. Their interpretation of the distribution and style of brown and buff wares is that local producers of the middle Moche valley brown wares are emulating the sierra styles of the buff paste wares. The distribution of Otuzco series types in the Otuzco basin itself has not yet been investigated.

### *Quinga Series*

*Macroscopic paste identification.* The Quinga Series consists of white paste vessels. Most of these appear to lack aplastic inclusions. There is significant variation in paste color and texture for this series, ranging from cool white, to cream, bone, or pale orange-tan. Fire clouds are black, tan, or orange. They are almost always oxidized pastes. However the bone and pale gray colors occasionally have an ash grey to dark grey core. Some pastes have almost a waxy appearance while others are chalky or gritty. This is probably due to the varying characteristics of different clay sources. For instance, the waxy texture indicates a more plastic clay.

Pure, white clays like those of the Quinga Series may be kaolinite or illite, and the predominant interpretation in the Andes is that they are kaolinites (see Czwarno 1983). White clays

are unlikely to accumulate through wind transport or surficial water flow and are most likely primary clays formed from buried sediments. Potters typically exploit deposits nearer the surface. Czwarno's study, as well as my own observations in the highlands above the Moche, valley indicate however, that mining for fine, white clays is common in the northern Andes both prehistorically and among modern communities. If some of the raw clays of the Quinga Series vessels are in fact kaolinite they may also have been produced by hydrothermal alteration which occurs in orogenic belts like the one comprising the Peruvian Coastal Batholith. (Inoue 1995:270; Velde and Druc 1999:79).

*Petrography.* The potsherds in the Quinga Series often exhibit no visible non-plastic inclusions, apart from some small, rounded blobs of red hematite that are visible under the microscope (Figure 6.4.13). Since the pastes are often very creamy white, the iron likely represents impurities in the raw clay. These concentrations of hematite may also be a product of firing. In terms of technology and construction, it is not possible to see any flux material of the sort Czwarno (1983) suggests. The fine, homogeneous paste indicates either an extremely good raw material source or very careful preparation of the clay body. When aplastic inclusions are present, they vary. I suspect that they come from several different source locations. Samples range in paste color from cool or warm white, to a darker bone color, to almost orange or buff. These may simply be due to firing variations but they could also indicate differences due to source locations. The paste is very fine and compact, indicating care in preparation but contains many very fine rounded to subrounded grains of quartz. This quartz may indicate a volcanic rather than plutonic paste or temper source because the grains of quartz are more rounded and equant. Additionally, many of these quartz grains exhibit embayments (literally small inlets or bays on the edges of the grains). This is also a common characteristic of quartz grains from extrusive environments (Drew Coleman personal communication; MacKenzie 1980:70).

*Manufacturing techniques.* Quinga Series vessels are almost exclusively bowls but other forms, such as a miniature necked jar, do occur. These were exclusively coil-constructed vessels. Secondary forming included smoothing, burnishing and polishing. All are extremely thin-walled, but

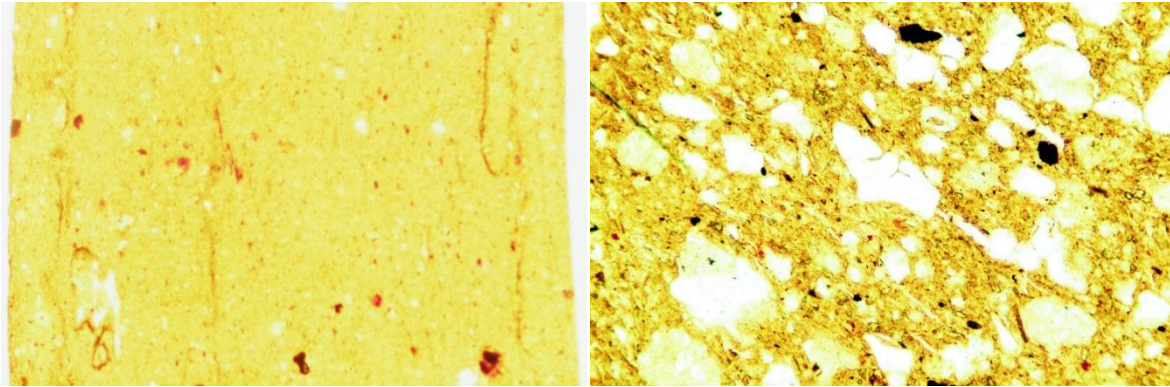


Figure 6.4.13. Quinga Series without aplastics (left), containing hematite concentrations and with aplastics (right), including embayed volcanic quartz (center of slide).

the process of thinning vessel walls is not readily apparent. If they were scraped when leather hard, then evidence for that process has been eliminated by tertiary forming techniques. A few examples of plain bowls are rather sloppily-made with obvious coil seams not completely eliminated by smoothing and no burnish or polish. Quinga Series types are; Quinga Plain, Quinga Burnished, and Quinga Painted, including orange-slip painted, red-slip painted, polychrome, and negative-painted varieties (Figure 6.4.14). The Quinga Painted bowls are predominantly the orange slip-painted variety. These designs are always just below the exterior lip and usually consist of diamond shapes filled with cross-hatched lines.

*Discussion.* The Quinga Series might be divided into several subgroups but further investigation is needed to determine how much variation exists in the sample of white paste pottery. White paste vessels show a variety of paste recipes that may indicate different regions of production. The production of white paste vessels occurred commonly in the northern highlands of Peru, from Cajamarca to Huaraz (Topic and Topic 1983:252; Lau 2006:151). The most recognizable styles are Cajamarca and Recuay bowls. Czwarno (1983) concluded that the Callejon region of production had the dominant influence on La Libertad regional styles early on, while the Cajamarca style was more influential later in the Middle Horizon. Lau describes the region of highland La Libertad as a “buffer zone” between Cajamarca and Ancash. Similar to Czwarno, Lau concluded that Groups in La Libertad produced their own white paste vessels but these showed Recuay stylistic influences in the





Figure 6.4.14. A sample of Quinga Series white paste bowl sherds.

EIP and were influenced by Cajamarca styles later in the Middle Horizon (Lau 2006:162). The Topics concur, indicating that the white paste bowls typical of the middle Moche and Virú valleys and their adjacent highlands are less important styles, not as widespread as products from Cajamarca and Recuay and not as well known (Topic and Topic 1982:18; 1983:258).

Quinga Series vessels at Cerro León have a variety of paste recipes but are fairly uniform in shape, surface treatments, and decoration. Other than being white, they bear little resemblance to either Cajamarca or Recuay style “kaolinite” bowls. This echoes Strong and Evans’ description of white paste Callejon Unclassified vessels in the middle Virú valley as having some kind of connection to the Callejón de Huaylas region but not fitting easily in with Recuay types (Strong and Evans 1952:351). Cerro León’s Quinga Series assemblage fits well in the Topic’s category of “lesser” white paste styles. Decoration on the Quinga Series bowls at Cerro León is not similar to decoration depicted by Strong and Evans (1952:349) for Callejon Unclassified vessels. The Topics report that



white paste bowls of this style are most numerous at Cruz Blanca and nearly as common in the middle Moche valley. However, they are less common in the middle Virú valley (Topic and Topic 1982:18).

The Topics describe a wider variety of decorative treatments and slip-paint colors for the white paste bowls than is present at Cerro León. Lip treatments such as fingernail impressions, scalloping, and castellation occur at Cerro León but the simple groove below the exterior lip was the most common lip treatment in the Cerro León assemblage. Further distinguishing these “lesser styles” from Cajamarca and Recuay traditions is the fact that they do not have tripod supports and ring bases are rare (only one was found in the assemblage at Cerro León). Interestingly, Cerro León’s assemblage of Quinga Series bowls had no representational designs. Representational motifs are more common in Cajamarca and Recuay white paste pottery.

These white wares are most prevalent at a time that Lau describes where the northern highland groups as a whole were experiencing widespread stylistic interaction (Lau 2006:158). Styles were simpler and share more in common region-wide. Exchange wares, in contrast to the most elaborate Recuay fine wares that are rarely found outside of Ancash, had “simple style protocols” that were appropriate for many different contexts, including funerary ritual, commensal events, or pilgrimage offerings (Church 1996:601-602). The Topics (1982) suggest that Quinga Series wares were influenced by the stronger regional traditions of Cajamarca and Recuay. However the appearance of Quinga wares in relation to these traditions, in terms of timing, style, and technology is not yet well understood. Research on the distributions and contexts of all these traditions is needed.

Czwaro’s work (1983) identified possible sources for white paste “kaolin” wares from EIP sites near areas where white clays were mined prehistorically in the Cajamarca region, the Callejón de Huaylas region, and near Marca Huamachuco in the department of La Libertad. Czwaro pinpointed sites near these mining areas that were likely locations for production of white paste wares (1983:171). Using X-ray fluorescence he obtained signatures for raw clays from these areas and compared them to sherds from a sample of sites in the middle Moche and Virú valleys and a number of other sites in the adjacent sierra. Samples from sherds he collected in the immediate area of Cerro

León (Czwarno 1983:116-117) had signatures similar to both the Huacaloma clays in the Cajamarca region and from the Balcón de Judas site in the Callejón de Huaylas. I do not know if the sherds Czwarno collected are representative of the Cerro León white paste wares, but his results provide some indication that the middle Moche valley was an area of overlapping interaction with both areas producing the desirable white-firing vessel pastes and slips.

A possible complicating factor in his study is that all the sherds in his samples contained higher ratios of potassium and calcium than would be expected to occur in kaolinite clays (Czwarno 1983:36). Czwarno attributes these anomalous results to cultural factors by proposing that because kaolinites have higher temperatures of vitrification, potters were adding a flux in the form of powdered limestone or marl in order to facilitate sintering in open firing conditions (ibid.). A more likely explanation is that (at least where potassium was high) the clay source may have been illite. Even though Czwarno identifies the presence of aplastic inclusions in most of his potsherd and raw clay samples, he never mentions identifying them under a petrographic microscope (Czwarno 1983:43). Czwarno does not appear to have used qualitative analysis of aplastic inclusions in his pottery samples or his raw clay samples. This procedure could have identified natural inclusions (which in white, primary clays might be parent material) or solved the question of intentionally added “flux” material.

#### *Other wares*

I identified several potsherds that did not easily fit into either Castillo or Cerro León wares as the bulk of the assemblage from Cerro León did. These other wares comprised less than 1 percent (n=16) of the total pottery rim assemblage from excavation. Forms were *ollas*, but there were few indicators of manufacturing techniques in the sample, other than coil construction for the vessel neck. None of the potsherds have decoration. These pastes have some voids surrounding inclusions in the pastes, but less of the shrinkage that I saw in Castillo wares. These other wares did not contain any of the Myrmekite secondary reaction textures similar to Cerro León types. However in addition to the

many green biotite grains and green-gold grains of hornblende (Figure 6.4.15), many of this smaller sample did have the secondary reaction texture referred to as sericitization, which appears as fine specs of mica in the thin sections. This reaction texture is distinct but generally common in igneous plutonic rocks. Sericitization, as well as hornblende and biotite are present in the bedrock sampled from Cerro León itself. This is by no means direct proof that these samples come from the immediate area, but it is worth further investigation. These fragments could be the most likely candidates for evidence of pottery production within 5-km or less of Cerro León.

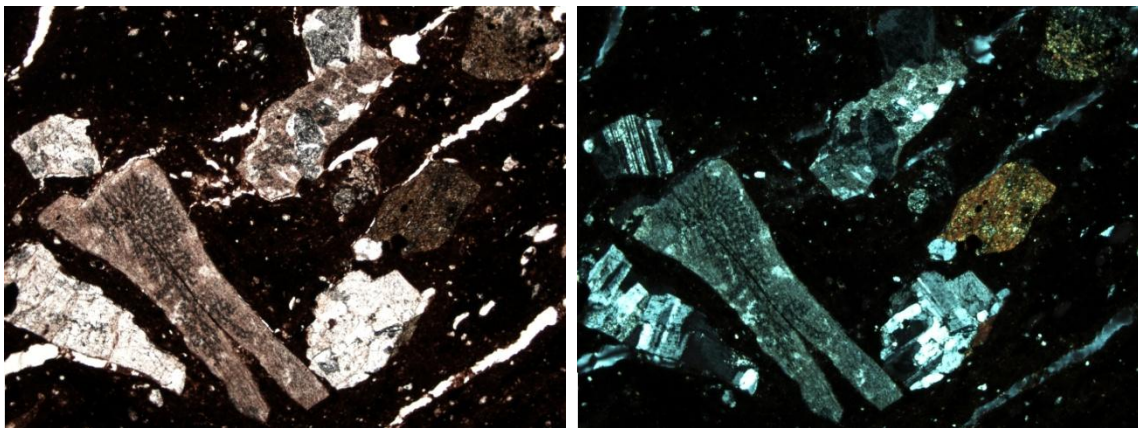


Figure 6.4.15. Other types of pottery possibly made within 5 km of Cerro León.

## 6.5 The Cerro León Typology in Regional and Chronological Context

From the data presented on contexts at Cerro León presented in Chapter 5, it is clear that there is relatively little to go on stratigraphically to create a relative pottery chronology. Since the assemblage consists mainly of architectural fill and looted deposits and the compounds likely shared use and reuse of the surrounding middens, the best means of looking at chronological change in the pottery assemblage at Cerro León may be to obtain clusters of absolute dates from houses in Area 1 and other areas of the site and compare the corresponding area assemblages.

Although Cerro Arena is a Salinar phase site and was apparently abandoned by the Gallinazo phase, there are some striking affinities between certain vessel forms at Cerro Arena and Cerro León. Several bowl forms at Cerro León are nearly identical to bowls from Cerro Arena and have

characteristics not mentioned for any currently reported sierra sites. Brennan's Type D, Variety 1 and 2 (1978:624) and Type E Variety 1 (1978:614) are a series of bowls with red-brown paste and ranging in surface color from red to reddish-brown to brown, gray, or black. These occur almost exclusively in high status households at Cerro Arena (Brennan 1978:624). Brennan describes the bowls' surfaces as slipped and either fired in reducing or partially oxidizing conditions, much like those of Cerro León. Forms and lip treatments are the same between the two sites as well. One form of pattern burnishing (I call it bi-directional burnishing) also appears on bowls at both sites (see Brennan 1978:616, Figure B-9, B and C; and 1978:629, Figure B-20). Similarities between Brennan's Type D and E bowls and those of the Cerro León Series do not go beyond the characteristics described here. The Cerro Arena assemblage has many bowls with flat bases, as well as more complex designs of pattern burnishing that Cerro León lacks.

Some Cerro Arena and Cerro León bowls share similar features but jar and bottle forms do not. Cerro León has none of the bottle or neckless jar forms prevalent in the Cerro Arena assemblage. Brennan's Type H necked jars have red-on-white designs but the jar form, the designs, and the quality of the slips are totally dissimilar to Cerro León White-on-red types. The white-on-red slipped and painted vessels at Cerro Arena (which are mostly large jars) are the classic markers of the Salinar phase called Puerto Moorin White-on-red (Ford 1949:50). The Cerro León Series has different vessel shapes and slip and paint that is thicker and much more intense in color; the designs on cántaros include wide horizontal bands of white paint on a red background only at the neck. The pastes of the Cerro Arena and Cerro León bowls need to be examined so as to determine whether they have similar origins. If so, then these similarities most likely indicate that relationships between coast and highlands in the Moche valley exhibit a significant degree of continuity over time, from Salinar through Gallinazo-Early Moche phases. The total dissimilarity of the rest of the assemblages argues against their being contemporary.

Ford (1949) worked out the Virú valley ceramic typology not only to compare pottery assemblages at different sites but ultimately to develop a chronological sequence for the prehistory of

the entire valley. Bennett (1939, 1950) focused on the Gallinazo phase in order to refine Ford's classification. Ford used the type-variety system to describe the full range of ceramics found in surface collections and excavations in the Virú valley. He based his chronological subdivisions (Early, Middle, and Late Gallinazo) in large part on paste and temper, which Fogel states was later proven to be a static trait rather than temporally sensitive (1993:7). Bennett's division of Gallinazo into three distinct subphases (I, II, and III, 1950:113-118) supported Ford's chronology via stratigraphic excavations. However, his results likely contained overlapping designations since he excavated in arbitrary levels which cross-cut natural stratigraphic breaks (Billman 1996:237-238). Fogel (1993) later attempted to refine the sequence based on a re-examination of ceramics from grave lots at the Gallinazo site along with samples from coastal Gallinazo sites in the Moche valley and a re-examination of Wilson's material from the Santa valley, producing another tripartite division (Early, Middle, and Late Gallinazo). Her analysis, however, also was based on Bennett's mixed stratigraphic cuts (1993:8).

Even though the Virú valley project's typology (i.e. type designations as a result of descriptive categorization) remains useful and largely intact more than 50 years after it was established, problems with the chronological aspects of the classification have recently come to a head (Millaire and Morlion 2009). Archaeologists up and down the north coast of Peru have found pottery of the Castillo series (presumably a marker of the Gallinazo phase) in many contexts that date to early, middle, possibly late Moche (Millaire 2010). The solution for many researchers seems to be to divide everything formerly considered by Ford, Bennett, and others to be part of a coherent Gallinazo phase pottery assemblage, including all plain and decorated types (but especially highlighting the Castillo Series and Gallinazo and Carmelo Negative types) into distinct "commoner" and "elite" pottery traditions. Castillo plain and decorated types, the pottery of commoners, are widespread and unchanging through centuries of occupation in virtually all north coast valleys. In contrast, the classic "Gallinazo style," mainly the negative-painted tradition of finewares, is found in

the burial and ritual contexts of the elite. Elite types represent a more abbreviated period of time where changes in style mark the shifting ideologies of polities (Uceda et al. 2009:121; Donnan 2009).

Gamarra and Gayoso (2008) examined domestic wares of the Moche valley Castillo series from an architectural compound (CA35) in the Urban Zone at the Huacas de Moche. Their sample contained mostly *ollas* and cántaros from floors associated with Moche phases II, III, and IV, although the largest sample was designated Moche phase II (Gamarra and Gayoso 2008:190). Their coarse wares comprised mainly Castillo Plain and Modeled types, with many examples of modeled and coil-appliquéd jars as well as face-neck jars (Gamarra and Gayoso 2008:198, Figura 8). They also report Sarraque Cream cántaro fragments (Gamarra and Gayoso 2008:193). Although this assemblage of mostly Moche II phase pottery should have some temporal overlap with Cerro León, the two vessel assemblages have little in common. Gamarra and Gayoso did not report any Castillo Incised vessels with triangular shoulder punctuations in the Urban Zone vessel assemblage but these are the most common decorated Castillo types at Cerro León. The CA35 assemblage does share similarities with the modeled vessels from surface collections at Cerro Oreja (Briceño et al. 2006). Cerro León and Cerro Oreja overlap in that they both have Castillo Incised (triangular punctuation) vessels. The interesting overlaps and dissimilarities of the three sites could be due to a number of factors such as stylistic or functional distinctions, or they may be chronological in nature.

The Cerro León assemblage shares little in common with Early Moche phase assemblages from the Moche valley, including both vessels from households in the urban zone at the Huacas de Moche and vessels produced for elite consumption. Fineline collections from Moche phases I and II contained only stirrup spout vessels (Donnan and McClelland 2000). But Moche I and II finewares bear no resemblance to anything excavated to date from Cerro León. There are no Early Moche phase stirrup vessel fragments in the Cerro León Area 1 pottery assemblage. Evidence from the excavation of the Huacas de Moche pottery workshop (Uceda 1998) indicates that it post dates the occupation of Cerro León. Uceda dates the workshop to the late Moche III and mainly Moche IV phases (1998:108). Apart from the mysterious Moche phase hollow figurine fragment found in

Compound 6, no other pottery object from the Area 1 excavations at Cerro León resembles any item produced in the workshop of the Huacas de Moche.

## **6.6 Discussion**

The goal of Chapter 6 was to understand where and how different vessels in the Cerro León assemblage were made. My main questions were; 1) where did the different pottery wares come from if they were not made at the site by household-level manufacturers, 2) how did manufacturers from other places connect with consumers at Cerro León, and 3) when did these relationships occur in the prehistory of the valley and in the EIP of northern Peru in general. The typology devised for this project was built on and continues to refine a solid foundation of previous work for the Moche valley (Billman 1996; Topic and Topic 1982; 1987).

The clay survey demonstrated that small amounts of inferior-quality clay would have been available within 5-km of Cerro León, but greater quantities of better-quality clays would have been available in adjacent areas both up and down the Moche valley watershed. Then as now, people utilized the lower Moche valley or highland resources over middle valley clay resources for their abundance, ease of access, and quality. The pottery typology demonstrated that: 1) three of four pottery wares at Cerro León were of highland origin, 2) differences in aplastic inclusions can be connected to source regions in the valley and the highlands and there is potential to refine these results with future petrographic research and sampling, 3) there are clear differences between the valley- and highland-produced wares in all aspects of manufacturing that are likely the result of different groups of potters learning different traditions of pot-making.

Both macroscopic and petrographic evidence indicated that differences exist between Castillo and Cerro León Series vessels indicating that they were made in different regions. The petrographic study demonstrated that Cerro León and Otuzco types were made somewhere in the upper Moche valley watershed, perhaps in the regions of the modern towns of Huacaday, Otuzco, Salpo, and Carabamba. Many of the Quinga Series vessels likely also came from this region as well as others

throughout highland La Libertad. A survey of manufacturing techniques further demonstrated that Castillo and Cerro León Series pots were made by different groups of people who had learned and used distinct motor habits and techniques to make pottery. The petrographic and manufacturing studies also showed that Cerro León, Otuzco, and Quinga Series wares all have closely related origins and share similar, techniques and traditions of manufacture.

Other lines of evidence tend to support the conclusion that little to no pottery manufacture took place at Cerro León. No raw clay or tempering material caches were discovered during excavation of the residences. Few if any artifacts that could unambiguously be categorized as potting tools were recovered from excavation of the house compounds either. No wasters or firing failures have yet been recovered from any location on the hill. Finally, although open air firings often leave virtually no traces of archaeological evidence, no large burned areas associated with any of the above materials were ever located. The absence of such artifacts or features does not eliminate the possibility of on- or near-site pottery making, but it does make such activity far less likely.

But how did these producers of Castillo, Cerro León, Otuzco, and Quinga pottery types get their products to Cerro León? Dean Arnold (1993:130) emphasizes the fact that distribution of their products is vital to potters because this step is how they transform pots into the things they need such as food. Clearly potters from the lower valley as well as the highlands had some kind of access to consumer populations in the middle valley. Highland potters probably belonged to farming households that produced pots in the dry season months. Either they had intermediaries or access to transportation by foot or by llama to help them distribute products. Coastal producers may have belonged to communities where year-round farming was possible, but their access to the raw materials for potting made it worthwhile for some community members to devote time to manufacture for part or all of the shorter growing season.

Highland or coastal pottery producing households could have entered into some kind of mutually beneficial relationship with Cerro León residents in exchange for agricultural products, such as maize or coca, or other items such as stone or copper tools or ornaments. I believe that the reason



that Cerro León households placed such an emphasis on highland products was because most household members were from the highlands themselves. It would have been beneficial to both groups to maintain these connections. Highland potters would have received foods and coca; things that were difficult or impossible to grow in their region, while highland families that settled at Cerro León maintained connections with home communities. Cerro León families, far from their place of origin, would have been able to continue to use products they were familiar with, as well as promote highland identity and solidarity in private and public contexts by using their distinctive, highly visible material culture. But what did they use the pottery types for and how did they use them?

Chronologies show that these selective relationships took place at a pivotal moment in the course of Moche valley prehistory. Relative chronology, as well as AMS dates presented in the previous chapter, clearly shows that the entire Cerro León pottery assemblage post-dates Salinar phase developments at major sites such as Cerro Arena and pre-dates developments at the Huacas de Moche during the Moche III phase. Within the Gallinazo-Early Moche phase, the Cerro León assemblage bears little similarity to the Moche II and III household assemblage from the urban zone at the Huacas de Moche, but shares similarities with surface collections from the domestic sector at Cerro Oreja. My hypothesis is that Cerro León was occupied in Moche phase II times but that abandonment was underway and likely completed sometime in Moche III.

## **Chapter 7 FUNCTIONAL ANALYSIS OF THE CERRO LEÓN STUDY ASSEMBLAGE**

### **7.1 Introduction**

The background provided on Gallinazo-Early Moche phase foodways in Chapter 2 provides context for the discussion of past studies of vessel form and function and their influence on the methodology of the present study. The study of archaeological pottery assemblages on the north coast of Peru has traditionally focused on chronology building. This practice has come into sharp focus recently, especially for the Gallinazo and Moche phases, because of the problems that scholars have encountered in reconciling incongruities in the co-occurrence of pottery types formerly considered separated by space and time (see Millaire and Morlion 2009). Functional issues in Gallinazo and Moche phase pottery studies have focused on those assemblages from ceremonial contexts, especially large-scale beer brewing in Moche ritual centers (Castillo 2003, Shimada 1994; Swenson 2006, 2008). However, few studies explicitly connect the mechanical performance characteristics of pottery assemblages with specific food-related activities on the north coast for the EIP (but see Gamarra and Gayoso 2008; Mehaffey 1998).

Inspired by a solid body of work in the archaeology of pottery and foodways in North America, as well as a growing number of studies in the Central Andes, my analysis reconstructs the links between the vessel assemblage and foodways within the Area 1 residences at Cerro León. I describe the methodology for my functional analysis in detail because it is not commonly used for domestic pottery assemblages in the Central Andes. Ethnographic analogy is the more popular choice for functional issues. However these types of studies focus on late prehispanic and early colonial highland areas and not the study region of my dissertation. The first goal of this analysis was to determine the function and relative frequencies of different vessel classes at Cerro León and how

these are related to foodways. The second goal was to compare vessel assemblages within and between the three residences to explore how, where, and when foodways varied in this part of the site.

In this chapter I demonstrate that Cerro León residents mainly selected culinary pottery to process, cook, store, and serve liquid and semi-liquid consistency foods. Based on my analysis, I conclude that there was a marked preference for the more varied functional assemblage of highland-manufactured wares, in everyday tasks and especially feasting activities. This appears to have been based on *how* household tasks were done and not simply on aesthetics or advantageous trade relationships. Preference for the distinctive, highland-made functional culinary assemblage was accompanied by the use of highland-style disk-shaped whorls for spinning yarn or thread. Even though the productive labor of women and men was focused on highland identity, Cerro León's Area 1 households maintained significant connections with coastal people, including pottery manufacturers and fishing communities.

## **7.2 Previous Research on Pottery Function**

Peru has a remarkable variety of ceramics to study, a long and detailed record of ethnographic and ethnohistoric accounts, and excellent preservation of plant and animal remains at archaeological sites. However, Andean archaeologists have devoted relatively little time to studying the form and function of prehistoric ceramics or the direct relationship that pottery vessels have to the prehistoric foodways. A few noteworthy exceptions include studies by Mehaffey (1998) and Gamarra and Gayoso (2008), both dealing with Moche pottery assemblages, and Bray's work with Inka pottery (Bray 2003). Most studies focus on issues of production including scale, specialization, and labor investment (see for example Costin 2001; Hagstrum 1989; Jennings 2004; Sillar 2000).

Functional analysis of pottery is based on the assumption that pots of similar shapes were used in similar ways in both prehistoric and ethnographic contexts and that these associations are not significantly different cross-culturally (Pauketat 1987:3). Inferences about function, therefore, can be supported both by archaeological and ethnographic evidence. Before the introduction of metal and

plastic containers diminished the role of pottery in the everyday lives of Andean communities, clay vessels were integral to the social reproduction of households through foodways (Sillar 2000:31). It is therefore surprising that archaeological studies do not make more frequent and explicit use of the plethora of ethnological and ethnoarchaeological pottery studies that exist in order to reconstruct foodways in the Central Andes (Sillar 2000; Arnold 1993; Camino 1989; Ramon 2007).

Although the studies mentioned so far are useful for archaeologists, they generally assume that whole vessels are the basic unit of analysis. This is ideal but it is rarely the case with archaeological collections. Research by Braun (1980), Hally (1983a, 1983b, 1984, 1986), and others (Ericson and DeAtley 1976; Egloff 1973; Fitting and Halsey 1966; Plog 1985; Walsh 1989; Whallon 1969) demonstrate that form and function can be assessed accurately when only the rim sherd represents the whole vessel. Braun (1980) provides some meaningful interpretations based on attributes of the rim and neck of a pottery vessel. Hally (1983a, 1983b, 1984, 1986) uses assemblages from late prehistoric and early historic domestic contexts in the southeastern U.S. to examine vessel morphology, use-alteration, and mechanical performance characteristics of different classes of pots. More recently, Wilson and Rodning (2001) examined preliminary categories of form and function for collections from North Carolina based on vessel shape, size, and evidence for use-alteration.

### **7.3 Methods of the Functional Analysis**

The functional categories used in this study follow those used by Henrickson and McDonald (1983), and others (Hally 1983a, 1986; Rice 1987; Smith 1988). I defined four functional categories related to food processing, preparation, storage, and consumption for the Cerro León vessel assemblage. These include cooking, short-term storage and serving of liquids, long-term liquid storage, food preparation, and food presentation or serving. Figures 7.3.1 and 7.3.2 present hypothetical reconstructions of the culinary vessel assemblage from Cerro León. Overall, there is a wide range of variation in shape and size with this assemblage. I include discussion of additional tentative categories for liquid transport and storage of dry goods, but ultimately I categorize these

vessels as containers for short-term storage and serving of liquids. I also discuss non-food related vessel categories including spinning and plying of yarn or thread, metal working, ornament, ceremonial or ritual items, and miscellaneous tools.

Classification of pottery vessels into the different functional categories is based on a combination of characteristics including the relative frequencies of different vessel classes and vessel morphology and technology related to intended and actual vessel use. These include vessel shape, surface treatment, and evidence for use-alteration. In this study, I established relative frequencies of vessel classes through identification of rim segments by feature. These identifications followed criteria established by others for arriving at a minimum number of vessels (MNV) (Chase 1985; Holley 1989; Orton 1993; Schiffer 1972, 1985; Wilson 2005). I assigned functional categories based on a set of mechanical performance characteristics connected with the physical and morphological features of different kinds of vessels. These mechanical performance characteristics and physical features are based largely on Hally's (1986) research in North America.

#### *Minimum Number of Vessels (MNV)*

Pottery from excavated contexts alone (not including controlled surface collections) totaled more than a metric ton of material for the three residential compounds combined<sup>23</sup>. The condition of these fragments in general was small, and we recovered no whole vessels<sup>24</sup>. Because of the highly fragmented condition of this pottery assemblage, establishing a minimum number of vessels (MNV) was challenging at best. Nevertheless, establishing relative frequencies of vessel classes for the pottery assemblage provides essential information on what food preparation, storage, and consumption activities were important to the residents of Cerro León and how pottery as material culture was integral to household social reproduction (Sillar 2000:31; Wilson 2005:147).

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<sup>23</sup> The assemblage total is 149,950 fragments weighing 1,330,081.8 grams, all of which we classified. The total does not include fragments less than ½-inch in diameter which were weighed but not counted or classified.

<sup>24</sup> We do have a small sample of five nearly complete cooking vessels from surface collection at the site and many of the excavated bowl fragments are rim to base pieces, providing some information on complete vessel size and volume for two functional categories.

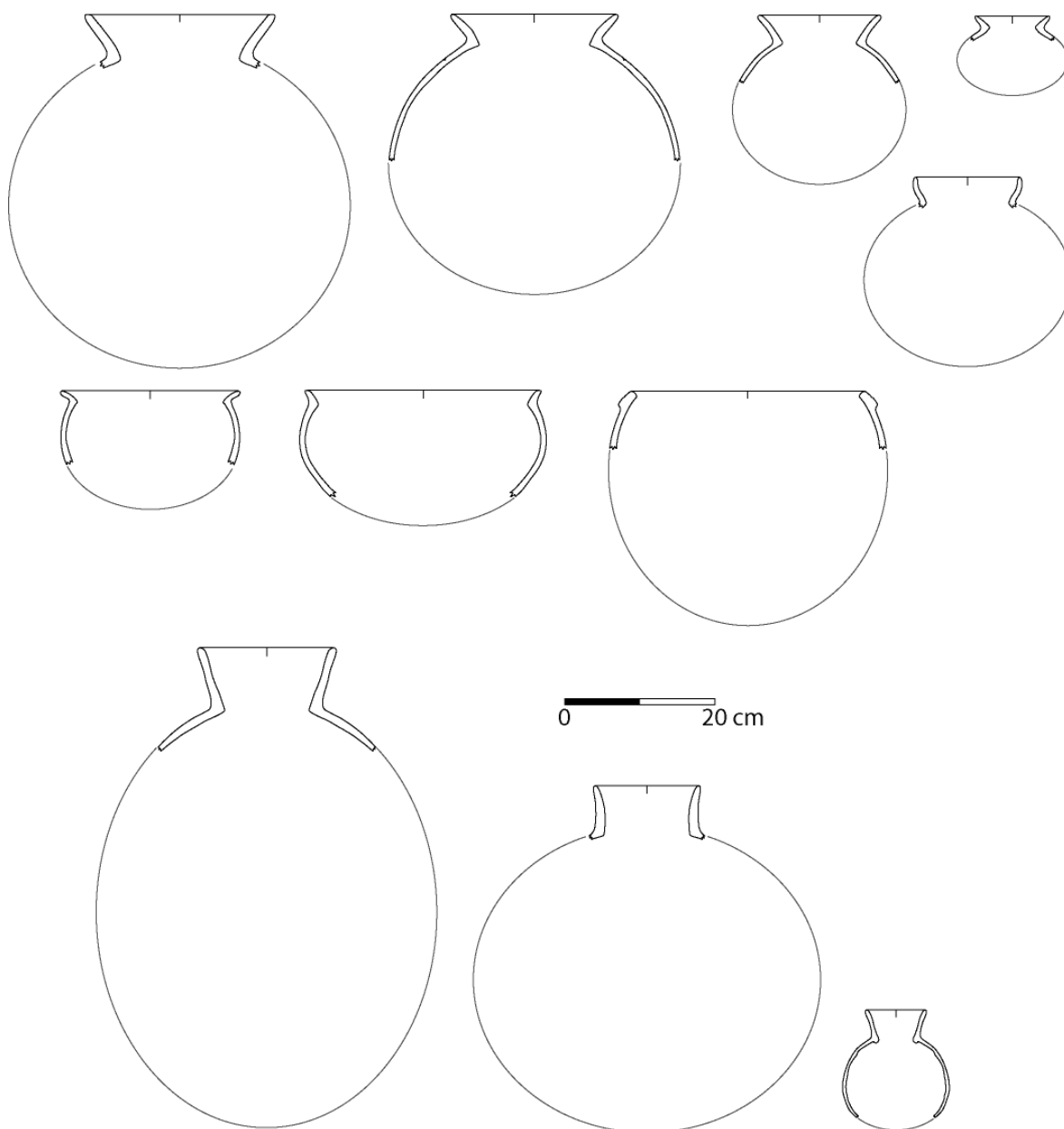


Figure 7.3.1. Reconstructions of Castillo Series coastal vessels (cooking vessels shown above, liquid storage and serving vessels below\*).

\*On this and Figure 7.3.2, double lines are actual vessel profiles, single lines are projected reconstructions based on body sherds and whole or partial vessels from Cerro León surface collection and excavation.

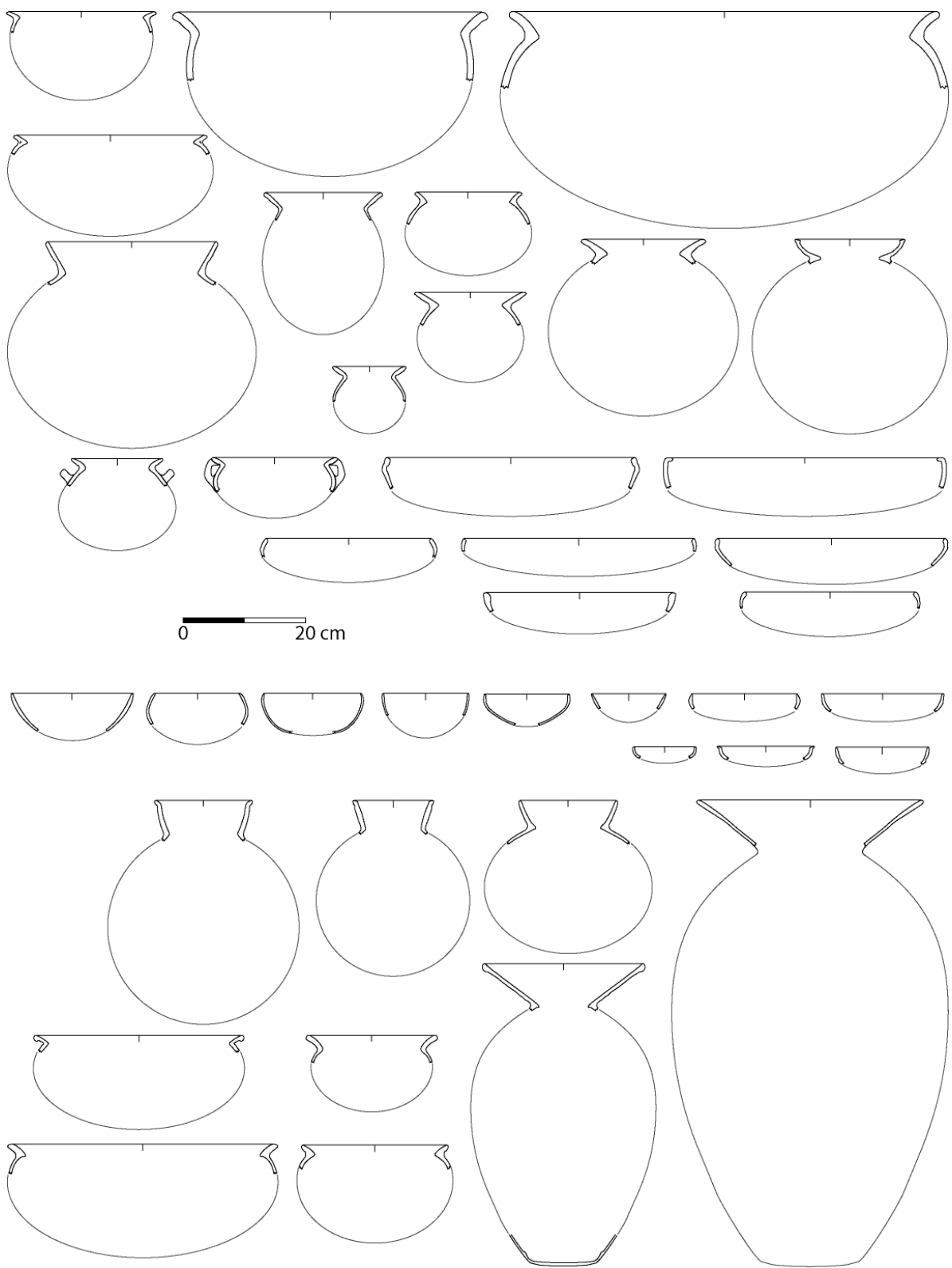


Figure 7.3.2. Reconstructions of Cerro León Series highland vessels (cooking and toasting vessels above, liquid and semi-liquid consistency food serving and storage containers below).

