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ARCHAEOLOGICAL INVESTIGATIONS AT ZORROPATA:
LOCAL SOCIOECONOMIC AND POLITICAL DEVELOPMENT IN A CONTEXT OF
IMPERIAL WARI EXPANSION

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

By

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September 2018

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September 2018

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in a Context of Imperial Wari Expansion

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Sarah L. Dost Kerchusky

iii

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the shores of hesitation bleach the bones of countless numbers who, when in site of victory, laid down to rest and resting — died¹”. This quote rang in my head whenever I was tempted to procrastinate. A special thank you goes to my husband, Thomas, who has stood by my side through all the triumphs and tribulations of both graduate school and this project. You are an amazing partner and friend. To my son, Nikolas, who, while only an infant, was with me each day as I wrote this dissertation and inspired me to get going when the going got tougher. Thanks to Joyce Berry, whose friendship comforted me at the very beginning of my academic career and whose example continues to inspire me.

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¹ The original wording of the quote is as follows: “On the Plains of Hesitation bleach the bones of countless millions who, at the Dawn of Victory, sat down to wait, and waiting—died!” – George Cecil.

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Abstract

Archaeological Investigations at Zorropata: Local Socioeconomic and Political Development in a Context of Imperial Wari Expansion.

by

Sarah L. Dost Kerchusky

This dissertation investigates the impact of Wari imperial encroachment on local cultural, political, and economic practices during the Middle Horizon (AD 600–1000) at a local habitation site, Zorropata, located in the Las Trancas Valley in Nasca, Peru. Empires expand and incorporate new peoples and territories via strategies that are conversant with and contingent upon local socio-political and economic circumstances. Therefore, investigating the local circumstances (i.e., the historically contextualized local cultural practices, sociopolitical organization, and economic practices and organization) is integral to a study of imperial interaction.

During the Middle Horizon, the Wari, one of the earliest New World empires, expanded from their Ayacucho homeland into the Nasca Region and established at least three colonies (Pacheco, Pataraya, and Inkawasi). Archaeological research of Nasca settlement patterns from this period suggest that the local impact of Wari encroachment was significant. A large portion of the population appears to have resettled from the Nasca and Taruga Valleys south to the Las Trancas Valley, away from and perhaps in contention with the Wari.

The present research utilizes archaeological data from surface analysis and excavation at Zorropata to consider the following: 1) the implications of local population movement on a local Las Trancas community in a context of Wari imperial expansion; 2) the nature of Nasca-Wari relationship and in particular whether and in what ways the Wari may have

established some form of political or economic control over this local community; and 3) effects of imperial agendas and policies on this community.

In addition to the primary research goal introduced above, this dissertation considers the local Middle Horizon polychrome ceramic tradition (Loro) in its stratigraphic, cultural, and temporal context. This dissertation also takes a household approach to investigate Zorropata as a local Nasca community occupied during the Middle Horizon in light of the trajectory development of Nasca society. Data generated by this research allow for investigation of status differences, the use of space at the site, the local economy, the production of goods and the use of raw materials (e.g., pottery production or lithic manufacture), cooking, serving, and storage practices, and other traditional labor practices. These data are in turn used to document how local agency functioned to maintain some cultural practices while innovating others in the wake of an empire.

Table of Contents

Signature Page	ii
Copyright Notice	iii
Acknowledgements	iv
Curriculum Vitae	vii
Abstract	xi
Table of Contents	xiii
List of Tables	xvi
List of Figures	xvii
Ch 1 Introduction to the Research Problem and Archaeological Context	1
The Nasca	1
The Research Problem	7
Introduction to the Region and Ecology	11
Regional Chronology	19
Summary of Chapters	22
Ch 2 History of Research and Nasca Culture History	27
Part I: Early Nasca Archaeological Research	28
Part II: Nasca Culture History	38
Part III: Middle Horizon in Nasca	49
Discussion	57
Ch 3: Theoretical Framework: A Study of Empire at the Periphery	60
Imperialism at Periphery	61
Levels of Analysis	65
Operationalizing a Study of Empire at Periphery in Nasca	68
Research Programs	79
Ch 4 Surface Analysis at Zorropata	83
Site Selection	83
Zorropata	86
Site Boundaries and Context	93
Project Crew and Schedule	99
Mapping Procedures	100
Surface Artifact Collection	104
Summary of Surface Architecture	126
Discussion	165

Chapter 5: Excavations at Zorropata	172
Research Methods	172
Excavation Units	178
Excavation Procedure	180
Site Stratigraphy	182
Summary of Excavation	188
Laboratory Phase	260
Radiocarbon Dates	265
Discussion	276
Ch 6: Pottery Analysis	290
Methods	293
Classification	294
Fineware	296
Plainware	314
The Zorropata Vessel Assemblage	318
Ceramic Production	341
Compositional Analysis in Nasca	345
INAA at Zorropata	350
Discussion	351
Ch 7: Woven Artifacts and Weaving Tools	359
Methods	367
Results	370
Summary	375
Weaving Tools	377
Discussion	385
Ch 8 Analysis of Stone tools and Miscellaneous Artifacts	388
Stone tools	388
Figurines	401
Musical Instruments	417
Adornments	420
Bone Artifacts	423
Discussion	425
Ch 9: Analysis of Ecofacts	428
Faunal Analysis	428
Shell Analysis	439
Other Ecofacts	445

Ch 10: Analysis of Human Crania	450
Isotope Analysis	465
Cortisol	470
Discussion	473
Ch 11 Zorropata: A Local Nasca Village Occupied During Wari Imperial	481
Testing the Hypotheses	481
Discussion	495
Chapter 12 Conclusions: External Correlations and Future Directions of Research	497
Part I: Loro Pottery at Zorropata	497
Part II: Zorropata: A Middle Horizon Nasca Settlement	504
Part III: Future Directions	511
References Cited	515
Appendix 7.1	542
Appendix 7.2	547
Appendix 7.3	553
Appendix 10.1	556

List of Tables

Table 1.1. Chronological Periods of Peru and Nasca.	2
Table 4.1. Habitation Terraces by Sector.	88
Table 5.1. Archaeological Features by Unit.	201
Table 5.2. Artifact Counts and Weights (Grams) for Sector 1 Units.	212
Table 5.3. Percentages of Unit Artifact Assemblages by Count.	220
Table 5.4. AMS Dates and Ceramic Styles Associated with Sector 1 Units.	224
Table 5.5. Features and Artifacts Associated with Subsistence Activities or Craft Production at Habitation Context Units in Sector 1.	277
Table 6.1. Zorropata Ceramic Vessel Assemblage.	292
Table 6.2. Unit 1 Ceramic Vessel Assemblage.	320
Table 6.3. Unit 5 Ceramic Vessel Assemblage.	321
Table 6.4. Unit 8 Ceramic Vessel Assemblage.	322
Table 6.5. “Principal components analysis of the ceramic sample from SNR showing the first eleven components, describing greater than 90% of the cumulative variance in the dataset. Strong elemental loading along a particular component is indicated in bold” (Gilstrap 2016: Table 2).	352
Table 8.1. Technological Categories of Non-Obsidian Flaked Stone Tools from Excavated Contexts.	390
Table 8.2. Raw Material Types for Flaked Stone Artifacts.	391
Table 8.3. Obsidian from Zorropata by Technological Category.	392
Table 8.4. Density of Obsidian per Meter ³ from Excavated Habitation Contexts at Cocahuischo, Marcaya, and Zorropata. (Numbers from published data).	395
Table 8.5. Technological Categories of Ground Stone Artifacts from Excavated Contexts.	400
Table 9.1. Faunal Bone Counts Organized by Unit.	429
Table 9.2. Classification of Zorropata Fauna by Taxonomic or Size Group.	433
Table 9.3. Marine shell species represented in the excavated assemblage from Zorropata.	441
Table 9.4. Marine Shell and Faunal Bone Counts and Weights Comparison Between Zorropata, Marcaya, and Cocahuischo.	446
Table 10.1. Isotope Samples.	467
Table 10.2. Cortisol Samples.	472