Straight sherd counts are not accurate representations, and Chase (1985) recommends not using them to establish MNV. It's also necessary to realize that the pottery gathered from residential spaces at most archaeological sites does not represent the in-use assemblage for any given point in time in the occupation of a typical household. Rather, it is a discard assemblage, largely composed of secondary refuse accumulated through occupation, abandonment, and post-abandonment processes (Schiffer 1996). In Chapter 5 I pointed out that 46.5 % of the pottery assemblage consisted of recycled material in construction fill. However ethnoarchaeological studies have shown that because different vessel classes have varied but reasonably predictable breakage and replacement rates, archaeologists can make approximations of the in-use vessel assemblage (David 1972; DeBoer 1974; Foster 1960). Factors such as frequency of use, heat exposure, amount of handling or movement, and lower replacement cost make cooking pots (*ollas*) appear much more frequently in discard assemblages when compared to large, immovable, harder-to-replace storage jars (Foster 1960).

For the Cerro León study assemblage, I identified single or conjoining rim segments in feature and non-feature contexts and counted these as individual vessels. When I could make such identifications with certainty, individual vessels included numerous non-fitting rim and body sherd segments. I also made every attempt to identify cross-mends between contexts and included all refits along with the single, initially identified vessel. Cross-mends sometimes occurred between widely separated contexts within a residential compound, but I never identified refits between compounds<sup>25</sup>. This procedure of discrete vessel identification is subject to analyst error, not only because of the size and condition of the collection, but also because surface and rim morphology often varied circumferentially for an individual vessel (Holley 1989:10).

In order to further control for inflated vessel frequencies in the study assemblage, I included only vessels rims that were easy to sort into categories by type and functional class and that provided

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<sup>25</sup> The enormous size of the collection placed time constraints on searching for cross-mends between residential compounds. However, I classified 93 % of the collection myself and became extremely adept at recognizing sherds from the same vessel. Working through collections by field season, I was readily able to make refits between sherds from field seasons several years apart. In my opinion, the likelihood of cross-mends occurring commonly between compounds is relatively low, but this must be borne out through thorough investigation.



a suite of other information about vessel function. Thus, the MNV for the Cerro León study assemblage does not include rim segments that were too small or eroded to identify as to functional category. These small, ambiguous or unidentifiable rims account for 30 % of the raw rim count. Thus the MNV for the Cerro León study assemblage is 4,254. Of this total, I chose a sample set of the MNV for metric data analyses. The criteria for this selection process was 8 % or more of orifice diameter present for *ollas* and 5 % or more present for all other functional classes. These vessel fragments also had to have complete lip in order to determine shape and thickness. Most composite vessels such as jars had the neck juncture present, but some vessels had broken off above the neck-body juncture. Few vessels with very long necks were intact from the lip past the neck-body juncture. These criteria provided me with an 18 % sample (n= 747) of the MNV to work with for analyses of metric variables related to vessel size and capacity, or other functional, technological, or chronological information.

Table 7.3.1. Raw count, MNV, and metric data assemblage count for Cerro León pottery vessels.

Raw count of vessel rims		Study assemblage count (MNV)		Metric data assemblage count	
6,113	100 %	4,254	70 % of raw ct.	747	18 % of MNV

### *Shape and Size*

A direct relationship exists between the shape of a pottery vessel and its intended use (Braun 1980; Hally 1986; Smith 1988). Many studies assume that whole pots are the basic unit of analysis for examining vessel function. This is ideal but it is rarely the case with archaeological collections. Research by Braun (1980) and Hally (1983a, 1983b, 1984, 1986) demonstrate that form and function can be assessed accurately when only the rim sherd represents the whole vessel. Braun provides some meaningful interpretations based on attributes of the rim and neck of a pottery vessel (Braun 1980). Orifice diameters are used as proxies for vessel size in the Cerro León study assemblage (Wilson 2005). Based on the established criteria, the relevant aspects of vessel shape to mechanical

performance are summarized in Table 7.3.2. These mechanical performance characteristics and physical features are based mostly on Hally's (1986:278) research in North America.

Table 7.3.2. Mechanical performance characteristics and physical properties of Cerro León pottery vessels.

<b>Mechanical Performance Characteristics</b>	<b>Physical/Morphological Properties</b>
Vessel stability	Overall shape, height to width ratio
Effective vessel capacity	Overall vessel size or fill level determined by location of orifice constriction
Manipulation of contents	Orifice diameter, orifice constriction, or vessel height (e.g. stirring, beating, crushing, kneading)
Removal of contents	Orifice constriction , rim angle (pouring or lifting out)
Vessel content spilling	Orifice size/constriction
Vessel content heat loss	Orifice size/constriction
Evaporation of vessel contents	Orifice size/constriction, porosity (based on surface treatments such as slipping and burnishing)
Orifice closure	Flaring neck, orifice size/constriction, lip treatments all facilitate covering
Thermal shock resistance	Vessel wall thickness, vessel curvature
Vessel suspension	Handles or supports
Heat absorption efficiency	Rounded vessel bases, porosity, exterior surface texturing

The most relevant characteristics for the Cerro León pottery assemblage are vessel stability, effective vessel capacity, manipulation, removal, or spilling of vessel contents, heat loss and evaporation of vessel contents, orifice closure, and thermal shock resistance. These are the properties that include specific reference to orifice size or constriction, neck and lip shape, or other properties that are not determined by the overall shape of a vessel. Finally, handles and supports are relevant to cooking vessel forms because of the need for tipping and moving vessels over and off of cooking fires and also suspending them over the flame. Handles are also useful for pouring liquids or liquid consistency foods.

Because of the nature of the vessel assemblage, especially the low occurrence of rim-to-base vessel profiles, several of the mechanical characteristics presented here are open to revision through research of additional study assemblages. Most of these concern the physical and morphological properties that deal with vessel bodies and bases. I identified many bases that fit easily into many of the functional categories in this study. Certain base shapes do appear to correlate highly with

functional categories and I discuss these for each specific shape class. These bases were not included in the MNV of the study assemblage in order to avoid counting the same vessel twice and inflating vessel frequencies. A larger sample with whole vessels or nearly complete rim-to-base profiles is needed in order to use these physical and morphological properties in a functional analysis. Based on the above mechanical characteristics and related physical and morphological properties, we can expect to see certain combinations of these features associated with the different functional categories proposed for the Cerro León pottery assemblage. I present the expected results in Table 7.3.3.

Table 7.3.3. Functional vessel categories for Cerro León: their proposed morphological properties and mechanical performance characteristics.

<b>Functional Category</b>	<b>Mechanical performance/ physical properties</b>
Cooking	<ul style="list-style-type: none"> <li>• Rounded base and relatively thin vessel walls, texturing of exterior surfaces, and coarse temper for efficient heat transfer and thermal shock resistance,</li> <li>• Necks slightly constricted to allow for manipulation of contents but minimize spilling, heat loss, and evaporation</li> </ul>
Liquid transport/serving/short-term storage	<ul style="list-style-type: none"> <li>• Relatively small for easy lifting/pouring</li> <li>• Constricted but straight or flared neck to aid pouring and reduce spilling</li> <li>• Surface treatments (burnishing and/or slipping) to reduce permeability, evaporation, or leaking</li> <li>• Stable bases (unable to determine from collections)</li> <li>• Range from minimal to significant investment in decoration depending on social context (higher visibility)</li> </ul>
Long-term liquid storage	<ul style="list-style-type: none"> <li>• Large capacity, can be immovable when full</li> <li>• Flared necks for ease in tipping/pouring or to act as a funnel for filling</li> <li>• Constricted orifices to inhibit spills and keep dirt/pests out</li> <li>• Surface treatments (burnishing and/or slipping) to reduce permeability, evaporation, or leaking</li> <li>• Lips altered or thickened to aid in covering orifice</li> <li>• Stable bases (unable to determine from collections)</li> </ul>
Dry storage	<ul style="list-style-type: none"> <li>• Large capacity, can be immovable when full</li> <li>• Stable bases (unable to determine from collections)</li> <li>• Lips altered or thickened to aid in covering orifice</li> <li>• Relatively thick-walled</li> <li>• Possibly uniform in size and shape to permit stacking</li> <li>• Relatively tall and narrow for efficient use of space</li> </ul>
Food preparation/serving	<ul style="list-style-type: none"> <li>• Open or unrestricted orifices to allow ease of access to contents, manipulation of contents, or visibility</li> <li>• Surface treatments (burnishing and/or slipping) to reduce permeability, evaporation, or leaking</li> </ul>
Presentation or serving	<ul style="list-style-type: none"> <li>• Open or unrestricted orifices to allow for visibility, filling or removal of contents</li> <li>• Range from minimal to significant investment in</li> </ul>

	decoration depending on social context (higher visibility) • Size classes appropriate for one person, family-sized, or possibly for large-scale gatherings (feasting)
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I based the shape categories identified at Cerro León on those commonly identified ethnographically throughout the Andes [see the volume edited by Ravines and Villiger (1989) for example]. I use the Spanish nomenclature in most instances where translation is either not necessary because the term is commonly accepted in English or where English translations are more cumbersome than the Spanish equivalent. I identified seven basic shapes for the Cerro León vessel assemblage. My basic shape categories include; 1) *ollas* (cooking pots), 2) *tinajas* (extra large storage vessels), 3) *cántaros* (large liquid storage vessels), 4) *jarras* (pitchers or jars — any smaller, short-term liquid storage and serving vessels), 5) *tostaderas*<sup>26</sup> (parching, toasting, or possible storage pans), 6) bowls (any rounded open form where the mouth was roughly the maximum diameter), and 7) bottles (forms with restricted necks and orifices much smaller than maximum vessel diameter). Several of these basic categories break down into secondary shapes with direct bearing on function. I discuss these in the descriptions of vessel classes. I also identified miniature versions of some of these vessel shapes, mainly *ollas* and *jarras* which I discuss apart from their larger-size counterparts.

Finally, there are forms in the Cerro León pottery assemblage for which there do not seem to be exact modern analogs, such as the *tostadera*, the *canchero*, the *rallador* or grater bowl, and others. In these cases, mechanical performance characteristics and evidence for use-alteration are the only means available (in the absence of iconographic imagery) that can help us move toward reasonable inferences about primary vessel function.

### *Paste Composition*

Paste composition has been shown to be directly linked to mechanical performance of pottery exposed to thermal shock (Steponaitis 1984; Tite et al. 2001). I have already discussed the aspects of

<sup>26</sup> This form is similar to the *colandera* or colander described by archaeologists who work in the highlands (see Isbell 1977 and Lau 2001 for example).

paste composition that allude to the region of raw materials procurement – and most likely region of production in Chapter 6. In this section I discuss the aspects of paste composition that may be related to the function of vessels as food containers. Ethnoarchaeological, ethnographic, and historical evidence demonstrates that resistance to thermal shock in cooking pots is often a main concern for both makers and users of pots and usually takes precedence over concerns for the mechanical performance characteristics of other functional categories of vessels (Tite et al. 2001). Many combinations of paste and firing exist that will satisfy the basic requirements for strength, toughness, and thermal shock resistance and result in acceptable cooking pots (Tite et al. 2001:322). In order to withstand repeated heating and cooling, cooking pot pastes require clay and inclusion combinations that expand and contract at similar rates in order to avoid the propagation of heat cracks. In general, the pastes of cooking pots have also been found to contain a larger volume of inclusions than other functional categories and are fired at lower temperatures (Tite et al. 2001).

Both Cerro León and Castillo paste recipes worked adequately in regard to resistance to thermal shock, but each used a different set of mechanical properties to achieve roughly the same result. Cerro León wares contain high volumes of coarse, poorly sorted inclusions that contain abundant plagioclase. Plagioclase has a thermal expansion rate that is relatively close to that of the surrounding clay (Rye 1981:27). The high volume of inclusions in the paste, combined with the observation that Cerro León wares appear to have been fired at relatively low temperatures creates a pottery paste that is overall resistant to thermal shock (Tite et al. 2001:321).

Castillo wares have poorly sorted coarse sand temper that contains abundant quartz. High quartz content has been shown to reduce thermal shock resistance and induce heat cracks because its thermal expansion rate is much greater than average clays (Rice 1987; Rye 1981; Steponaitis 1984). This creates voids in the paste between inclusions and the surrounding clay however, inhibiting crack propagation. The paddle and anvil construction of *olla* walls also aligned particles and increased overall vessel strength (Steponaitis 2009; preface to new edition). Castillo wares are highly oxidized, harder, and break down less than Cerro León *ollas* and so may have been fired at higher temperatures.

The paste composition requirements for storage and serving vessels are different. Vessels for the storage of liquids must have the right combination of strength to withstand loading and holding of often high volumes as well as some permeability that allows for evaporative cooling without too much liquid loss (Halley 1986; Henrickson and McDonald 1983). Serving vessels, as well as some smaller storage and transport vessels must have paste recipes that are ideal for withstanding the mechanical stress of a lot of moving and handling as well as the frequent manipulation and transfer of vessel contents. Thus, higher concentrations of smaller-sized inclusions may be better for increased resistance to impact damage. Fine, compact pastes are also suitable for serving vessels because such vessels are used to convey important stylistic or ideological information. Their surfaces must provide suitable ground for decoration or iconographic information that is easily visible in both intimate and more public social settings (Cook and Glowacki 2003; Mills 2007; Schiffer and Skibo 1997).

Pots in the Cerro León assemblage generally follow the above guidelines for reducing thermal and mechanical stress. All vessels used for cooking had rounded bases for efficient heat absorption. The highland produced *ollas* are higher in plagioclase content which has a similar expansion rate to that of the surrounding clay, thus reducing the incidence of heat cracking (Rice 1987:97). The valley-produced Castillo series *ollas* contain a high quartz-content sand for tempering material. Thermal expansion of quartz is generally higher than that of clay, however Castillo pots have large voids surrounding temper grains as well as thicker vessel walls –these factors likely allowed for quartz expansion without crack propagation as well as increased vessel strength in repeated exposure to cooking fires. For both highland- and valley-produced wares there is evidence that potters considered temper size when making different functional categories of pots. Larger vessels always contained coarser and more abundant non-plastic inclusions while small vessels had small, well-sorted non-plastics or none at all.

## *Surface Treatment*

Surface treatments of vessels are directly related to intended vessel function. This is especially true for cooking and liquid storage vessels (Henrickson and McDonald 1983:633; Rice 1987:231). Textured surfaces of cooking pots aid in even and efficient heat transfer and minimize cracking (Schiffer et al. 1994). Cooking pot surfaces at Cerro León are overwhelmingly smoothed, in spite of evidence that techniques to create textured surfaces (specifically cord-wrapped paddle impressed) were known. Surface treatments of liquid storage vessels are important in achieving the right balance of permeability and evaporative cooling (Henrickson and McDonald 1983; Rice 1997; Skibo 1992). Burnishing over slipping and burnishing on plain surfaces are the most common techniques used to align surface clay particles in order to reduce permeability of vessel walls on Cerro León storage vessels.

For the study assemblage, if enough of the vessel body below the rim or neck is present (i.e. about 2 to 3 cm) and covered with slipping and/or burnishing then I assumed that this treatment was applied to the entire surface of the vessel. Evidence from vessel bases recovered for many of the functional vessel classes at the site confirm this assumption. Slipping and burnishing are the most common surface treatments for fineware serving vessels as well. Plastic techniques are used at Cerro León that somehow relate to vessel function in two different vessel classes. The *tostadera* form often had large, curved or geometric pieces cut out of vessel walls before firing. The *rallador* form has deep, wide scoring or criss-crossed incisions made in wet clay on the vessel interior. Hypotheses on the functions of these surfaces are addressed in the discussion sections for each vessel class.

Surface treatments also conveyed themes and social messages on Cerro León finewares. Burnishing natural clay surfaces or applying slips created red, brown, and black and white backgrounds onto which potters painted more elaborate designs with vivid orange and white slip-paints. Resist or negative painted designs were executed on plain surfaces or on slipped and painted bowls and *cántaros/jarras*. Smudging either slipped or plain surfaces was used to create black

surfaces on many fineware bowls and jars. Nearly all designs are linear, curvilinear, or geometric. Low luster polish is sometimes present on individual serving bowls, bottles, or *jarras*.

#### *Use-alteration*

Wear and tear on a vessel's surface is often the only direct evidence for how it was used. Pots used over open fire have distinct patterns of soot and oxidation on their exteriors (Skibo and Schiffer 1992). Sooting occurs at Cerro León on both *ollas* and *colandera/tostadera* vessels. This was distinguished from burning of broken pots and other trash after disposal. This post-discard burning was identified, in contrast to cooking fire sooting, as heavy carbon build-up on all surfaces and edges of potsherds. Pitting or scratches on interior vessel necks was not present. Abrasions on exterior vessel bases occur in the Cerro León study assemblage on a variety of vessel forms including *ollas*, *cántaros*, *jarras*, and bowls. These abrasions appear to be the result of dragging a vessel across a surface (e.g. pulling something toward you or tipping it to add or remove its contents). Wear patterns caused by scraping or stirring, usually occurring toward the bases of vessel interiors, were not common in the study assemblage (Skibo 1992:139-140; Wilson and Rodning 2001:31-33). I identified some pitting on the interior bases of *ollas* and bowls.

One final piece of evidence related to use-alteration is the occasional incidence of vessel repair. At Cerro León this occurs in the form of drilling holes on either side of cracks in vessel necks and sometimes further down the vessel wall. Research at European archaeological sites indicates that people used repair holes only on finer vessels with presumably higher replacement costs (Cleal 1988). I found repairs on plain and fine vessels for both wares at Cerro León but, they were most highly correlated with the *cántaro/jarra* forms, individual serving bowls, and red-slipped serving *ollas*, all of which I consider as having higher replacement costs than plain cooking pots. I found evidence for sanding or filing down of rims too, presumably to eliminate chips or cracks and extend a vessel's use life. I identified this type of major repair or remodeling on red-slipped pottery, but it was rare in the vessel assemblage.



Residues are an ambiguous category for the Cerro León pottery assemblage. The factors accounting for this remain unclear. Thick, burnt cooking residues were relatively rare on Cerro León *ollas*. The interior bases of some long-term liquid storage vessels did display smooth, black surfaces with fine, superficial cracks or crazing. The cause for this is unknown and warrants further research. One theory is that storage over time of acidic liquids such as *chicha* may have worn the vessel interior in this way. Santiago Uceda noted darkening of vessel interiors in long-term water storage vessels at the pottery workshop at the Huacas de Moche (1998:98). Arthur (2002:332) notes spalling of vessel interiors as a common pattern of non-mechanical attrition for African beer brewing vessels, but spalling is virtually non-existent in the Cerro León assemblage.

#### **7.4 Form and Function of Cerro León Vessel Classes**

In this section I summarize data relevant to vessel function for the Cerro León vessel assemblage. The functional categories used in this study follow those used by Henrickson and McDonald (1983), and others (Hally 1983a, 1986; Rice 1987; Smith 1988). I follow my own pilot study of vessel form and function supplemented with the work of others for different time periods and regions, since the only other studies on vessel function for Gallinazo-Early Moche phase sites that exist deal with distinct functional assemblages (Mehaffey 1998; Ringberg 2004). In my study, I identified three basic functional categories related to food presentation and serving, storage, and cooking for the Cerro León vessel assemblage. To present the MNV study assemblage, I refined these functional categories and identified the 13 basic vessel shapes listed in Table 7.4.1. The following sections summarize the relevant points for each basic shape. Where I discuss vessel size, I am referring to a measurable subset of the MNV that is representative of each basic shape in the study assemblage. I present inter-assemblage comparisons at the end of the chapter. Of course many vessels had multiple uses in a typical household. These categories are designed to simplify and emphasize the major household activities in which vessels would have served their primary or intended function. I examine possibilities for vessel reuse, when applicable, in the shape summary.

Table 7.4.1. Cerro León vessel shapes in the study assemblage by basic shape.

Functional Category	Basic Shape	Study Assemblage		Size Subset	
		Count	%	Count	%
Cooking	Angled-neck <i>olla</i>	2,059	48.40%	399	53.41%
	Neckless <i>olla</i>	30	0.71%	9	1.20%
	Bulged-collar <i>olla</i>	143	3.36%	27	3.61%
Food Presentation/Serving	Individual serving bowl	415	9.76%	86	11.51%
	Red-slipped serving <i>olla</i>	115	2.70%	23	3.08%
	Parching/storage pan	502	11.80%	44	5.89%
	Bottle	10	0.24%	5	0.67%
	Miniature vessel	60	1.41%	15	2.01%
	<i>Canchero</i> /restricted form	4	0.09%	0	0.00%
	<i>Tinaja</i>	7	0.16%	1	0.13%
Storage	<i>Cántaro</i> or <i>jarra</i>	906	21.30%	137	18.34%
	Sculptural/effigy vessel	1	0.02%	0	0.00%
	Face-neck Jar	2	0.05%	1	0.13%
	Total	<b>4,254</b>	100.00%	<b>747</b>	100.00%

#### *Angled-neck olla*

The most commonly occurring vessel in the entire study assemblage is the classic form of the *olla*. A minimum number of 2,059 angled-neck *ollas* from the three compounds at Cerro León comprised 48 percent of the total vessel assemblage. Angled-neck describes a vessel with a sharp break in direction between neck and body where the neck and/or rim is flared out. For all of these *ollas*, the neck is a separate piece, attached to the body and often supported with an extra coil of clay wrapped around the throat at the point of attachment. All angled-neck *ollas* have globular bodies for efficient heat transfer and restricted orifices for effective containment of contents and decreased evaporation of liquids during boiling.

The angled-neck *ollas* break down into three separate ware categories; slightly more than half (58 %) are Cerro León wares (Figure 7.4.1), 41 percent are the Castillo wares (Figure 7.4.2), and only 1 percent of angled-neck *ollas* belong to other wares with sand or grit temper that differ from the Cerro León or Castillo pottery (Figure 7.4.3). Neck angle and lip form vary both within and between wares. Nearly all Castillo plain angled-neck *ollas* have rounded or rounded and tapered lips. Cerro

León plain *ollas* have a greater variety of lip forms including; rounded, tapered and rounded, square, or folded. A few Cerro León angled-neck *ollas* have lip treatments similar to Cerro León plain and red-slipped liquid storage vessels. These include; thickened and rounded with a groove below the exterior lip, a superior groove or channel on a square lip, or notched on the superior lip. One final lip treatment that appears to be correlated with type is a cut-away, stepped design (*escalonado*) on Cerro León plain angled-neck *ollas* (Figure 7.4.4). This was identified on 59 vessel lips for the Cerro León type. One additional olla had a cut-out on the neck. Although *escalonado* rims have not been report for Castillo types elsewhere, I identified six Castillo plain angled-neck *olla* rims at Cerro León with this type of lip treatment.

Neck heights vary between Castillo and Cerro León angled-neck *ollas*. Figure 7.4.5 presents a box plot of neck heights for angled-neck *ollas* by type. Even with the larger sizes of *ollas* for the Cerro León plain type, the rim height is shorter than the Castillo plain or incised varieties, or for the other, valley-based ware categories. The two Cerro León burnished *ollas* whose neck height is higher than all other types are both over 30 cm in diameter and are atypical for the cooking olla functional category in that they have the angled-neck form but are burnished. This may indicated that they had another intended function. They have no soot so they may have had serving or other function.

Handles are not common in the diagnostic rim assemblage but, when present, they occur almost exclusively on plain, angled-neck *ollas* (Figure 7.4.6). In the general collection, neck and body fragments show attachment scars for handles and handles themselves are also found. Handles are mostly made from simple coils that are slightly flattened. Strap handles are rare. Coils are attached either vertically (to lip or neck and shoulder) or horizontally (on shoulder) to *ollas*. Handles on angled-neck *ollas* are invariably small – openings do not accommodate anything greater than the diameter of an index finger. Most of these coil handles are too small and poorly attached to withstand supporting the entire weight of an *olla*, either full or empty. My own observations of traditional clay pot cooking in the Moche valley lead me to conclude that people used such handles mainly as a

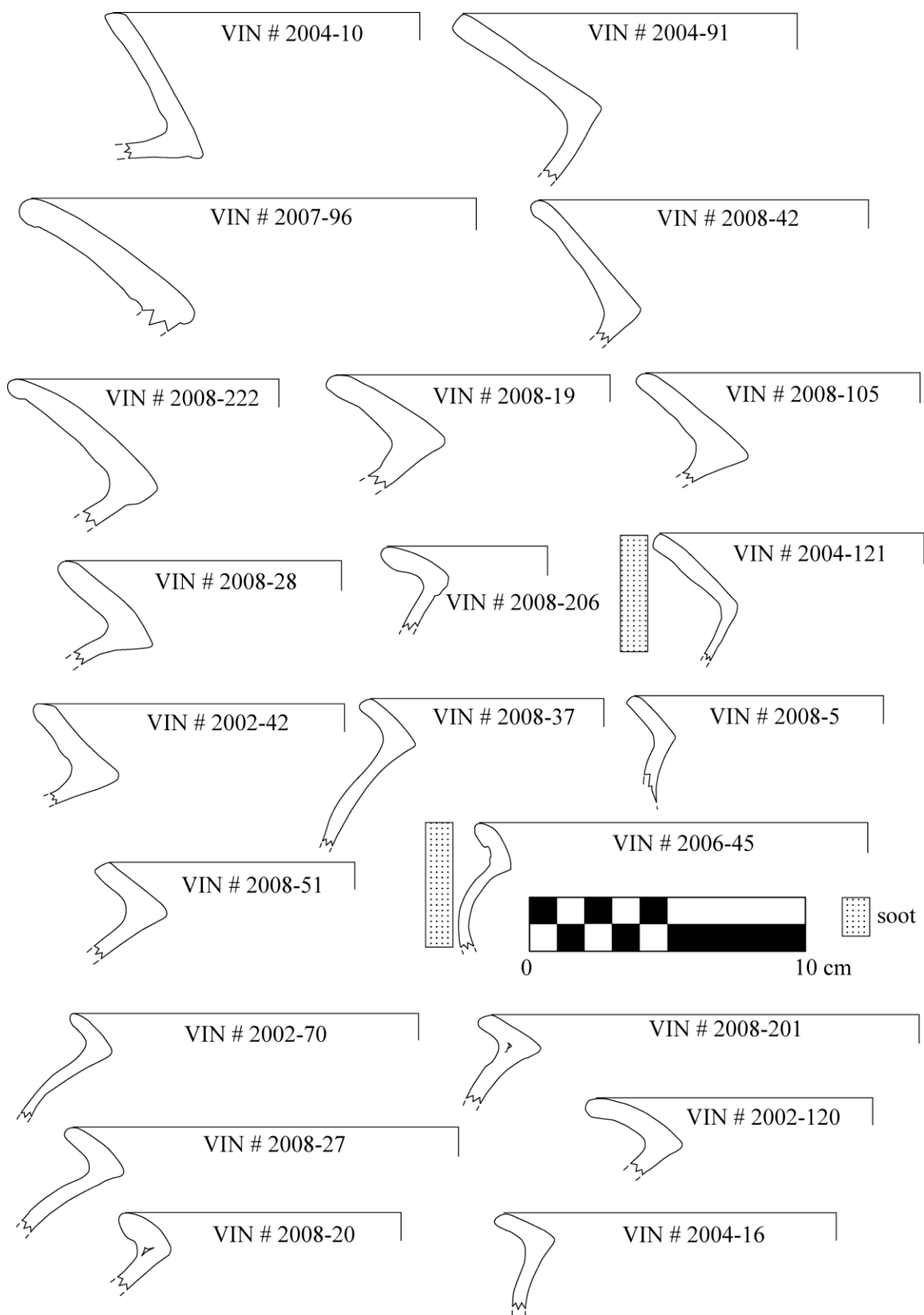


Figure 7.4.1. Cerro León Series angled-neck *ollas*.

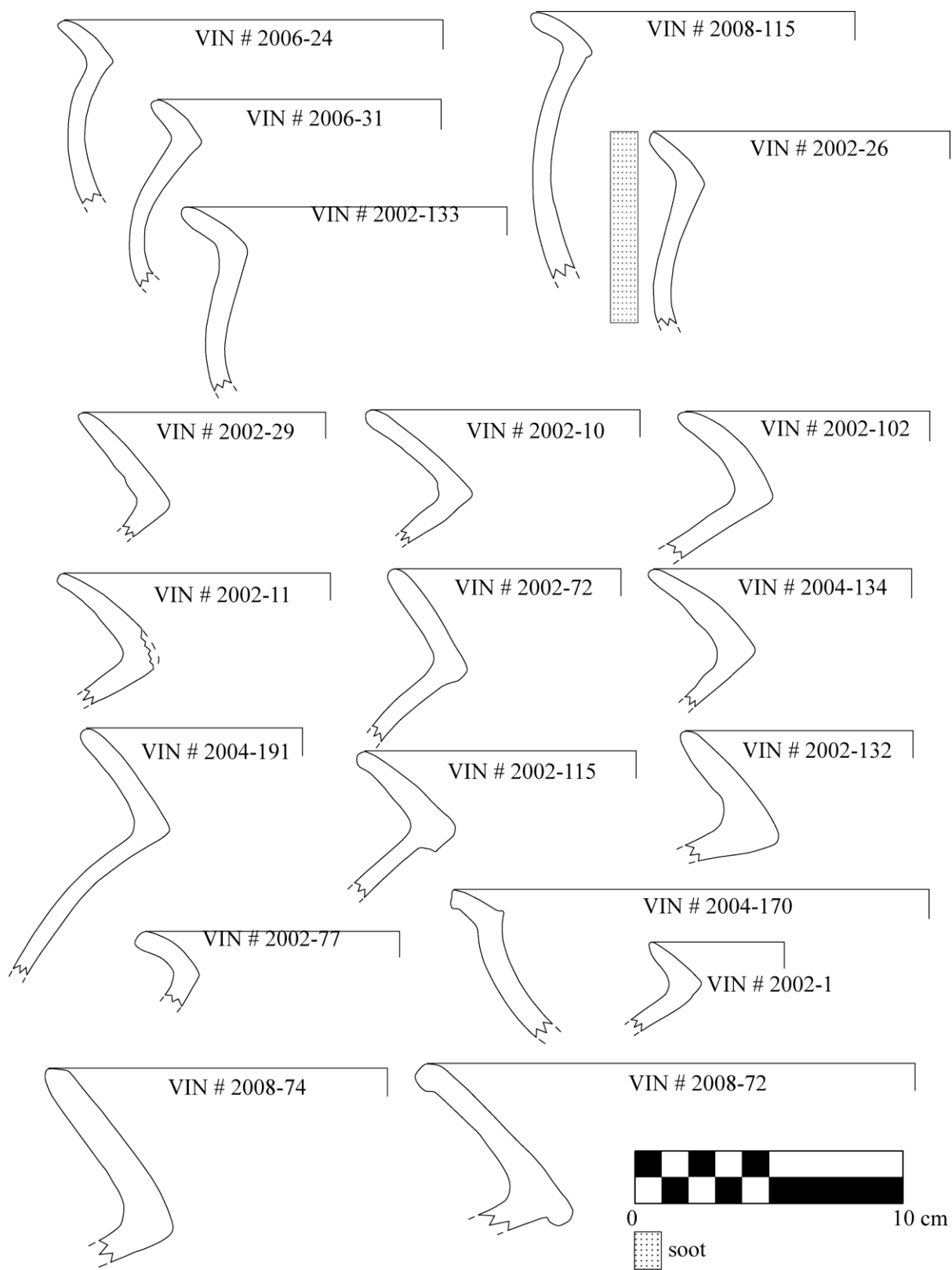


Figure 7.4.2. Castillo Series angled-neck *ollas*.

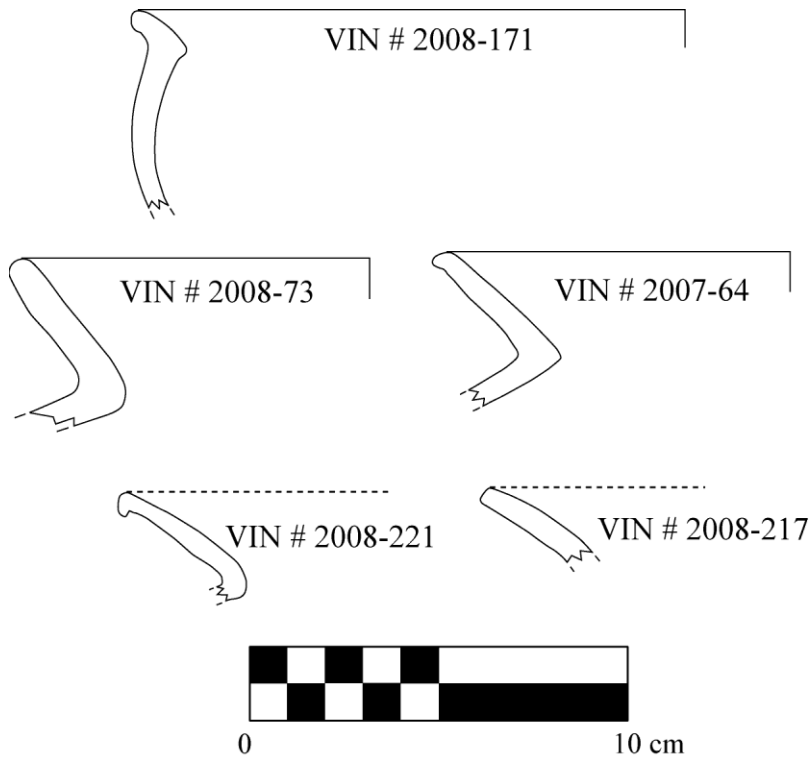


Figure 7.4.3. Angled-neck *ollas* with other paste and temper.

means to tip or tilt a pot with a long straight stick while it was on the fire in order to look at or manipulate its contents. I have not yet found any pattern in the occurrence of horizontal versus vertical handles, their overall size or shape, or their distribution between the Cerro León versus Castillo pottery wares that suggests any chronological trends. However Ford's (1949:54-55) study suggests that they are potentially chronologically sensitive.

One other form of handle is rare in the assemblage of angled-neck *ollas* – a strap that attaches to opposite ends of the interior lip, creating an almost basket-like handle (see Figure 7.4.6, VIN 2008-78). One example of this basket strap occurs in each type, Castillo Plain and Cerro León Plain. Even though both *ollas* with this strap are small and have soot indicating they were used over a fire, it seems unlikely to be anything more than a decorative embellishment, incapable of supporting the

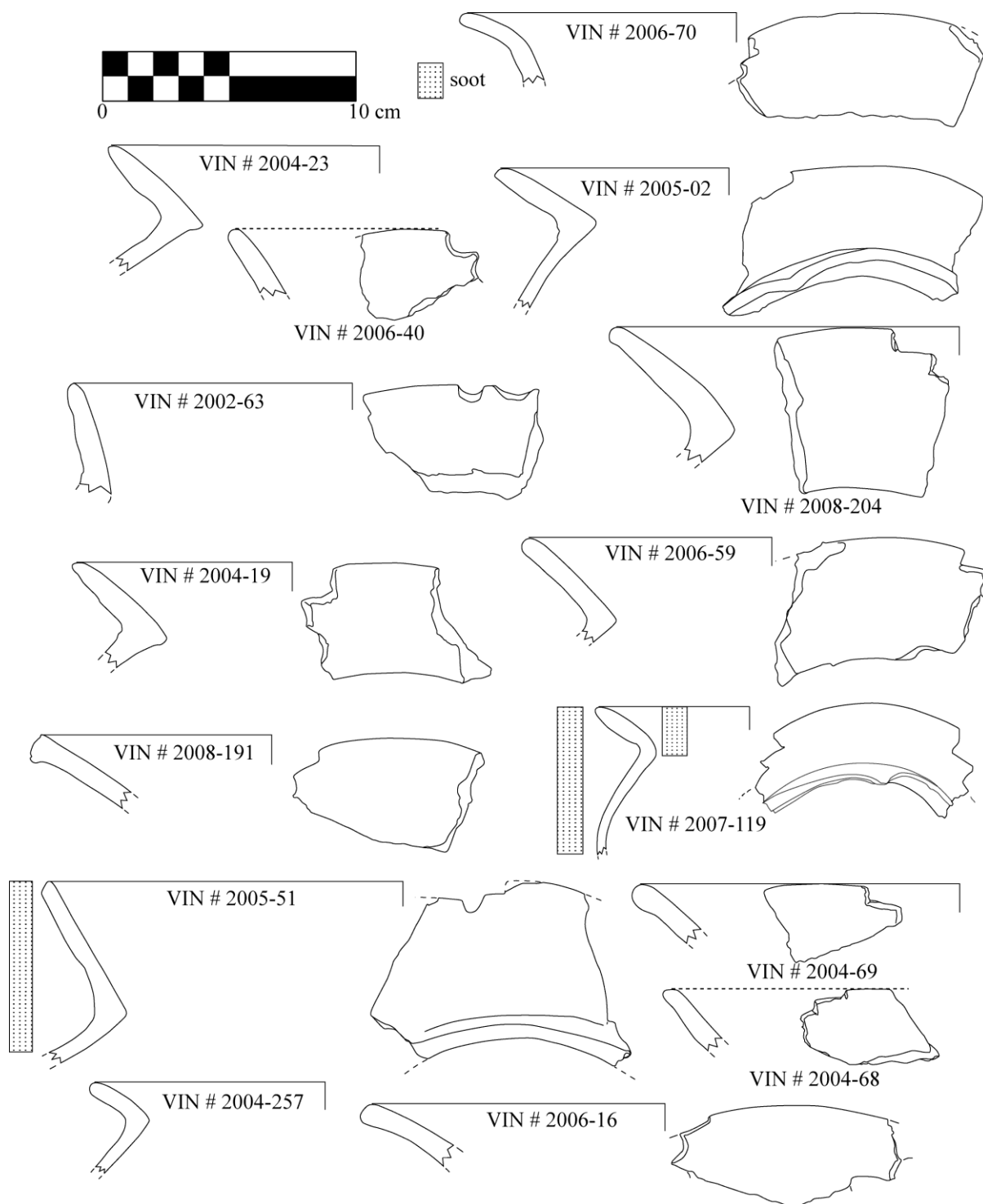


Figure 7.4.4. Cut-lip (*escalonado*) ollas, Castillo Series are at top left: 2006-40, 2004-23, 2002-63, and 2004-19, 2007-119 is Otuzco Series, the rest are Cerro León Series.