List of Figures

Figure 1.1. Map of Perú Indicating the Nasca Region in the Ica Province and the Site of Huari, Capital of the Wari Empire, in the Ayacucho Province.	3
Figure 1.2. Map of the Nasca Region with Zorropata and Other Sites Mentioned in this Dissertation Marked.	4
Figure 1.3. Map of South Coast, Perú.	12
Figure 1.4. Map of Zorropata with Site and Sector Boundaries Indicated.	13
Figure 1.5. Map of Coastal Deserts of Pacific South America.	15
Figure 1.6. View West (Down Valley) from Zorropata at Sunset Showing the Typical Landscape in the Middle Valley Region, Las Trancas.	17
Figure 2.1. Google Images of Some of the Nasca Geoglyphs Including the Hummingbird, the Huarango Tree and Human Figure, and Several Linear Geoglyphs.	43
Figure 2.2. Cocahuischo Facing North (Up Valley) Demonstrating a Steeply Dropping Alluvial Fan.	48
Figure 4.1. Zorropata from the Foot of Sector 4, Facing North.	87
Figure 4.2. Map of Zorropata with Perimeter Wall Sections Composed of Two Courses of Field Stone with Gravel Fill Indicated in Red.	90
Figure 4.3. Perimeter Wall composed of Two Courses of Field Stone with Gravel Fill.	91
Figure 4.4. Map of Zorropata with Perimeter Wall Sections indicated in Red and Walls Along the Site Perimeter Composed of One Course of Field Stone Indicated in Purple.	92
Figure 4.5. Original Crew of Zorropata 2014 Field Season in Front of the Copara Municipal Building, Las Trancas, Perú.	94
Figure 4.6 View of Huaca del Loro from the Road, Facing West. Damage to Site is Due to the Expansion of Agricultural and Road Infrastructure.	97
Figure 4.7 Zorropata from an Air Photo Dating to 1944. Note the Looters Pits in the Location of the Adobe Compound.	98
Figure 4.8. Sector 1 with Surface Artifact Collection Grid.	102
Figure 4.9. Example of Large, In Situ Grinding Surface Near Unit 2 at Zorropata.	106
Figure 4.10. Two-Handed Mano, Surface of Sector 1, Due West of Adobe Compound.	107
Figure 4.11. Non-Diagnostic Ceramic Sherds from Surface Artifact Collection.	109
Figure 4.12. Early and Middle Nasca Ceramic Sherds from Surface Artifact Collection.	110
Figure 4.13. Late Nasca Ceramic Sherds from Surface Artifact Collection.	112
Figure 4.14. Loro Ceramic Sherds from Surface Artifact Collection.	113
Figure 4.15. Transitional Ceramic Sherds from Surface Artifact Collection.	115
Figure 4.16. Flaked Stone Tools produced from Locally Available Materials from Surface Artifact Collection.	116
Figure 4.17. Obsidian from Surface Artifact Collection.	118
Figure 4.18. Ground Stone from Surface Artifact Collection.	119
Figure 4.19. Sling Stones from Surface Artifact Collection.	120
Figure 4.20. Marine Shell from Surface Artifact Collection.	121

Figure 4.21. Textiles, Cordage, and Disks/Spindle Whorls from Surface Artifact Collection.	123
Figure 4.22. Figurines from Surface Artifact Collection.	124
Figure 4.23. Adornments from Surface Artifact Collection.	125
Figure 4.24. View of Structures 3 and 34 Across a <i>Quebrada</i> .	129
Figure 4.25. Structure 3, Facing East.	130
Figure 4.26 Section of Western Perimeter Wall at Unit 4, Facing East.	131
Figure 4.27 Air Photo Showing Structure 64, the Eastern Perimeter Wall, in Sector 3.	133
Figure 4.28 Examples of Sling Stones from Zorropata.	134
Figure 4.29 Structure 55, an Example of a Retaining Wall at a Small Terrace (19) in Sector 5.	136
Figure 4.30. Map of Zorropata with Field Stone Retaining Walls Indicated in Red.	137
Figure 4.31. Map of Zorropata with Other Walls Made from a Single Course Field Stone Indicated in Red.	138
Figure 4.32. Map of Rectangular Field Stone Structures or Partial Rectangular Structures Indicated in Red.	139
Figure 4.33. Apparent Cache of Sling Stones from the Surface of Sector 3 Near Structure 10.	141
Figure 4.34. Map of Round Stone Structures at Zorropata Indicated in Red.	142
Figure 4.35. Structure 2, an Example of a Round Filed Stone Structure, in the Northwest of Sector 1.	143
Figure 4.36. Structure 67, A ‘G’-Shaped Field Stone Structure Just South of Possible Plaza in Sector 1.	144
Figure 4.37. Possible Main Plaza in Sector 1, Outlined in Red, Facing West.	146
Figure 4.38. Possible Plazas in Sector 1, Outlined in Red.	147
Figure 4.39. Adobe Mortar Between Field Stones in the North Wall of the Probable Main Plaza.	148
Figure 4.40. View South of Possible Small Plaza in the North of Sector 1.	149
Figure 4.41. Examples of Paniform Adobe Blocks from the Surface of Zorropata.	150
Figure 4.42. Northern Wall of Structure 21 Showing Paniform Adobe Blocks Held Together with Adobe Mortar.	152
Figure 4.43. Partial Cross-Section of Eastern Wall, Structure 21.	153
Figure 4.44. Plastered Adobe Wall in West of Tomb Chamber, Structure 21.	154
Figure 4.45. Paniform Adobes in a Wall at Cahuachi.	155
Figure 4.46. Paniform Adobes in a Structure at Huaca del Loro.	156
Figure 4.47. Adobe Compound Including: Structures 20, 21, 22, 23, 24, and 25. Three Additional Rectangular Structures (17, 19, and 27) May Also Be Part of the Compound but Are Not Contiguous.	157
Figure 4.48. Structure 15 in Proximity to the Adobe Compound.	158
Figure 4.49. Structure 32, Sector 1.	159
Figure 4.50. Map of Structures in Sector 2.	161
Figure 4.51. Sector 2 Adobe Architecture (Structure 4).	162
Figure 4.52. Map of Structures in Sector 4.	163
Figure 4.53. Structure 69 in Sector 4, a Probable Small Adobe Tomb Structure.	164
Figure 5.1. General Stratigraphic Sequence for Habitation Context Units.	183
Figure 5.2. Example of Domestic Debris Layer Under Mud Floors.	185