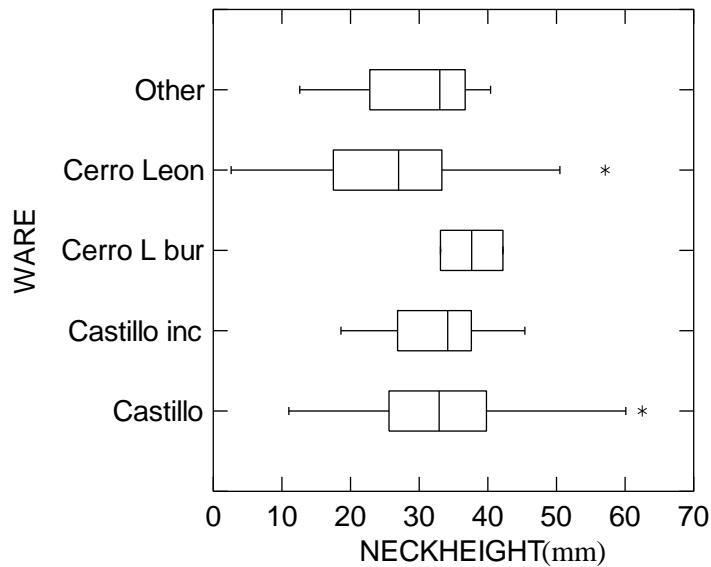


Figure 7.4.5. Boxplot of neck height (mm) for Castillo, Cerro León, and other *ollas*.

weight of a full vessel. Of the 2,055 angled-rim *ollas* in the study assemblage, an 18 percent sample (n=399) had 8 percent or more of the orifice diameter present and could be measured with certainty. Orifice diameters in this subset of angled-neck *ollas* range in a unimodal size distribution from 10 cm to 95 cm with a mean orifice diameter of 20 cm (Figure 7.4.7). The majority of *ollas* cluster around 18 to 22 centimeters in orifice diameter but the rest do not seem to fall into other size classes that might indicate highly standardized manufacture. There are several possible reasons for needing a variety of sizes on hand for specific tasks. First, it might be necessary to prepare the same types of foods for different numbers of people. Different types of foods may also require different sizes of vessels. For example, families in the Moche valley typically have several larger pots on hand for family meals, but only one small pot used to boil and steep herb teas or medicines. Cuts of llama



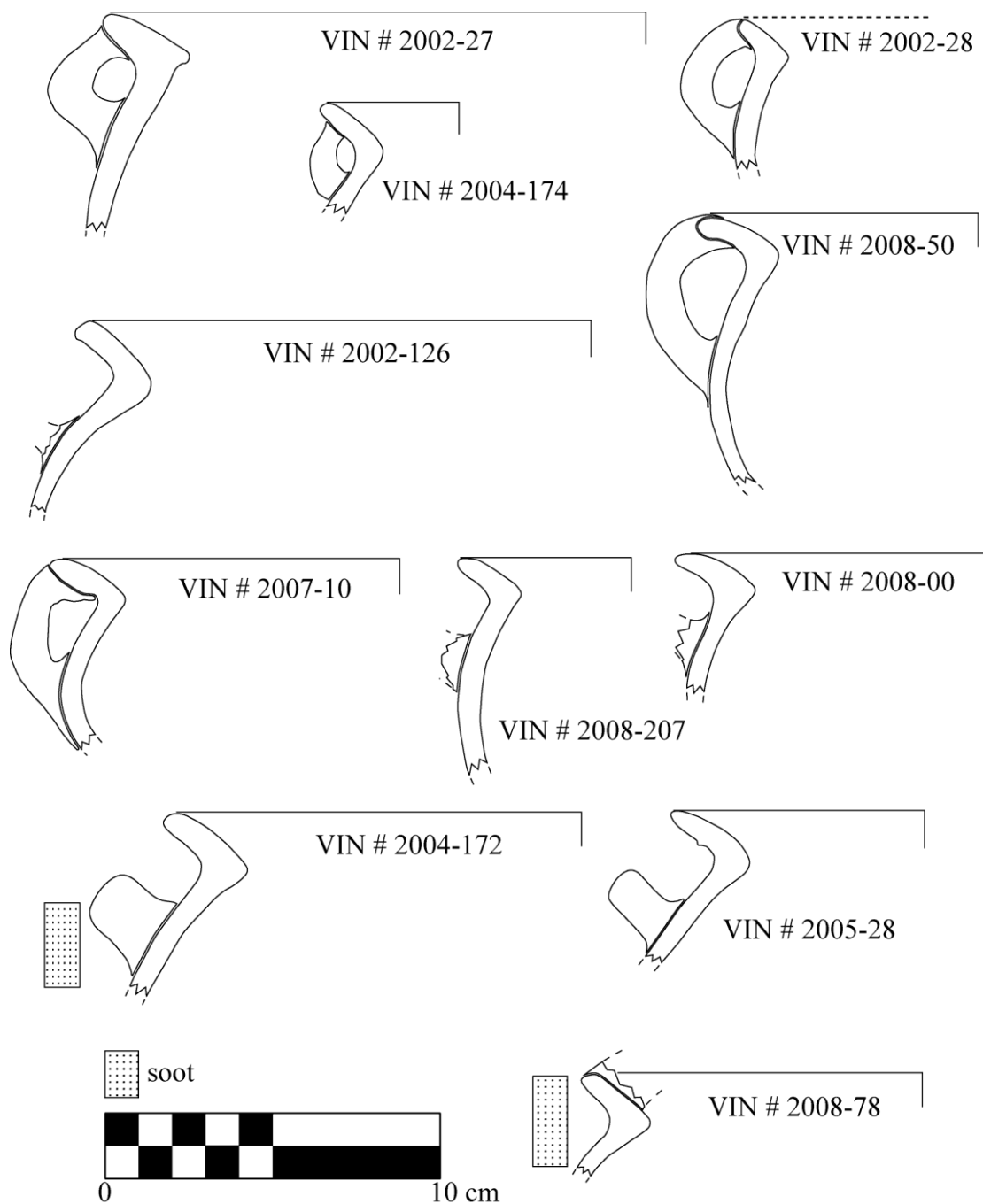


Figure 7.4.6. Angled-neck *ollas* with handles (Castillo are at top, Cerro León wares below).

or deer meat for stews or maize on the cob might require larger pots whereas small *ollas* are more suitable for beans or shellfish. Boiling larger batches of storable foods or beverages, especially

*chicha*, so that a household can make enough for a single large-scale gathering or to last a family a few days would require larger vessels.

A few whole or nearly complete angled neck *ollas* were present in surface contexts at the site. From these it was possible to determine vessel capacity. Three Cerro León *ollas* with a range of orifice diameters from 13 to 18 had an average volume capacity of 6.2 liters. A single Castillo Incised *olla* with an orifice diameter of 18cm had a volume of 11 liters. A much larger sample is needed but there could potentially be differences in how orifice diameter correlates with vessel volume for highland and coastal ware *ollas*. If such differences exist, they could be related to the size of groups for daily meals, cooking techniques, or foods highland and coastal groups were cooking.

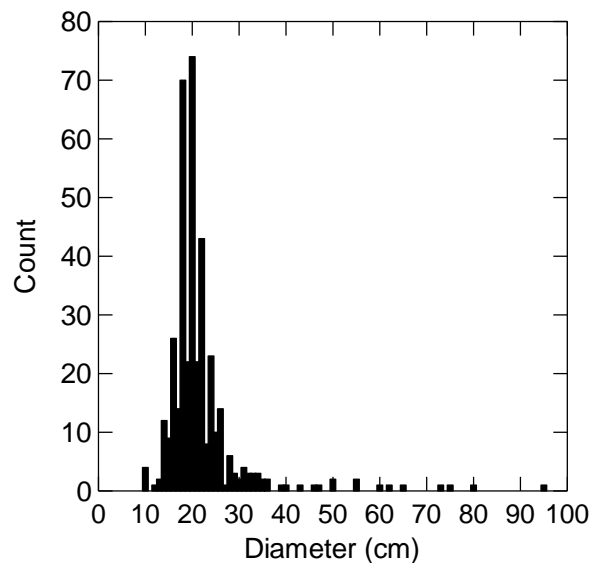


Figure 7.4.7. Bar graph of orifice diameters for angled-neck *ollas*.

When grouped by ware, it is obvious that size distributions for Castillo and Cerro León angled-neck *ollas* are correlated with distinct types or scales of cooking activities (Figure 7.4.8). Castillo plain *ollas* cluster tightly around a median orifice diameter of 20 cm. Castillo plain *ollas*

have a more limited range of sizes than Cerro León plain *ollas*. No Castillo rims in the study assemblage are over 35 cm in orifice diameter. Cerro León plain angled-neck *ollas* on the other hand, exhibit a broader range of sizes even though the median is the same – 20 cm. The distribution of orifice diameters for Cerro León *ollas* are skewed toward larger size classes, but no particular pattern in this over 40 cm, extra-large size range is apparent (Figure 7.4.9). Instead, sizes just gradually grade up from around 36 cm to 95 cm, with a couple of *ollas* within each 10 cm size grade. It is interesting to note that Castillo *ollas* are more standardized in size that Cerro León wares.

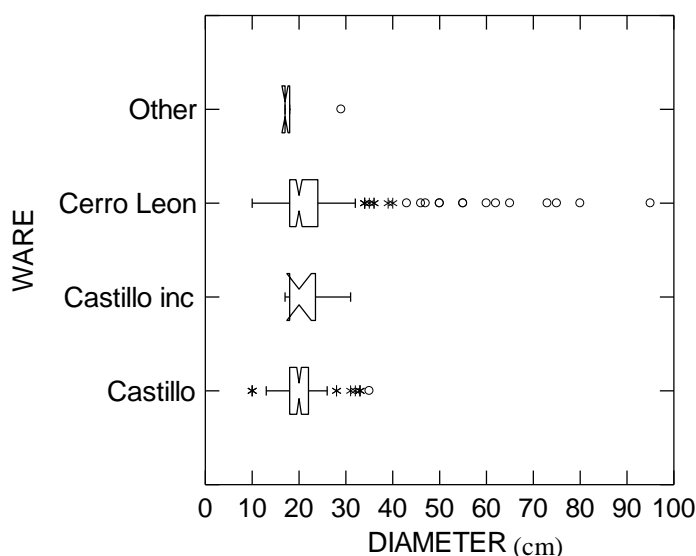


Figure 7.4.8. Box plot of angled-neck *olla* orifice diameters grouped by ware series.

Apart from potential differences in vessel capacity, no major differences in vessel shape exist between the Cerro León and Castillo wares, but the methods of manufacture and the paste composition are distinctive. All wares have smoothed surfaces. Vessel bodies are thinner than their necks. However, potters used different techniques to thin the walls. Cerro León *ollas* are thinned through scraping, while Castillo wares showed evidence of paddle and anvil shaping. Both

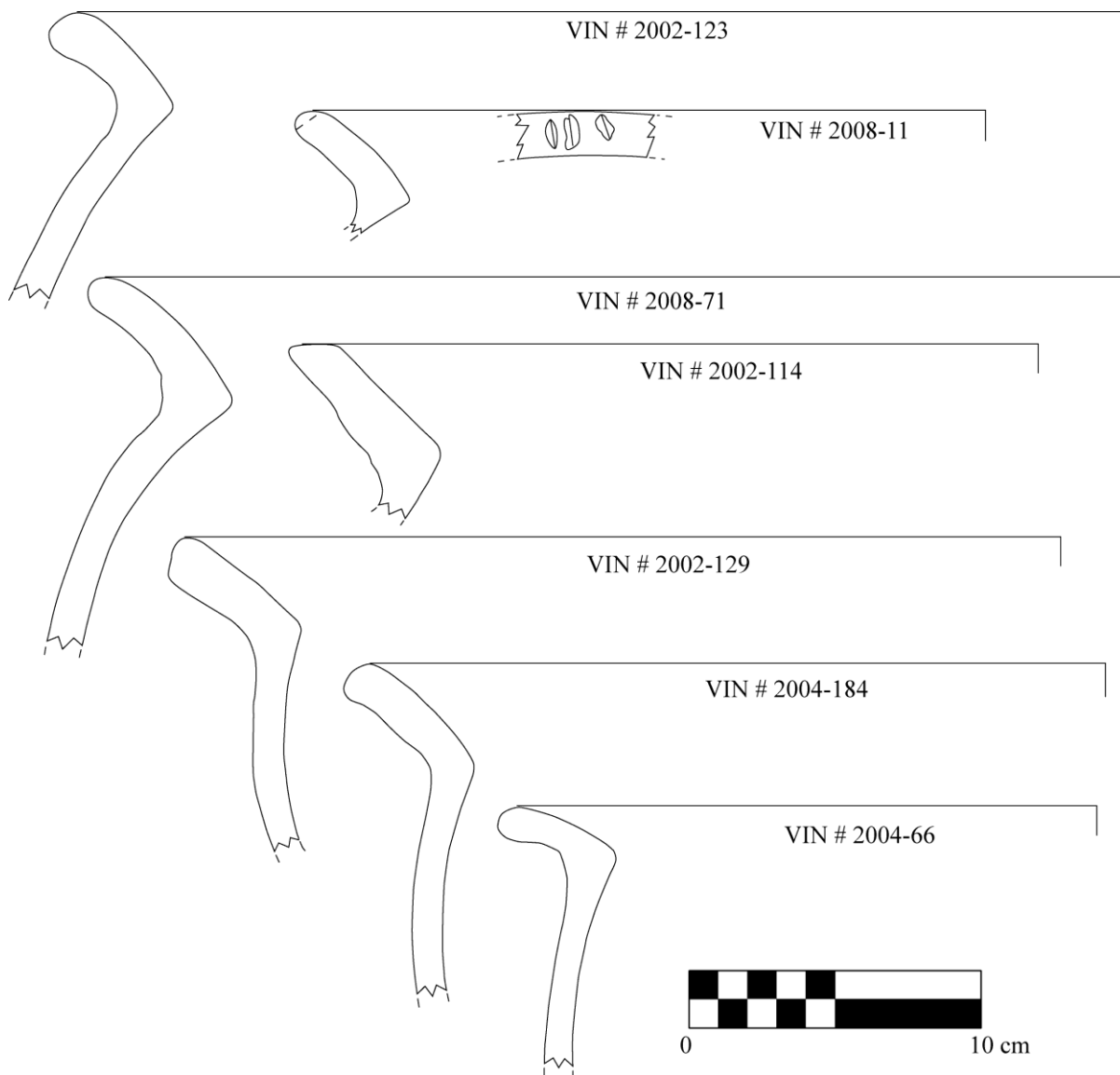


Figure 7.4.9. Large-capacity angled-neck *ollas* of the Cerro León Plain type.

techniques helped to improve heat transfer and made the vessels lighter in weight. Judging from the bulk of the plain body sherds in the excavation assemblage and the handful of whole and partially reconstructable vessels in the Cerro León collections, both wares had uniform wall thicknesses which minimize thermal gradients that lead to heat cracks (Rye 1981:27). Uniformly thin walls also allow for faster, more efficient cooking and save on fuel consumption – an important consideration in a desert environment.

Surface treatment related to vessel function is overall plain and smoothed. A small number of angled-neck *ollas* in the Cerro León study assemblage have sparse, incomplete burnish on vessel lips, necks, and shoulder areas, especially at handle attachment locations (n=15). This appears to have been an attempt to quickly finish a lip form or an attachment area such as a neck or handle. Because of the vessel shape and the fact that some examples have soot, I interpret these crudely burnished vessels as cooking pots. Burnishing on vessel lips may have been used to reduce impact damage on an especially susceptible part of the vessel.

Fragments of a single, textured-surface vessel were recovered from excavation, indicating that people at the site were aware of such techniques, however, this does not seem to have been used at all as a method to improve heat transfer and strengthen vessel walls for cooking vessels at Cerro León. The lone example is a Castillo ware textured with possible cord-wrapped paddle impressions. I had difficulty finding documentation for the cord-wrapped paddle technique in the Andes in general. However, carved paddle techniques are in use in modern pottery manufacture in northern Peru (see articles by Christiansen and Villegas in the volume by Ravines and Villegas;1989).

The only other kind of surface treatment on *ollas* is decorative and would not have affected mechanical performance. This form of plastic decoration is found only on the Castillo type. Castillo Incised decoration occurs in the form of punctuations on a small number of angled-neck *ollas* (Figure 7.4.10). Most punctuations appear to have been made with a pointed instrument, such as a stick, modified to make a triangular impression. Occasionally other rounded impressions are found. The field for this decoration is always on the vessel shoulder, at or below the neck juncture. Except for the lip treatments described above, Cerro León *ollas* never have this type of surface decoration.

Finally, at least 20 percent of the angled-neck *ollas* in the study assemblage have soot, indicating direct use over cooking fires. Many rounded bases also showed evidence of oxidation. It is somewhat surprising that more *ollas* don't have sooting, but a small amount of post-discard burning at the site may have obscured some evidence for cooking. I had difficulty identifying evidence for

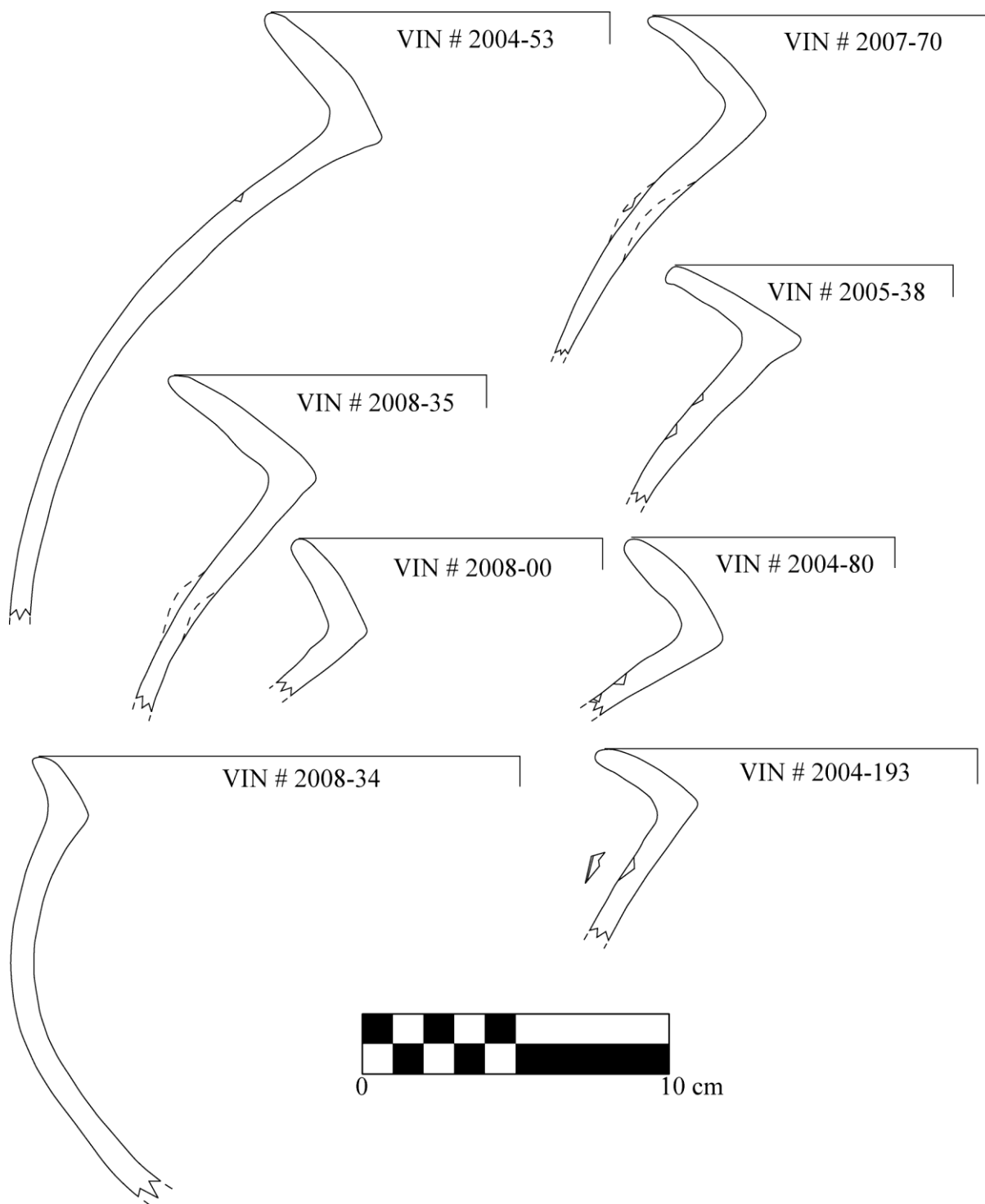


Figure 7.4.10. Castillo Incised *ollas*.

interior abrasion patterns that might indicate stirring. This may be in part due to the battered condition of most vessel fragments due to their re-use as architectural fill. I was able to identify some evidence for dragging of vessel bases across rough surfaces in the form of multiple parallel abrasions.

### *Bulged collar olla*

The second type of *olla* was called bulged collar by Bennett (1950:90, Fig. 27G) or *cuello convexo* in the Peruvian literature. The minimum number of bulged collar *ollas* in the Cerro León assemblage is 142 (Figure 7.4.11). These *ollas* have more vertical necks with a distinct convex, curved neck. Their form is restricted with a sharp change in direction between the neck and the globular body. Their interpretation as cooking vessels is based on their globular shape, their plain surfaces (with minimal decoration that follows the general characteristics of the angled-neck *ollas*), and the evidence for soot on 13 percent of bulged collar vessels in the study assemblage. The majority of bulged collar *ollas* in the study assemblage are Cerro León vessels (n=116). One of these has some burnishing on the lip, but other than that they are all plain. Twenty-four of the study assemblage are Castillo wares. Of these, all were plain except one that had triangular punctuations on the shoulder. Only two bulged collar vessels in the assemblage are made of a different paste with crushed white rock inclusions. Lip and neck shape differ significantly between Cerro León and Castillo bulged collar vessels. On the Cerro León wares necks are shorter and lips are more elaborated, generally angled. Castillo bulged collar vessels have incurved necks and tapered lips.

Except for obvious differences in the neck form, bulged collar *ollas* have paste composition, surface treatment, and evidence for use-alteration similar to that of the angled-neck *ollas*. Bulged collar *ollas* were used for cooking, and were probably especially suited to boiling liquids or semi-liquid consistency foods. Although they may have been less convenient for pouring out contents, these bulged collar *ollas* may have helped to keep liquids from spilling or sloshing out while being stirred. It is also possible that the neck shape may have reduced evaporation over long episodes of boiling or simmering by collecting steam in the bulged neck area (Nelson 1998:18).

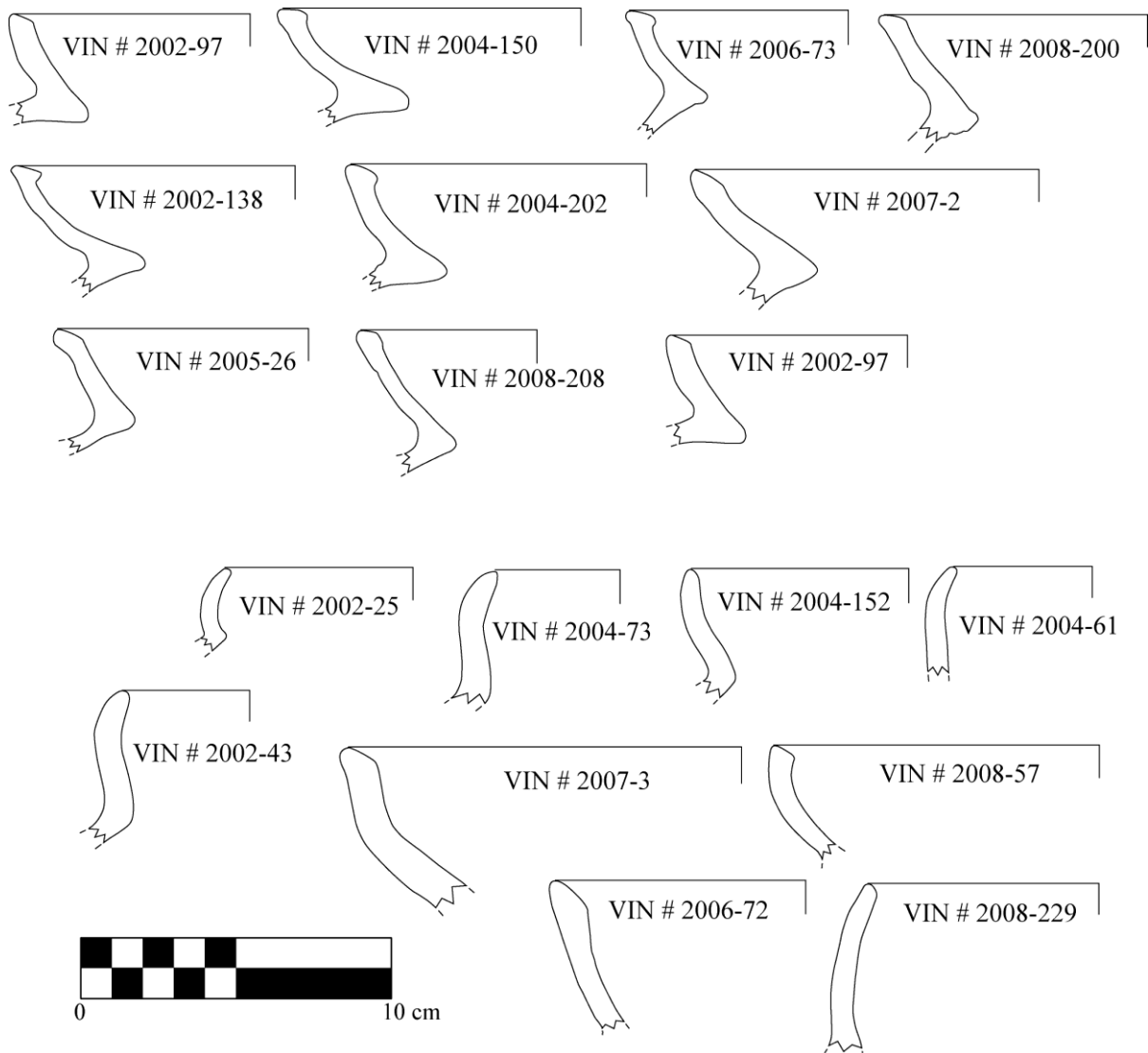


Figure 7.4.11. Bulged collar *ollas*, Cerro León Series at top, Castillo Series forms at bottom.

#### *Neckless olla*

Bennett (1950), Ford (1949), and Strong and Evans (1952) report many neckless *ollas* for the Virú Valley Project. These are Castillo wares, as are the neckless *ollas* found at Cerro León. These vessels have only slightly restricted profiles with unmodified or incurved rims and a thickened lip (Figure 7.4.12). There is no change in direction of the vessel wall that defines neck from body. In essence, these *ollas* are rather like large, incurved bowls. The MNV of neckless vessels is 29. Of these, 13 are plain and 12 have a variety of combinations of broad-line incised and triangular



punctuation designs on the exterior lip. An additional four of the neckless category were large enough to be classified as Valle types. Four of these are plain with one having a broad-incised zig-zag on the exterior lip. The metric assemblage contains only nine neckless *ollas* and all are Castillo series. Four are plain and five are incised varieties. Although much of the literature shows these *ollas* with rounded bases, no bases were identified in the Cerro León assemblage. Orifice diameters are larger for this vessel shape and have a broader range of sizes, from 22 to 75 cm. The median orifice diameter is 39 cm. The large orifice would have allowed easy access in order to manipulate contents while the incurved upper body served to keep contents from spilling while being stirred. The neckless *olla* may have slowed evaporation during boiling to some degree although it was perhaps not quite as efficient as an angled-neck or bulged collar *olla*.

The question of whether or not these *ollas* were actually used over cooking fires remains open. I have identified soot on only one vessel in the collections from Cerro León — a Castillo Incised neckless *olla* with an orifice diameter of 22 cm. I have not seen any evidence of sooting for this vessel shape reported in the literature. It is possible that people used different size classes for different activities. Vessels at the smaller end of the size range may have been used for cooking. The majority of plain neckless *ollas* cluster tightly around the 39 cm median and the sooted example is one of the smallest for this vessel shape. Storage may have been the primary function of neckless *ollas* with orifice diameters over 40 cm since the wide vessel opening would have accommodated a scoop to easily add or remove dry goods or liquids (Donnan 1973:92-93). The thickened, squared lip may have provided leverage for lifting or tipping the vessel or provided a lip for securing a cover. Gamarra and Gayoso (2008:194) provide anecdotal evidence for use of neckless vessels as water storage and refer to the vessel shape as a *tinaja*. Large neckless *ollas* may have rested in a depression or been partially buried for support and stability. This would have stabilized and immobilized the container and reduced risk of breakage. We do have one or two depressions in Compounds 1 and 3 (Subfeatures 5.01, 5.02, 18.5 and Features 45 and 46) that may have served as pot rests for such large

vessels at Cerro León. Although whether these features had enough depth to stabilize a vessel that might have been taller than it was wide is questionable.

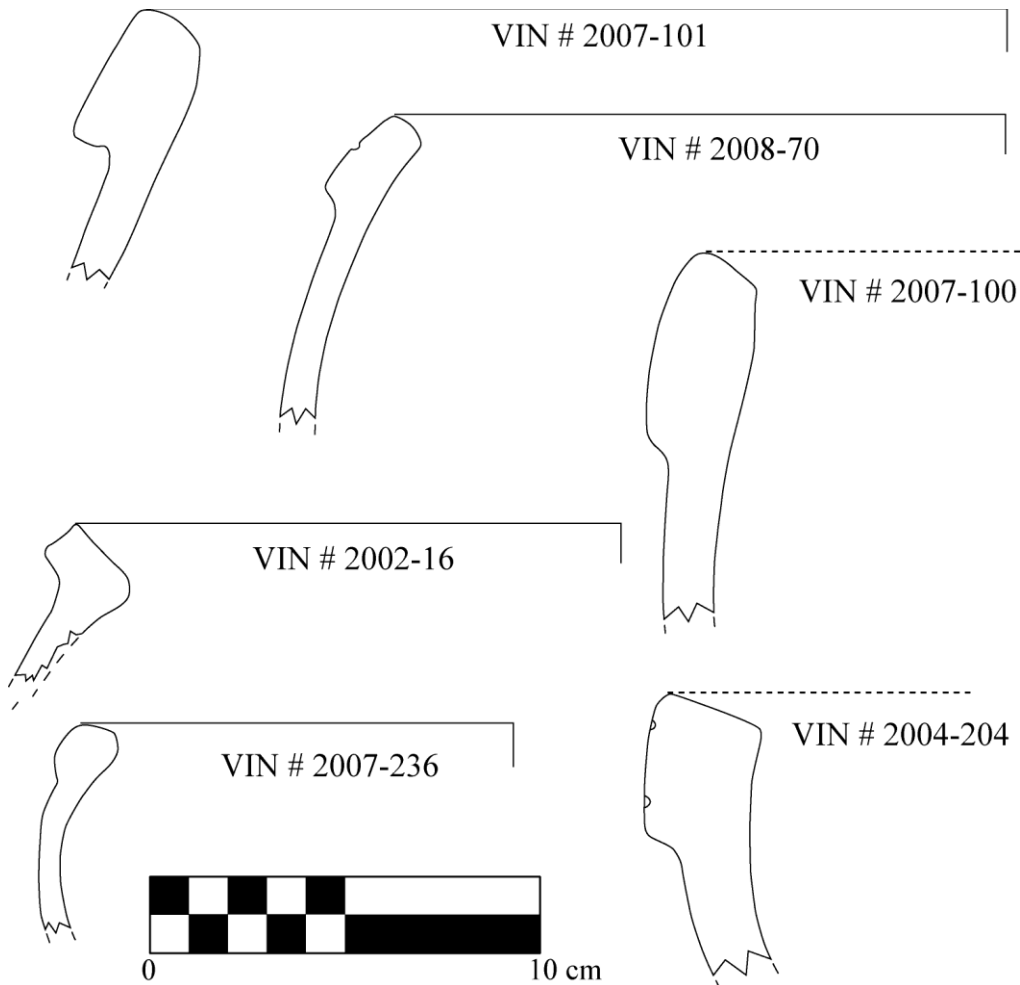


Figure 7.4.12. Neckless *ollas* of the Castillo Series.

#### *Individual serving bowl*

Vessels for serving and eating or drinking commonly have a maximum diameter at or near the vessel lip. In the Cerro León study assemblage this functional category consists predominantly of open, shallow bowls (MNV = 415). Henrickson and McDonald (1983:632) provide the most common range of orifice diameters and height to maximum width ratios for individual serving and eating bowls. Bowls for individuals range from 6 to 8 cm in height and 10 to 23 cm in diameter, with

a mean of 14 cm for orifice diameter. The average ratio of maximum diameter to height is 2:1.

Henrickson and McDonald (1983:632) describe typical family-sized serving and eating bowls as deeper with larger orifice diameters. The individual serving bowls range in size from 10 cm to 21 cm with a median orifice diameter of 16 cm. For the Cerro León study assemblage, none of the serving bowls fit in the family serving size category, but there are a range of sizes from small and shallow to medium-sized and deep in profile (Figure 7.4.13).

A small subset (2 %) of serving bowls may have been for 'everyday' eating or drinking. As with the fine, painted bowls, these are all Cerro León wares. No Castillo bowls were recovered at Cerro León. They were probably not used in food preparation because they were too small, open, and shallow in profile to have been practical for that purpose. All of these bowls are Cerro León plain vessels.

These bowls were made by coil method and lack any surface treatment other than smoothing. Their orifice diameters range from 10 to 15 cm. This falls between within the range for individual-sized serving vessels suggested by Henrickson and McDonald (1983:632). I did not identify bases for these plain bowls but they were most likely rounded. There may be some ambiguity between these small, plain, open bowls and the *tostaderas* (parching/storage pans) described below. I believe they differ in size (*tostaderas* are larger on average) and method of construction (parching vessels seem to have a more incurved profile and were thinned by scraping the exterior base). Also, many *tostaderas* have cut-outs and exterior soot whereas plain serving bowls do not. The study assemblage contains few plain individual serving bowls. It is possible that for everyday meals people used bowls made from hollowed out gourds (*Lagenaria* sp. or *maté*), a practice still popular today in Peru. Fragments of gourd were recovered from excavations at Cerro León. People may have also eaten straight from the pot with some type of utensil.

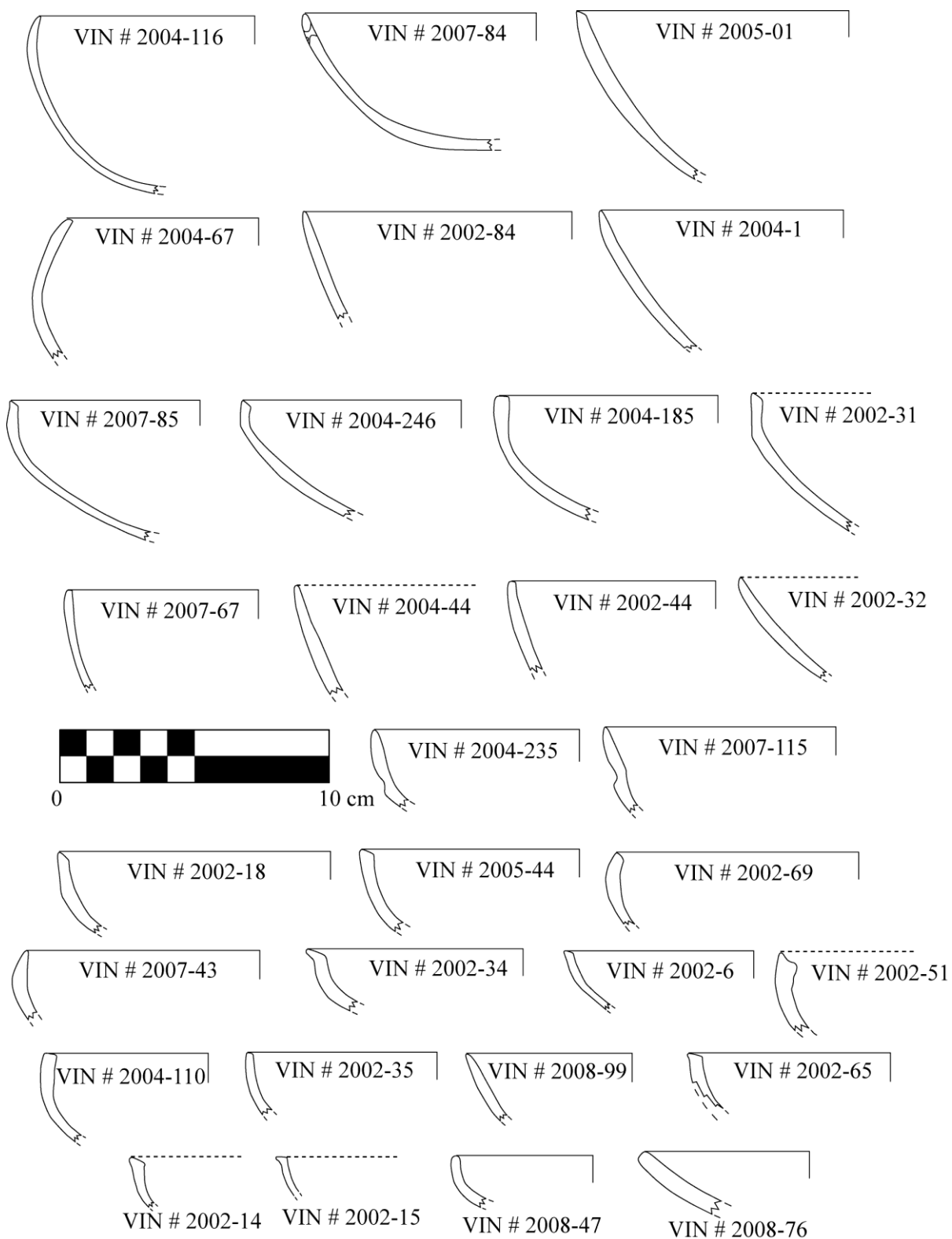


Figure 7.4.13. Bowl profiles for the Cerro León Series.