Figure 5.3. Gravel on Top of the Intact Section of Adobe Tomb Roof.	189
Figure 5.4. Deteriorated South Wall of Structure 21.	194
Figure 5.5. East Wall of Structure 21.	195
Figure 5.6. West Wall of Structure 21.	196
Figure 5.7. North Wall of Structure 21.	197
Figure 5.8. Plan Map of Unit 1 Showing Excavation ‘Areas’.	200
Figure 5.9. Feature 3, Unit 1, Intact c. 1 x 1 Meter Section of Tomb Roof.	203
Figure 5.10. Feature 2, Unit 1, Possible In Situ Deposit of Botanicals (Coca?) Just East of the Tomb Roof.	204
Figure 5.11. Feature 1, Unit 1, Uprturned Huarango Beam Pried from Tomb Roof.	206
Figure 5.12. Feature 5, Unit 1, Cache of Six ‘Trophy Head’ Individuals 2 Through 7.	207
Figure 5.13. Feature 4, Unit 1, ‘Trophy Head’ Individual 1.	208
Figure 5.14. Feature 8, Unit 1, ‘Trophy Head’ Individual 8.	211
Figure 5.15. Plan View of Unit 2.	217
Figure 5.16. Unit 2 Stratigraphic Profile.	218
Figure 5.17. Late Nasca Obsidian Projectile Point on the Stratum 2 Surface at Unit 2.	223
Figure 5.18. Plan View of Unit 3.	226
Figure 5.19. Unit 3 Stratigraphic Profile.	227
Figure 5.20. Feature 1, Unit 3, Possible Pit Feature, After Excavation.	229
Figure 5.21. Plan View of Unit 4.	231
Figure 5.22. Unit 4 Stratigraphic Profile.	232
Figure 5.23. Plan View of Unit 5.	236
Figure 5.24. Unit 5 Stratigraphic Profile.	237
Figure 5.25. Plan View of Unit 8.	239
Figure 5.26. Unit 8 Stratigraphic Profile.	241
Figure 5.27. Mud Floor Across All Subunits at Unit 8.	242
Figure 5.28. Feature 1, Unit 8, Pit Feature, After Excavation.	243
Figure 5.29. Feature 3, Unit 8, Probable Hearth in Cross Section.	245
Figure 5.30. Feature 4, Unit 8, Sea Urchin Placed on Mud Floor.	246
Figure 5.31. Feature 5, Unit 8, Raised Rectangular Area on Mud Floor Surface.	248
Figure 5.32. Plan View of Unit 9.	250
Figure 5.33. Unit 9 Stratigraphic Profile.	251
Figure 5.34. Fragmentary Mud Floor Across All Subunits at Unit 10.	253
Figure 5.35. Unit 10 Test Units.	255
Figure 5.36. Unit 10 Stratigraphic Profile.	256
Figure 5.37. Unit 6 Surface Before Excavation, Sector 3, Facing South.	258
Figure 5.38. Unit 7 Surface Before Excavation, Sector 3, Facing South.	259
Figure 5.39. Schematic of Test Units at Units 6 and 7.	261
Figure 5.40. Map of Structures 9, 10, and 11 at Sector 3.	262
Figure 5.41. Photo of Structures 10 and 11 in Sector 3.	263
Figure 5.42. Frequencies of Ceramic Styles at Unit 1.	267
Figure 5.43. Frequencies of Ceramic Styles at Unit 5.	269
Figure 5.44. Frequencies of Ceramic Styles at Unit 8.	270
Figure 5.45. Frequencies of Ceramic Styles at Unit 4.	271
Figure 5.46. Frequencies of Ceramic Styles at Unit 2.	273
Figure 5.47. Frequencies of Ceramic Styles at Unit 10.	274

Figure 5.48. Frequencies of Ceramic Styles at Zorropata.	275
Figure 5.49. Partially Exposed <i>Quincha</i> Wall from Archaeological La Marcha, Across the Las Trancas Valley from Zorropata.	278
Figure 5.50. Example of Cut Marks on Faunal Bone.	281
Figure 5.51. Example of Projectile Point Tip Imbedded in Faunal Bone.	282
Figure 6.1. Fineware and Plainware Vessel Types from Zorropata (a. Convex Bowl; b. Straight Bowl; c. Cup Bowl; d. Angled Goblet; e. Very Large Collared Vessel; f. Type 1 Flaring Bowl; g. Type 2 Flaring Bowl; h. Dish; i. Spout and Bridge Bottle; j. Collarless Plainware Vessel; k. Collarless Plainware Vessel; l. Deep Bowl; m. Cantaro (or Jar if not painted); n. Face-Neck Jar; o. Collared Plainware Vessel; p. Collared Plainware Vessel).	295
Figure 6.2. Flow Chart of Fineware Types.	297
Figure 6.3. Flow Chart of Plainware Types.	298
Figure 6.4. Straight Bowls from Zorropata (a. ZA111-2.4; b. ZA111-2.5; c. ZA106-15.1; d. ZA111-10.2; e. ZA106-24.1; f. ZA109-23.2; g. ZA339-1.2; h. ZA133-22.1; i. ZA109-23.3; j. ZA111-2.3; k. ZA133-5.2; l. ZA133-3.1).	299
Figure 6.5. Type 1 Flaring Bowls from Zorropata (a. ZA133-8.3; b. ZA109-13.1; c. ZA101-3.1; d. ZA109-18.3; e. ZA109-28.2; f. ZA1RA1-9.1; g. ZA109-28.1; h. ZA1RA1-6.1; i. ZA109-28.14).	300
Figure 6.6. Type 2 Flaring Bowls from Zorropata (a. ZA1RA1-20.1; b. ZA123-8.1; c. ZA133-24.1; d. ZA133-2.1; e. ZA101-7.1; f. ZA101-5.1; g. ZA109-28.2; h. ZA111-9.1; i. ZA106-27.1; j. ZA109-20.1; k. ZA109-27.1).	302
Figure 6.7. Deep Bowls from Zorropata (a. ZA1RA1-16.3; b. ZA1RA1-14.2; c. ZA1RA1-26.1; d. ZA1RA1-3.1; e. ZA1RA1-14.1).	303
Figure 6.8. Convex Bowls from Zorropata (a. ZA1RA1-1.2; b. ZA1RA1-1.3).	304
Figure 6.9. Cup Bowls from Zorropata (a. ZA1RA1-37.3; b. ZA101-4.2).	305
Figure 6.10. Dishes from Zorropata (a. ZA1RA1-5.2; b. ZA1RA1-3.2; c. ZA1RA1-13.1; d. ZA1RA1-31.1; e. ZA1RA1-12.1; f. ZA1RA1-19.1).	306
Figure 6.11. Sherd from an Effigy Vessel (ZA102-34.1) from Zorropata.	308
Figure 6.12. Spout and Bridge Bottle (ZA133-25.2) from Unit 9 Zorropata.	309
Figure 6.13. Face-Neck Jar (ZA106-11.1) in Profile.	311
Figure 6.14. <i>Cantaros</i> from Zorropata (a. ZA133-5.3; b. ZA111-15.3; c. ZA106-36.1; d. ZA106-29.1).	312
Figure 6.15. Vases/Angled Goblets from Zorropata (a. ZA133-5.1; b. ZA133-3.2; c. ZA109-28.1; d. ZA109-9.1; e. ZA109-17.1).	313
Figure 6.16. Collared Utilitarian Vessels from Zorropata (a. ZA339-1.4; b. ZA109-22.1; c. ZA1RA1-1.1; d. ZA133-17.1; e. ZA102-27.1; f. ZA109-22.1; g. ZA109-26.1; h. ZA1RA1-36.1; i. ZA109-21.1; j. ZA1RA1-28.1).	315
Figure 6.17. Fragment of Necked Olla with a 54 cm Rim Diameter (ZA1RA1-28.1).	317
Figure 6.18. Handle from Zorropata (ZA106-22.1).	319
Figure 6.19. Slip Line Design Element on Ceramic Vessel Rim (ZA111-3.1).	327
Figure 6.20. Another Example of a Slip Line on a Ceramic Body Sherd (ZA109-25.1).	327
Figure 6.21. Red Band Along the Rim of a Ceramic Dish (ZA339-1.1).	328
Figure 6.22. Circle Line Design Motif (ZA1RA1-14.1 and 2 (Refit)).	329
Figure 6.23. Crosshatch Design Element (ZA106-20.2 (Left), and ZA102-31.1 (Right)).	329
Figure 6.24. Diamond Design Element (ZA102-26.1).	330

Figure 6.25. Empty/White Circle Design Element (ZA1RA1-13.5).	330
Figure 6.26. Polka Dot Design Motif (ZA1RA1-35.1).	332
Figure 6.27. Rectangle Line Design Motif (ZA102-9.1).	332
Figure 6.28. Red and White Rectangle Design Motif (ZA109-14.1).	333
Figure 6.29. Semicircle Design Element Along the Rim of a Ceramic Dish (ZA1RA1-29.1).	334
Figure 6.30. Stripe Design Motif (ZA102-31.1).	335
Figure 6.31. Step Fret Design Element (ZA109-20.1).1	335
Figure 6.32. Zig-zags (ZA1RA1-1.2 and 3 (Refit)).	336
Figure 6.33. White Slip Field with Brown Slip Splatter (ZA1RA1-17.1).	336
Figure 6.34. (Top) Natural Design Motif Featuring Plant Life (ZA1RA1-30.1 (Left), and ZA1RA1-19.1 (Right)).	337
Figure 6.35. (Bottom) Natural Design Motif Featuring Animal Life, Possibly a Partial Feather or Bird Wing (ZA102-11.1).	337
Figure 6.36. (Top) The Girl Face Design Motif (ZA1RA1-3.3 (Left), and ZA1RA1-3.6 (Right)).	338
Figure 6.37. (Bottom) Partial Rayed-Eye Design Motif (ZA106-14.1).	338
Figure 6.38. Abstract Design Motif (ZA1RA1-40.1 (Top Left), ZA1RA1-42.1 (Top Right), ZA1RA1-34.4 (Bottom Left), ZA1RA1-43.1 (Bottom Center), and ZA1RA1-41.1 (Bottom Right)).	339
Figure 6.39. Paste Type 1 Shown in Cross Section.	344
Figure 6.40. Paste Type 2 Shown in Cross Section.	346
Figure 6.41. Paste Type 3 Shown in Cross Section.	347
Figure 6.42. “Elemental bivariate scatterplot comparing all samples from the current SNR dataset to Vaughn et al.’s (2006) Group 1 and pottery samples from from Jincamocco in the Sondondo Valley of Southern Ayacucho, Peru. Ellipses are draw at 90%-confidence intervals” (Gilstrap 2016: Figure 5).	353
Figure 7.1. Closeup of Plain Weave Body of Decorated Textile from Sector 4.	362
Figure 7.2. Closeup of Border of Decorated Textile from Sector 4.	364
Figure 7.3. Frequency of Textiles by Raw Material and Provenience.	365
Figure 7.4. Frequency of Cordage by Raw Material and Provenience.	366
Figure 7.5. Type I Textile.	372
Figure 7.6. Type II Textile.	372
Figure 7.7. Type III Textile.	373
Figure 7.8. Type IV Textile.	374
Figure 7.9. Zorropata Cordage Types.	376
Figure 7.10. Spindle Whorls and Disks from Zorropata.	379
Figure 7.11. Spindle Recovered from Unit 1 at Zorropata.	384
Figure 8.1. All Formal, Obsidian Tools Recovered in 2014 Excavations at Zorropata.	393
Figure 8.2. Scatterplot of Obsidian XRF Results from Zorropata.	398
Figure 8.3. Small Intact Mortar Recovered During Surface Collection.	402
Figure 8.4. Seated Figurine: Obverse, Profile, and Reverse.	404
Figure 8.5. Leg of Seated Figurine with Dot Line Design.	405
Figure 8.6. Leg of Seated Figurine with X Design.	405
Figure 8.7. Torso of Seated Figurine with Star Design.	407
Figure 8.8. Standing Armless Figurine: Obverse, Profile, and Reverse.	409

Figure 8.9. Standing Hooked Leg Figurine: Obverse, Profile, and Reverse.	410
Figure 8.10. Standing Hooked Leg Figurine with Score Marks.	412
Figure 8.11. Animal Figurine: Plan and Profile.	412
Figure 8.12. Heads: Complete Heads and Crowns.	414
Figure 8.13. Stone Stela Carved from White Stone.	418
Figure 8.14. Whistle: Obverse and Reverse.	419
Figure 8.15. Examples of Beads and Pendants.	421
Figure 8.16. Bone Awls and Needles.	424
Figure 9.1. Example of Small and Medium Mammal Remains from Zorropata.	431
Figure 9.2. Fish Vertebrae from Unit 2.	436
Figure 9.3. Otolith Recovered from Unit 2 at Zorropata.	437
Figure 9.4. Examples of Marine Shell from Zorropata: 1: Clam (Myacidae and Lucinidae); Mussel 2: <i>Aulacomya ater</i> , 3: <i>Chorro mytilus</i> ; 4: Oyster (Ostreidae); 5: Scallop (Pectinidae); 6: Sea snail; 7: <i>Olivella</i> (Olivellidae); 8: Keyhole limpet (Fissurellidae); 9: Slipper limpet (<i>Crepidula</i>); 10: Chiton (<i>Amphineaura</i>); 11: Barnacle (<i>Balanus</i>); 12: Urchin (<i>Strongylocentrotidae</i>); and 13: Crab (Crab).	442
Figure 10.1. Unit 1 at Architectural Structure 21 (a.k.a., Recinto A1).	452
Figure 10.2. <i>Barbacoa</i> Style Tomb at Recinto A1 in Profile Facing East.	453
Figure 10.3. Individual 1 (<i>Craneo</i> 6).	455
Figure 10.4. Mummified Face of Individual 1.	456
Figure 10.5. ‘Trophy’ Head Individual from Zorropata with Carrying Cord and Hole Through Forehead.	458
Figure 10.6. Individual 2 (<i>Craneo</i> 1).	459
Figure 10.7. Individual 3 (<i>Craneo</i> 2).	461
Figure 10.8. Individual 4 (<i>Craneo</i> 3).	462
Figure 10.9. Individual 5 (<i>Craneo</i> 4).	463
Figure 10.10. Individual 6 (<i>Craneo</i> 5).	464
Figure 10.11. Individual 8 (<i>Craneo</i> 7).	466
Figure 10.12. Strontium Data of the Zorropata ‘Trophy’ Head Individuals.	469
Figure 10.13. Carbon and Nitrogen Isotope Data of Two Zorropata ‘Trophy’ Head Individuals.	471
Figure 10.14. Cortisol Data of Two Zorropata ‘Trophy’ Head Individuals.	474
Figure 10.15. Dental Pathology, Individual 1.	477
Figure 10.16. Enamel Hypoplasia, Individual 1.	477
Figure 10.17. Cribra Orbitalia in Right Orbital of Individual 2.	478
Figure 10.18. Tubular Cranial Vault Modification, Individual 5.	479

Chapter 1

Introduction to the Research Problem and Archaeological Context

This dissertation investigates local Nasca social, political, cultural, and economic practices and how they were affected when the Wari, the earliest empire to develop in the Andes, established at least three colonies (Pacheco, Pataraya, and Incawasi) in the Nasca Region during the Middle Horizon (c. AD 600-1000; Table 1.1). This chapter introduces the major research themes and questions carried throughout this dissertation. Data discussed in the following chapters were collected because of archaeological fieldwork and subsequent laboratory work at the site of Zorropata in the Las Trancas Valley, in the Nasca Region, Ica Province, Perú (Figure 1.1). This chapter discusses the site of Zorropata and places it within its cultural, ecological, and chronological context. At its close, this chapter outlines the organization of the remaining chapters.

The Nasca

Chapter 2 provides a detailed culture history of the Nasca and a brief synopsis of archaeological research in the Nasca Region. This section serves to introduce the trajectory of Nasca cultural development as well as some of the major research themes that frame the present research. The Southern Nasca Region is composed of three valleys. North to south these are Nasca, Taruga, and Las Trancas. The Nasca Valley is the largest and most arable of the three followed by Las Trancas. The northernmost valley is also the seat of the modern city of Nasca (Figure 1.2).

Table 1.1. Chronological Periods of Peru and Nasca.

Horizons and Intermediate Periods	Nasca Chronology	Associated Dates
Late Intermediate Period	<i>Tiza</i>	c. A.D. 1000 – 1476
Middle Horizon	<i>Loro, Wari</i>	c. A.D. 600 – 1000
Early Intermediate Period	<i>Late Nasca</i>	c. A.D. 450 – 600
	<i>Middle Nasca</i>	c. A.D. 350 – 450
	<i>Early Nasca</i>	c. A.D. 1 – 350
Early Horizon	<i>Proto-Nasca</i>	c. 100 B.C. – A.D. 1
	<i>Paracas</i>	c. 800 – 100 B.C.