A variety of finely finished serving bowls comprise the majority of individual serving bowls in the Cerro León study assemblage. Although there is some variation in the shape of the profile, this does not alter the basic function, which was probably serving and drinking liquids such as *chicha* or semi-liquid stews or gruels. The different vessel profiles affect vessel capacity. The ratio of maximum diameter to height varies within this group from 2.0 to 3.7. I used the few rim to base profiles in the collection to estimate vessel volume at approximately 0.25 liters for a shallow, small bowl to 1.7 liters for a deep, large bowl<sup>27</sup>.

Potters made these bowls from Cerro León pastes as well as other non-local pastes, including Otuzco paste (possibly related to Cerro León paste) and Quinga, white-firing clay pastes. Inclusions in the pastes of the Cerro León ware bowls are small and usually well-sorted. The buff and white clay pastes have fine inclusions, many only visible with magnification. Paste composition affects vessel function in this vessel shape because the fine inclusions decrease permeability and enable a smooth surface. This increases strength, especially when combined with the fine burnish and low luster polish on most vessels. Paste composition also contributes to aesthetics and appearance for this series of fineware bowls. The white and buff-colored clays create a contrast with other bowls in the black, red, and dark brown colors created through slipping and/or smudging of vessel surfaces.

In the Cerro León total vessel assemblage, color and decoration are most elaborate for individual serving bowls (Figures 7.4.14 and 7.4.15) followed by some *cántaro* and *jarra* forms. A variety of firing conditions and decorative techniques are represented, some of them quite labor intensive and technically sophisticated. Surface treatments range from burnishing and/or polishing of plain or slipped surfaces to bichrome and polychrome slip-painting and resist or “negative painting” techniques. Firing atmosphere for individual serving bowls and other finewares was more tightly controlled in order to achieve desired visual effects. Creating smooth, low-luster surfaces with

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<sup>27</sup> I used DesignCAD 3K to estimate volume. I measured the whole interior profile from 1 cm below the lip to the base to approximate a vessel nearly full of liquid. The measurements do not represent the entire interior volume of the vessel rim to base.

intense color was most often the final product of fineware bowl production, but in many cases it provided background for painted decoration. Potters used slip paints to create simple linear designs on vessel exteriors for 30 percent of the fine individual serving bowls in the study assemblage.

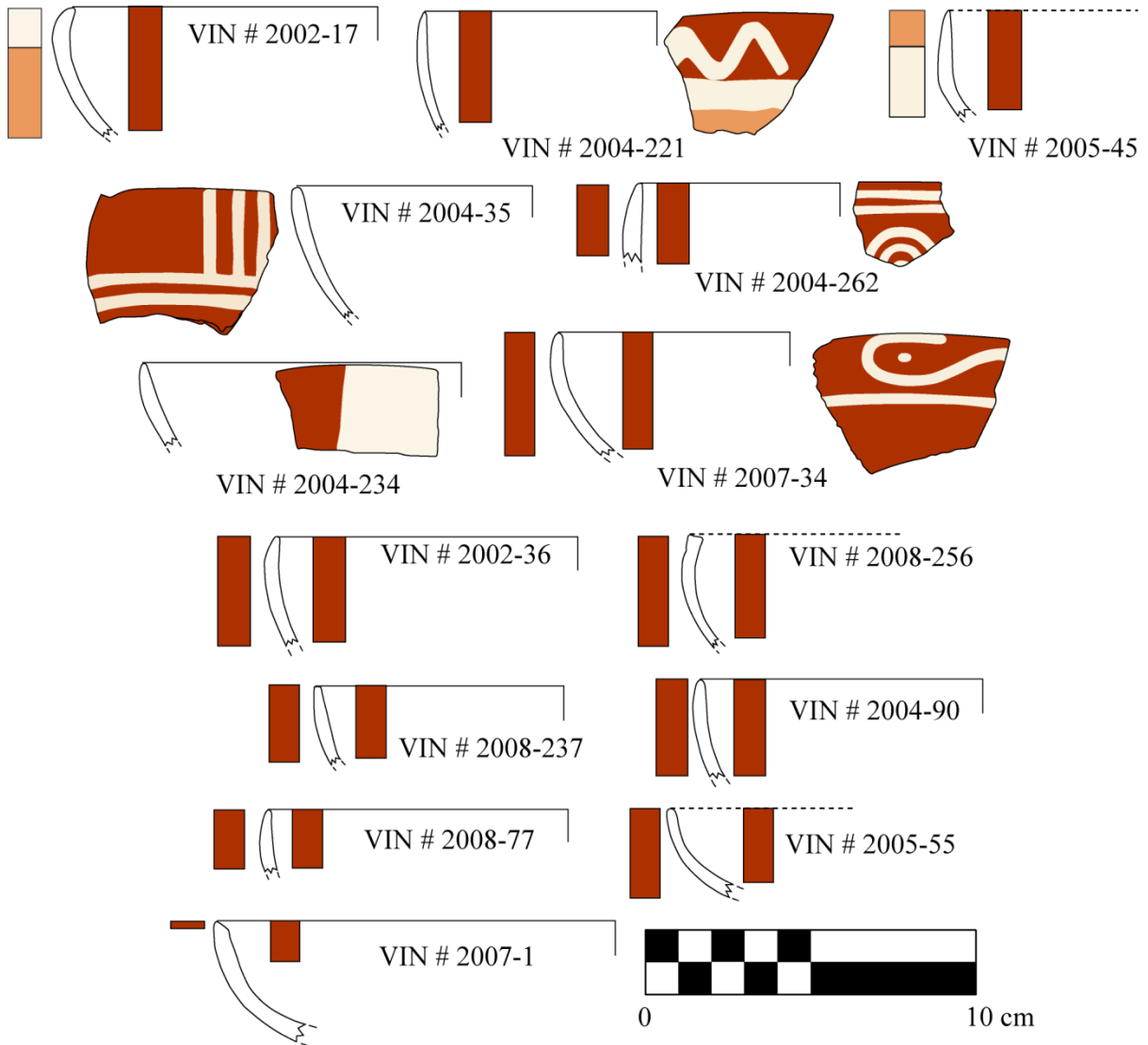


Figure 7.4.14. Cerro León Polychrome, White-on-red, and Red Slipped individual serving bowls.

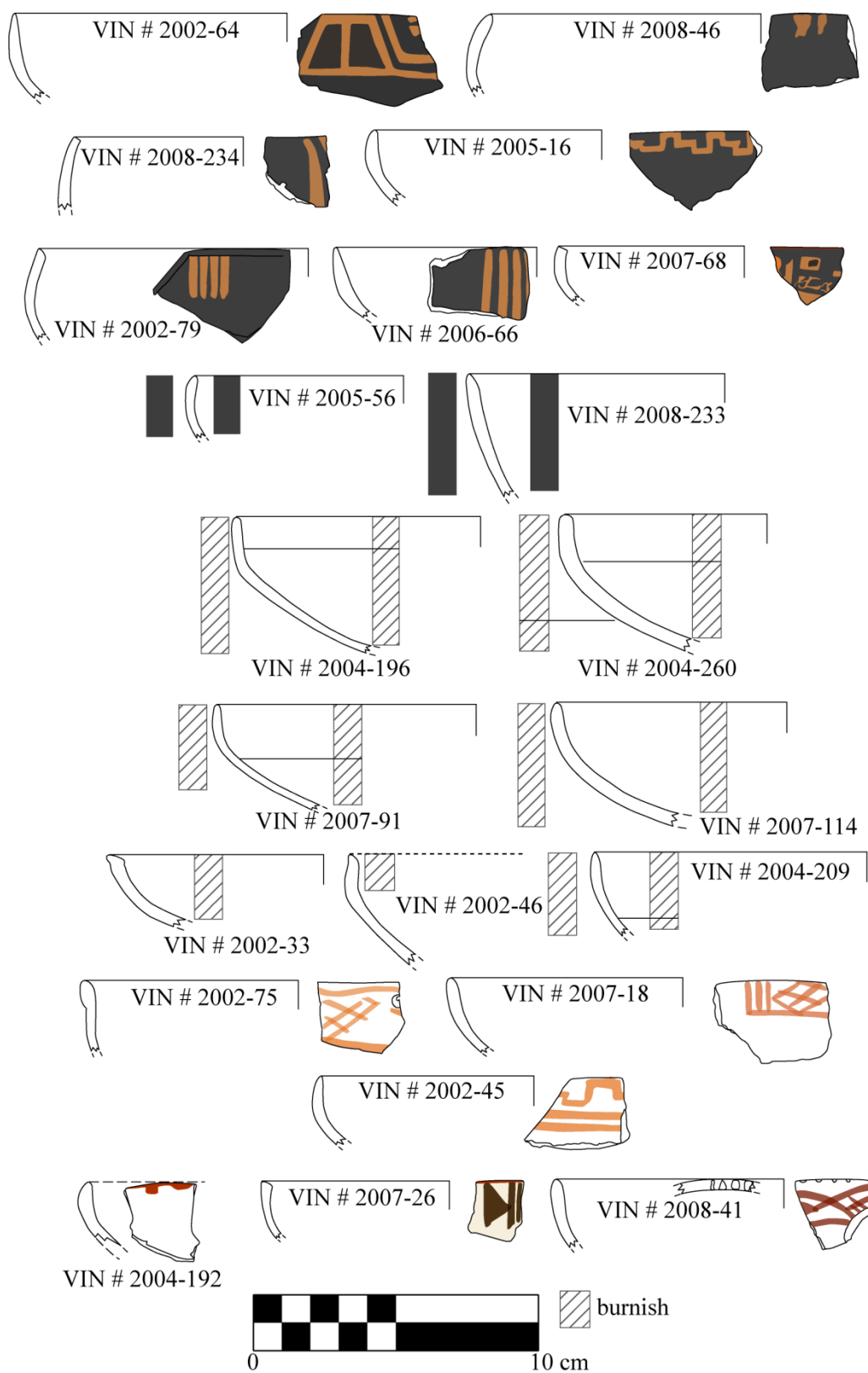


Figure 7.4.15. Cerro León Black, Burnished, and Quinga Painted individual serving bowls.

### *Red-slipped serving olla*

The minimum number of red-slipped *ollas* in the Cerro León study assemblage is 116. Of this number, fragments of 23 vessel rim were large enough to determine orifice diameter. These vessels make up only about three percent of the study assemblage. The red-slipped *olla* is similar in shape to the angled-neck cooking *olla*. Although no rim-to-base fragments for the red-slipped *olla* are present in the Cerro León assemblage, based on the examples we have the profile of this vessel shape is more squat and open than a plain angled-neck *olla* (Figure 7.4.16). The mean orifice diameter for this form is 31 cm with a range from 20 to 45 cm. In addition to their flattened shape, vessel necks are also shorter for the red-slipped *olla*. Lips are mostly beveled or rounded. Necks and lips are much thicker for red-slipped *ollas*. This is in contrast to the wall of the vessel, which were scraped extremely thin; much thinner than those of cooking *ollas*. The larger size and more open profile when compared to plain angled-neck *ollas* relates to vessel function.

Pastes for the red-slipped *olla* are Otuzco or Cerro León, with more than half (62 %) of the study assemblage being the distinctive buff margin with sharp black core. Although buff paste likely had a similar region of origin as the Cerro León paste, it generally has finer inclusions. The desired effect for red-slipped *ollas* (and for most of the red-slipped buff paste items in the study assemblage) appears to have been the bright, almost scarlet red vessel surface. Cerro León red-slipped *ollas* have darker red slips and less control in firing atmosphere. Red-slipped *ollas* are slipped over most or all of the exterior but only to just below the neck on vessel interiors. Most are finished with burnishing on the exterior and interior neck, but some examples in the study assemblage only have burnish concentrated on the interior neck and lip.

I interpret the red-slipped *olla* as a serving piece for liquid or semi-liquid consistency beverages or foods. The low, open profile would have allowed for easy access to contents as well as stability when contents were added, manipulated, or removed. The slip and burnish would have decreased permeability of vessel walls. Thicker necks and lips with burnish would have strengthened



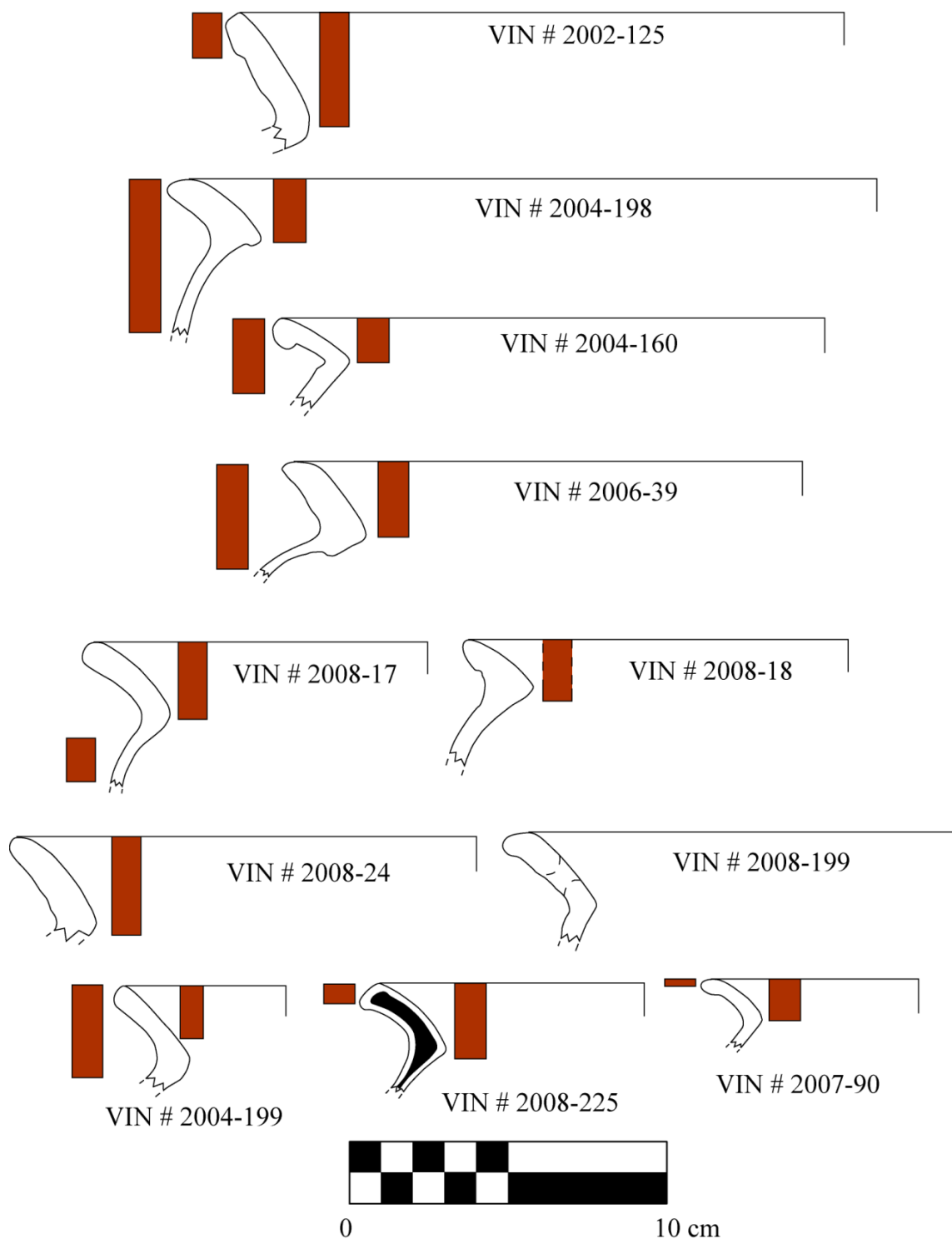


Figure 7.4.16. Cerro León and Otuzco Series Red-slipped serving *ollas*.

the vessel orifice so it could better withstand impact damage due to frequent manipulation of vessel contents. The extremely thin vessel walls are a perplexing feature of this vessel form and generally made the vessels weaker. Four red-slipped *ollas* in the study assemblage show evidence for repair in the form of strap holes at the neck or shoulder. These vessels were not numerous in a household and probably not part of everyday culinary equipment since people apparently made the effort to extend the use life of such special items. Only two may have been used over a fire and are sooted on their exteriors. This may be evidence of secondary use, based on the mechanical performance characteristics already described.

### *Tostadera*

Shallow pans, or *tostaderas*, number 501 and comprise 12 percent of the Cerro León study assemblage. These vessels have short, restricted profiles and broad, slightly rounded to partially flattened bases. Even with the restricted profile, these vessels are very open. The 47 vessels with measureable orifice diameter have a mean orifice diameter of 30 cm. Pans were probably constructed through a combination of slab and coil construction. Profile walls exhibit a change in direction that appears almost carinated (Figure 7.4.17). This effect is achieved by scraping the lower part of the vessel's exterior when leather hard to thin it. Vessel lips are distinct from individual serving bowls used for drinking. Pans are thickened toward the lip and are rounded, beveled toward the interior, or sometimes flattened with a channel or groove on the superior part of the lip. Pastes are mostly Cerro León (87 %), and a small portion of the study assemblage pans are made from buff pastes (13 %). Both pastes for this vessel shape have poorly sorted inclusions that are fine to medium-sized. Vessel exteriors are smoothed and/or scraped. Interiors are smoothed or sometimes lightly burnished below the side wall. A variety of secondary surface treatments follow those of other vessel shapes made from Cerro León and buff pastes. Lip treatments such as grooves below exterior lips or on superior lips, plus bands of red slip on the superior part of the lip occur on pans of both paste types. Five

percent of pans have cut-outs in their side walls or lips (see Figure 7.4.17, VIN 2008-00), although cut lips are far less common (n=2).

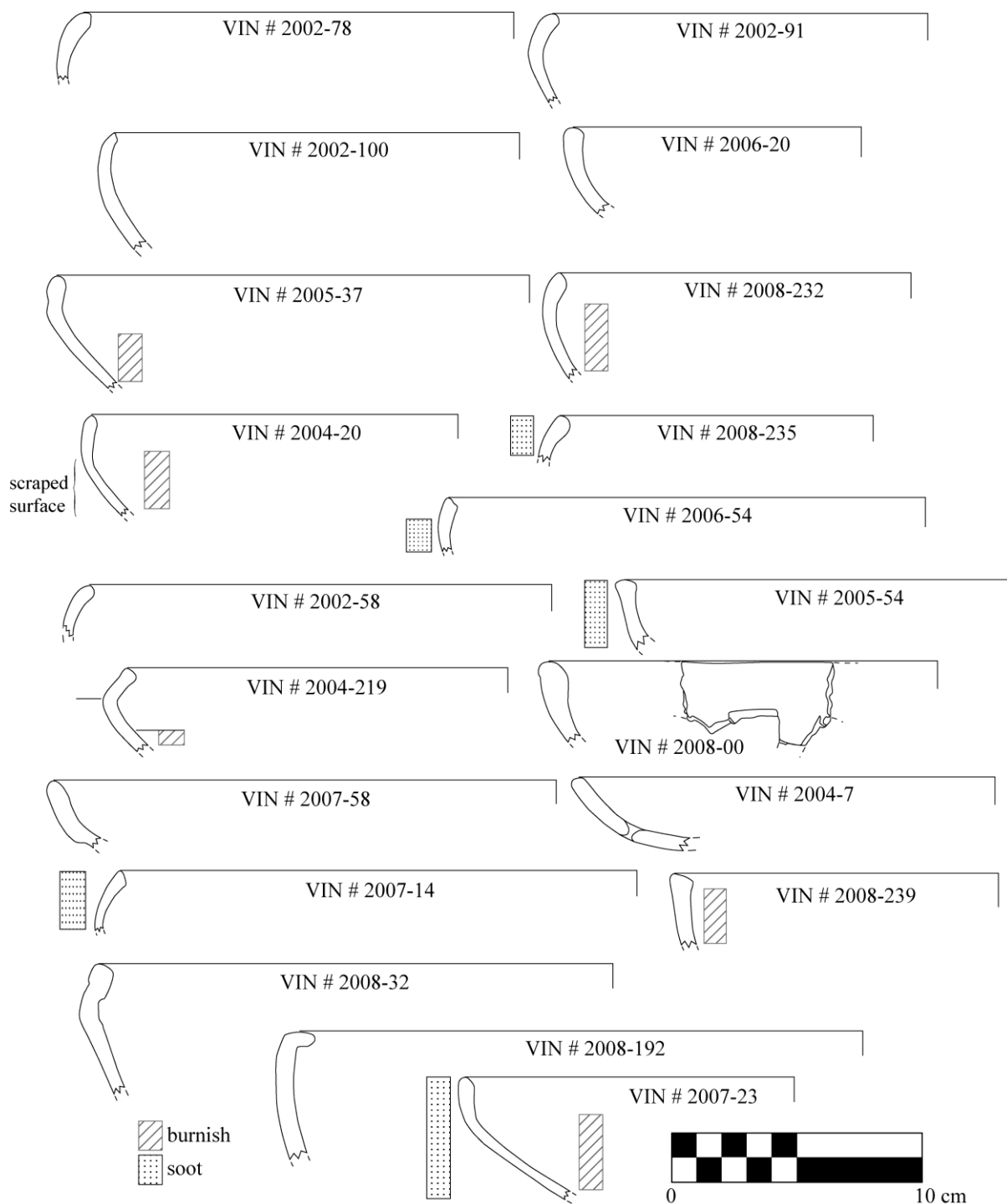


Figure 7.4.17. *Tostadera* forms in Cerro León and Otuzco Series wares.

Twenty-eight percent of *tostaderas* have exterior soot, providing evidence for their use over fire. This evidence, as well as pan morphology lead me to interpret the vessel's function as parching or toasting of corn, other grains, seeds, or legumes. The open, shallow profile and the wide, slightly curved shape would have provided a lot of surface area for even and quick heating of pan contents, while the incurved side wall and lip would have kept seeds from spilling out when contents were stirred or tossed. Pans with cut-outs would have proved impractical for this function, with seeds or other small items falling out of the holes.

No whole or partial vessels for this shape category were found, but the size of cut-outs are typically at least 2 cm on one side. In fact, the side-wall where the cut-outs are located is a weak point in vessel construction and all vessel rims in the assemblage are broken at this location. Interestingly, when pans are divided into groups according to surface treatment (plain, burnished, or cut-out), they correlate with different vessel sizes. Smaller pans with plain or burnished surfaces were likely used as parching or toasting vessels although they may have served multiple functions. The largest vessels are those with cut-outs. Their larger size and inability to hold smaller items such as seeds or legumes suggest a different function. Even though this form would not work well for toasting, many still exhibit evidence for heavy sooting. Anecdotal evidence suggests that these pans may have hung over the hearth for storage of larger food items<sup>28</sup>. Perhaps the holes allowed smoke from the hearth to pass through to perishable items stored in the pan. This may have affected preservation or kept pests away.

### *Bottle*

Bottles are a somewhat enigmatic category of vessels at Cerro León even though they are abundant in EIP archaeological assemblages throughout the north coast. In the Andes, bottles such as single-spout, stirrup-spout, or spout-and-bridge (or handle) forms are not interpreted as having any

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<sup>28</sup> When I told my laboratory assistant, Mr. Jaime Jimenez, about the pan with cut-outs he remarked that he recalled his grandmother having a similar vessel hanging in her kitchen directly above the hearth in her Cajamarca home.

sort of culinary function. For the purposes of my study, I define the culinary form of bottle as being taller than it is wide, with low center of gravity and a composite contour used for serving small amounts of liquid. Bottles have more or less vertical necks that are often, but not always taller than the orifice is wide. Bottles number only 18 in the Cerro León study assemblage. These include seven Castillo plain or burnished (Figure 7.4.18). The Cerro León series bottles (n=8) did not fit into the culinary functional category. Because of the fragmentary condition of the pottery assemblage in general, small rim or lip fragments of bottles, small bowls, and miniature vessels are difficult to distinguish one from the others. However, few bottle bases or body sherds were found in the Cerro León pottery assemblage in general so the small MNV may actually be a relatively accurate reflection of their minimal presence in the Cerro León households.

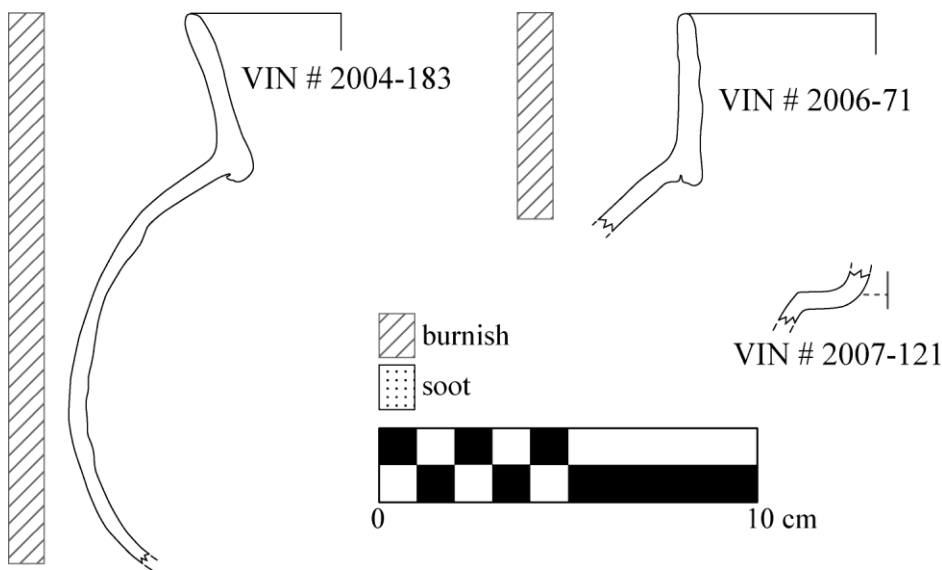


Figure 7.4.18. Castillo Series bottles.

Only six vessels with measureable orifice diameters were present in the metric assemblage and these show a median diameter of 10 cm. In the study assemblage, there were a variety of base shapes including, rounded (n=5), flat (n=8), and ring bases (n=3). A single carinated neck fragment was recovered from excavations in Compound 3 (Figure 7.4.18, VIN 2007-121). This vessel had a narrow neck diameter of 2 cm and a deep red slip smudged to nearly black. Pastes are generally very

fine and well-sorted. All of the Castillo paste bottles have either plain or burnished surfaces, with one possible negative painted example.

I interpret bottles in the Cerro León study assemblage as liquid serving vessels. Flat and rounded bottle bases show many abrasions, perhaps evidence of repeated dragging or tipping across a surface for passing or pouring. Smaller bottles could have easily been held around their bodies while larger vessels could have been gripped by their necks for pouring, passing, or filling. Vertical to slightly angled necks and rounded to tapered lips would have aided in pouring liquids. The low center of gravity and shapes of the bases would have provided good stability. Constricted orifices and stable bases prevented spilling of vessel contents. The form's narrow neck and wider base may have also kept sediments in the liquid from escaping when poured. The majority have nice finishes which improved durability and probably also designated them for more special occasion use. Their smaller size and low liquid volume capacity indicate serving individuals or small numbers of people.

### *Tinaja*

The *tinaja* is the largest vessel at many EIP archaeological sites. At Cerro León they number only ten in the study assemblage. The low number is expected because such large vessels would have had low rates of breakage and replacement. Getting a *tinaja* up to the households of Area 1 at Cerro León would have been a difficult task, but once it was up the hill and set in place, it probably would have been moved infrequently, if ever. Two varieties of *tinaja* shape are present in the Cerro León study assemblage; necked (n=6) and neckless (n=4). The necked variety has long, straight to slightly incurved necks with a thickened lip (Figure 7.4.19). The neckless *tinaja* is identical in general shape to the neckless *olla*, but is much larger. Regardless of whether they are with or without necks, the orifice diameters for this vessel shape are large. The samples that are measurable in the assemblage (n=4) range from 47 to 75 cm in orifice diameter. The median of these few samples is 52 cm. Bases are indeterminate for both necked and neckless *tinajas*, although possible rounded base fragments were found for one vessel. It is likely that the neckless variety had a rounded base since this is

common for the smaller cooking *olla* and is also commonly reported in the literature for this type (Gamarra and Gayoso 2008; Strong and Evans 1952). Vessel walls are thick and pastes are very coarse for this type. All *tinajas* (n= 7) in the study assemblage have Castillo pastes. Surfaces are smooth and plain, although like the neckless cooking *olla*, plastic decoration (incisions and punctuations) is present on a few examples. The necked *tinaja* has a small node on the shoulder.

The *tinaja* is commonly identified as a long-term liquid storage vessel in the ethnographic and archaeological literature in the Central Andes. At Cerro León this was what people most likely used them for. Once filled, they would have been immovable. Easy access to contents would have been gained through the large orifices for either necked or neckless shapes. People likely added and removed vessel contents with a dipper or smaller vessel. The thickened lip (and neck) would have helped the vessel mouth withstand impacts sustained while adding and removing contents. Many ethnographic accounts designate larger vessels with less restricted openings as water storage vessels (Fontana et al. 1962; Gamarra and Gayoso 2008; Henrickson and McDonald 1983:633). This makes sense since household members would have needed frequent access to small amounts of water for many different tasks. The massive volume would have meant fewer trips to the valley floor for water. Thick vessel walls with coarse paste inclusions would have also allowed for evaporative cooling of liquids, improving freshness. No wear patterns have been found on the *tinaja* fragments in the Cerro León study assemblage. However, impact damage to neck and lip — the most likely form of use-alteration to *tinajas*, is likely to have been obscured by post-discard formation processes.

### *Cántaros and Jarras*

Next to the angled-neck *olla*, *cántaros* and *jarras* are the second most ubiquitous vessel shapes in the Cerro León study assemblage, comprising a minimum number of 906 vessels. *Cántaro* and *jarra* shapes exhibit the most variety of all vessels in the study assemblage. Although initially classified as one category for data collection, it soon became apparent that when enough of the rim and neck were present it was possible to identify differences in size, morphology, and surface

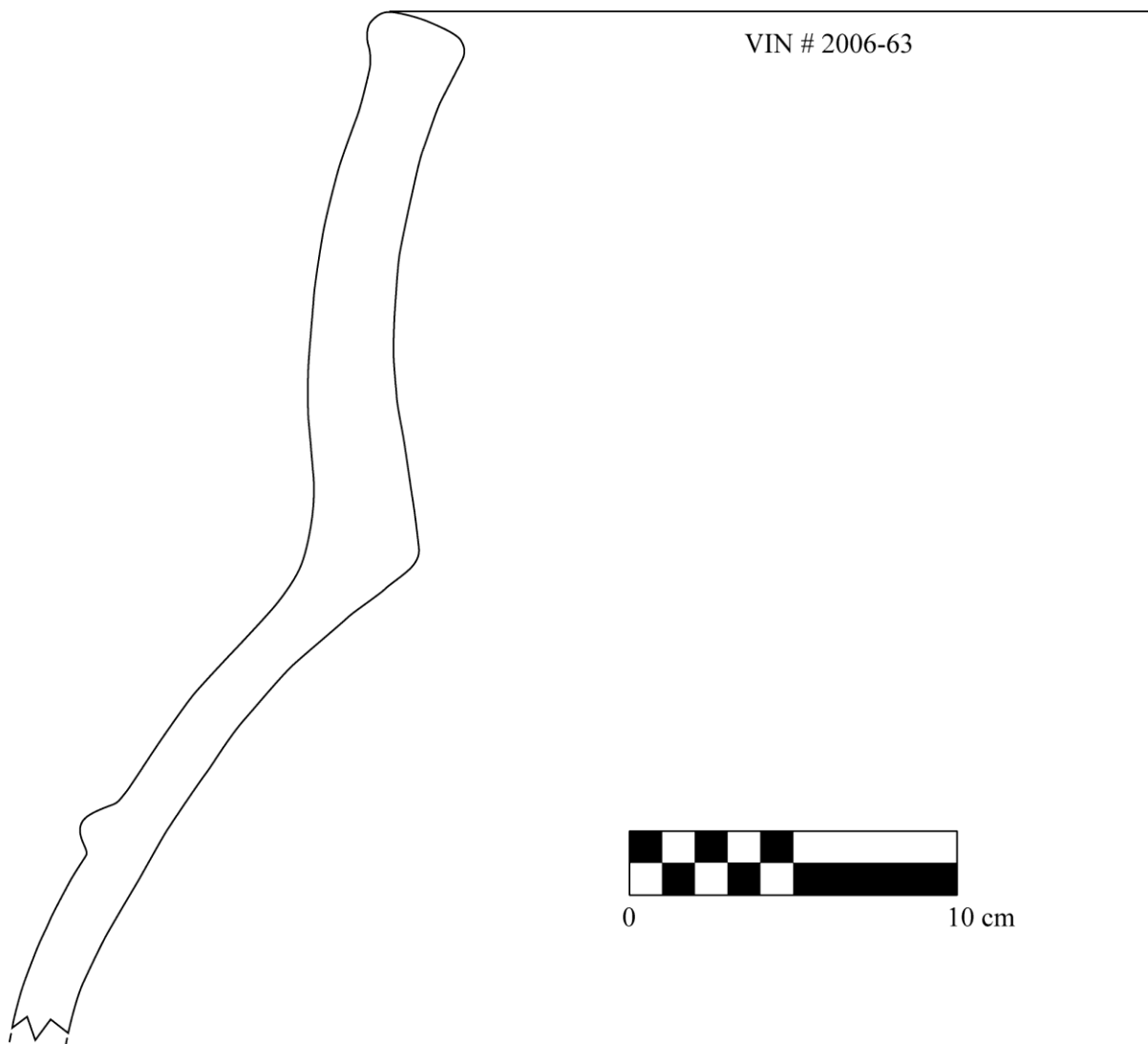


Figure 7.4.19. Castillo Series *tinaja*.

treatments between the two vessel shapes that could relate to function. Differences in morphology and surface treatment also correlate highly with vessel ware within the *cántaro* and *jarra* shape categories. In general, *cántaros* are larger containers than *jarras*. This and other observations detailed in the following sections led me to interpret a different function for *cántaros* versus *jarras*. I discuss Cerro León and Otuzco *cántaros* first, followed by Castillo forms. Next, I describe the functional aspects of *jarras* by type. The total metric assemblage for *cántaros* and *jarras* is 132.



*Cerro León and Otuzco Series cántaros.* As I discussed in the previous chapter, vessels made from Cerro León and Otuzco paste wares are often similar in many aspects of morphology, surface treatments, and function. *Cántaros* for both wares have a composite shape with the juncture of the neck and shoulder sharply constricted. Vessel lip and neck decorative treatments vary (Figure 7.4.20, 7.4.21, and 7.4.22). No rim-to-base fragments were found, but enough bases were found to determine that this form stood on a flat base that was narrower than its maximum diameter. Although difficult to determine without rim-to-base fragments, *cántaros* were large and likely had a capacity of several liters. They had a relatively narrow, tall, egg-shaped body with maximum diameter at the shoulder. Necks are angled and long, sometimes reaching maximum shoulder diameter. For the measurable proportion of the study assemblage (n=61), the mean orifice diameter is 28 cm. The shape of the lip varies a great deal, but most are thickened exteriorly or rolled with an exterior groove about a centimeter down from the lip.

Pastes have medium to small inclusions and are poorly sorted with buff pastes being generally finer than Cerro León pastes. The interior body walls were scraped thin at leather-hard stage, usually to half the thickness of the neck and lip. Surface treatments involve slipping and burnishing for nearly three-quarters of these *cántaros*. Red slip is usually applied to the lip and then on the exterior from the neck down to just above the base. Only slipped areas were burnished; the plain areas of the neck and base are smoothed. Lips are occasionally decorated with round or v-shaped punctuations that may have been made with a stick. Occasionally, a band of white slip was applied over the red slip at the neck.

While researchers note that less restricted large-mouthed vessels, such as the *tinajas* in the Cerro León assemblage, commonly serve as water storage, they distinguish vessels with restricted necks for storage of special liquids like milk, wine, honey, oils, and beer (Fontana et al. 1962; Henrickson and McDonald 1983:633). The mechanical performance characteristics of Cerro León and buff *cántaros* suggest long-term liquid storage (and probably also fermentation) of maize beer. Their tall, angled necks could have served as spouts when pouring out contents or funnels when

filling vessels. The angled neck and thickened lip would have facilitated tying a cover over the mouth of the vessel, protecting the contents from pests or other forms of contamination. Slipping and burnishing of the bodies of these large jars would have reduced permeability of vessel walls, while slip and burnish at the lip increased protection from impact damage. Evidence for use-alteration includes abrasions on the bases, probably from tipping vessels for pouring. Some evidence for repairing vessels by drilling strap holes is present for necks and rims.

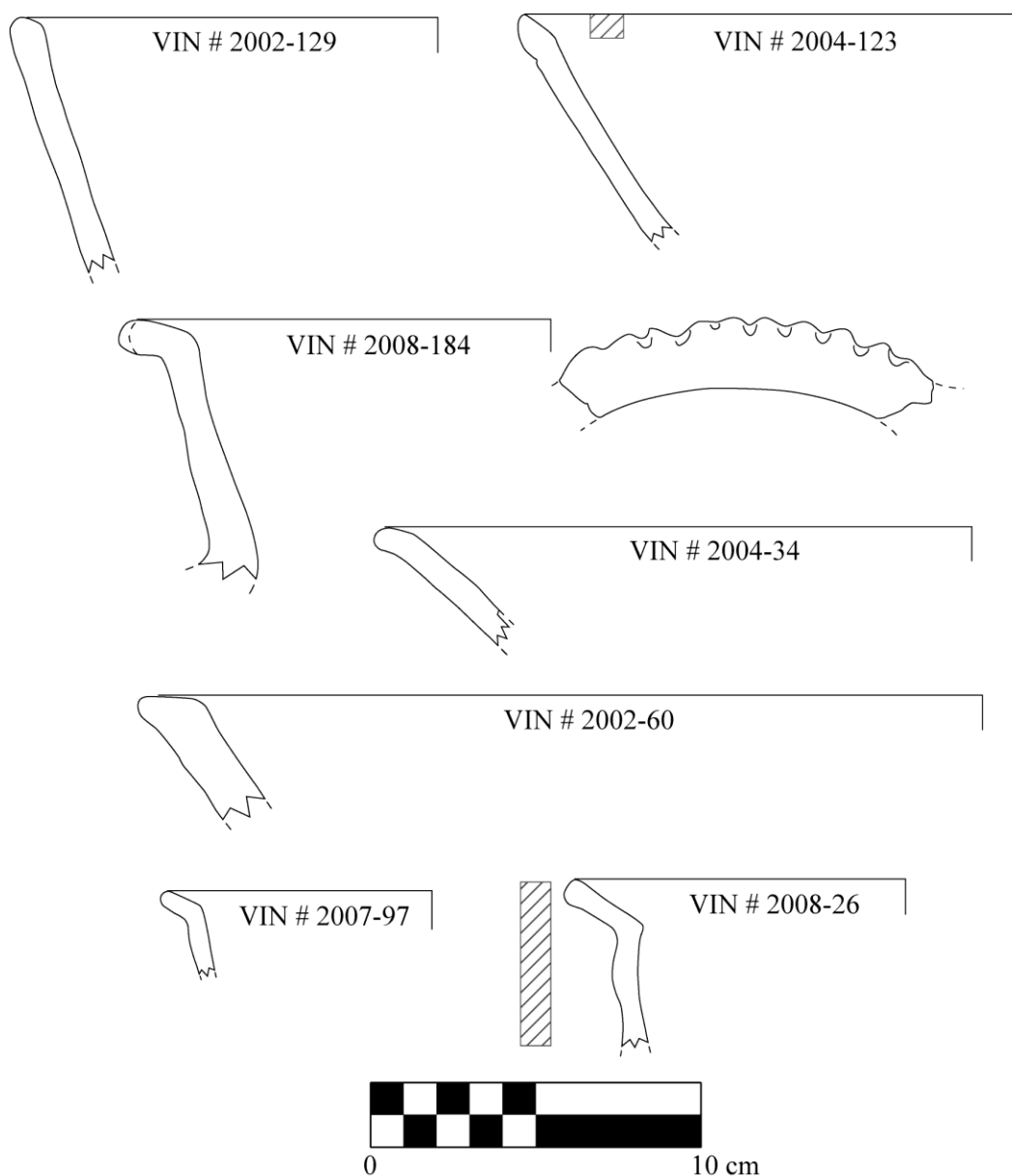


Figure 7.4.20. Cerro León Series Plain and Burnished *cántaros*.

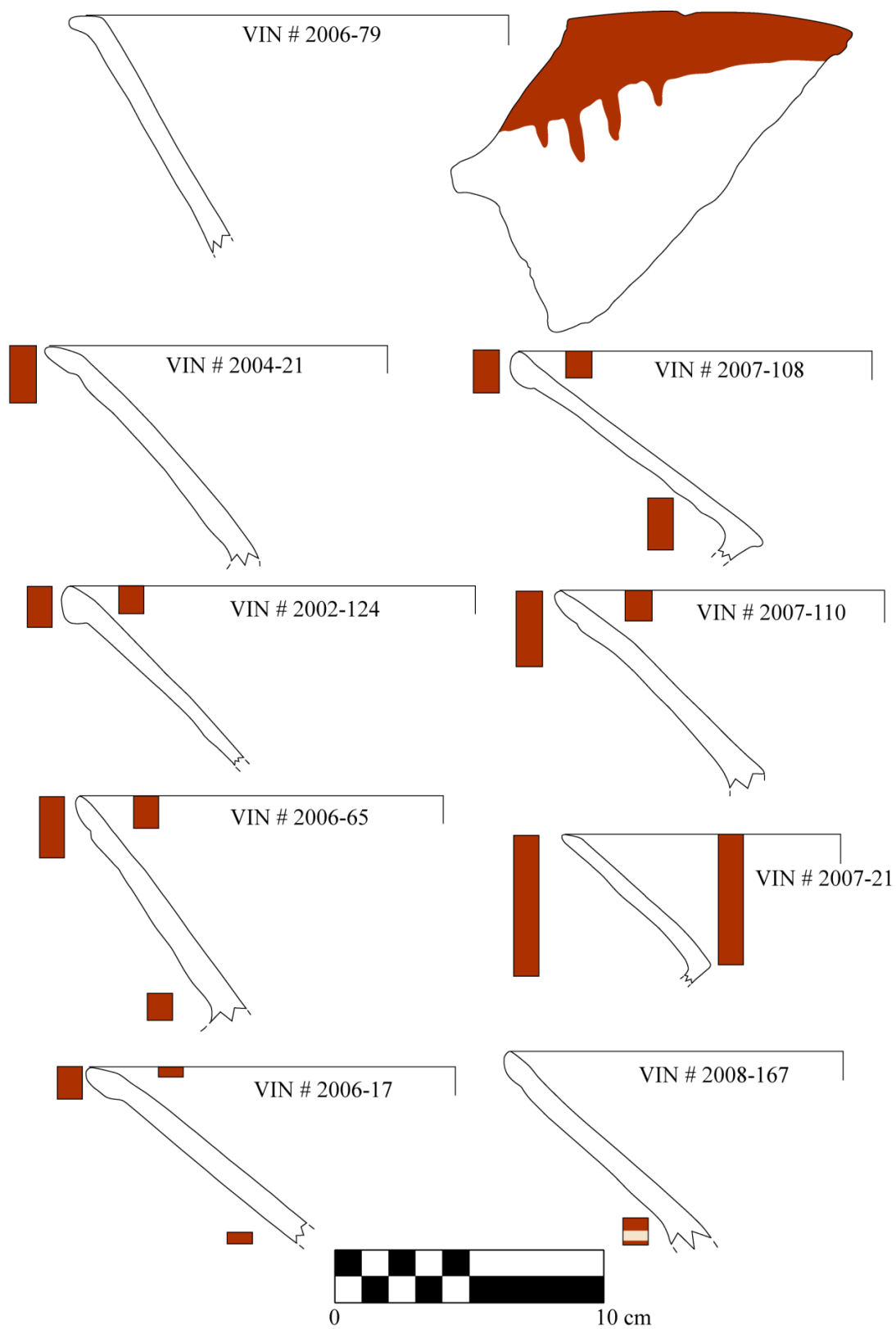


Figure 7.4.21. Cerro León and Otuzco Red-slipped and White-on-red *cántaros*.

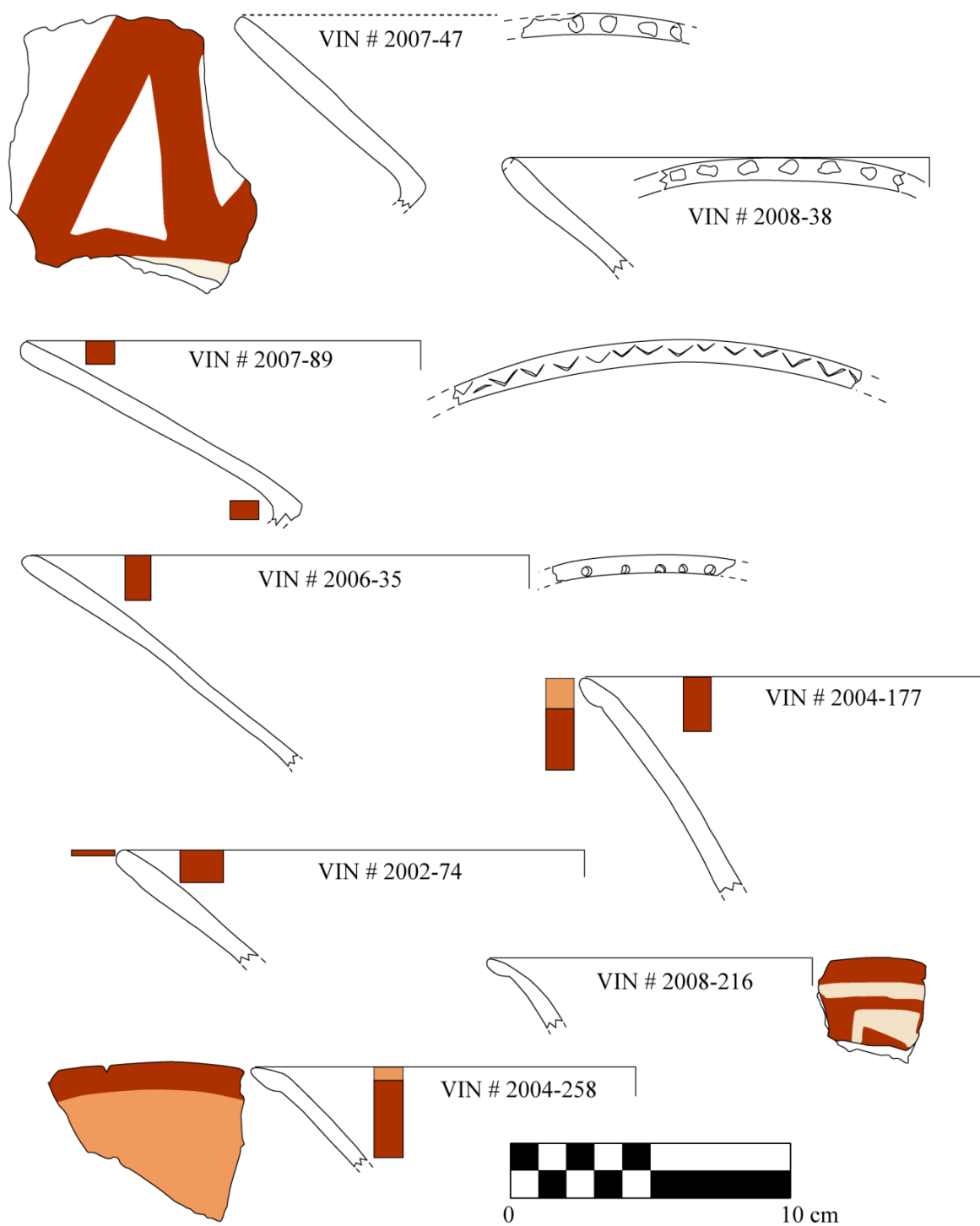


Figure 7.4.22. Cerro León and Otuzco Red-slipped and Polychrome *cántaros*

*Castillo Plain Cántaros.* Castillo ware *cántaros* (n=11) number fewer in the Cerro León metric assemblage than Cerro León and Otuzco wares (Figure 7.4.23). Less is known about this type at Cerro León than the more ubiquitous Cerro León and Otuzco types. The necks are thicker, slightly less angled, and shorter than Cerro León and buff paste *cántaros*. No information was recovered as to vessel capacity or the shape of the lower part of this vessel, but they appear to be a composite contour vessel with maximum diameter at the shoulder. The vessels with measurable orifice diameter range from 19 cm to 26 cm with a mean diameter of 21 cm, much smaller than Cerro León or Otuzco *cántaros* (Figure 7.4.24). Vessel lips are rounded to flattened. Pastes are coarse and surface treatment is either plain or burnished. Some vessels may be Castillo modeled varieties but only modeled body fragments were found. It is not known if this decorative technique was associated with *cántaros* or *jarras*. A single example of Castillo paste *cántaro* mimicks the slender, longer-necked form of the Cerro León and buff paste *cántaros* (Figure 7.4.23, VIN 2002-108). This vessel also has burnish only at the interior and exterior lip which is rare for Castillo wares in general. This is a possible highland style made with a coastal paste, or a hybrid.

I interpret the Castillo Plain and burnished *cántaros* as storage vessels, but they could have been more all-purpose in their function. Since roughly half are burnished and half are plain, it is possible that unburnished vessels may have held dry goods while burnished vessels stored liquids. There is no evidence of residues that would indicate that the plain surface vessels were treated with fat, oil, or resin to decrease permeability. Castillo plain *cántaros* may have also served as smaller-capacity water storage vessels although the restricted neck and smaller orifice (when compared to *tinajas*) may not have worked as well for frequent accessing of contents. Cross-culturally, dry goods storage is a widely varied category that is often problematic for archaeologists (Henrickson and McDonald 1983:632; Smith 1988:145). Storage in general, especially for commodities other than *chicha*, is a topic that requires more attention at EIP sites on the north coast.

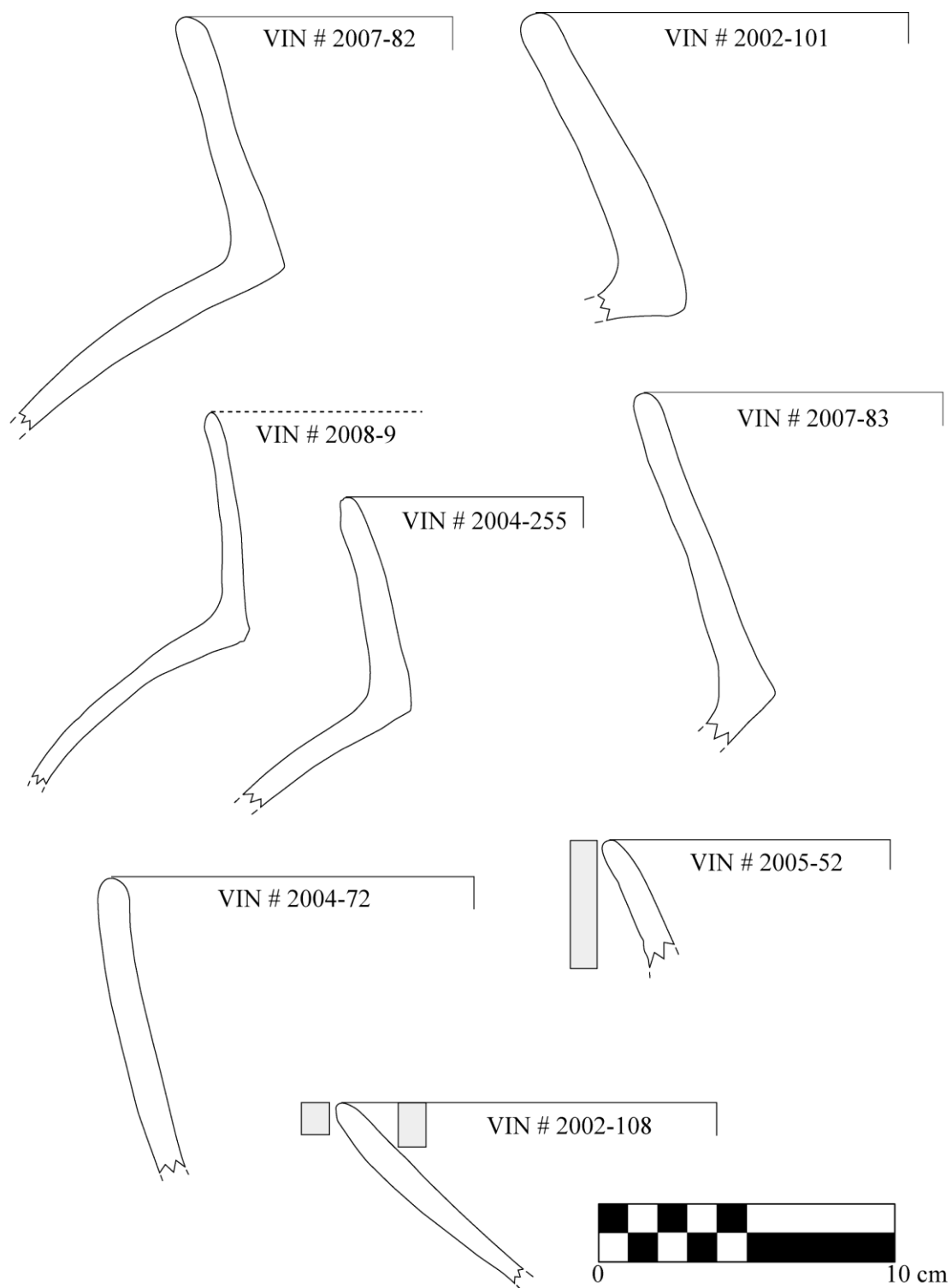


Figure 7.4.23. Castillo Plain and Burnished *cántaros*.

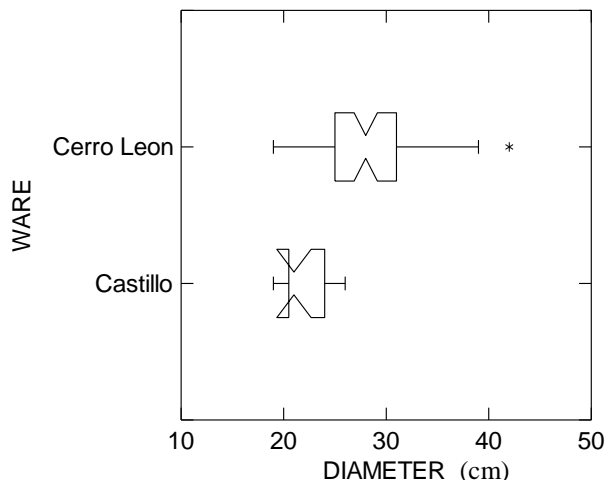


Figure 7.2.24. Box plot of orifice diameter for Cerro León and Castillo Series *cántaros*<sup>29</sup>.

*Jarras*. Although variation is more continuous than discrete between *cántaros* and *jarras*, distinctions in shapes can be made. *Jarras* have a smaller orifice diameter than *cántaros* and the neck angles are less everted. They are similar in shape to bottles described above but are larger. *Jarras* have complex profiles and restricted orifices but their maximum width-to-height ratio may have varied widely. They may have rounded or flat bases, but this could not be definitively ascertained from the Cerro León assemblage. Necks are more or less vertical. The form resembles that described for bottles in the Cerro León study assemblage but *jarras* are larger.

Cerro León (n=35) and Otuzco (n=7) *jarras* have a range of orifice diameters from 8 cm to 23 cm with a mean of 16 cm (Figure 7.4.25). They overlap *cántaros* in orifice size but have shorter, more vertically oriented necks. They are burnished and slipped on the interior of the neck as well as over the entire exterior surface of the body. Pastes are similar to *cántaros*. The lip for this form is more squared and often beveled toward the interior. They frequently have a groove below the

<sup>29</sup> With the boxes notched to show the medians, outer confidence limits sometimes extend beyond the hinges on a box (McGill et al. 1978:14).

exterior lip. No base fragments have been identified for this vessel shape but they probably were rounded.

A minimum number of 17 Castillo *jarras* had measureable orifice diameters. These vessels had a mean orifice diameter of 14 cm. Castillo *jarras* are plain or burnished (Figure 7.4.26). I was unable to determine the shape of the base for these vessels, but most likely they were rounded. No flat bases for Castillo ware *cántaros* or *jarras* were recovered from excavation contexts. Nearly all vessels had straight necks and rounded lips. It is possible that some of these vessels had modeled decoration on the shoulder, but again no rim to shoulder fragments in the assemblage confirm this. These grade down in size gradually to the bottle category, which is similar in profile. *Jarras* don't appear to have been mold-made however; whereas bottles clearly were.

#### *Sculptural/effigy jar*

There are no whole or partial effigy jars in the Cerro León study assemblage. In the raw count of sherds, 54 fragments had sculptural characteristics<sup>30</sup>. Many pieces for these types are merely fragments of low-relief shapes, and it is impossible to discern what they might have depicted. Identifiable fragments included a feline head, eyes, a hand or paw, pinched-coil serpents, and a mouth with fangs. Cerro León and Otuzco (n=39) sculptural forms, when identifiable, appear to represent zoomorphic subject matter, such as felines, llamas, and a possible monkey, while Castillo (n= 15) forms suggest zoomorphic themes of serpents, felines, and birds.

The near absence of vessel rims and the higher incidence of sculptural body detail indicate that the identifying characteristics of this shape category occur lower on the neck or below the neck-body juncture. Most body sherds or adornos were Cerro León White-on-red (n=12) or Polychrome (n=8) types, followed by burnished or plain surfaces. Cerro León sculptural jar fragments consisted of hands, a nose, eyes, feline ears, paws and fangs. Other fragments are unidentifiable curvilinear

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<sup>30</sup> This total does not include the fragments of the sculptural Chimu black ware bottle described in Chapter 5, that was determined to be part of a post-occupation encampment in Compound 1.



sculptural shapes. Sculptural Otuzco sherds (n= 5) were red-slipped sculptural shapes. The only rim sherd that appeared to have sculptural elements below the lip on the neck was unidentifiable as to the type of design or subject matter. This was a Cerro León Polychrome fragment. Castillo modeled sherds (n=15) included some appliqué and modeled fragments.

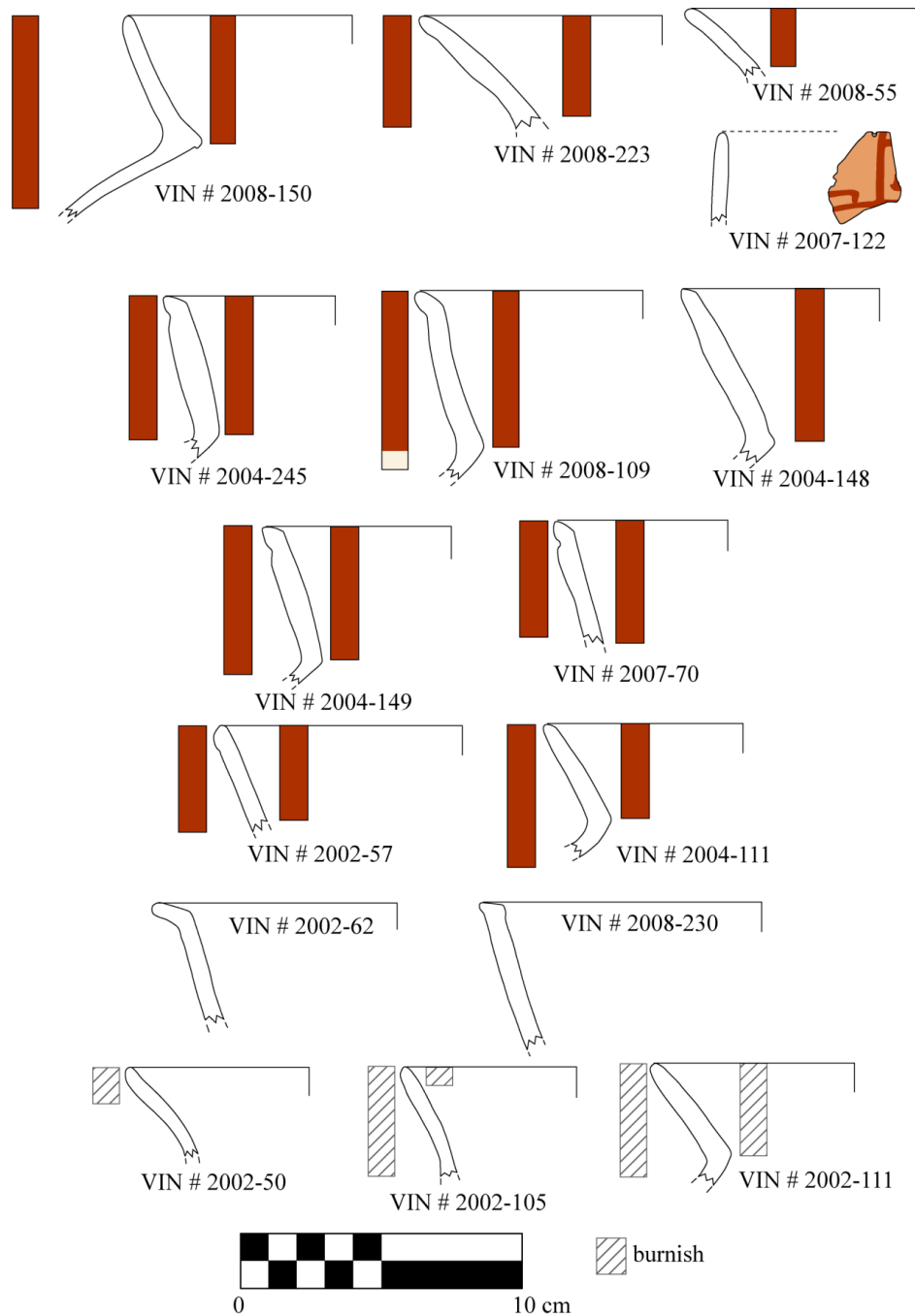


Figure 7.4.25. Cerro León and Otuzco Series *jarras*.

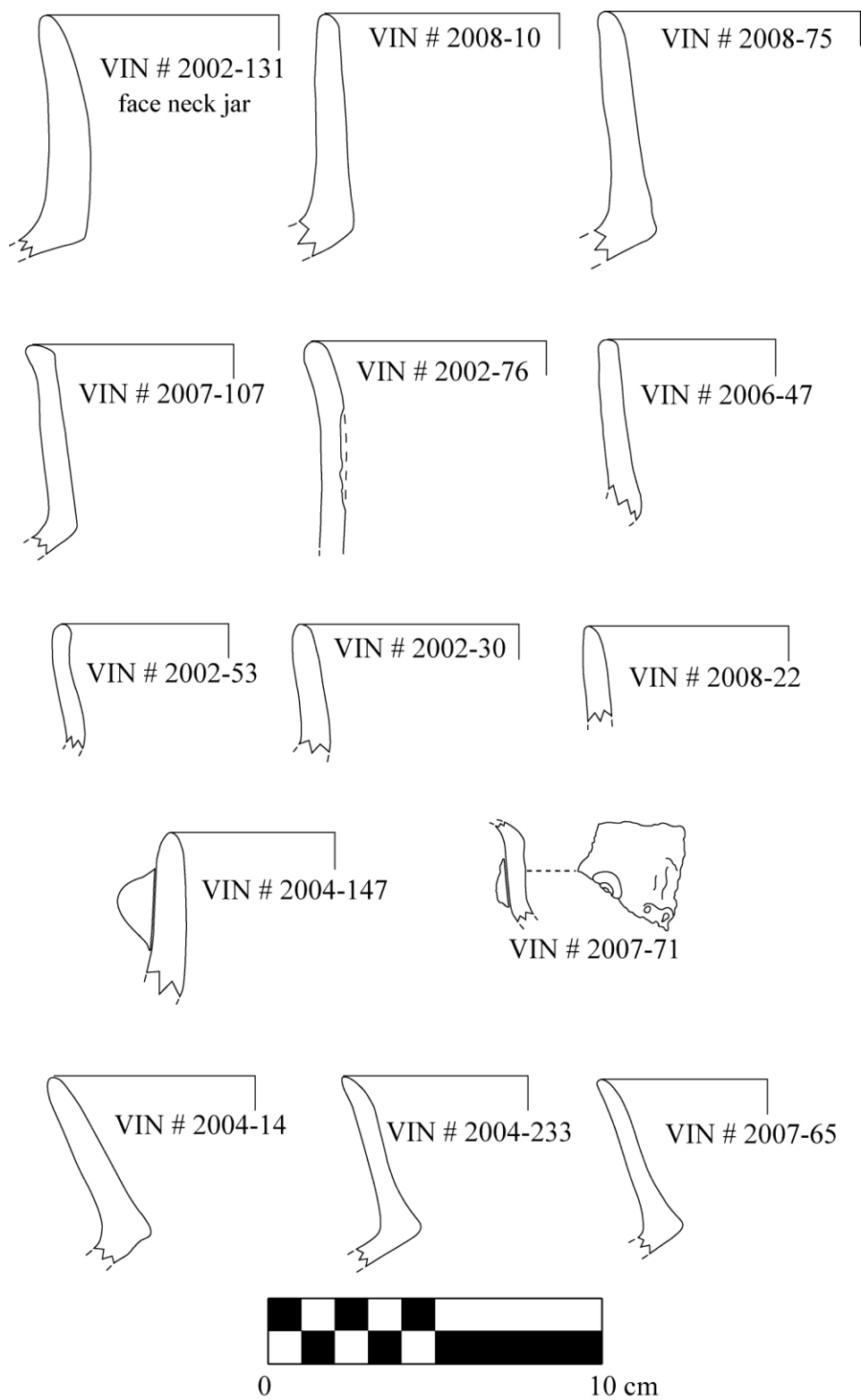


Figure 7.4.26. Castillo Series *jarras*.

### *Face-neck jar*

The face-neck jar is a classic form, usually attributed to the Castillo Series associated with Gallinazo and Early Moche phase household and mortuary contexts. The Cerro León study assemblage contains only three of these vessels, all of which were Castillo Series pastes (Figure 7.4.27 and see Figure 7.4.26, VIN 2007-71). Orifice diameters for these vessels range from 10 to 14 cm. As the name suggests, the only difference between these vessels and Castillo plain and burnished *jarras* is the modeled face on the neck.



Figure 7.4.27. Castillo Modeled face-neck jar.

In general, *jarras* functioned as short-term storage and serving vessels for liquids. Their broad range of forms and surface treatments, as well as their smaller size, suggest that they were more visible and portable than the larger cántaros. Cerro León and buff paste jars also show the highest

incidence of repair holes drilled at the neck and lip, thus extending use life and reducing breakage and replacement rates. Vessels such as these more elaborately finished and decorated jars were probably moved and used frequently at gatherings where they would have attracted attention while simultaneously serving a practical purpose. More frequent handling may have necessitated more repair, especially if such containers had higher replacement costs.

## **7.5 Non-vessel culinary items and vessels with dubious culinary function**

### *Miniature vessels*

Miniature vessels differ from bottles in their basic shape. Most miniatures are *olla*-like in form (Figure 7.5.1). They have shorter, angled or flared necks and more open (but still restricted) orifices than bottles. Although we have no rim-to-base profiles in the collection, it is likely that such forms are globular and are greater in width than they are in height. Although difficult to tell apart, there is a greater range of sizes and neck shapes for miniature *ollas* and jars than for bottles. The minimum number of miniature vessels in the Cerro León study assemblage is 51. Of those with measurable orifice diameter (n= 16), orifices range in size from 4 cm to 16 cm with a mean diameter of 7.5 cm. Pastes are identical to those of the larger sized forms in the study assemblage, however with more Cerro León wares (n=25) than Castillo wares (n=12). Miniature plain *ollas* have slightly coarser inclusions whereas burnished and slipped examples have finer inclusions. Plain miniature *ollas* are found in Castillo (n=8) and Cerro León (n=12) types. Two of the Castillo miniature *ollas* have vertically oriented handles attached to the neck and shoulder. Other pastes (buff, white, and a single unidentified type) are represented by only a few rim fragments. The surface finishes for Castillo miniatures are plain or burnished. Cerro León miniatures have a variety of surface treatments. Twelve are plain and 23 are burnished (12 of these are black smudged and six are red-slipped).

Based on their shapes, miniature vessels at Cerro León may have functioned in the same ways as their larger counterparts. None show evidence of use, however, so this must remain open to further

research. *Ollas* may have been used to steep small amounts of herbs or medicinal plants, but since none of the examples show any evidence for use over fire, this is speculative. The finely finished miniature jars could have been used to serve small amounts of food or drink, but their shape, especially in the neck and lip, would not have functioned well in pouring or drinking. They may have been toys or mementos that connote the function and purpose of their larger counterparts, but were

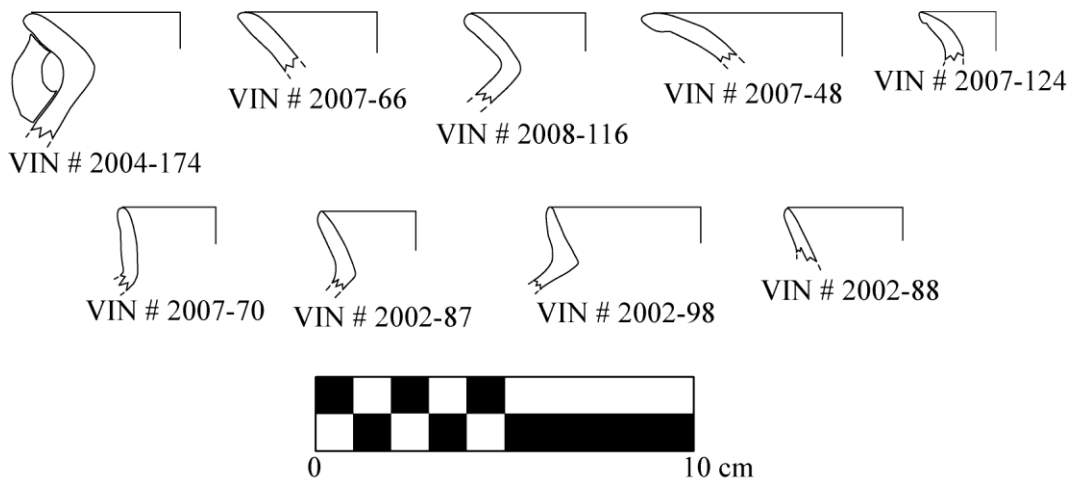


Figure 7.5.1. Miniature vessels in the Cerro León assemblage.

never actually in use for such tasks. A few, especially those with orifice diameters smaller than 7 cm, might have served as *caleros* (small containers for lime powder used in coca chewing). Again, there are no residues in any of the vessels to suggest this. Nor was there any wear (i.e. abrasions) on the interior lip to indicate that any of the miniature vessels were plugged with stoppers.

### *Canchero*

The *canchero* or “corn popper” is a rare vessel form at Cerro León, comprising only six vessels in the study assemblage. The *canchero* is a squat, small, incurved vessel with a restricted orifice and no neck. Of these, three are Cerro León Plain, and two Polychrome (Figure 7.5.2). The remaining example is Cerro León Burnished. None are Castillo ware pastes. Two, a polychrome and a burnished fragment, are hollow, horn-shaped handles. As the name suggests, this vessel shape has been identified at other EIP sites on the north coast as having been used to toast corn kernels or

*cancha*. However none of the fragments in the assemblage had any evidence of use wear. No soot was reported for any of the Virú valley project *cancheros* (Strong and Evans 1952:333).

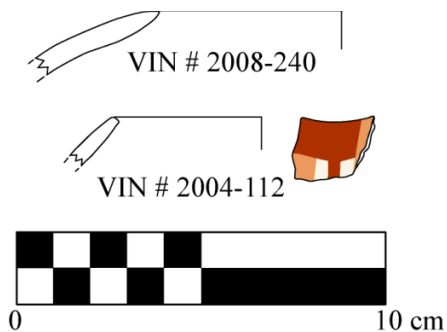


Figure 7.5.2. *Canchero* forms in Cerro León pastes.

### *Spoon*

A single pottery spoon was recovered from the Feature 62 patio in residential Compound 6 at Cerro León (Figure 7.5.3). The spoon is a beautifully finished item with an effigy head at the tip. The surface treatment is black smudging with fugitive orange painted lines on the bowl. One of the recessed round eyes of the effigy head (probably a serpent) is filled with a white, plaster-like substance. Spoons are common in the Cajamarca and Recuay regions and are also found at Moche sites, but stylistically the black spoon from Cerro León is distinct.



Figure 7.5.3. Spoon form in Cerro León Black with fugitive orange paint.

### *Grater bowl*

Grater bowls are a mysterious vessel class in pottery assemblages at EIP sites on the north coast. Only two grater bowl fragments have been found so far in all surface collections and excavation contexts at Cerro León. One of these is part of the Cerro León study assemblage (Figure 7.5.4). The forms are open bowls with thick walls and orifice diameters reported for grater bowls are generally large (Strong and Evans 1952:325). As the name implies, the deep, criss-crossed incisions (made in wet clay) on the interiors of grater bowls have been interpreted as having some kind of food processing function. This is problematic because no wear patterns, such as abrasions, have ever been documented on their surfaces. It is possible the rough-textured surfaces could have been used to “grate” or break up foods, such as tubers, that had already been softened by boiling or roasting, but this activity would have at least left heavy residues, if not wear from repeated friction. No similar form has been documented in an ethnographic context so the functional significance of the grater bowl awaits further study. It is also possible that their intended or primary function was not culinary.



Figure 7.5.4. Castillo Series grater bowl potsherd.

### *Tortero spindle whorl*

The minimum number of *torteros* (disk-style spindle whorls) in the Cerro León study assemblage is 54. All the *torteros* were made from fragments of broken pottery vessels. Cerro León paste vessels fragments were by far the most common choice for making *torteros* (Figure 7.5.5). The mean weight of the Cerro León Series *torteros* was 21 g; however the median was 8.8. Only two of the 54 *torteros* in the study assemblage were made from Castillo paste vessels. These Castillo *torteros* had a mean weight of 28.9 g. Perhaps this choice was based solely on the relative ubiquity of Cerro León wares at the site. However, the abundant, rounded inclusions in the Castillo wares' pastes may not have held up well to grinding. Cerro León wares do have relatively large inclusions, but in general their pastes are finer, denser, and less crumbly than Castillo wares which commonly have a texture like very coarse sand. Little ethnographic information exists for the use of potsherd *tortero* whorls in the Andes but wooden versions are common in the highlands (Bird 1979; Frame 1983; Goodell 1969; Vreeland 1986).

In contrast to the *piruru* (a bead- or cylinder-shaped whorl described below), the *tortero* is commonly held to be the appropriate type of whorl to use with the drop spindle technique when making yarn from heavier fibers such as camelid or wool. There is ethnographic evidence to suggest that large *tortero* whorls were used by fishermen on the north coast of Peru to ply several cotton threads into twine for fish nets or heavier fibers into rope for multiple tasks (Vreeland 1986:382, Figure 10). Even though the sample size for the Castillo whorls is very small, these large whorls would have been better for plying of coarser fibers. The Cerro León Series, with the exception of a single outlier (weighing 69 g), was generally not geared toward this type of task.