Figure 1.1. Map of Perú Indicating the Nasca Region (Red Star) in the Ica Province (Orange) and the Site of Huari,(Black Triangle) Capital of the Wari Empire, in the Ayacucho Province (Red).

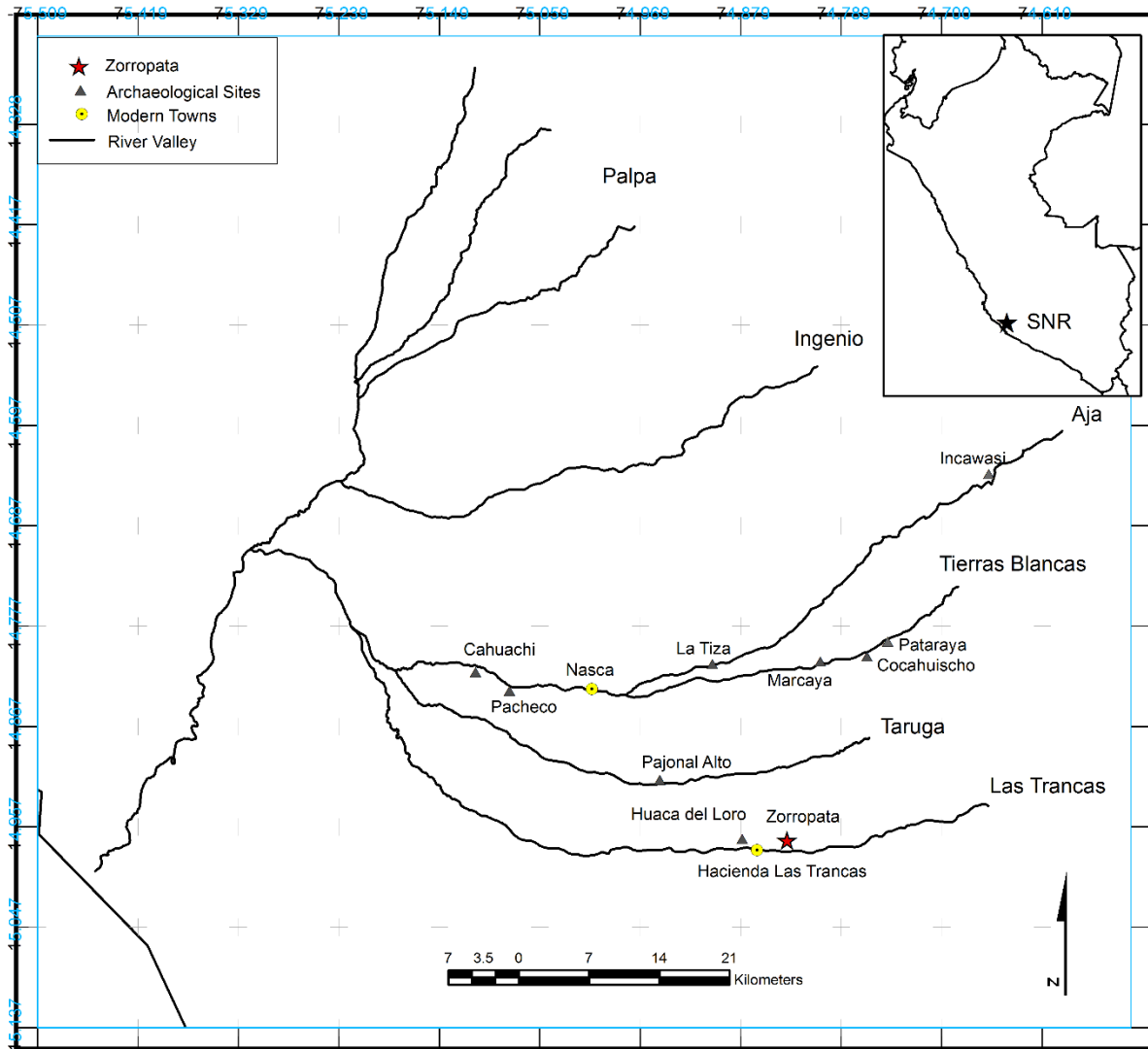


Figure 1.2. Map of the Nasca Region with Zorropata and Other Sites Mentioned in this Dissertation Marked.

The earliest evidence for a complex regional society in the Nasca Region dates to the Early Intermediate Period (AD 1–750; Table 1.1). The local chronology further divides this period into the Early Nasca (AD 1-350), Middle Nasca (AD 350-450), and Late Nasca (AD 450-600). The Early Nasca is characterized by the development of new ceramic technologies and styles; the construction and use of Cahuachi, a ceremonial center in the Nasca Valley; and the construction of many of the geoglyphs for which the region is widely known (Conlee 2010:98). The Early Nasca village was small, rural, and economically independent.

Occupants of villages throughout the region were integrated by a shared tradition of fine polychrome ceramics and participation in public rituals at Cahuachi (Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). Polychrome pottery was manufactured using clay that is chemically identical to the adobes used to build Cahuachi and probably from a nearby source (Boulangier and Glascock 2012:6; Vaughn and Neff 2004:1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and Van Gijsegem 2007:816). Taken together with evidence of ceramic manufacture and part-time specialization at Cahuachi (Orefici and Drucini 2003), Nasca polychrome ceramics were probably made and used by Cahuachi elites as a way to disseminate their ideology throughout the region in a material form (Conlee 2003:49; Schreiber and Lancho Rojas 2003:15; Silverman 1993:302; Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011).

Construction at Cahuachi ended by the Middle Nasca period but its use continued through the Middle Horizon. The Middle Nasca period was also marked by the innovation of puquios, a system of aqueducts that allowed the Nasca people to obtain water from subterranean sources. As a result, the amount of arable land was significantly increased and

permanent settlements were established for the first time in middle valley (Schreiber and Lancho Rojas 2003:145).

Nasca society became more fragmented during the Late Nasca period. Settlement pattern data indicate that the local population began to aggregate into larger settlements throughout the region (Isla and Reindel 2005:63; Schreiber 1999:167; Schreiber and Lancho 2003:17). One or a few large settlements aggregated into polities established in different parts of the valleys (Schreiber 1998:263, 1999:168). These polities appear to have been in conflict with each other but still slightly integrated by Cahuachi, though the ceremonial center's influence had waned (Kellner 2002:80-81; Schreiber and Lancho Rojas 2003:17). A close relationship was shared between the Nasca culture and the Huarpa culture of the Ayacucho region, thought to be the culture from which the Wari Empire developed. This relationship was manifest in the exchange of ideas and technologies, especially those related to ceramic production (Menzel 1964:5; Knobloch 2005:117).

Into this milieu, the Wari Empire established at least three colonies in the Nasca Region. Pacheco, a probable ceremonial and administrative center (Conlee 2010:96; Schreiber 2005:247; Tello 2002:9), was established in the Nasca Valley (Edwards 2010:469; Silverman 1993:29). As one travels east up the Nasca Valley it diverges into two tributary valleys, Tierras Blancas (the southern tributary) and Aja (the northern tributary). Pataraya, 35 km upstream from Pacheco in the Tierras Blancas Valley, likely served as a Wari outpost instrumental to effecting Wari political and economic interests in the region (Edwards 2010:41). Excavations at Pataraya support that the site's occupants were integrated into long-distance exchange networks that probably involved the export of local finished goods and raw materials (e.g., cotton for textiles, ceramic wares, clays, or pigments) to the imperial

metropole, Huari, located in the highlands of Ayacucho (Edwards 2010:467-472). Inkawasi is located c. 50 km upstream from Pacheco in the upper Aja Valley (Katharina Schreiber, Personal Communication). This site has not been the subject of archaeological excavation, and data pertaining to its function are not available. Other evidence of the Wari in the Southern Nasca Region is relatively sparse and consists of Wari-style tombs and ceramics from mortuary contexts (Schreiber 1999:169).