Figure 7.5.5. A Sample of *tortero* spindle whorls and blanks made from Cerro León potsherds.

#### *Piruru* spindle whorl

Only two *piruru* spindle whorls are present in the Cerro León study assemblage (Figure 7.5.6). There is literature on these spindle whorls, providing various lines of evidence that they were used in a horizontally held spindle technique used for spinning cotton fiber into thread (Vreeland 1986; Millaire 2008). The *piruru* technique produces S-twist cotton thread and is common on the Peruvian north coast (Vreeland 1986).

fragments were not large enough to determine the orifice diameter. It had been fired to the point where its paste is a pale ash gray and had the texture and appearance of pumice. No identification as to ware or type was possible. The piece had been used repeatedly over an extremely hot fire. There Although this vessel looks nothing like other small jars that have been identified as metal working may even be small flecks of oxidized copper on the lip, but these have not been tested chemically.



Figure 7.5.6. *Piruru* spindle whorls.

### *Crucible*

A single possible pottery crucible form was recovered that is shaped like a shallow tray (Figure 7.5.7). The form has a flat base and a low, rounded and tapered lip. It appears to have been round and not square, but this is not certain. Excavations recovered no corner pieces, however. The crucibles elsewhere on the north coast, I assigned this vessel as having a tentative metal working function. Thin sections of the rim showed intense burning to the point where pastes had completely blackened and shrunk leaving very large voids around non-plastic inclusions. I identified only a couple of mineral grains as possible blackened and cracked quartz.

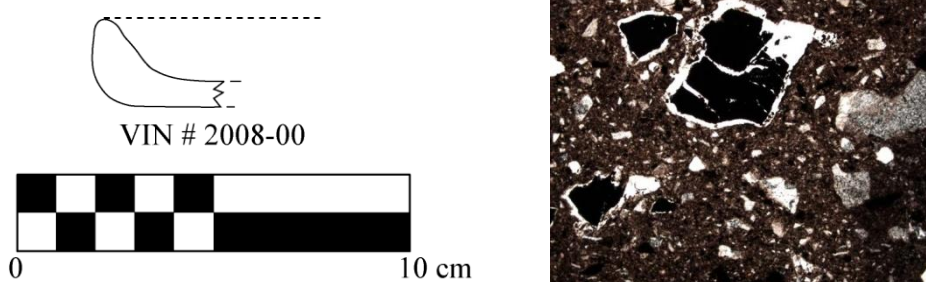


Figure 7.5.7. Possible crucible fragment profile and thin section in plain polarized light.

### *Hollow figurine*

Two hollow figurines were found in the Cerro León study assemblage (Figure 7.5.8). The two are distinct. One is a fragment of a press-molded Moche-style figurine, probably a female. The other, is a unique hollow torso and neck fragment made from Castillo paste. The paste is darker than usual for Castillo wares and the surface is burnished. Obviously a hollow ceramic head had originally been attached to the unburnished neck. The piece is unique; and I have not encountered any other examples similar to this in the literature for EIP archaeological sites in the Moche valley. Figurines made from the Cerro León paste are absent in the Cerro León study assemblage, although there is evidence for many sculptural vessels with zoomorphic subjects portrayed. Figurine traditions are not prominent for the north central Andean highlands (Greider 1978; Lau 2001; Terada and Onuki 1982). Figurines like those recovered from the Gallinazo Group (Strong and Evans 1952:182, Figure 32, N and O) were not found at Cerro León.



Figure 7.5.8. Castillo series hollow figurines.

### *Slipcast pottery*

Hundreds of tiny fragments of pottery were recovered from excavations at Cerro León that are so thin they were often mistaken for crab shell. Almost all fragments are curved and smooth on the interiors and have an average thickness of 0.9 mm. A few fragments are small, dime-sized thin discs. Partially complete pieces show that these were tubes closed at one end (Figure 7.5.9). Analysis of the slipcast pottery at Cerro León is not yet complete. So far, 444 fragments weighing 50.9 grams have been classified. Slipcast pottery was used to make the panpipes that appear in southern Peru at the end of the Early Horizon (Dawson 1964:107). Although Dawson reports his samples to be extremely thin (often no thicker than an eggshell), those depicted in his article appear thicker than samples from Cerro León and are crusted with a thicker consistency clay that held the individual pieces together (Dawson 1964:112, Figure 1). None of the Cerro León slipcast fragments have clay on their exteriors, but two partial tubes were recovered from Compound 1 that had a white crusty residue on them. The curved and tube-shaped examples from Cerro León do seem to suggest a function as flutes or whistles but further study is needed.



Figure 7.5.9. Slipcast tube fragments.

### *Worked sherds*

A total of 180 items weighing 3.6 kg show evidence of grinding and shaping. The majority of these items are disks made from fragments of broken pottery vessels. I infer that the majority of these disks were probably blanks that would have eventually had a center hole drilled to make a *tortero* spindle whorl (refer to Figure 7.5.5). However, it is possible that some of these objects (plus some of the disks without holes shown in Figure 7.5.5) could have been gaming pieces. Some of the shapes seem purely decorative (a cross or clover shape) or may have served as all purpose (or possible pottery manufacturing) tools (Figure 7.5.10). These are relatively rare items in the Cerro León pottery assemblage.



Figure 7.5.10. Unusual worked sherd shapes.

## 7.6 Inter-assemblage Comparisons

In this section I perform a number of comparisons between of functional assemblages of the different residential compounds in Area 1 of Cerro León. I look for similarities and differences in the shapes of vessels and how functional categories are distributed among the pottery wares found at the site. I then examine vessel-size distributions for *ollas*, individual serving bowls, parching pans, and cántaros to look for variation among the assemblages of the three residences. These analyses shed light on patterns of foodways for daily meals as well as how residents participated in preparations for special occasions. Information on vessel sizes also reveal insights about the size of groups sharing meals for everyday and ritual feasting situations.

### *Basic Shape Frequencies*

The relative frequencies of *ollas*, pans, bowls, and jars vary only slightly between the three residential compounds of Area 1 at Cerro León (Table 7.6.1). Compounds 3 and 6 show slightly higher proportions of jars for liquid storage and fermentation, however. While it was the hypothesis that Compound 1 would have the highest proportion of fineware individual serving bowls due to the large amount of space available for large-scale gatherings, this is not the case. Compound 3 has a higher relative frequency of serving bowls with a lower frequency of *ollas*. For Compound 6, the relative frequency of *ollas* is roughly the same as Compound 1, but the proportion of fineware individual serving bowls is lower.

Table 7.6.1. Relative frequencies of functional categories in Compounds 1, 3, and 6.

FORM	1		3		6	
	Ct.	%	Ct.	%	Ct.	%
Individual Serving Bowl	306	10.45%	52	13.51%	88	8.22%
Storage/Parching Pan	338	11.55%	50	12.99%	114	10.64%
Neckless <i>olla</i>	21	0.72%	2	0.52%	7	0.65%
<i>Olla</i>	1457	49.78%	171	44.42%	548	51.17%
Bulged-collar <i>olla</i>	100	3.42%	10	2.60%	32	2.99%
<i>Cantaro</i> or <i>Jarra</i>	659	22.51%	92	23.90%	259	24.18%
Bottle	9	0.31%	0	0.00%	1	0.09%

<i>Tinaja</i>	5	0.17%	2	0.52%	0	0.00%
<i>Canchero</i> /Restricted form	2	0.07%	1	0.26%	1	0.09%
"Face-Neck" Jar	1	0.03%	1	0.26%	1	0.09%
"Grater Bowl"	0	0.00%	0	0.00%	1	0.09%
Miniature vessel	29	0.99%	4	1.04%	19	1.77%
Total Rims	2927	100.00%	385	100.00%	1071	100.00%

Although slight differences do exist, the results of this analysis show that each residential compound had accumulated essentially the same suite of culinary equipment for preparing, serving, and storing food and drink. Household members must have carried out the same types of food-related tasks. Many factors could account for the higher proportions of serving and storage vessels in Compounds 3 and 6. These two residences could have been established later than Compound 1, and therefore may not have accumulated higher proportions of *ollas* through breakage and replacement. The assemblages are also much smaller, and this may have resulted sample bias. If the differences were not caused by length of occupation or sample size, then it is difficult to assess whether the minor differences in relative frequencies of functional categories were played out as differences in the ways each residence carried out day to day foodways activities. Each compound has at least one room devoted to cooking daily meals. But, perhaps if Compounds 3 or 6 were “younger,” they may have taken advantage of resources available from kitchens in Compound 1, which was more established and further along in the household life cycle. It is possible that such differences corresponded to differences in social status in that Compound 1 supported more or larger families (Welch and Scarry 1995).

### *Type Distributions*

In this section, I examine the distribution of pottery types for angled-neck cooking *ollas* and individual serving bowls. I have hypothesized that, in all likelihood, residents of Cerro León made very little, if any, pottery at or near the site. Evidence from petrographic analysis demonstrates that great quantities of pottery products flowed into Cerro León from down valley as well as the highlands

of the Moche valley watershed. The distribution of angled-neck *ollas* may reveal some spatial patterning in the acquisition and use of lowland Castillo wares versus highland Cerro León wares. On the other hand, individual serving bowls are a category that includes all highland types. Cerro León, Otuzco, and Quinga Series bowls all came only from the highlands. The second half of this section examines the distribution of different types of individual serving bowls across the residential compounds. I explore the implications of the distributions of forms and wares at Cerro León in the discussion section.

Table 7.6.2. Frequencies of all pottery types per residential compound.

Type	Compound 1		Compound 3		Compound 6		Total
	Count	%	Count	%	Count	%	
Cerro Leon Plain	1130	40.59%	157	41.21%	550	51.94%	1837
Cerro Leon Burnished	184	6.61%	31	8.14%	72	6.80%	287
Cerro Leon Red-Slipped	493	17.71%	80	21.00%	128	12.09%	701
Cerro Leon White-on-Red	27	0.97%	5	1.31%	5	0.47%	37
Cerro Leon Polychrome	27	0.97%	9	2.36%	9	0.85%	45
Quinga	25	0.90%	4	1.05%	7	0.66%	36
Otuzco	186	6.68%	20	5.25%	90	8.50%	296
Castillo Plain	676	24.28%	67	17.59%	185	17.47%	928
Castillo Incised	20	0.72%	4	1.05%	7	0.66%	31
Castillo Modeled	2	0.07%	1	0.26%	0	0.00%	3
Valle Plain	8	0.29%	2	0.52%	0	0.00%	10
Other Paste & Temper	6	0.22%	1	0.26%	6	0.57%	13
Total	2784	100.00%	381	100.00%	1059	100.00%	4224

The distribution of Castillo and Cerro León angled-neck *ollas* displayed somewhat unexpected results. I had hypothesized that if founding populations at Cerro León came from the highlands to settle in the middle Moche valley, early on pottery assemblages would have exhibited a greater affiliation with highland roots. As time went on, households established later in the site's occupation would have contained more and more valley-produced pottery wares. However, Compound 1 has the lowest proportion of Cerro León (highland=56%) to Castillo (coastal=44%) pottery types, while Compounds 3 (highland=64%, coastal=36%) and 6 (highland=67%, coastal=33%) have roughly two Cerro León *ollas* for every Castillo *olla* (Figure 7.6.1). While



Compound 3 does not have the same proportion of Castillo plain *ollas*, it does have the highest relative frequency of Castillo Incised vessels. One possible explanation that the distribution is the reverse of what was expected is that Compounds 3 and 6 may have experienced a change in access to lowland pottery vessels for some reason.

Connections with trading partners may have been a factor for Compound 1. Since it was the more established household, residents may have had more ties in the valley. Compound 1 may have had to replace broken vessels for a much longer time and took more advantage of valley pottery producers. Another possible explanation is that differences in distribution might relate to vessel function or size in that Compound 1 was more engaged in activities in which Castillo vessels performed better. Marriage of highland men to coastal women at Cerro León may also explain this result. Coastal women may have had connections in the lower valley to pottery manufacturers and found it easier or more desirable to use familiar objects and social connections.

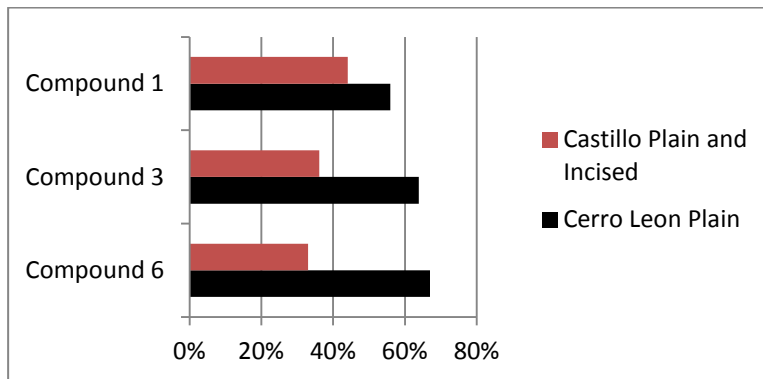


Figure 7.6.1. Frequencies of Castillo plain and Cerro León plain *ollas* in Compounds 1, 3, and 6.

In the case of serving bowls, most of which are likely from the same region of production, there are few differences between compounds. All residential compounds contained the same vessel types, but the relative frequencies for each type vary slightly (Figure 7.6.2). One commonality is that the bulk of serving bowl assemblages for all compounds are red-slipped, black-smudged, or unslipped and burnished. The remainder of each assemblage is then made up of much smaller yet still varying proportions of bichrome, polychrome, white and buff paste types. The relative frequencies of red-

slipped bowls are higher than black-smudged for Compounds 1 and 3 while the reverse is true for Compound 6. This could be a chronological trend since it was initially hypothesized that Compounds 1 and 3 were established earlier than Compound 6. There are other characteristics of the pottery assemblage of Compound 6 that indicate it might be different from Compounds 1 and 3 that will be discussed in the next section too. Achieving the black surface is something that may have changed technologically over time too, but this needs further investigation.

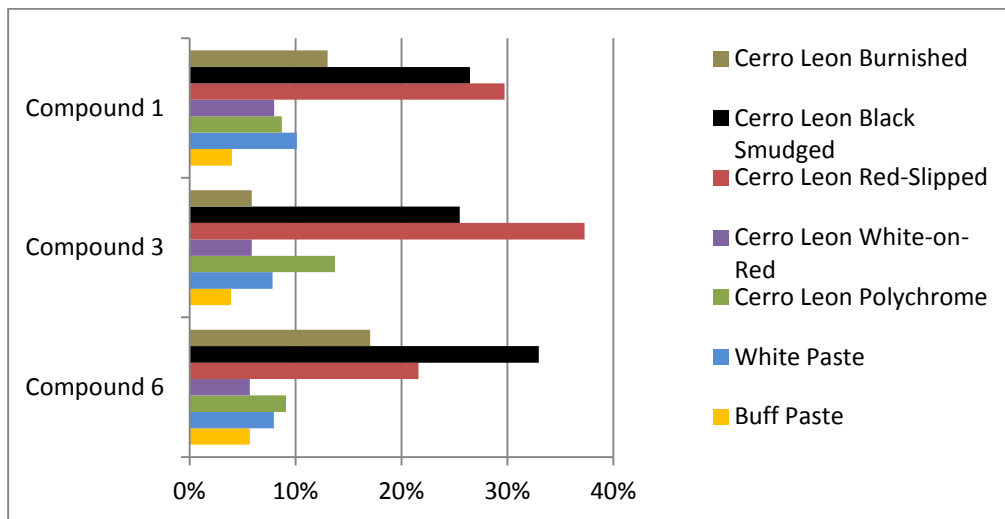


Figure 7.6.2. Frequencies of individual serving bowls in Compounds 1, 3, and 6.

Compound 3 has a higher relative frequency of polychrome vessels than Compounds 1 or 6. In general, Compound 3 also has higher frequencies of types with decoration, which is interesting but doesn't necessarily indicate any social or economic distinctions for Compound 3 residents.

Compound 1 has the highest relative frequency of white paste bowls. The Quinga series of white bowls was likely produced in a greater number of locales than Cerro León or buff types. Lau (2001) and others (Church 1996; Czwaro 1983; Topic and Topic 1983) note that white paste bowls were made all over the highlands from Cajamarca to Recuay. The white paste vessels in the Cerro León assemblage do appear to have different paste recipes but the majority have very similar paste and decoration so it is difficult to determine whether they indicate a much broader sphere of interaction or down the line trade, or whether they are part of the same region of production as Cerro León wares.

If they are from many different production centers, this may indicate that in addition to the greater mix of highland and lowland cooking pots, the residents of Compound 1 had slightly greater access to exchanges for white paste bowls with highland trading partners. However, the difference of roughly two percent between Compound 1 and Compounds 3 and 6 is likely a reflection of the overall greater sample size of Compound 1 bowls.

### *Vessel Size Comparisons*

In this section I examine differences and similarities in the size distributions of *ollas*, bowls, *tostaderas*, and *cántaros*. Although some samples sizes are small, it is worth examining all vessel categories with enough samples for comparison if only because comparative samples have not yet been established for EIP sites with highland components in the Moche valley. For all basic shapes examined in this section, notches of the box plots overlap demonstrating that orifice size distributions for each residence are generally comparable. The hinges on each plot, which represent 50 percent of the variation in each assemblage, also overlap.

Even though the bulk of the collection is comparable, it is immediately apparent that for the angled-neck *olla* notable differences occur (Figure 7.6.3). Here the location of each distribution is identical, that is, all the medians are the same for the three residences. Generally, the spread of each distribution is small as well, especially for Compounds 1 and 3, with 50 percent of the data packed tightly around the median. It appears that the majority of meals at Cerro León were prepared for groups of similar sizes. However, Compound 1 and to a lesser extent Compound 6 have several outliers, representing a series of *ollas* with large and extra large orifice sizes. If, as Wilson notes, “size distributions often correspond with the size of the social groups that come together to prepare and consume meals,” then Compounds 1 and 6 were often engaged in preparations for meals involving large groups of people (Wilson 2005:187). Blitz (1993) and Potter (2000) also discussed the social and political significance of vessel size as connected to hosting feasts, which can serve as a competitive or integrative element in complex society.

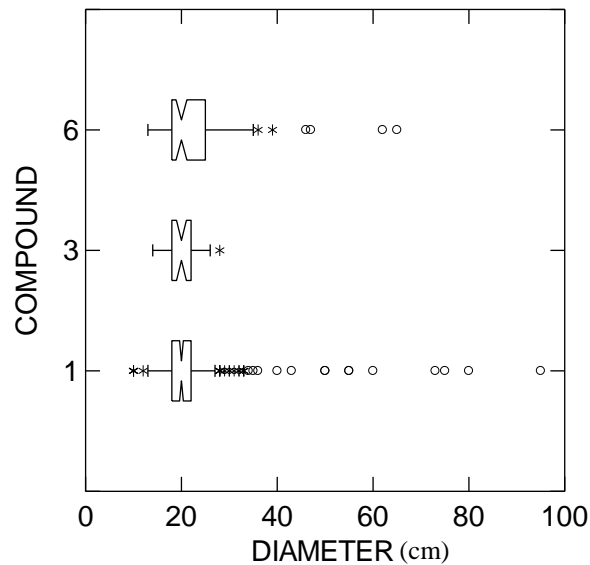


Figure 7.6.3. Boxplot of orifice diameters for cooking *ollas* in Compounds 1, 3, and 6.

The size distributions for individual serving bowls vary, but this could be a factor of the relatively small sample sizes for Compounds 3 and 6 (Figure 7.6.4). Generally, even though these two residences have serving bowl assemblages with smaller mean orifice sizes than Compound 1, portion sizes for individual servings of food or drink varied little between the three residences. Perhaps the broader range of sizes for Compound 1 is only a factor of sample size. If not, it could be that Compound 1 had a broader range of bowl sizes for feeding a broader range of ages, genders, or statuses of consumers at large-scale events.

With the exception of the large size *ollas*, parching pans vary the most in size compared to the other basic shape categories (Figure 7.6.5). As discussed in the previous section, there could be functional or chronological issues that account for these differences. The size differences correlate with the different types of pans, with plain being the smallest and the cut-out form being the largest. Whatever the case, sizes and types differ between Compounds 1 and 3 and Compound 6.

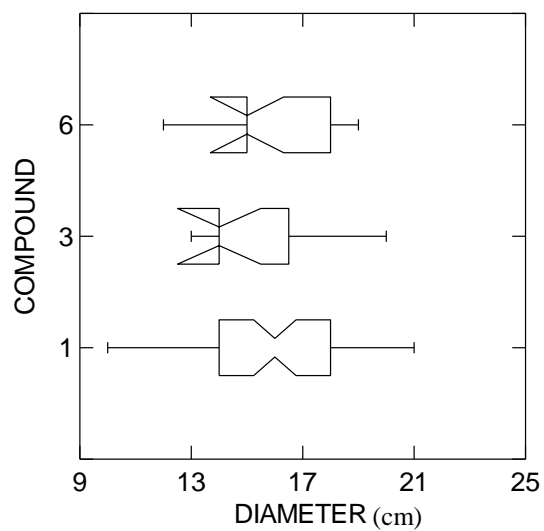


Figure 7.6.4. Boxplot of individual serving bowl orifice diameters for Compounds 1, 3, and 6.

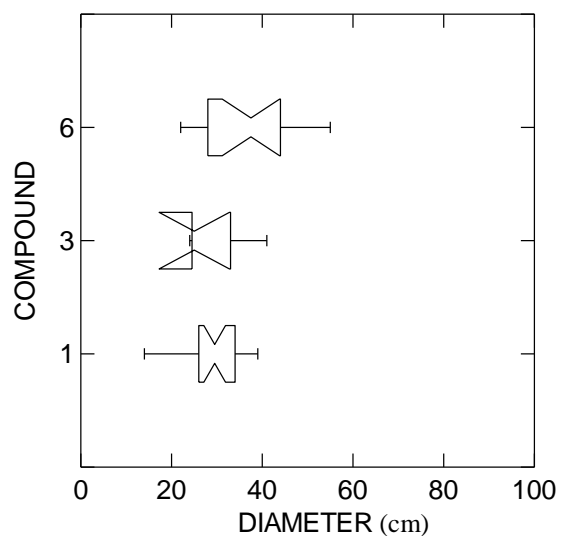


Figure 7.6.5. Box plot of *tostadera* (parching pan) orifice diameters (in cm) by compound.

The final category is the large, long-term liquid storage and fermentation vessels, *cántaros* (Figure 7.6.6). For this functional category, the distribution of basic shapes indicated that Compounds 3 and 6 may have had higher proportions of liquid storage and serving vessels in their assemblages. Although sample size could be a factor in the distribution of orifice sizes, it does seem that *cántaros* in Compound 1 may have had slightly larger orifice sizes, plus a broader range of sizes overall. In Compound 3 especially, most of the orifice sizes fall below the median.

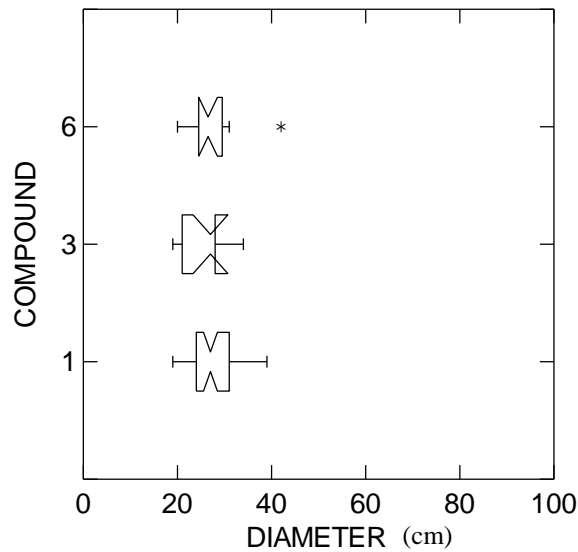


Figure 7.6.6. *Cántaro* orifice size distribution in cm by compound.

## 7.7 Discussion

The functional analysis of the Cerro León vessel assemblage has important implications for understanding foodways and social organization during the Gallinazo-Early Moche phase. In the previous section, I assigned vessels with different suites of characteristics to the four general functional categories defined for the Cerro León pottery assemblage. Based on the morphological and physical vessel properties, mechanical performance characteristics, evidence for use-alteration, vessel

frequency, and decorative techniques, the full vessel assemblage for Cerro León consisted of the following:

1. a range of angled- or flared-neck *ollas* for boiling various quantities and types of liquid-consistency foods.
2. bulged-collar *ollas* of various sizes for longer duration boiling of liquids or liquid consistency foods.
3. large, straight-sided *cántaros* possibly for heating and serving of larger quantities of liquid- or semi-liquid-consistency foods or in the absence of evidence for sooting, possibly dry or liquid storage of items that required easy and frequent access.
4. large *cántaros* with thin walls and flared necks for longer-term storage and covering of liquids.
5. small- to medium-sized *jarras* with thick walls for short- to long-term storage of liquids.
6. bottles for transporting, serving, and short-term storage of relatively small quantities of liquids.
7. large *tinajas* for long-term storage of liquids.
8. medium-sized *tostaderas* for heating dry materials over open flame.
9. medium-sized *tostaderas* with large cut-outs on their walls for toasting or storing dry foods.
10. medium-sized serving *ollas* for manipulating solid or semi-liquid foods.
11. large, open *ollas* for manipulating and/or serving solid or liquid-consistency foods.
12. small- to medium-individual-sized bowls for serving and eating solid or liquid-consistency foods.

Based on this functional analysis, as well as ethnographic and paleoethnobotanical information, it is apparent that households at Cerro León used clay pots mostly for boiling liquid consistency foods. This is consistent with ethnographic and ethnohistoric research for the Central Andes and the North Coast, in particular, where most hot meals consisted of soups, stews, or gruels made from a variety of cultivated plants (especially maize and beans), guinea pig, and a variety of other small-sized land animals and marine resources. What is distinctive about the Cerro León vessel assemblage is: 1) the differences between everyday culinary needs versus the requirements of feasts and 2) the ethnic and gender associations of the different pottery ware traditions that comprised the culinary functional assemblage as well as those for spinning camelid and cotton fiber.

#### *Everyday Foodways*

Everyday culinary assemblage at Cerro León emphasized ease and efficiency. Pottery vessels were likely the best, if not the only, option for the preparation of liquids or liquid-consistency foods

that would have been the basis for everyday meals. Households mainly used the classic angled-neck *olla* for this purpose. This functional category did not have distinct size classes but fifty-eight percent of my sample had orifice diameters from 18 to 22 cm. Based on estimates of vessel capacity discussed earlier in this chapter, pots with this range of orifice diameters would have yielded approximately a day's serving of *chicha* for four to six people.

It is likely that the majority of everyday individual serving wares for everyday meals were made from gourds. There are very few small open bowls with plain surfaces presumed to be for every-day use serving use. Fragments of *mate* (gourd) are present in the Cerro León artifact assemblage. Strong and Evans commonly found small gourds fashioned into cups and bowls throughout stratigraphic layers at Gallinazo phase sites in the Virú valley (1952:125). For coastal assemblages contemporary to Cerro León, Ford (1949:56), Strong and Evans (1952:266), and Bennett (1950:89) report bowls at Gallinazo and Moche phase sites but they are by no means common in site assemblages. Bennett (ibid.) states that bowls figure somewhat in mortuary assemblages but none of the authors discussed bowls as prominent in household sites. Two lines of evidence indicate that clay bowls were a product of a strong *mate* bowl tradition for coastal society; 1) clay bowls appear late in the chronology and 2) most of the bowls mentioned by Virú Valley Project researchers were mold-made using gourds.

In addition to boiling and stewing, preparing toasted grains or legumes was important. The *tostaderas* or pans used for parching maize, peanuts, or squash seeds are relatively uniform in size and shape. Toasted maize or *cancha* was a popular food at the time of Spanish conquest and remains popular today (Rowe 1946:222). Such foods had good nutritional value and portability. Toasting would have been an efficient way to prepare such foods for long-term storage or immediate consumption. The pan form with large cut-outs on its sides may have been used to suspend perishable foods over the cooking hearth. Larger food items (or small ones in bags or containers) would have been simultaneously smoked, dried, and stored over shorter periods of time. They would have been out of the way but accessible and free of pests until ready for use.



Long-term liquid storage in clay vessels was vital to the foodways and social lives of Cerro León households. Whether the large vessels were for storage of *chicha* has not yet been tested. This assessment must await analysis of the botanical remains from Cerro León and would be clarified by analysis of pottery residues. Based on direct archaeological evidence from other sites (Gero 1990; Moore 1989), the increased reliance on crops such as maize and peanuts during the EIP (Pozorski 1976) and the well-noted pan-Andean dislike of drinking water (Coe 1994:205; Gillin 1947:45; Rowe 1946:292), it is likely that *chicha* was preferred to water and prepared at Cerro León for drinking and cooking. It would not necessarily have had a long storage-life<sup>31</sup> but boiling and alcohol content would have reduced sickness due to contamination of the water supply.

There are few functional categories that unequivocally deal with storage of dry foods or for liquid transport. Containers that were light-weight and less prone to breakage than ceramic vessels would have been preferred for both tasks. In the late prehistoric southern Andes of Peru pottery vessels for liquid (or possibly dry goods) transport, such as the *aríbalo*, were one of the most visible and frequently occurring functional categories of vessels (Bray 2003b:111; Arnold 1993:139). Liquid or dry transport needs for an agricultural settlement are vital (Arnold 1993:139), and Cerro León was not within easy distance of fields and water sources. Distinctive methods of carrying vessels are not really known (nor have they been explored in depth) for northern Peru in comparison to other areas of the Americas (Arnold 1993). Gourds or animal hides may have been the preferred light-weight alternative for liquid transport on rocky terrain.

Dry storage remains an enigmatic category for the Cerro León collections, but many possible alternatives would have been available. Since Gallinazo phase households would have had gourds, plant fiber, cotton, and llama wool and skins available to them, it is possible that storage of dry goods could have been in containers made of any of these materials. Pottery vessels with restricted orifices may trap moisture and mold might have been a problem. The lack of storage pits in the region makes

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<sup>31</sup> Jennings (2005:245) reports *chicha* goes bad within about a week. Modern *chicha* makers in the Moche valley who use crude sugar (*chancaca*) to speed fermentation inform me that the beverage becomes too alcoholic or too vinegary for consumption in about a week to 10 days. My personal experience supports this.

masonry rooms or above ground structures made of organic materials likely storage locations.

Although the climate is dry, cloth or fiber sacks or baskets made of plant fibers may have prevented molding by exposing the contents to air flow. Problems with rodents may have made storage in clay jars preferable, but this would have had drawbacks as well. Gourds would have been a light and sturdy alternative to pottery vessels. They also could have been hung, if not too heavy when full, in order to keep rodents out and allow air to circulate around the container and inhibit mold formation.

### *Feasting Foodways*

Comparisons of the vessel assemblages for everyday meals versus special large-scale events are apparent in nearly all functional categories including cooking, liquid storage, group serving, and individual serving. The most obvious and telling difference between the three residential spaces at Cerro León relates to the capability of each residence to prepare for and carry out large-scale food preparation and consumption events. Compound 1 residents had both the space and the large-capacity cooking vessels to prepare for and host feasting events. Combined data from functional and typological analyses also reveals how the distinct vessel sets of Cerro León and Castillo series pottery were designed for different functional goals and how the residents of Cerro León took advantage of both to varying extents.

Although the bulk of cooking *ollas* at Cerro León fit into a limited size range, a sizeable proportion of vessels were of considerably greater size and volume capacity. These fell into no particular size classes but ranged from above 30 cm to 95 cm in orifice diameter. Clearly, since *chicha* can't be stock-piled, large-scale preparation events needed equally large-scale cooking pots. These types of vessels were almost exclusively found in the Compound 1 assemblage. Fermentation and serving of prepared foods and beverages would have used large, brightly-colored red and white *cántaros*, *jarras*, bottles, and open-profile serving *ollas* that were largely meant to remain in a central serving location. While the first three functional categories would have been for liquids, the last was likely used for serving semi-liquid consistency foods such as stews.

Individual serving vessels are important because of their relationship to the inherently social aspects of foodways. A considerable amount of time and effort was invested in the appearance of bowls, bottles, and polychrome jars in the Cerro León assemblage. These bowls and bottles held smaller amounts of liquids or liquid consistency foods for individual-size servings. Such fine-quality, highly visible vessels would have been important features for social occasions involving food. What is most interesting about the Cerro León individual serving bowl assemblage is the fact that it clearly reflects highland traditions and foodways.

Although design and decoration are not functional aspects of bowls as culinary equipment, they potentially served important social functions. Cerro León ware manufacturers used bold, simple designs and colors that lent to the visibility of bowls (as well as *cántaro* and *jarra* forms) in crowds or large spaces. Certain stylistic techniques tend to be associated with certain types but there is overlap in all the decorated Cerro León and Otuzco finewares. Black-smudged types always have linear and geometric abstract design painted in a thin, orange, translucent iron oxide. White paste bowls have orange or red slip-painted linear designs in linear themes. The Quinga series white bowls are the only bowl form to have the cross-hatched diamond design on their exteriors. Both black and white bowls have design fields on the interior or exterior, below the lip. Red-on-white and Polychrome types have bold bands of color or linear and curvilinear designs usually with lighter slip paints on the darker, red slip ground. These types have design fields only on vessel exteriors.

The Cerro León fine wares comprise a “party ware” assemblage. Like Stephen Vaughn’s (2004) example from Nazca sites in southern Peru, everybody had some of these wares, but sculptural vessels such as *jarras* and bottles were rarer and less accessible across social statuses. Although it is not certain how controlled production and distribution of the Cerro León, Otuzco, and Quinga fine wares was in the Moche valley highlands and middle valley, they appear to have been widespread and perhaps used as a strategy for creating community cohesion because they were easily recognizable and accessible to many. The distribution of such items may have been broad, but people with the resources to do so (like the residents of Compound 1) may have used them to their advantage,

associating themselves with an integrative drinking/feasting culture through hosting, gifting, and creating obligations or exchange relationships (LeCount 1999:251; Goldstein 2003:167). The designs were purely decorative, but may have been similar to weaving designs, providing easily recognized symbols with broadly shared meanings.

### *Foodways and Cultural Identities*

One of the most intriguing results of the combined origins and manufacture study in Chapter 6 and the functional analysis in this chapter is how the functional categories were divided by ware. Figure 7.7.1 demonstrates that the Cerro León series of highland-manufactured pottery accounts for all major functional classes of the Area 1 culinary assemblage at Cerro León. By contrast, the Castillo ware vessels made by coastal manufacturers were mainly cooking pots with remarkably few liquid storage and serving vessels. Although not included in the figure below, the highland-made Otuzco and Quinga series wares round out the parching/storage, food presentation and serving, and liquid storage/serving functional categories.

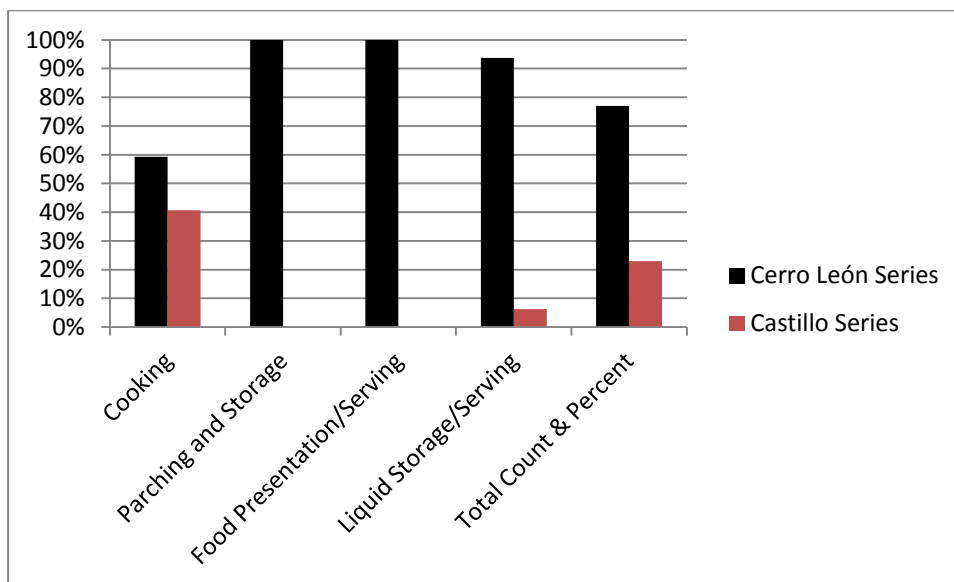


Figure 7.7.1. Cerro León (highland) and Castillo (coastal) functional categories in Area 1 houses.

*Coastal Identity.* Vessels that were part of a coastal-based repertoire of functional categories materialized mainly in everyday domains of existence at Cerro León. These vessels were limited in scope to the point where the most universal vessel form, the *olla* or angled-neck cooking pot, was the most represented coastal form at the site. Other functional categories of coast-manufactured containers were present, but these comprised just a small part of the overall functional assemblage. These did include vessels with decoration, for example, a few sherds of Gallinazo Negative pottery and a single face neck jar. Households also used coast-produced burnished bottles, but again, these were no more than occasional pieces in any of the household assemblages. In all, the overwhelming majority of coastal vessels were used for everyday cooking and liquid serving and storage.

*Highland Identity.* Highland-manufactured vessels comprised a much larger proportion and a broader functional range of the total Cerro León vessel assemblage. Mundane usage is particular to highland foodways and included forms for cooking, parching, storage and serving (both individual and larger-capacity). The potential differences in vessel volume capacities between highland- and coast-manufactured ollas deserve further investigation. One possible line of inquiry might be cultural or ethnic differences in what was included in a meal or how everyday meals are served. Larger coastal Castillo *ollas* may have been ideal for cooking greater quantities of food, either for larger numbers of people or for making once-a-day, one-pot meals. Cooks may have used the smaller volume capacity Cerro León series *ollas* for one-pot meals, either for smaller family groups or for serving one-pot meals multiple times a day.

Toasting seeds, grains, or other items or storing perishables above the hearth were clearly tasks that both coastal and highland groups would have done. However the *tostadera* or *colandera* pan forms (especially those with holes or cut-outs) found at Cerro León and other highland sites (see Lau 2001, for example) have no known identical form in coastal Castillo ware assemblages. Over-hearth storage could have been done with containers made from other materials such as *mate*, reeds, cane, or leather. Pottery bowls were part of Castillo ware assemblages in the Virú valley, but not with

cut-outs (Bennett 1950:90; Ford 1949:54–56). Further comparative study on form and use-alteration (i.e. sooting) are needed to understand this form, its distribution, and its possible uses.

In stark contrast to the coast-manufactured functional assemblage, highland functional and stylistic forms dominated special-use, large-scale culinary contexts. These contexts had ritual-ancestral associations and were geared toward legitimizing particular identities or lineage ties. Large- to extremely large-capacity vessels invoked enormous cooperative labor efforts for feeding people and creating obligations between hosts, helpers, and guests. Individual serving bowls also created a means to encourage display of and participation in a particular ideology. Both male and female gendered ideals are suggested by embracing connections to highland forms and styles.

#### *Cultural Identities and Other Pottery-related Activities*

A variety of non-culinary activities involved the use of pottery. The main activity of interest in this discussion is spinning. Nearly all implements for spinning are *tortero* forms, used to perform the typically highland method of spinning. Only two coast-manufactured *piruru* spindle whorls suggest that little of the coastal manner of spinning cotton was practiced at the site. No evidence of a figurine tradition was present for highland-manufactured pottery but a very small number of figurines of coastal style and manufacture indicate possible participation in coastal-style household ritual. Both of these types of material culture suggest that although coastal lifeways were known in activity and ritual, highland identity for women was the dominant cultural ideal and practice. In addition to these activities, household members almost exclusively repaired highland-manufactured culinary vessels and re-used highland vessel fragments for other activities.

## **Chapter 8 CONCLUSIONS**

In Chapter 4, I outlined three models to use as guides for interpreting the nature of Cerro León's occupation. The models provided a framework for understanding the occupational history of Cerro León and, more specifically, the identities of household members in three residential compounds that were central to life at the settlement. The first of these included a scenario of invasion into the middle valley by highland populations. The second model interpreted highland material culture in the middle Moche valley as evidence of intensive exchange systems between coastal natives and highlanders. The final model proposed the peaceful migration of a highland ethnic group to Cerro León. I concluded that the migration and colonization model is the most plausible scenario based on the choices households made about their foodways, especially their selection and use of highland-manufactured culinary equipment. However, as is usually the case, the reality is more complex and includes aspects of the other models. Specifically, defense and exchange relationships make for a richer interpretation of the occupational history of the households that comprised the core of Cerro León.

The possibility that the people residing at Cerro León were coast-based groups who engaged in intensive exchange relationships with highlanders can be ruled out for several reasons. First, more than half of the pottery assemblage is from source regions probably 30 km or more up valley from Cerro León. This was more than a stylistic preference. It was based on cultural differences in daily and feast-oriented foodways. The pottery assemblage was largely a highland vessel set made for people who used a particular set of culinary equipment. Although there was overlap for basic forms, the Cerro León highland assemblage was functionally very different from those reported for coastal EIP household assemblages (Bennett 1950; Fogel 1993; Gamarra and Gayoso 2007).

One of the main aspects of foodways in the households of Cerro León that stands out is the special role of Compound 1 in large-scale food and beverage production and consumption. It is noteworthy that public, ritual or political life was so connected to the residence in this case. Large spaces for gathering, eating, and drinking in Compound 1 were also connected to ancestor-focused activity, indicating that this might have been a source of legitimization and prestige for Compound 1 household members. The extremely large-capacity *ollas* and great quantities of cántaros, individual serving bowls, and other liquid and semi-liquid food serving containers in the vessel assemblage indicated that Compound 1 residents were capable of preparing potentially huge quantities of beverages and food within the household for gatherings (Moore 1989:691). Compound 1 likely received food surpluses and labor for such events from neighbors in Compounds 3 and 6 as well as many others in the settlement. While the residents of Cerro León provided the *chicha* (and probably the coca) for gatherings, highland home communities provided essential complementary resources. These included the functionally and stylistically distinctive vessel assemblage for preparing, storing, and serving feasting cuisine (Goldstein 2003: 167) as well as other feasting foods such as deer meat (Hastorf 2003).

Distinctions focused on highland foodways were not limited to special occasion resources but were central to everyday activity. Vessels for cooking, toasting, and storage, were mainly highland forms. The main coastal presence in this culinary material culture assemblage of Cerro León was the *olla*. It is significant that the most prominent aspect of the functional vessel assemblage that was coast-related was something virtually universal in form and function. Notably, there were differences between coast-produced and highland-produced *ollas* that showed they were made by people with different “templates” for creating such basic forms. Differences apparent in assemblages of cooking pots, in addition to the absence of other forms in coastal household assemblages such as the individual serving bowl and the *tostadera* (parching or storage pan), demonstrate the potential of domestic pottery assemblages for revealing cultural differences. Additionally, there was very little mixing or hybridization of pottery forms or styles. This came mostly in the form of highland styles of *ollas* (the



distinctive cut-lip variety of angled-neck *olla*) made with coastal pastes. This also occurred on the most basic form of everyday use in the culinary assemblage but was not related to function.

Culinary traditions were not the only aspect of Cerro León activities and material culture that showed a preference for highland technology or style. Supporting this view is evidence for spinning technology, which at Cerro León is dominated by the *tortero* or disk-style spindle whorl. The fact that only two *pirurus*, the coastal style of whorl used for cotton fiber, were recovered from the three compounds indicates that spinning technology was also highland-focused. Evidence related to choices regarding stone tool material types supports a focus on highland technical choices as well (Surridge 2010). The mudstone so abundant at Cerro León likely came from sources a relatively short distance up the Quebrada del León but neither Gallinazo nor Moche households in the area relied on it to make their tools. Although little comparative data currently exists for architecture and mortuary practices, these aspects of Cerro León material culture may also have evinced a preference for highland ways of doing things.

The study of identity at Cerro León was fruitful and enhanced interpretations of vital activities in the lives of compound residents. Gender, ethnicity, and status all played important roles in the daily lives and interactions of household members in Area 1 of Cerro León. Food production was carried out both at the scale of intimate daily meals and at a very large-scale for special ceremonies or other occasions in Area 1 residences. Daily meal preparations were likely more gendered activity and the domain of women, taking place in the kitchen with its well-used hearths, ash pits, vessel rests, and *ollas*. In addition to their central role in the day-to-day functioning of the household, women were likely directly connected to preparations for public ritual or political life at the site. At least for Area 1, there were no large-scale, special cooking or storage features outside of the compounds that would have indicated that special food production was carried out separate from the residence. Perhaps at the larger-scale production was spread out among women in many households since preparations could not be made too far ahead of the event (Jennings 2005:245).

Men probably provided additional assistance for food or beverage preparations, making food production in special contexts a less gendered activity.

Although daily and special occasion foodways were focused on highland material culture, residents at Cerro León obtained pottery (mostly cooking pots), marine resources, and probably other perishable items from coastal communities. In addition to material goods, there is a high likelihood that communities exchanged marriage partners as well. In the Case of Cerro León, women from coastal communities may have married in without altering the predominantly highland public and ceremonial life in significant ways. Because of the predominantly functionally highland culinary vessel assemblage and the evidence for spinning activity (the dominance of disk-style *tortero* spindle whorls) coastal women marrying into Cerro León's highland lineages may not have been common.

David Anthony (1997:23) describes “push and pull factors” as essential to understanding migration as a social process. For highland groups, the push to move and settle at Cerro León would likely have involved lower agricultural productivity and increased seasonality of the *quechua* and *jalca* zones. In a more limited agricultural system, kin groups may have favored senior members with increased status while others were afforded less opportunity for advancement (for example older siblings over younger). Expansion of groups through lineage segmentation (Anthony 1997:23) may have enabled more marginalized members of kin groups to branch off and find new opportunities for increased social status and prestige within the system, yet working around the limitations of the home base. Once individuals or groups found their niche in a new location, they may have used their status as “founders” to gain resources or prestige and draw others into cooperative or competitive relationships.

Pull factors would have involved the attractiveness of the new location, the distance to it, and transport costs (Anthony 1997:26). The attractiveness of the middle valley for highland groups was unquestionably its superior agricultural productivity. The potential for growing highly prized crops such as maize, coca, and peppers in double-cropping conditions would have been strong incentive to take risks in order to obtain resources and potential surpluses. Judging from the evidence for the

source regions of most of Cerro León's pottery (and their home trading communities), most groups probably didn't face a move of especially long distance but rather from one ecozone down the valley to an adjacent one in a compressed and varied landscape. This would not have been difficult for communities that were already using llamas for load carrying, wool, and meat. Once established, new communities would have the potential to gain control of newly tapped resources and the home communities (especially ones that manufactured pottery) would have benefitted from exchange relationships.

One factor constraining the pull into the middle valley for highland groups would have been potential hostility from groups who were already settled there. Protection was clearly a major consideration for the people who settled Cerro León (Fariss 2008) but not enough of a concern to close channels of communication and exchange of food, pottery, and probably marriage partners and labor. Perhaps, as Dillehay (1976) and Rostworowski (1988) described for the Chillón valley, these relationships were always fraught with tension and provided only a veneer of cooperation that was periodically disrupted by overt hostilities such as raiding.

But what ended or altered this apparently well-established coexistence? It is clear that Cerro León and likely dozens of similar settlements were abandoned at some point in the Early Moche phase. From evidence of abandonment processes in my sample of Cerro León's houses, it was apparent that leaving the site was not a sudden catastrophic or violent event. Based on evidence for draw-down behavior, people in Area 1 apparently knew they were going to leave at some point, and they were not likely to return. At least for households residing in Compounds 1 and 6, the life cycle had not yet run its course as there was little evidence for contraction and conversion of living space into disuse or trash accumulation locales.

Residents of Area 1 at Cerro León left, apparently with some time to think about what they would do next, but where they might have gone and why are questions that remain to be answered. At least from the standpoint of a strong multi-generational focus on highland ceremony, food ways and culinary equipment, and other craft traditions throughout the occupation of Area 1 at Cerro León,

evidence does not suggest that residents went on to completely assimilate into coastal communities. At this point it is difficult to say what, if any, highland cultural influences might be archaeologically visible at Moche sites in the Moche valley. Based on absolute dating for the Huacas de Moche and Cerro León, it is plausible that highland occupations in the middle valley overlapped with Early Moche phase political development. Highland populations in the middle valley may have felt some degree of pressure to join Moche political and social restructuring and expansion and relocate to other Moche settlements in the lower or middle Moche valley, or they may have chosen to opt out and return to communities in the highlands. We need to understand the timing and process of abandonment at other highland EIP sites in the valley before we can infer that what happened to three high status households at Cerro León was also happening to other households in different situations elsewhere.

The information gained by this study offers many avenues for refining research questions and stimulating new research. The most important aspect is to connect the foodways data gathered from the functional study of the pottery assemblage to work on the botanical and faunal remains from the Cerro León excavations that are forthcoming. These complementary analyses will offer a more complete picture of foodways in Cerro León households. Expanding the sample of absolute dates for Compounds 1, 3, and 6 as well as other site areas is vital to understanding the occupational history of the site as a whole. Archaeological investigating of other households and functional areas of the site will be an important aspect of future studies as well. Clarifying aspects of the production and distribution systems of pottery assemblages at Cerro León and other highland EIP sites will help to clarify relationships in the Moche valley watershed. Going beyond the site of Cerro León to build an expanding database of household studies for this dynamic phase of EIP development will make for a more complete picture of how Cerro León fits into regional chronologies.

## Appendix A: Plant and Animal Resources recorded for North Coast Archaeological Sites

Table A.1. Available crop plants, tree fruits, terrestrial fauna, and marine resources recorded for the north coast EIP.

Crop plants	References
squash	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Towle 1952:355–356; 1961:141–142)
gourd	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Towle 1952:355–356; 1961:141–142)
cotton	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Towle 1952:355–356; 1961:141–142)
maize	(Pozorski 1976:121; Tate 1998; Towle 1952:355–356; 1961:141–142; VanDerwarker personal communication 2010*)
manioc	(Fernández H. and Rodríguez R. 2007:16; Perry 2002:337)
peanut	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Towle 1952:355–356; 1961:141–142)
common bean	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Ryser 1998:78, Table 6.1; Towle 1961:141–142; VanDerwarker personal communication 2010*)
Lima bean	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Ryser 1998:78, Table 6.1; Towle 1961:141–142; VanDerwarker personal communication 2010*)
chili pepper	(Fernández H. and Rodríguez R. 2007:16; Pozorski 1976:121; Towle 1961:141–142)
potato	(Fernández H. and Rodríguez R. 2007:16; Towle 1961:141–142)
sweet potato	(Fernández H. and Rodríguez R. 2007:16; Perry 2002:337)
quinoa	(Fernández H. and Rodríguez R. 2007:16; Towle 1961:141–142)
coca	(Bardolph personal communication 2011*; Fernández H. and Rodríguez R. 2007:16; Towle 1961:141–142)
caigua	(Fernández H. and Rodríguez R. 2007:16)
achira	(Fernández H. and Rodríguez R. 2007:16)
jícama	(Fernández H. and Rodríguez R. 2007:16)
<b>Tree fruits</b>	
lúcuma	(Fernández H. and Rodríguez R. 2007:16)
avocado	(Fernández H. and Rodríguez R. 2007:16; VanDerwarker personal communication 2010*)
pacae	(Pozorski 1976:121)
cansaboca	(Pozorski 1976:121)
guayaba	(Fernández H. and Rodríguez R. 2007:16; Towle 1952:355)
guanábana/cherimoya	(Bonavía et al. 2004:512)
pepino dulce	(Fernández H. and Rodríguez R. 2007:16; Towle 1961:141–142)
<b>Terrestrial fauna</b>	
llama	(Billman personal communication 2005*; Pozorski 1976:114; Shimada 1985; VanDerwarker 1999:72)
guinea pig	(Pozorski 1976:114; VanDerwarker 1999:72)
deer	(Gagnon personal communication 2009*; VanDerwarker 1999:72)
dog	(Pozorski 1976:114; VanDerwarker 1999:72)
frog	(VanDerwarker 1999:72)

turtle	(VanDerwarker 1999:73)
lizard	(VanDerwarker 1999:73)
snake	(VanDerwarker 1999:73)
snail	(Pozorski 1976:119; VanDerwarker 1999:73)

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**Marine resources**

mollusk	(Pozorski 1976:119)
fish	(Pozorski 1976:119)
sea lion	(Pozorski 1976:119)
pelican	(Pozorski 1976:119)
mussel	(Pozorski 1976:119)
conch	(VanDerwarker 1999:73)

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**Fresh water resource**

crayfish	(Billman personal communication 2008*)
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\* Although analysis is not complete, these resources have been specifically identified in the Cerro León assemblage.

## **Appendix B: Area 1 Architectural Descriptions**

### **B.1 Introduction**

This appendix provides general descriptive information for each of the features in the three residential compounds included in my dissertation. I have compiled the information here from various reports submitted to the Peruvian Ministry of Culture and summaries written by Brian Billman, Jesús Briceño Rosario and myself, over the years. This is meant to provide an overarching summary of excavation information in one place, in English to make the material more accessible to North American scholars and students working on the MOP Cerro León Project.

#### **B.2.1 Compound 1**

Compound 1 is the largest residence known at Cerro León, measuring roughly 480 m<sup>2</sup>. At least 34 adjoining rooms, patios, and other functional spaces, including a stairway and corridors make up the residential space. Compound 1 occupies a large modified terrace that appears to have been chosen chiefly for its size and commanding view over the valley and the quebrada del León. Residents remodeled and expanded the compound several times during its occupation. The original core of the compound appears to have consisted of a large room that was later divided into a kitchen (Feature 5) and several storage or special purpose rooms (Features 8, 9, 10) with storage (Feature 6) and patio (Feature 14) with entryway (Features 23 and 7).

Feature 5 is a 13.56 m<sup>2</sup> room with full-height (1.8 m) walls. The room contained a total of seven internal subfeatures, mostly hearths and ash-filled pits. Upon beginning excavation, the room perimeter seemed intact, but large looted areas had damaged the center of the room. Excavations began in the north half of the room, which was covered with approximately 60 cm of wall collapse debris. The central part of the north half contained a thin layer of wind- and water-lain compacted sediment, the result of a past El Niño event(s?). Beneath these sediments lay a level of compacted guinea pig coprolites comprising a use-compacted floor (Floor 2). Portions of two large cántaros were broken in two separate locations upon this floor. A grouping of rocks in the northeast corner of

the room likely served as a pot rest (F. 5.02) for one of the large cántaros. Beneath Floor 2 excavators moved through approximately 8 to 10 cm of compacted fill with guinea pig scat, charcoal, ash, and fish and camelid bones. At the terminus of this level, excavation uncovered Floor 3, another use-compacted surface containing dense concentrations of crushed and compacted guinea pig scat as well as a small patch of floor plaster. A small hearth (F. 5.01) lay on the surface of Floor 3, against the north wall of Feature 5. The hearth had a maximum diameter of 20 cm and a depth of 8 cm. The upper strat consisted of intact charcoal and ash while below a thin layer of oxidized soil was present.

The southwest quarter of the Feature 5 room contained the least disturbed stratigraphy in the room. Its deep, intact deposits indicate a long and complex history of occupation. In this corner, approximately 30 cm of wall collapse debris overlay Floor 1, a compacted dirt floor created after the original occupation of the household. Although the floor had no artifacts associated with it, the occupation likely dates to the Chimu phase (see Feature 8). This compacted dirt surface had a small burned area with oxidized earth, rock and ash that excavators determined to be a hearth (F. 5.03).

Feature 5 was apparently occupied for a short time during the Chimu phase. Debris from collapsed walls was apparently cleaned up a bit and the room was used as a temporary shelter. One plausible interpretation is that Chimu pastoralists used the site shortly after an El Niño event. Floor 1 was in fact, on top of El Niño sediments. After the 1998 El Niño, Cerro León was covered with vegetation for several months and sheep and goat herders took advantage of the extra pasture. Evidence in the form of Chimu blackware pottery fragments and a living floor with hearth were revealed in Feature 8, on the other side of Feature 5's south wall.

As mentioned above, beneath Floor 1, excavations uncovered caps of fine sediments alternating with sandier, coarser sediments. These pairs of fine and coarse water-lain deposits document cycles of inundation, settling, and drying produced by repeated rains. In all, there were four episodes of this cycle. These events produced a deposit with a total depth of 27 cm. Beneath this, excavators discovered Floor 2 to have been partially destroyed by looting. Some intact plaster



was centrally located along Feature 5's south wall. The floor was also oxidized in this location with ash and charcoal surrounding the oxidized area. This Floor 2 hearth was designated Feature 5.04.

At some point, it is clear that the south wall of Feature 5 was either newly constructed or remodeled to be made thicker. It appears this massive wall was constructed sometime after the use of Floor 3, which was encountered after removal of 10 to 20 cm of coarse sediment with dense concentrations of household organics, including ash, charcoal, and guinea pig coprolites. Excavations to reach Floor 3 also revealed a large, deep hearth in the southwest corner of the Feature 5 room. This hearth had a plastered border clearly associated with Floor 3. A stone projected out from the corner of the wall above the hearth and was tentatively described as a pot rest. Hearth Feature 5.05 was bell-shaped in cross section and had a depth of 45 cm. It was filled with charcoal and ash. Various pieces of a broken *olla* were in the hearth fill.

Also associated with Floor 3 in Feature 5 was a north-south running wall that extended under the south wall of Feature 5. Compound 1 underwent major remodeling after use of Floor 3 in Feature 5 terminated. This does seem to make the corner "pot rest" stone protruding from the southwest corner of the Feature 5 wall somewhat problematic. Perhaps the hearth Feature 5.05 was in use both during the occupation of Floor 3 and on into the use of Floor 2, the final living surface of the original occupation of Compound 1, but since there was no sign of a hearth in the corner associated with the Floor 2 occupation, this does not seem possible.

Floor 4 was the first occupation of Feature 5. This was a use-compacted surface with associated hearth (5.07) and ash-filled pit (5.06) features. The hearth was bell-shaped in cross section and highly oxidized. Excavators unavoidably disturbed part of the hearth upon excavating the Feature 5.06 ash-filled pit. Underneath Floor 4 excavators encountered sterile, compacted sand with gravels that formed an *in situ* soil, formed as the bedrock degraded over time.

The southeast quarter of Feature 5 was not nearly as well preserved as the adjacent southwest quarter. The Floor 1, post-occupation compacted surface was present, however. An approximately 30 cm cap of wall fall and refuse covered the occupation surface and underneath it lay the thick

deposit of El Niño sediments. The southeastern corner of Feature 5 has no wall, but rather marks the entry into the room via a small room or vestibule designated Feature 7. The entry to Feature 5 from Feature 7 had been blocked by debris from wall collapse, thus allowing rainwater to pool in the southeastern quarter of Feature 5.

Beneath the El Niño deposits, as in the southwest quarter of the room, Floor 2 was encountered damaged by looting in all areas but the perimeter of the room. No interior features were associated with Floor 2 in this area of the room. Between Floor 2 and Floor 3 lay 10 to 20 cm of sandy sediment mixed with high concentrations of guinea pig coprolites, charcoal, and ash. In association with Floor 3 a small hearth (Feature 5.08) and a large depression that likely served as a vessel support (Feature 5.09) were found.

The northwest quarter of Feature 5, beneath the post-occupation compacted living surface (Floor 1) and the final occupation level of the original occupation (Floor 2), was covered with a hearth (Feature 5.10) and two large, ash-filled pits (Features 5.11 and 5.12). The hearth was along the western wall of the room almost in the northwest corner and the pits were along the north perimeter of the room. Floor 4, the original compacted living surface of the room's occupation, was nearly completely destroyed by the hearth and ash pit features associated with Floor 3.

In the final phases of excavation of Feature 5 the excavation crew cleaned out the large, central looter's pit. This looting had destroyed any evidence of intact living floors in most of the east half of the room. Upon finishing this cleanup, however, the crew discovered additional features associated with Floor 3 along the eastern perimeter of the room. These features included a hearth (Feature 5.13), a post hole (Feature 5.14), and an ash-filled pit (Feature 5.15). As in other areas of Floor 3, the surface around these features was a stratum of sediment that contained ash, charcoal, and abundant guinea pig coprolites. The discovery of post holes is rare at Cerro León and Feature 5.14 was the largest found at 16 cm in diameter. It extended 33 cm below the surface of Floor 3 and likely supported the roof of the larger room in the earliest occupation of Feature 5. The post was removed and the hole filled and capped along with the rest of the surface when the use of Floor 3 ended.

Feature 6 is a small, well-made masonry room with full-height, double-faced and filled walls. Looting activity destroyed nearly the entire interior and filled the room with loose looter back-fill. Nevertheless, along the room perimeter, excavators found evidence for two discrete living floors. Excavations uncovered remnants of Floor 1 beneath 30 cm of wall collapse debris in the northeast and southeast corners of Feature 6. The floor consisted of use-compacted El Niño sediments and, like Features 5 and 8, is the likely result of short-term post-occupation encampment during Chimu times. It appears that the room was cleared of post-abandonment debris and a dry masonry wall was constructed from wall collapse stones. Beneath the compacted El Niño sediments of Floor 1, a 20 cm layer of fill containing household trash and further El Niño sediments separated Floor 1 from Floor 2. Floor 2 is contemporary to the original occupation of Compound 1 and consisted of a thick cap of buff-colored plaster. The only remaining remnant of Floor 2 was found along the south wall of the Feature 6 room. Underneath the floor excavators revealed a thick domestic trash deposit. It appears that the inhabitants of Compound 1 used the trash and sediment mix to level and construct Feature 6. The dimensions of the room are so small that a storage function is the most likely functional interpretation for the original use of the space. Additional support for the use of the space as storage is the fact that it is adjacent to the largest interior space devoted to cooking in the compound, Feature 5.

Feature 7 served as the means of accessing Features 5 and 6 from the patio area of Feature 14. The Feature 7 passageway was likely also used as a sleeping area. The space was largely destroyed by looting but remnants of intact floor were found over a domestic trash and fill substrate. No evidence of the post-occupation compacted El Niño sediments found in Features 5, 6, and 8 was found in Feature 7 but looting could have easily destroyed such evidence. A small remnant of Floor 2, contemporary with Floor 2 in Features 5 and 6, was found in the southeast corner of the passageway. A small hearth (Feature 7.01) tucked in this southeast corner was associated with the living floor.

Feature 8 is immediately to the south of Feature 5, sharing the well-made stacked stone wall with that feature. This north wall of Feature 8 is more than a meter thick. Excavations revealed that

Feature 8 had a total of five interior features and probably served as a sleeping/living space during the original occupation of Compound 1. The west half of the room showed evidence of occupation in prehistoric and modern times. Features 8.01 and 8.02 were small hearths associated with modern trash (containing plastic) and Chimu phase blackware pottery. Both post-occupational episodes were likely to have been related to herding and foraging activities after El Niños. Sixty centimeters of sediments mixed with trash, wall fall, and looting debris lay beneath the post-occupation surface and associated hearths. The east half of the room contained a large looter's hole back-filled with mixed deposits from the looting event.

Beneath this debris was the floor of the original occupation. The entire floor was intact and associated with three features. In the northeast corner of Feature 8 crews found a circular cist (Feature 8.03) lined with upright stone slabs. The cist had originally been covered with several tabular stones but these had been partially disturbed, some moved aside and others fallen back into the cist. The contents of Feature 8.03 were looted and the disturbed fill had fallen back into the cist. The disturbed fill had dense artifact content, including lithic debris, pottery fragments, a coastal-style spindle whorl (*piruru*) with incised designs, and a finely made quartz crystal projectile point. It is very likely that during the original occupation the cist held a secondary human burial since human bone was recovered from the looter back fill. However, little human bone was recovered and since looters typically leave bone behind it is reasonable to interpret the context as a burial site where the bones of the individual(s) were removed at abandonment. Next to the Feature 8.03 cist a large burnt area, hearth feature 8.05, was found. The hearth was U-shaped and contained ash, charcoal, and bone. Burning took place directly on the plaster floor. It is possible that the fire area was surrounded by adobe bricks on three sides that were used as vessel supports over the fire.

In the west half of Feature 8 excavators uncovered a circular pit measuring 55 cm in diameter and 33 cm in depth (Feature 8.04) dug out of degraded bedrock. The pit was not lined with clay or plaster, nor was there any evidence of burning or ash fill. The base contained fine sediments indicating that it had been filled with rain water during El Niño events. It is possible that the feature

was originally excavated in order to support a large pottery vessel. It is likely that the artifacts in the pit fill may have been left on the living floor when the original inhabitants of Compound 1 abandoned the room and were washed into the pit during the rain events.

Excavators attempted to answer the question of how residents of Compound 1 entered Feature 8 since no doorway was found. They dug two test trenches (TT 4.01 and 4.02) into the south wall of the room (also a retaining wall separating a higher terrace (Feature 22) from Feature 8). No doorway was found and the means by which residents accessed the room remains unclear. It is possible that entry was gained above ground by ladder from the terrace above or through the roof of the feature.

Features 9 and 10 are two smaller chambers to the east of Feature 8. They share Feature 8's massive, meter-thick north wall. All other walls are full height and finely constructed. Feature 9 was extensively damaged by looting and back-filled with debris from this activity plus colluvium from the terrace (Feature 22) above. This fill had dense concentrations of artifacts. Once fill was removed, excavators encountered a use-compacted surface with diffuse evidence of burning. This context likely indicates that the space served as a windbreak for a brief period of time after abandonment of the original occupation of the compound. Below this surface lay about 15 to 20 cm of debris from wall collapse on a plaster floor. Except for looting disturbance in the center of the room, the floor was intact and was found at the same level as the floor in Feature 8. Excavation crews did not encounter artifacts or features in contact with the floor.

Feature 10, east of Feature 9, had no evidence of looting and an intact plaster floor underneath sloping colluvium and wall collapse debris that ranged from 30 to 55 cm in depth. Excavators did not find any artifacts at floor contact however, they did find two features. The first was a hearth (Feature 10.01) situated along the north central perimeter of the room. It had a diameter of 35 cm and was 10 cm deep. The hearth appeared intensively used. It was highly oxidized and filled with ash. Feature 10.02 was a complete mammal skeleton, possibly a small dog or fox found in situ in the southeast corner of the room in direct contact with the floor. Similar to Feature 8, Features

9 and 10 no apparent entryway into either of the rooms was found. Both rooms likely served as storage, but Feature 10, because of the hearth, may also have served as a sleeping space.

Feature 14 is an “L-shaped” patio located east of Features 10, 7, and 23. Although the west and south walls were thick and likely full height, the north wall was thin and low. The east wall was a retaining wall that separated the Feature 14 patio from the Feature 18 patio to the east. The Feature 14 patio sits roughly 30 cm higher than Feature 18. Feature 14 had been nearly completely destroyed by looting but excavation crews did find fragments of three discrete occupation floors. Floor 1 was a use-compacted surface with small, scattered deposits of ash. Floor 2 consisted of small fragments of a thin plaster surface over fill with domestic refuse. Floor 3 was discovered by excavation of a test trench below 20 cm of fill. Floor 3 was an intact, thick plaster surface. The unusually high counts of lithic tools and debitage in the Feature 14 fill are worth noting. Excavators recovered eleven whole and 24 broken hoes, 16 bifaces, 10 utilized flakes, and 1,848 pieces of lithic debitage along with many other different types of artifacts in the fill of Feature 14. Possible explanations for the presence of so much debris are that looters may have disturbed a trash deposit from beneath one of the living floors or that trash from this feature and other adjacent rooms was dispersed by looting activity. A space that is somewhat tucked away like the Feature 14 patio could also have become a convenient location for dumping trash during the process of abandonment.

On Feature 14's south wall are two small rooms, Features 15 and 20, that were interpreted as storage spaces. Like Features 8, 9, and 10, the south wall of Features 15 and 20 is the retaining wall of a large terrace (Feature 22). Most of the 20 to 70 cm of debris filling the two small storage rooms fell down from Feature 22 above. Both rooms had badly preserved plaster floor built over fill containing household trash. Originally, the two small rooms were a single, larger space. A thin dividing wall was built on top of the plaster floor after the original construction of the room to subdivide the space. As with all the other rooms that share the Feature 22 retaining wall, entryways are unknown.

Feature 16 is east of Features 15 and 20 and south of patio Feature 18. A looter hole was evident in the east half of the room. Like all other rooms along the Feature 22 terrace retaining wall, this room contained debris fallen down from above. However, the Feature 16 room, unlike Features 15 and 20, was built on bedrock outcrop that was modified to create a flat surface for the floor as well as the bases of the south wall. Most of the floor was bedrock but in the east end the floor overlay a deposit of trash fill that continued under the Feature 18 patio. Above the floor was a thick lens of sediment and refuse. A *batán* was removed from the debris/fill of the room. It is likely that the room was abandoned during the original occupation of the compound and was used as a dump. Excavators did not find any pits, hearths, or other internal features in Feature 16. In this instance however, doorway access from patio Feature 18 was clearly present in the northeast corner of Feature 16.

Feature 17, east of Feature 16, is the last room along the Feature 22 terrace retaining wall before another large retaining wall intersects the retaining wall running north—south. This small room contained only minimal looting in the north half but was otherwise intact. Underneath wall fall and colluviums from the terrace above was an intact plaster floor without associated artifacts. Also in the room was a small U-shaped wall made of rock and adobe abutting the east wall of the room (Feature 17.01). This wall was only 50 cm high. This may have served as some kind of bin or trough but function is not known.

The Feature 18 patio is a very large patio at the east end of Compound 1. It is bordered on the east by a large, thick, crudely constructed retaining wall. The patio was covered with loose refuse and excavation crews uncovered only small patches of plaster floor. During the first season of excavation at Cerro León, time did not permit the full excavation of the patio, but a test trench probed the subfloor (TT 2). An intact, stratified trash deposit was discovered that appeared to predate most, if not all of the construction episodes of Compound 1. In fact, most of the east wall was built upon domestic trash deposits, indicating that Feature 18 was a fairly late construction in the history of Compound 1. Like Feature 14, Feature 18 has very dense concentrations of lithics and ceramics. Again, this could be a product of looters disturbing the trash fill beneath the floor but it is difficult to

determine. Over several field seasons, Feature 18 was excavated in sections running south to north. These units were designated XUs 7, 10, 60, 61, 62, 63, and 64.

South and east of Feature 12, XUs 60 and 61 contained several features associated with occupation and use of the Feature 18 patio. Feature 18.01, abutting the south wall of Feature 12, is an enormous *batán*. Looters apparently disturbed the *batán* at some point after the abandonment of Compound 1 because it rests upon back dirt from nearby looting activity. Excavators also uncovered three small, shallow hearth features in this area of the patio (Features 18.02, 18.03, and 18.04). All were covered by small amounts of ash and charcoal, indicating that their use may have been only short-term. Feature 18.05 is a ring of stones near the eastern retaining wall of the patio. This likely served as a support for a large pottery vessel. Excavation units 61 and 62 were severely looted, but 63 and 64 had better preservation. There is evidence of use-compacted sediments overlaying bedrock outcrops in this area of the patio. On top of the occupation surface lay a thin deposit of sediments and wall collapse debris. It appears that the long, eastern retaining wall was constructed on trash deposits and bedrock. The low areas on the uneven surface of Feature 18 were then filled and leveled with additional household refuse and sediments.

Located at the north end of patio Feature 18, the Feature 12 room may have served the residents of Compound 1 as another kitchen. Access into the room was in the east wall, adjacent to the southeast corner of the room. Looting destroyed the north half of the room, but the south half remained intact and excavators uncovered 2 living floors here with many associated features. Floor 1 was covered by a 20 cm thick refuse deposit. In the south half of Feature 12 the plaster floor had two small hearths (Features 12.01 and 12.03) associated with it. The Feature 12.01 hearth, located along the west wall of the room, contained three stones that probably served as a pot rest. The Feature 12.03 hearth was in the northwest corner of the room. A cap of sediment about three cm thick separated Floor 1 from Floor 2. Floor 2 was a use-compacted surface; not plastered. A small oxidized area with some ash was on the central part of the Floor 2 surface in the room's south half. The fill between Floor 1 and Floor 2 contained small fragments of metal (copper), lithic debitage, and



pottery fragments. Hearth Features 12.01 and 12.03 were also in use during the occupation of the earlier living floor, Floor 2. When in use during the Floor 2 occupation, residents of Compound 1 vented hearth Feature 12.01 by digging a long, narrow, east—west running channel in the floor. In addition to these, hearth Features 12.02 and 12.04, two post holes (Features 12.06 and 12.07) and an ash-filled pit (Feature 12.05) were also associated with Floor 2.

North of Feature 12, a series of excavation units (XUs 50, 66, and 67) were laid out in order to define the area surrounding Feature 12. Excavation units 48, 49 and 52 were west of Feature 12. Excavation unit 50 was immediately north of Feature 12, on a small terrace area later designated Feature 41. The area was delimited to the south by Feature 12's north wall and on the west by a retaining wall that was also Feature 12's west wall. The majority of this area had been looted but after removal of 10 to 20 cm of fill containing domestic refuse, excavation crews encountered a use-compacted surface with two associated hearths (Features 41.01 and 41.02). This area was likely a *quincha* walled and roofed space that may have served as an outdoor cooking and/or craft-producing area. Excavation unit 66, north of XU 55, revealed the north edge of the terrace upon which the Feature 41 *quincha* room was built. The retaining wall delimiting the terrace curved from northwest to southeast and was 30 to 40 cm high. Its surface was use-compacted and contained much charcoal and ash on its surface. Two superimposed hearths (Feature 41.03) associated with the occupation surface had been partially destroyed by looting. The upper hearth had a much deeper profile and cut into the lower, more shallow hearth. The lower, shallow hearth had a plastered and highly oxidized base and was filled with ash. Further evidence that Feature 41 was built of *quincha* was provided by the many fragments of burnt earth with cane impressions recovered from the fill above the use-compacted surface in XU 66. North of XU 66, excavation crews set up XU 67 below the terrace wall in order to obtain samples of possible trash deposits associated with Feature 41. These excavations produced many materials including a disk-style spindle whorl (*tortero*), copper fish hooks, lithic tools, beads, and debitage, pottery fragments, and charred organic remains.

On the west side of the retaining wall shared by Feature 12 and Feature 41 was a narrow corridor (XUs 48, 49, and 52). The western boundary of this small space was yet another retaining wall. One small fragment of use-compacted floor was discovered along the east wall of the space. Deposits that overlay this floor were approximately 10-20 cm thick. The fill in XUs 48 and 49 had a surprisingly high density of artifacts. The southern-most XU 52, adjacent to Feature 23, was completely destroyed by looting activity. No living floors or other features were found. The space may have been a convenient, out-of-the-way location for dumping trash or storing items that household members used infrequently.

The Feature 54 room is at the northern terminus of patio Feature 18. Beneath a cap of trash-filled sediments 20 to 30 cm thick, excavations revealed a floor made of use-compacted sediments. Associated with this occupation surface crews identified three hearths (Features 54.01, 54.02, and 54.03). In the northwest corner of Feature 54 excavators also uncovered a large, low-walled bin, Feature 55. The base of the bin was dirt floor and was directly associated with an ash-filled pit.

Feature 49 was excavated in 2007. This feature is a small room at the northern boundary of the Feature 13 patio close to the northern perimeter of Compound 1. Measuring 1.65 by 1.65 meters, this structure's function is unclear. The room was almost completely destroyed by looting. A layer of looter back fill and trash mixed with sediments covered a compacted dirt floor. The room contained very few artifacts but did have a small hearth associated with the compacted floor (Feature 49.01). The hearth was 22 cm in diameter and 4 cm deep. It was covered by ash and charcoal. Beneath this compacted surface another hearth (Feature 42.01) was uncovered that was situated on bedrock outcrop. This hearth was in use before Feature 49.01 and was sealed with a layer of mud corresponding to the remodeling or addition of the higher, use-compacted dirt floor. Because of its small size, the hearths, and the fact that the room was built into a cluster of large boulders that may have served as a windbreak, Feature 49 is interpreted as a small cooking and storage space.