During the Early Intermediate Period the local population was centered in the Nasca Valley. Concomitant with the founding of the Wari colonies, there was a shift in settlement patterns that resulted in the majority of the local population relocating away from the Wari in the southernmost valley, Las Trancas. The number and size of habitation sites decreased in the Nasca and Taruga Valleys but increased in the Las Trancas Valley (Conlee 2010:97; Schreiber 2005:248). Settlement patterns from Las Trancas indicate increased stratification with the development of a hierarchical arrangement of sites (Schreiber 2005:248-249).

Zorropata is one of the largest Middle Horizon habitation sites in the Las Trancas Valley. Identified as a domestic site with a ceremonial function and a possible second-tier center this site is well suited for an investigation of imperial interaction from a local perspective. It has the potential to provide data on domestic life and economic activities and as a second-tier center, if Las Trancas communities interacted with the Wari this site may be a point at which that interaction occurred.

The Research Problem

This dissertation pursues one primary and two ancillary research goals using data from fieldwork conducted in 2014 at the site of Zorropata in the Las Trancas Valley. First and foremost, research pursues an investigation of empire at periphery. Second, it contributes new data regarding the Loro ceramics in their cultural and chronological context. Third, it considers the developmental trajectory of Zorropata as a Nasca settlement occupied during the Middle Horizon.

Empire on Periphery

Empires, expansive and assimilating states (Morrison and Sinopoli 1992:335; Sinopoli 1994:159), use strategies that are tailored to local sociopolitical and economic circumstances to assimilate new peoples and territories (Schreiber 1992:14). Investigating the local circumstances (i.e., the historically contextualized local cultural practices, sociopolitical organization, and economic practices and organization) is therefore integral to a study of imperial interaction. The primary goal of the present research is to investigate Wari imperial encroachment in the Nasca region and its effects on a Las Trancas settlement. It seeks to elucidate aspects of the nature of the Nasca-Wari relationship and determine if Zorropata was incorporated into the empire. In particular, this research seeks to investigate questions concerning the significance of the population movement to the Las Trancas Valley and changes to local culture in the context of Wari imperial expansion.

Loro Ceramics

Although the Nasca ceramic sequence is well known and provides a chronological framework for archaeological study in the region, the Loro style has never been defined in

stratigraphic context. Loro pottery (and the Loro chronological phase), named for the type site Huaca del Loro, is a local polychrome slip-painted fineware style produced during the Middle Horizon (Strong 1957:36). Previous research has studied many aspects of the appearance, stylistic motifs, and significance of these ceramics from museum collections (Gayton and Kroeber 1927:26-30; Silverman 1989; Spivak 2015). This research seeks to embellish previous studies by contributing data regarding Loro ceramics in their archaeological and stratigraphic setting.

Zorropata: A Middle Horizon Nasca Village

The third goal of this dissertation is to investigate the nature and development of Zorropata as a local settlement and consider what research at this site contributes to Nasca archaeological research writ large. Zorropata was identified as a domestic site with a ceremonial function and a probable second-tier center occupied more or less continuously from at least the Late Nasca period until the early Middle Horizon. During an extensive archaeological pedestrian survey in the Southern Nasca Region (discussed in Chapter 2), Katharina Schreiber and a team of students from the University of California, Santa Barbara, identified habitation terraces and one and maybe two adobe compounds containing a gravel fill at Zorropata. The compound(s) was described as similar to an adobe structure documented by Julio C. Tello at Huaca del Loro in the 1920s (Tello 2002:22-25). Huaca del Loro is the largest habitation site in the region (c. 100,000 m²) and has been described as the primary politico-ceremonial center of the local polity that developed in the Las Trancas Valley during the Middle Horizon (Schreiber 2005:248). The structures at Huaca del Loro were *barbacoa* style tombs – a tomb style correlated with higher-status graves (Carmichael

1988:293)¹. Zorropata is the only other Middle Horizon site in the valley where similar structures were identified.

Reconnaissance in 2013 followed by archaeological fieldwork in 2014 (both conducted by me) designated six sectors based on apparent function and divided by natural boundaries such as *quebradas*. This work also identified at least 126 habitation terraces. Sector 1 contains 81 terraces and the adobe compound. It exhibits the densest concentration of artifacts and architectural features. At c. 30,000 m², it is the largest site sector and served as the main habitation area of the site. Sectors 3, 5, and 6 had 45 habitation terraces among them. Sectors 2 and 4 had no habitation terraces and were not targeted for excavation during this project. A large stone wall and four small adobe structures were identified in Sector 2. The function of these structures is not known at present. Sector 4 is a cemetery associated with Zorropata. The total size of the site including all sectors may be at least twice the size of Sector 1.

Excavations at Zorropata offer significant new data to the growing body of Nasca research. William Duncan Strong excavated at Huaca del Loro in the 1950s (Strong 1957:36). Data resulting from his work were only published in a preliminary report; and the site has since been severely impacted by modern agricultural expansion (discussed further in Chapter 2). Zorropata is the first local Middle Horizon habitation site to be targeted for excavation in nearly 70 years.² Moreover, this site's status as a secondary center and apparent connections to the primate center, Huaca del Loro, by way of the adobe compound(s), support the claim that Zorropata was a well-connected and prominent local settlement. The presence of *barbacoa* style tombs at both sites may indicate that, at least in death, socioeconomic status differences at Zorropata and Huaca del Loro may have been enacted in

similar ways and on similar scales. As a habitation site, Zorropata generates data about domestic life, craft production, and other economic activities, as well as differences in social and economic status. As a politically significant site Zorropata is a prime location for investigating some of the ways that local communities may have interacted with the Wari Empire.

Introduction to the Region and Ecology

Geographical Area

Current archaeological research defines the south coast of Perú to include the modern Department of Ica (Chincha, Pisco, Ica, Nasca Valleys) and the Acari Valley in Department of Arequipa (Paul 1991; Proulx 2008:563; Silverman 1996:98; Vaughn 2000:6; Figure 1.3). The Nasca drainage is composed of several valleys including those of the Palpa and Ingenio Valleys to the north, and the Nasca, Taruga, and Las Trancas Valleys to the south. The primary geographical focus of this dissertation is the Southern Nasca Region (Vaughn 2000:7), comprising the three southern valleys (Nasca, Taruga, and Las Trancas). The archaeological site targeted by the present research, Zorropata, is located in the middle valley region of the Las Trancas Valley (Figure 1.4).

Andean Ecology

The Andean Mountain range (or Andes) is the longest in the world and the second highest after the Himalayas. The Andes pass through several countries in South America and are divided into three zones: 1) the Southern Andes (Argentina and Chile); 2) the Central



Figure 1.3. Map of South Coast, Perú.

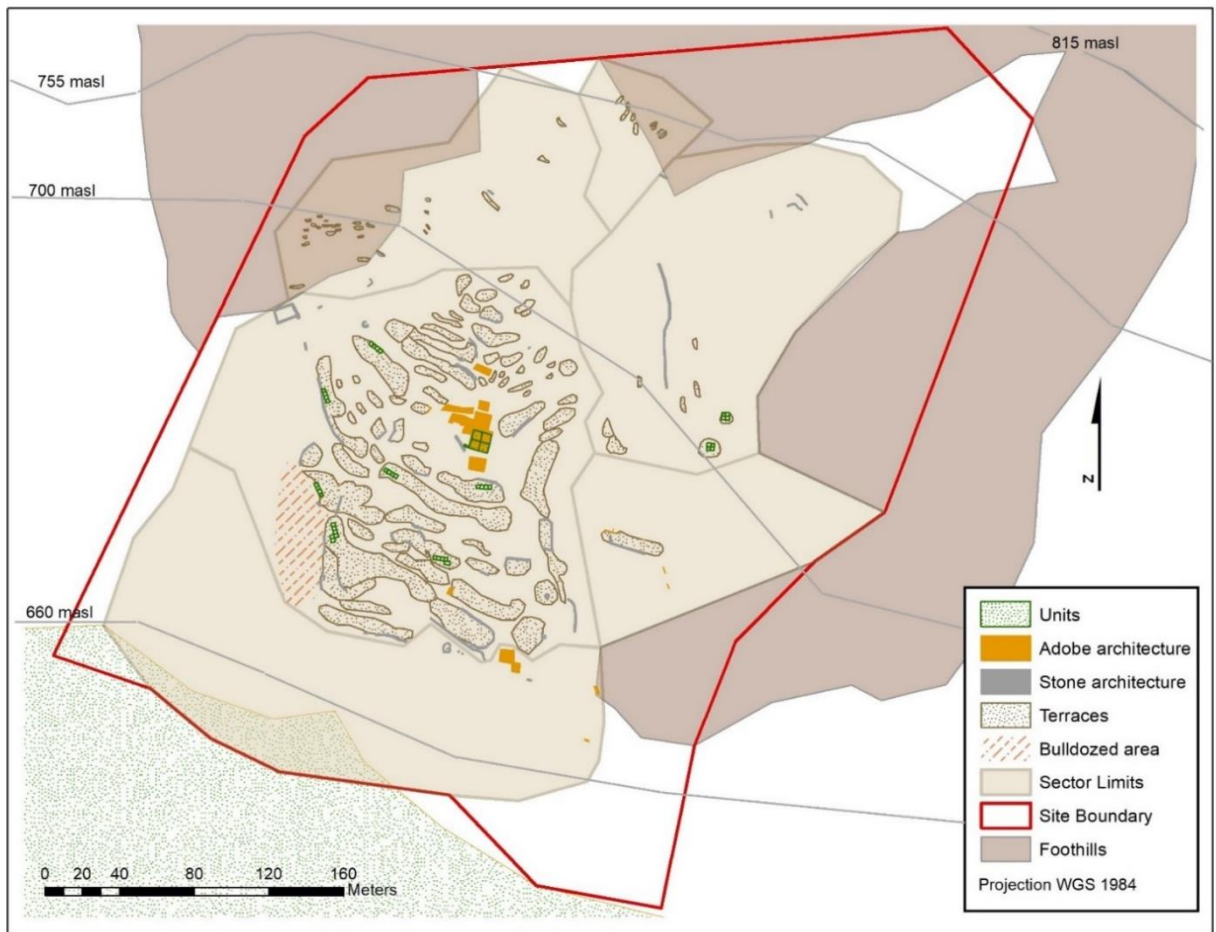


Figure 1.4. Map of Zorropata with Site and Sector Boundaries Indicated.

Andes (Bolivia, Perú, and Ecuador); and 3) The Northern Andes (Columbia and Venezuela).

Due to the focus of this dissertation the following section will discuss the ecology of the Central Andes of Perú in general and the south coast of Perú in specific.

The Central Andes are characterized by extreme topography. The Pacific Coast is west of the Andes and is one of the most perennially dry places on earth. The west coast comprises three deserts (Sechura, Peruvian Coastal, and Atacama) that extend uninterrupted from the north of Perú around the Piura Region to Northern Chile becoming progressively dryer (Figure 1.5). To the east sits the Amazon Rainforest, the world's largest at c. 7,000,000 km². The Andes themselves average c. 4,000 m in height. Aridity along the coast is caused by the extreme height of the Andes that acts as a barrier to moist air from east, and the upwelling of cold coastal waters from the Pacific that reduce atmospheric humidity.

Perú is enormously diverse in terms of ecology and biodiversity. Eighty-four of the 103 existing ecosystems in the world are expressed in Perú. Moreover, Perú is home to more than 21,000 species of plants and animals -- at least 27% of which are endemic. Nature has had a deep influence on peoples who have lived and settled in Andean Perú from the first people up to modern times.³ Relating to early human settlement, Pulgar Vidal (1987:16) describes eight culturally and historically informed indigenous ecological zones that are drawn on in many archaeological and ecological studies of Andean Prehistory. From west to east these are: *chala*, *yunga*, *quechua*, *suní*, *puna*, *janca*, *rupa rupa*, *omagua*. These zones exist on a continuum rather than having circumscribed borders (Mayer 1985:50). Of these zones *chala*, or coast, and *yunga*, or foothills, are the most salient for research in the Nasca Region.



Figure 1.5. Map of Coastal Deserts of Pacific South America.

Nasca Ecology

The Nasca Region is located on the outskirts of the Atacama Desert⁴ and beholden to its unsparing climate. While it is located on the Pacific coast Nasca is not a marine environment (Kroeber 1944:11-41). Indeed, the ocean is c. 50 km west of the modern town over open desert. Nasca occupies a transitional area between coast and mountains (Kosok 1965:50; Figure 1.6).

The climate is warm year-round with an average annual temperature of c. 30.13 C. Precipitation is minimal and infrequent in the Nasca Region. A few millimeters of rain fall annually in lower elevations and up to 125 mm fall in upper valley regions (c. 2000 meters above sea level (masl)). The average rainfall is less than 1 millimeter although there are rare (usually once a year) deluges approaching 50 mm⁵ of rain in the course of a few hours. The Nasca Region has been arid and forbidding for as long as people have lived there. The last decade has seen warmer temperatures and less rain than has been reported for previous decades.

In addition to the perennially arid climate, coastal lowlands (as well as the highlands) are affected by periodic El Niño Southern Oscillation (ENSO) events that result in severe and widespread drought conditions (Schreiber 2005:245). Ice core data indicate that ENSO related drought conditions could be protracted, lasting for hundreds of years, as was the case with a drought that lasted from AD 500 to 700 (Beresford-Jones et al. 2009b:326; Eitel et al. 2005:153).

Rivers in the Nasca Region are fed by seasonal rainfall in the highlands (above 2000 masl). As water flows down valley in the Andean foothills, valley bottoms are characterized by deep, permeable, alluvial deposits. Nasca rivers become influent and flow beneath the



Figure 1.6. View West (Down Valley) from Zorropata at Sunset Showing the Typical Landscape in the Middle Valley Region, Las Trancas.

surface in the phreatic zone (groundwater) for long stretches. These conditions apply in particular for elevations below 1,200 masl. The point of infiltration, where rivers enter the phreatic zone, varies annually based on rainfall volume in the highlands (Schreiber and Lancho Rojas 2003:28). The point at which the rivers reemerge, c. 400 masl, is more consistent. Katharina Schreiber and Josué Lancho Rojas (2003:29) note the location of Cahuachi and numerous Proto and Early Nasca cemeteries along the banks of the rivers where they reemerge in modern times. Thus, the point of reemergence now may be the same (or very close) to what it was at least 2000 years ago.

In Nasca, above c. 2,000 masl, agriculture is dependent on rainfall — irrigated with rain water flowing downstream from the highlands (Schreiber and Lancho Rojas 2003:28). Meanwhile, much of the arable land in the region is in the middle valley region (between c. 1000 and 500 masl) where rivers are influent. *Puquios*, a system of aqueducts that tap into the phreatic zone and channel groundwater into reservoirs and irrigation canals on the surface, support irrigation agriculture and make water available for domestic use in the middle valley region (Schreiber and Lancho Rojas 2003:36). The development and impact of this infrastructure on Nasca culture are discussed in Chapter 2.

Zorropata is located in the middle valley region of the Las Trancas Valley. *Puquios* supply the surrounding modern towns with water and would likely have done the same for the archaeological site's ancient occupants. Zorropata is on the northern aspect of the Andean foothills at one of the widest parts of the Las Trancas Valley immediately adjacent to the agricultural zone. The local population has an agricultural economy. Among other agricultural products they grow alfalfa, potatoes, and grapes for making pisco. They also keep fields of prickly pear cactus (*Opuntia sp.*) with the thorns removed for cochineal

(Dactylopius coccus), an insect harvested to make red dye and whose modern uses include food and cosmetics. The Municipality of the Town Center of the Las Trancas Valley, in cooperation with the National University of Ica and the Royal Botanical Gardens (RBG), Kew, UK, supports a program, called Conservamos Ica, or CÓNICA, that seeks to conserve local indigenous plant and animal biodiversity⁶. The project began in 2003 and maintains the ‘Center of Useful Plants’ at the municipal building in Copara.