A group of rooms (Features 19 and 21), a patio (Feature 31), and a possible slab-lined tomb (Feature 24) were constructed on the east side of Feature 18's eastern boundary wall. Feature 19 is a

small well-made room with full height walls that probably served as a storage space. The entire center of the room was dug up and destroyed by looters. However, remnants of a single, intact plaster floor were present around the perimeter of the room. Guinea pig coprolites were present along the north wall of the room. Because of the small size of the room and the presence of the guinea pig scat, storage space or a guinea pig hutch are two possible functions for the room. Below the floor, excavation crews found evidence of a hearth, used before construction of the room took place. The room was constructed upon fill and was added to Compound 1 after the construction of Feature 18, making it part of one of the latest building episodes in the entire residence.

Little could be determined about Feature 21, a small room to the south of Feature 19. Digging all the way to bedrock in this area of the compound, looters destroyed all but small segments of the room's south and north walls. The south wall appeared to have also served as a retaining wall. A small fragment of plaster floor with *media caña* was connected to the north wall segment. On this small patch of plaster floor excavators encountered a small hearth (Feature 21.01), filled with ash over an oxidized base. Ten cm of fill with domestic refuse separated the Floor 1 remnants from a second remnant of plaster floor, Floor 2. This earlier floor ran under Feature 21's north wall to continue under Feature 19. Between Floor 1 and Floor 2 several possible use-compacted surfaces were evident. It appears that Feature 21 was once a large room predating construction of Feature 19, but excavators could not determine this with any degree of certainty because of the extensive damage caused by looting activity.

Excavations enabled determination of the construction sequence for this part of Compound 1. Features 16 and 17 were likely the first rooms built, likely for storage purposes. Next, residents laid down a layer of fill containing household trash, approximately 10 to 20 cm thick out in front of (north of) the two storage rooms. After laying the trash deposit, the east wall of Feature 18 was constructed on top of the trash, forming a closed patio space. Finally, a first and then a second small room, Features 21 and 19 respectively, were added on the east side of the Feature 18 retaining wall.

Immediately southeast of Feature 21, crews opened up additional excavation units to probe the area for evidence of additional walls or rooms. This large area was covered with looting activity and, being near the base of a slope was covered with looter back fill over a meter in depth. The south profile of these units did show that the looter back fill covered intact colluviums with high densities of artifacts from the domestic occupations to the south (upslope). These occupations are still part of Compound 1, but are on the southeast perimeter of the compound. Approximately 30 cm of intact colluviums was excavated down to bedrock. A small east—west running wall lined up with the south wall of Features 15, 16, 17, and 20. No intact floors or additional architecture were discovered. Crews opened up another excavation unit immediately south of Features 16 and 17. Again, deposits of looter's back fill over colluvium were removed. This revealed that after abandonment of the compound a significant portion of the terrace wall collapsed onto Features 16 and 17, filling the rooms almost completely. A small segment of the intact retaining wall was also found in Feature 16.

Feature 22 is a large patio situated on the terrace above Features 8, 9, 10, 15, and 20. The western third was excavated in 2004. The patio was covered with a soft, loose layer of fill roughly 15 cm thick. Excavators uncovered compacted floor in XU 16, made up of a mix of compressed earth and exposed bedrock. Crews uncovered an entryway made of exposed bedrock and plaster in the patio's southwest corner. Two large stone slabs, positioned upright framed either side of the entry. The patio was accessed from the Feature 32 patio below and to the northwest via the Feature 42 staircase. The staircase defines the western margin of the Feature 22 patio. Because the patio space was large, it was divided into smaller units for excavation. Excavation units 16, 17, 18, 38, and 40 comprised the total surface area of patio Feature 22. Another upslope terrace to the south contains additional patio space (Feature 43).

Two cists lined with upright tabular stones (Features 22.01 and 22.04) were uncovered on the north wall of Feature 22. The retaining wall separating Feature 8 from Feature 22 had been modified to include construction of the cists. The Feature 22.01 cist was 30 cm in depth and its basin-shaped floor was lined with mud mortar. Much of the contents of the cists had collapsed into Feature 8, but a

partial camelid skeleton, pottery fragments, lithics, and a stone bead remained in the cist. The Feature 22.04 cist was located east of Feature 22.01. The second cist was similar to the first in size and depth as well as the finish of the floor with mortar. The Feature 22.04 cist had been looted and appeared to have contained only camelid bone. One bone had evidence of cut marks on it.

A semi-circular low wall feature (Feature 22.03) is located to the east of the slab-lined cists. This wall was only 40 cm in height and constructed of mud mortar and stone. The function of this feature is unknown. It may have served as a windbreak, although none of the four hearths found on the patio are within this space. The hearths (Features 22.02, 22.05, 22.09, and 22.11) instead, are found in various locations around the patio. The base layer of every Feature 22 hearth exhibits intense oxidation, indicating extremely hot fires burned in each. Tucked away out of the main area of the patio, a series of ash deposits line the southern retaining wall separating Feature 22 from Feature 43. These ash dumps (Features 22.06, 22.07, and 22.08) are located east of an enormous *batán* (Feature 22.10). All these features line the patio's southern boundary wall in a mix of natural sediments, cultural trash fill, and exposed bedrock.

Feature 23 is a small patio space to the east of Features 6 and 7. Patio Feature 23 is approximately 40 cm higher in elevation than patio Feature 18 and 10 cm higher than patio Feature 14. Feature 23 is separated from Feature 18 by a low retaining wall. Small fragments of a single plaster floor were found along the north and west margins of the patio space, but looting had destroyed the majority of Feature 23. This space may have been roofed and likely served as an activity area and a means of entry into the Feature 5 kitchen via the Feature 7 passage way and sleeping area. Some evidence of stone tool and bead production as well as metal object finishing is present in the Feature 23 fill.

Feature 24 is an oblong, upright slab-lined cist in the northeast corner of Compound 1. It is likely part of the latest construction phase in Compound 1, along with Features 19, 21, and 31, all located on the east side of Feature 18's eastern retaining wall. Feature 24 had a hardened occupation surface made of compacted sediments overlaying domestic trash fill. The cist had been looted but the

compacted surface was left intact. Much of the fill removed from Feature 24 apparently ended up in Feature 31 immediately to the south. Included among the refuse in the Feature 31 patio that likely came from the Feature 2 cist was a small, hollow gold bead. A scant quantity of human bone was found in the cist, indicating that, like cist Feature 8.03, a human burial may have been removed upon abandonment of Compound 1.

Feature 31 lies between burial cist Feature 24 (north) and storage/guinea pig hutch Feature 19 (south) on the east side of the Feature 18 patio. No actual floor was found in the space. It may have eroded away or it is possible the bedrock outcrop, which is high in the north half of Feature 31, was modified to serve as part of the floor. Wall collapse material from the east retaining wall of Feature 18 and the cist Feature 24 had fallen onto exposed bedrock in this part of the patio. The south half of patio Feature 31 contained a trash fill layer approximately 15 cm thick. This fill continued under the west wall (Feature 18's east retaining wall) to the Feature 18 patio sub-floor fill. As mentioned above, it appears that most of the rest of the fill in the Feature 31 patio was back dirt from looting the Feature 24 burial cist.

Features 35, 36, and 37 comprise a well-made room and two adjacent patio areas to the southeast of the Feature 22 patio. The Feature 35 room was nearly completely destroyed by looting activity. North and west walls are almost gone, but the east wall remained and was well-made. The southern boundary of the room is a large bedrock outcrop and the "floor" of the south half of the room appears to have been exposed bedrock. Fill above this bedrock was mixed and ranged in thickness from 40 to 90 cm. Excavators found no intact stratigraphy in any part of the room. Feature 36, a patio space southeast of Feature 35, has not been excavated. The Feature 37 patio surrounding Feature 35 (where?), had a looter's pit in the center. Wall collapse material and looter backfill debris covered the patio. Beneath this debris, one use-compacted surface was uncovered.

Just north of the unexcavated Feature 36 patio excavation crews found the remains of two small rooms, Features 52 and 53. Their small size and finely finished floors and walls led to the interpretation that Compound 1 inhabitants used them for storage. The small but well-made spaces

are located south of Features 16 and 17 on the terrace that also contains patio Features 22, 36, and 37. Features 52 and 53 are situated approximately 1.5 m higher than the Feature 18 patio to the north. The two small rooms, once shared a north wall that had been destroyed by looting and colluvium. This wall may have been low (i.e. not above 40 to 50 cm in height) in order to make accessing the contents of the rooms easier. The only remaining evidence of this north wall was the *media caña* floor in both rooms. The rest of the floor was completely destroyed in Feature 52 (The east room) but totally intact in Feature 53, the west room. A narrow strip of the terrace lies directly north of the two small storage spaces. The terrace surface immediately north (in front) of Feature 53 had evidence of burning. In Feature 53, three large fragments of a *cántaro* were found in contact with the floor.

Feature 32 is the second largest open space connected to Compound 1. Several excavation units attest to a complex history of this heavily used patio. The most revealing of these was the XU 57 stratigraphic cut excavated in the 2006 field season. Five different strata and three occupation surfaces were identified in the XU 57 excavations.

- Stratum I consisted of sandy sediments containing gravels, rocks, and a high density of artifacts and charcoal. This terminated at a more compacted surface. Stratum I showed evidence of looting.
- Stratum II transitioned to more compacted and darker brown sediments but still contained high concentrations of artifacts.
- Stratum III marked a shift to dark brown compacted sediments with interspersed layers of fine gravels. No rock was present in this stratum. Artifact density was moderate to high. A small area of oxidized fine gravels was defined in the southeast corner of the excavation unit.
- Stratum IV consisted of four layers of deposits. The first, level 4, was a thin layer of guinea pig coprolites, less than 2 cm thick. In the northeast corner of the unit the deposit was denser. Level 4 was the upper part of a use-compacted surface. Level 5 was designated as Floor 1. The floor had high concentrations of charcoal and ash. The floor was dark brown in color with an oxidized patch overlain by a thin layer of ash near the center of the unit. Floor 1 was heavily compacted and had a dark lense of organic matter mixed into the surface. It was about one to four cm thick. Beneath the dark, high-organic content floor was another thin lens of guinea pig coprolites, ash, and charcoal. Level 6 exhibited an abrupt change to a soft, lighter brown sediment without charcoal, ash, or organic matter. Level 7 consisted of the second use-compacted surface, designated Floor 2. Similar to Floor 1, this was a dark brown/gray, heavily compacted, with abundant charcoal and ash on and compressed into the floor surface.
- Stratum V consisted of another light brown layer of sediments containing gravels. At the base of this layer, a third occupation surface was encountered. This was a compacted surface without any organic matter or charcoal.

To the south of Feature 32 crews defined two terraces (Features 43 and 44) at a higher elevation than patio Feature 32 plus a staircase (Feature 42) fashioned out of large tabular rock and modified bedrock. The stairs allowed access from Feature 32 to patio Features 22, 36, and 37, as well as terrace Features 44 and 43. The height differential between patio Feature 32 and the upper-most terrace that the staircase served (Feature 43) totaled more than 2.5 meters. The staircase was covered in debris from wall collapse and contained very few artifacts. Adjacent to the staircase, the Feature 44 terrace featured stone work that was somewhat unusual for the site. The back (south) wall contained two very large upright slabs and two boulders. Between each slab and boulder builders filled the spaces with mud mortar and many chinking stones. The chinking stones had been carefully selected. They were narrow, tabular, and of widely varying lengths, some nearly 60 cm long. Above this wall builders had laid two large angular stones set in mud mortar. The entire wall was 1.25 meters high and had not been plastered over. The wall was constructed on top of bedrock.

Approximately 1.75 meters above terrace above Feature 44 and at the top of the Feature 42 staircase, Feature 43 is a narrow terrace situated just north of a large outcrop of bedrock at the southern margin of Compound 1. Three large looter's pits had completely destroyed the terrace and deposits consisted of mixed looter's back dirt and domestic trash. No intact walls or living surfaces were found. Excavators were able to determine that a small room with masonry walls had been present on terrace Feature 43. This room (Feature 47) also appeared to be severely damaged by looting. However, excavators did locate the bases of the east, west, and north walls. The south wall was a banquette and retaining wall. A small *batán* was found at the base of the west wall. It also appeared that the base of an earlier wall ran under Feature 44.

### **B.2.2 Compound 3**

Compound 3 is the smallest residence in Area 1 of Cerro León. Compound 3 is situated on three small, man-made terraces along a bedrock outcrop that served as the western wall and a natural



wind break for the residence. The first terrace along this bedrock outcrop is the highest elevation of the residential space. Four small but well-built rooms along this outcrop had some of the best preservation of roofing material, adobe bricks and mortar, and organic remains discovered at the site. Feature 25 is the northern-most structure along the bedrock in Compound 3. Wall collapse debris and looter back fill covered the room. Within the upper portion of this fill, a small, post-occupation hearth was found (Feature 25.01). The hearth was probably modern or at least historic in age. Much of the debris dug out of the room during looting was apparently thrown down to the terrace below (XU 29). The room's west wall was the bedrock outcrop. The east wall was the retaining wall for the terrace and showed significant damage due to erosion and looting. Upright slabs were located in the southwest corner of the room along the bedrock. The entire south wall was made from worked stone. Excavators were unable to locate a north wall. Only a damaged retaining wall was found just north of the end of the bedrock outcrop. A use-compacted floor was found in Feature 25 that was associated with several internal features. In the southwest corner of the room, a small storage bin made of stone and mortar was found (Feature 25.02). Contents of the bin included abundant plant remains, many of which were not carbonized. Another bin (Feature 25.03) and a hearth (Feature 25.04) were also found in association with the floor. The hearth was rectangular and lined with stones. It was filled with ash and charcoal and had an intensely oxidized floor. Excavators also encountered many guinea pig coprolites in the rest of the room.

Features 27 and 30 are adjacent to Feature 25 along the upper terrace of Compound 3. These rooms also share the use of the bedrock outcrop as their western wall. In these two rooms, mud plaster was used to cover the bedrock wall. The north and south walls consisted of worked stone covered in very thick mud mortar. Most of the floor in these spaces was destroyed by looting activity, except for remnants along the western bedrock wall. Occupants of Compound 3 had made the floors from a thick mud mortar as well. Judging from the amount of mud mortar in the room fill, these features had thick, well-made walls and roofing of cane and mud or adobe construction. Roofs appeared to have been made low, perhaps no more than about 1.3 meters high. In Feature 27, a

narrow ledge or banquette had been constructed along the western bedrock wall. The absence of other internal features, the low roofs, and the small size of the rooms all point to a storage function for Features 27 and 30. Great care was apparently taken to cover the walls and floor with a thick layer of plaster. This was likely an effort on the part of Compound 3's residents to protect the room's contents from destruction by insects, rodents, or climate.

Sharing Feature 30's south wall, Feature 28 is the southern-most structure along the bedrock at the top of Compound 3. The west bedrock wall of Feature 28 was covered in mud plaster as in Features 27 and 30. The bedrock wall also contained a niche (Feature 28.01) made of small planar rocks framing a natural hole in the bedrock. It is likely that the contents of the niche were removed upon abandonment of the site. The niche had been covered by fill and wind-blown sediments. The room's north and south walls were worked stone covered with mud plaster as well. The eastern retaining wall contained a banquette shaped out of mud and adobe. Entry into the Feature 28 room was likely gained via an opening situated somewhere along the banquette. Remnants of packed earth floor were discovered in Feature 8. Also on the floor and on top of the banquette, remains of a cane and mud roof material, wood, and cane-marked adobes were encountered. Included in this construction debris, excavators also found fragments of at least one pottery vessel and abundant charcoal. Similar to Features 27 and 30, the interior banquettes and lack of hearths or other features led to the conclusion that Feature 28 was also used as a storage space.

Feature 29 is the largest room on the upper-most terrace of Compound 3. It is south of Feature 28 and the terminus of the bedrock outcrop so its western wall is free-standing. Feature 29 shares its north wall with Feature 28. The room's west, east and north walls are all thick, worked stone constructions. Much of the debris overlaying the room interior is collapsed remnants of these walls. The south wall was not present, likely having been destroyed by looting and erosion. Most of the floor was gone but fragments of packed mud mortar were found scattered over the surface of the room. Fill above this patchy floor included debris looted from the terrace below (XU 25) guinea pig coprolites, mud mortar fragments, faunal material, and a human femur. The femur may be from a

slab-lined cist on the terrace below, Feature 33 in XU 26. The guinea pig coprolites were concentrated along the western perimeter of the Feature 29 room. Below the level of the floor fragments, excavators encountered an ash layer. It appears that the floor was added during occupation of the room. The original living surface was never identified but may have been a compacted earth surface. Remnants of a possible bin (Feature 29.01) were uncovered in the northeast corner of the room but the area was destroyed by looting and only a small portion of the thin, west wall was identified and mapped. The relatively large floor area of the room in addition to the possible bin, ash, and concentrations of guinea pig scat indicate that Feature 29 was an all-purpose space for cooking, keeping guinea pigs, performing various daily activities, or possibly sleeping.

The terrace to the east of the one that holds Features 25, 27, 28, and 29 is approximately a meter lower in elevation and contains few architectural features. This may have served as a long corridor, patio, or undefined space where unused items or trash from the upper terrace was stored or deposited. Several excavation units were dug (XUs 25, 26, and 29) in order to define the space, look for features, and examine the discarded or looted contents of the rooms on the highest terrace along the bedrock outcrop. The only Features that were encountered were a slab-lined cist (Feature 33) and two circular depressions used as vessel supports (Features 45 and 46). The remnants of walls running east-west and north-south were found on this terrace, indicating that the space was likely remodeled at least once during the original occupation of the residence.

The Feature 33 cist is a one meter square and one meter deep pit. It is lined on three sides by worked stone and on the fourth (west) side by natural bedrock outcrop. Only the northeast quarter of the cist contained intact fill. In this area, layers of fine silts alternated with coarser, sandy silts, indicating sedimentation due to El Niño events. Apparently the cist was open when the original inhabitants abandoned Compound 3 and it periodically filled with rain water. It is possible that the Feature 33 cist was intended for storage, but because of the femur found on the adjacent terrace, a burial function may also be likely. Like the other burials in Compound 1 (Features 8.03 and 24) it is possible that bones were removed from the cist when the original residents left Cerro León.

Excavation of XU 37, to the east of XU 25, identified the western part of Feature 34 (possibly a patio) but little else. The southern margin of Compound 3 exhibited significant damage from looting.

Features 45 and 46 were underneath 10 cm of disturbed fill that consisted of looted material from Feature 26 to the east and some alluvial material. The south half of XU 29 was excavated down to bedrock in the western part of the terrace and construction fill along the eastern retaining wall. Excavation crews removed 2 to 13 cm of disturbed fill and a layer of intact compacted sediments. The sediments probably formed during the use of Feature 25, above and to the west. Feature 45 was covered by a thin layer of alluvial sediments and trash. It was well-defined in planview and profile, measuring 60 cm in diameter and 18 cm deep. The base of the feature had a layer of light brown compacted mud. Feature 46 was smaller with a diameter of 50 cm and a depth of 12 cm. This feature was not as well-defined as Feature 45. Feature 46 had filled with sediments, apparently through natural processes after abandonment of Compound 3. Both features, being shallow circular basins without evidence for burning, were likely used as supports for pottery vessels.

On the lowest terrace of Compound 3, two small rooms (Features 26 and 38) and adjoining patios (Features 34 and 39) mark the eastern margin of the residence. The residential space is delimited by a long eastern retaining wall. To the east of this wall no architecture was found but the presence of high densities of artifacts indicate that this low area at the top of a *quebrada* chute may have served as one of Compound 3's midden areas. Features 38 and 39 are at the northern edge of this terrace. The western wall of the Feature 38 room is the western retaining wall of the terrace and was constructed with large stone slabs, about 75 cm to 90 cm long. The north and south walls of the room were also made from slabs. The eastern wall is marked only by a single course of smaller stones. This was likely the foundation for a *quincha* wall, while the other walls were full height stone walls. Fragments of clay with cane impressions were abundant in the fill of Feature 38.

Most of the room was destroyed by looting activity, but excavations in the north half of Feature 38 revealed two intact living surfaces in the profile of the looter's pit. Floor 2, the lower and earlier living surface was made up of a combination of exposed bedrock outcrop and compacted

sediments. In the southwest quarter of the room Floor 2 was never located although it may have been there originally. Floor 2 had been covered by about 15 cm of fill with gravelly sediments. In the north half of the room Floor 1 overlay this fill. Floor 1 comprised a thick, gray, ash-infused compacted sediment with embedded charcoal. The north wall was constructed during occupation of the later Floor 1 surface. Floor 1 was covered with 10 cm to 20 cm of alternating fine and coarse El Niño sediments. It appears that the eastern *quincha* wall was constructed on top of these sediments. This indicates that the room was remodeled during or after a period of moderate to heavy rain damage. In the room's southwest quarter, Floor 1 was compacted earth and bedrock outcrop. On its surface, Floor 1 had traces of oxidation covered by a layer of ash indicating that hearths had probably burned there. Feature 38 is interpreted as a kitchen space because of the domestic trash and probable hearths. The room was in use only during the later occupation of Compound 3. The patio continued to be used while the kitchen was in use.

Feature 39 is delimited by the eastern-most retaining wall of Compound 3. The patio was likely used for food preparation and cooking as well as stone tool and bead manufacture. The space was mostly destroyed by looting but excavators did identify one use-compacted living surface along the margins of the space. During the occupation of Compound 3, it appears that patio Feature 39 was remodeled, likely because of the El Niño events that had taken place prior to the rains that damaged the Feature 38 room. After these earlier rain events, a new floor was made over the entire surface of the patio. Later on, the Feature 38 room was built on top of this floor.

Feature 26 is a small room located on the west edge of the terrace off the northwest corner of the Feature 34 patio. The west wall is the retaining wall of the terrace. The east wall had a foundation of worked stone. Only a small fragment of packed earth floor remained in the room. The rest had been severely damaged by looting. The Feature 34 patio may have been the largest patio space in Compound 3. Within the confines of the Feature 34 patio, a large slab-lined cist (Feature 48) was found. Like the Feature 26 room, Features 34 and 48 had been severely damaged by looting. The cist was 90 cm in diameter and situated approximately 52 cm below the level of the floor of the patio.

The upright slabs that lined the walls of the cist were 30 to 40 cm long and were still in place on the east and west sides of the cist. The cist's contents were completely dug out by looters and they used debris from this activity to back fill the cist. The artifact content in the disturbed cist was dense and diverse. Contents included four fragments of sheet copper, one small fragment of sheet gold, stone tool and bead fragments, a grinding stone fragment, abundant pottery fragments, and a variety of faunal remains. Only one possible piece of human bone was found; a phalange.

### **B.2.3 Compound 6**

Compound 6 is roughly 15 by 15 meters in maximum extent, delimited to the north by a large bedrock outcrop before descending steeply toward the valley floor. The southern (upslope) extent of the compound is also framed by bedrock and large boulders. The original inhabitants enhanced both natural boundaries with wall construction, but the southern (upslope) boundary contained more elaborately constructed terrace walls to manage the steep hill slope. Large, double-faced retaining walls run roughly perpendicular to these two bedrock outcrops and define the western and eastern limits of the compound. The terrain slopes downward and the distance between the bedrock outcrops widens from west to east. The western compound wall, likely one of the main points of entry into the architectural compound, is a shorter, smaller construction. The eastern compound wall overlooks a large quebrada that defines the eastern limit of Area 1 at Cerro León. This wall is a more massive construction containing several boulders that are nearly a meter high (Briceño y Billman 2009:67). Compound 6 is comprised of four known masonry rooms and 2 patios, plus one corridor feature with stair-steps and a small landing. The 2008 field school students and staff excavated a total area of 93.12 m<sup>2</sup> which constitutes 68% of the entire residential compound space.

Compounds 1, 3, and 6 of Area 1 were originally constructed as residential spaces that likely housed larger and smaller family groups. The residential compounds of Area 1 are the largest and finest constructions at Cerro León. However, within Area 1, there is significant variation in the sizes of Compounds 1, 3, and 6. Such variation likely related to a number of factors including, a family's

social, political, or economic status, their position in the household life cycle, the timing of initial construction for each residence, the overall lengths of time each residence was occupied, and the different activities each household carried out.

Field school students under the supervision of MOP staff carried out a complete surface collection of Compound 6 during the 2007 field season. Preliminary impressions of Compound 6 included evidence of extensive looting, especially heavy between 1990 and 2000 (Briceño y Billman 2009:67). In spite of heavy looting, we identified the remains of at least seven rooms and patio areas visible on the modern ground surface. Surface densities of artifacts proved heavier in the southern and eastern portions of the compound probably related to the amount of colluvium related to the drop in elevation of approximately six to eight meters from Compound 1 down to Compound 6. Artifacts recovered from all surface collection units of Compound 6 consisted mainly of pottery and lithics. These indicate a range of activities including storage, processing, cooking, and serving of food and drink and production of stone tools and ornaments such as hoes, bifaces, flake tools, and beads (Briceño y Billman 2009:69).

Feature 51 is a large patio space on the western edge of Compound 6 that would have served as one of two main entry points into the residential space. It is irregular in shape and smaller in the northern than in the southern part. Its excavated area is roughly 32.83 m<sup>2</sup>, but could be much larger than that if it extends to a north-south running retaining wall roughly at the midpoint of the compound space. At this point, I don't include XU 91 because we didn't get far enough along in the excavation to determine whether this area is truly part of the patio. In the northeastern quadrant of the completed excavation, the patio terminates at a small masonry room (Feature 65). Traffic flow was permitted from the patio around this room to the north by a narrow corridor (Feature 59, XU 77) that abuts the bedrock outcrop at the northern extent of the compound. The southern portion of the patio is much larger, but its final configuration is unclear because time didn't permit finishing the excavations in its eastern quadrant.

#### Feature 51, XU 79

Excavations of excavation unit 79 pertain to the northern half of the patio feature. Deposits were shallow because the northern bedrock outcrop is high and relatively flat along the western edge of the compound. This portion of the patio was covered by larger rock from collapse of the double-faced western wall of the compound and smaller rock from walls built on top of the bedrock outcrop to extend its height. The height of the bedrock ranges from roughly 40 cm to 2 m high from the western to eastern compound walls. The walls on top of the bedrock outcrop may have heightened and leveled the outcrop to a full wall for application of roofing material, served as a windbreak, or merely provided a visual boundary for the northern edge of the compound. They were constructed of fitted, single-faced rock with many small chinking stones and no apparent mortar.

Beneath the wall collapse rock in the northwestern part of the unit, portions of a compacted surface overlay a thin, 2 cm layer of sand and silt containing a moderate amount of ash. The compacted surface may have been a late occupational surface, or a buildup of natural sediments compacted by post-abandonment trampling. Evidence for multiple small but intense fires was found along the base of the northern bedrock outcrop. Ashy fill, probably associated with these burning events, had accumulated, or been moved to, the northwest corner of the patio and along the western compound wall. Cuy scat had also concentrated along the walls and on top of the floor in this corner of the patio. The unit's only traces of packed plaster floor were found in the northwest corner under the thin layer of ashy fill. The northeastern portion of the unit contained one well-defined looter hole while the southeastern was disturbed by activity related to the looter hole.

#### Feature 51, XUs 80, 82, 86, 87, 88 and 91

Originally, the southwest quadrant of the patio was thought to contain the remnant walls of a large masonry room, possibly a kitchen because of its size and the large grinding stone (*batán*) in the southwest corner. This assumption guided our excavation strategy so we designated the "structure" as one excavation unit, XU 80. Unit 80 was divided into east and west halves and excavation began in the east half. Levels 1 and 2 of the excavation appeared to be looter's fill, but the boundaries of a



discrete looter's pit were not found. Level 3 exposed bedrock sloping down from the south edge of the unit to the center. There bedrock was burned in the east-central portion of the unit (this likely pre-dates patio construction). As excavation continued, it became apparent that the walls of the "room" were ill-defined or absent and we deemed it necessary to expand the boundaries of XU 80 in order to find them.

We began redefining XU 80 by clearing heavy concentrations of rock from the west half of the unit. We expanded the unit to the west and south and began to excavate level 1 of the 'new' west half of XU 80. However, it immediately became apparent that XU 80 was now so large that to divide and label manageable sub-units would be cumbersome. Thus, other excavation units (XUs 82, 86, 87, and 88) were created west and south of the original XU 80 in order to define the space more clearly. It also became apparent that XU 80 was not a masonry structure. It appeared that looters had stacked fallen rock around them as they dug through the wall fall and colluvium covering the patio feature.

Excavation unit 88, located in the southwestern-most corner of Compound 6, contained a remnant of intact plaster floor 1.5 cm thick. This floor was in the central and southeastern portions of the unit adjacent to bedrock covering the west half of the XU. Fill had been deposited underneath the floor to level it to the bedrock. This fill had dense concentrations of trash.

Patio Feature 51 is interpreted as a large, open, multi-purpose activity area where food processing and lithic tool production and maintenance took place on a regular basis. Before the Feature 51 patio was constructed people engaged in numerous episodes of burning and probably dumping of trash. Initial work on the patio probably began with filling episodes intended to create a suitably level living surface on the uneven bedrock. Builders used fill containing secondary refuse, sometimes in dense concentrations. The retaining wall that is the southern boundary of the compound was constructed, followed by floor with *media caña* made from yellowish compacted sediments brought in from off site. Although it was difficult to tell because of extensive looting, there appears to have been only one or possibly two occupation floors in the patio's use. There were no instances of multiple, superimposed living floors or occupations in patio Feature 51. Areas of the patio were

exposed to the elements after abandonment of the feature. Accumulations of wind-blown and pooled sediments indicate dry periods interspersed with El Niño rains. Heavy looting activity intrudes through the El Niño strata and has destroyed an estimated 80 (?) percent of the patio feature.

Feature 59 is a narrow (1.15 m) but long (5.41 m) passage that follows the natural bedrock outcrop defining the northern edge of the compound. Its southern boundary is the north wall of the Feature 99 storage room. The bedrock outcrops higher at the eastern and western ends of this space. The occupants of Compound 6 first used gravelly fill with low concentrations of artifact debris to bring up the lower central part of the corridor feature, followed by ashy fill with higher concentrations of cultural debris. At the eastern end of the corridor, the goal appears to have been to create a 'landing' consisting of a single step down to the Feature 58 room to the east and then a second step down to the level of the central retaining wall that accommodates the change in elevation from the Feature 51 patio to the lower, Feature 62 patio in the east half of the compound. Builders created the first step by placement of larger and smaller stones around the natural bedrock step, covered with a layer of plaster. The second step down off the landing consisted entirely of bedrock. In the west half of the corridor, the bedrock and fill are superimposed by two possible plaster floor remnants. The lower floor is at the level of the bedrock in the southwest corner of the unit. The second floor covered the first and continues into patio Feature 51, XU 79. Excavators found both of these floor remnants only along the exterior northwest corner of the Feature 99 room. The corridor's north edge contained dense concentrations of *cuy* scat along its base, as did the lower bedrock step below the landing. In the central part of the corridor feature no evidence for plaster floor was found, possibly due to wall collapse both from the Feature 65 room and the northern bedrock wall.

The small but well defined Feature 65 storage room breaks the flow of foot traffic from the western entry to Compound 6 in the northeastern quadrant of the Feature 51 patio. A person entering the compound would have had to pass to the north through the Feature 59 corridor or to the south across the patio to access the eastern part of the compound. One would not have been able to enter the room from the west either. Excavation revealed a plastered stone threshold on the east side of the

structure. The room likely served as a storage space because of the small size; 1.80 by 1.40 m with an area of 2.26 m<sup>2</sup> but could possibly have accommodated one or two adults for sleeping. The room had been looted and the looter hole destroyed roughly 50 percent of the room's surface area. Only the threshold and the northern and western perimeter of the room remained intact. The northeast corner and most of the eastern wall of the room were destroyed. There were small remnants of plaster floor along the north edge of the room. Also a small hearth was found above the level of the floor (?) along the western wall, partially destroyed by the looter hole. This was likely a post-occupation use of the remains of the room as a temporary shelter.

This Feature 58 kitchen or main hearth has an area of 6.92 m<sup>2</sup> (2.83 by 2.88 m). Most of the room is taken up by a large, raised bedrock outcrop that had clearly been used as a hearth. This hearth (Feature 58.01) covered the western third of the room with a total area of 2.55 m<sup>2</sup>. The bedrock sloped up sharply from east to west, creating a relatively large, flat surface at approximately 40 cm above the level of the bedrock floor in the rest of the room. The bedrock slopes up further to the west providing a substantial windbreak for the hearth. The base of the bedrock surface was covered with a thick deposit of grey ashy soil of approximately 3 to 8 cm. This contained much hearth trash, wood charcoal, carbonized beans or peanuts, fragments of bone and other cultural debris. At contact with the bedrock hearth surface, a *chunga* fragment was found along with large fragments of a burned, red slipped vessel and a small, polished river pebble. Alongside the hearth, out in the Feature 59 corridor, a large, upright stone stands next to the hearth that probably served as a firebreak. The stone was extremely friable, possibly in part from repeated exposure to heat as well as the weathered condition of most exposed rock at the site.

In the rest of the room the bedrock was covered by many layers of laminated silts, interpreted as pooled sediments from El Niño events. A shallow looter hole of approximately 90 cm in diameter intruded into the degrading bedrock floor. The eastern wall of the room is a double faced stone wall containing a large, well-worn *batán* as one of the interior-facing upright foundation stones. This wall

continues around the southeast corner of the room, terminating just before the landing of the Feature 59 corridor.

An excavation unit was designated for the northeast corner of Compound 6. This was quartered and rocks were cleared by quarter. Excavations began with the northwest quarter, which abuts bedrock outcrop on the north and west sides. The Feature 56 storage room is one of a pair of small rooms located in the northwest quarter of XU 75. The room has an area of approximately 1.46 m<sup>2</sup> and measures 1.09 by 1.53 m and is interpreted as a storage structure. No entry or threshold into either room is apparent, but this is not unprecedented at Cerro León. Many rooms in Compound 1 interpreted as storage facilities do not have doorways. Access into the Feature 56 room may have been from the bedrock outcrops immediately above the room or by ladder.

At first, we thought Feature 56 was a much larger structure because the eastern wall continued out from the northern bedrock outcrop to a full length of 3.72 m. However, excavation removed aeolian deposits mixed with looter's back-dirt to reveal a wide platform that served as a partition between Feature 56 and Feature 57. The platform is 1.3 m wide and just over 2 m long and intrudes into the eastern masonry wall shared by the two rooms. It appears that the occupants of Compound 6 added on to the natural bedrock outcrop after construction of the eastern wall shared by the two rooms. The southern part of Feature 56 had been looted and this activity had removed most of the later plaster floor that covered the east half of the room. Excavators found a remnant of a second plaster floor 12 cm below Floor 1 in the room's southeast corner. It is unclear whether this floor continues under the partition, thus verifying our original assumption that Features 56 and 57 were at one time a single larger room. In the west half builders appear to have utilized the natural sloping bedrock as floor. A well-worn *batán* used as an upright in the eastern wall of Feature 56 provides another indication that the people residing in Compound 6 built their residence after Cerro León had been occupied for some time.

Feature 57 is the second of the pair of storage rooms in the northeastern corner of Compound 6. It is located in the northwest quarter of XU 75 south of Feature 56. Feature 57 measures 1.95 by

1.18 m and has an area of 2.23 m<sup>2</sup>. Three compacted plaster floors separated by fill containing trash were found in Feature 57. The last plaster floor was emplaced over cultural fill in the southern half remains intact. The rest of Floor 1 was destroyed by looting activity. Beneath Floor 1, an intact second floor was found. A partially reconstructable vessel was found in contact with Floor 2. Two small ash deposits are situated at the level of the second plaster floor and intruding to the bedrock below. Below Floor 2 a final plaster floor was encountered that occupants had emplaced over bedrock. Floor 3 had two small circular depressions, subfeatures 57.01 and 57.02. An *olla* base was found sitting on the floor as part of Feature 57.01. This was interpreted as a pot rest.

The Feature 62 patio turned out to be a large and complex space. In the 2008 field season our Peruvian excavators were only able to complete an el-shaped portion of it. Its excavated portion measured 15.15 m<sup>2</sup> (5.62 by 4.41 m). In the northern part of the patio, the space extends all the way to the eastern boundary of the compound, along the eastern retaining wall, looking out over the *quebrada*. Looters had caused significant damage to the patio. The three remaining quarters of the large, XU 75 (the northeast, southeast, and southwest quadrants) constitute the 2008 investigation of the Feature 62 patio. It appears there was a single plaster floor over most of the three quarters of the XU 75 patio space. The western two-thirds of the patio floor either incorporated outcrops of eastern sloping bedrock or was emplaced directly over it, using some cultural fill for leveling. The eastern-most third contained deeper deposits of cultural fill over sterile sediments down to the double-faced and filled eastern Compound 6 boundary/retaining wall. It is likely that the fill served to level the steeply downward sloping bedrock and create a level surface for the patio, but this portion of XU 75 was so disturbed that no intact floor was found. It does not appear to have been a terraced or multi-level space, at least in the north end of the patio. The floor and its associated subfeatures are described below by XU quarters.

SWQ: Remnants of Floor 1 were found along the western and eastern margins of XU 75,

SWQ. Excavations revealed six subfeatures in this part of the XU, five small hearths and a

single post hole. All the hearths were either associated with the floor surface or found just above bedrock.

SEQ: Remnants of Floor 1 were also located in the western margins of the southeast quarter of XU 75. Just southeast of hearth 62.05, a large ash deposit (subfeature 62.06) appears to be directly associated with the burning of the 62.05 hearth. To the north of this ash deposit, extending to the southeast corner of the Feature 57 storage room, the SEQ of XU 75 contained portions of intact plaster floor.

NEQ: The floor along the western margin of the SEQ of XU 75 continued into the NEQ of the XU. This floor continued north along the exterior wall of the Feature 56 storage room to where the patio and the room terminate at the bedrock outcrop that makes up the northern boundary of Compound 6. Looter holes and looter backdirt in the eastern two-thirds of the NEQ of XU 75 contained relatively large amounts of stone tools and tool fragments as well as other domestic trash. A hearth, Feature 62.07, straddles the line between the NEQ and the SEQ of XU 75. In spite of the heavy looting, a small portion of the center of the hearth appears to have remained intact and is overlain by sub-floor fill and capped with intact plaster floor. Thus, it appears that the Feature 62.07 hearth predates creation of the Feature 62 patio floor. The hearth contained abundant carbonized botanical remains and was sampled for radiocarbon dating.

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