Regional Chronology

This section provides context for the chronological setting of this study by placing the Nasca regional chronology in the framework of the Andean master chronology. A relative chronological framework used in archaeological research throughout Perú was developed using pottery from the Ica valley (Menzel 1964:2; Rowe 1960, 1963:1). This framework comprises three ‘Horizons’ with interludes of two ‘Intermediate’ periods (Lumbreras 1974; Rowe 1960, 1962; Willey 1962, 1991). The three Horizons (Early, Middle, and Late) equate to periods of extra-regional ideological or political incorporation. Intermediate periods (Early and Late) document episodes of collapse, regionalization, and the reemergence of local political and cultural traditions between Horizons (Table 1.1). This chronology was formulated based on decorated pottery and therefore focuses on the development of complex, sedentary, agricultural societies. The Nasca chronology is discussed in brief above and in detail in Chapter 2. Nasca culture developed, thrived, and declined during the Early Intermediate Period and early Middle Horizon (discussed below).

The Pre-Ceramic period, which precedes the Early Horizon, begins with the earliest evidence of human occupation in Perú (before at least 9500 BC) and lasts until the development of ceramic technology and the wide-spread adoption of agricultural subsistence economies (c. 1800BC) (Moseley 2001:107). Pre-Ceramic societies hunted and gathered naturally prevalent resources along coastal Perú. By c. 2500 BC large populations thrived and became more sedentary. Some practiced gardening (Moseley 2001:112). Coastal communities became more complex and organized labor to build monumental civic-ceremonial structures (Haas and Creamer 2006:745; Ikehara et al. 2013:217; Kaulicke 2010, 2011; Shady 2003). By the period between 2500 – 1800 BC, referred to as the Cotton Pre-Ceramic, people transitioned from hunting and gathering to reliance on agriculture and pastoralism (Pickersgill 1969:54).

The Initial Period (c. 1800 – 800 BC) is characterized by the development of ceramic technology, increased complexity, and reliance on maize agriculture as well as a continued de-emphasis on wild resources. Populations boomed as irrigation became important to coastal agriculture (Moseley 2001:133). Agropastoralism became an important strategy as people spread from the coast to the highlands (Moseley 2001:135, 143). Construction of civic-ceremonial centers continued (Moseley 2001:136).

The Early Horizon (c. 800 BC – AD 1) began with widespread and prolonged drought and the decline of regional civic-ceremonial centers. The Early Horizon is associated with the widespread influence of Chavin culture emanating from the site of Chavin de Huantar in the northern highlands (Moseley 2001:158). The civic-ceremonial center at Chavin de Huantar was founded by at least 800 BC. Its influence reached the south coast by at least 400 BC and

seems to have had a profound impact on early Paracas culture (Dwyer and Dwyer 1975; Kroeber 1953; Moseley 2001:158; Paul 1996; Proulx 2008:564; Wallace 1991).

The Early Intermediate Period (c. AD 1 – 600) is characterized by a resurgence of regional identities and the decline of Chavin influence. Agropastoralism in the highlands and irrigation agriculture on the coast continued as important subsistence strategies. Population growth continued and people expanded into uninhabited territories. For example, Paracas peoples spread to the Nasca Region and Nasca culture developed indigenously from these roots (Moseley 2001:173). Moche society, a confederated archaic state that developed in northern Perú during the late Early Horizon, reached its apex during the Early Intermediate Period (Bawden 1996; Moseley 2001:174; Shimada 1994). Moche trade goods recovered in Nasca suggest that the two regions may have been connected by exchange networks (Proulx 1994:100-101).

The Middle Horizon (c. AD 600 – 1000) is characterized by two distinct but analogous cultural phenomena: the Wari Empire and the Tiwanaku State. Because of this dissertation's focus on the Nasca-Wari relationship, the Wari Empire is emphasized herein. During this period climatic conditions became cooler and drier (Schreiber 1992:94). Previous farming and pastoral techniques became less effective (Moseley 2001:223). During the late Early Intermediate Period, Huarpa culture in the Ayacucho regions of the south-central highlands was among the first in Perú to innovate agricultural terraces (Moseley 2001:232). The Wari Empire, which likely developed from Huarpa antecedents, radiated out from their heartland at the site of Huari in Ayacucho. Agricultural infrastructure such as terraces and irrigation represent key strategies in their expansion and consolidation (Moseley 2001:231; Schreiber 1992:263).

Tiwanaku was an expansive state that formed in the southern highlands of Perú and northern Bolivia by c. AD 560. Tiwanaku and Wari seem to have shared certain stylistic motifs (e.g., the staff deity) and ideologies (Moseley 2001:238). In early archaeological research in Perú, Wari and Tiwanaku are often conflated (e.g., Strong 1957:1). Tiwanaku influence waned slightly later than that of the Wari, around AD 1100.

The Late Intermediate Period (c. AD 1000 – 1476) follows Wari collapse and is characterized by fragmentation and chaos in formerly consolidated territories (Moseley 2001:245). In Nasca, this period is characterized by the development of a relatively high degree of indigenous sociopolitical and economic complexity. The Andean master chronology terminates with the Late Horizon (c. AD 1476 – 1534). This period commences with the Inca Empire and ends with its decline at the hands of Spanish conquistadors starting AD 1532.

Summary of Chapters

This dissertation consists of twelve chapters divided into three sections. The first section includes Chapters 1 through 3 and discusses the historical, theoretical, and methodological context of the present research. The second section includes chapters 4 through 10 and discuss data retrieval and analysis. The final section, Chapters 11 and 12, attempts to synthesize and evaluate the primary conclusions of this dissertation.

Chapter 2, The History of Research and Nasca Culture History, establishes in greater detail the history of Nasca research and the trajectory of development of Nasca civilization.

Emphasis is placed on research pertaining to the local Middle Horizon (i.e., the Loro Period) as it is immediately relevant to the goals of this project.

Chapter 3, Theoretical Framework: Empire at a Periphery, discusses the theoretical underpinnings of this dissertation. Major themes include life on the periphery of an empire, culture contact, incipient complexity, and archaeological households. Chapter 3 presents two primary hypotheses: 1) that Zorropata was incorporated into the Wari Empire; or 2) that it was not incorporated. Expectations for either scenario that can be addressed with archaeological data are outlined.

Archaeological data from surface analysis and excavation are discussed in Chapters 4 through 10. Chapter 4, Surface Analysis at Zorropata, Introduces the reader to the site of Zorropata. Site selection criteria and processes are described. Mapping procedures and results, the methods and results of archaeological surface artifact collection, and the analysis of stone and adobe architectural features are also discussed.

Chapter 5, Excavations at Zorropata, begins with a discussion of the sampling strategy used in unit selection and a discussion of the problems encountered during this process. The site's stratigraphy as discerned from excavated habitation and ceremonial contexts are presented. The chapter then proceeds to detail excavation methods, procedures, and results. Laboratory analyses are discussed in general terms to introduce more in-depth discussions of material analyses in Chapters 6 through 10. The results of AMS radiocarbon assays are described. This chapter concludes with a summary of the results of analysis and a discussion about some of the major trends observed regarding subsistence and non-subsistence activities, and symbolic life at Zorropata.

Chapter 6, Pottery Analysis, presents a classification of fineware and plainware vessels from excavated contexts at Zorropata. Data resulting from this classification are employed to make observations regarding decorative methods and motifs, and the site chronology. A discussion of Zorropata ceramic paste analysis precedes an exposition of the results of instrumental neutron activation analysis of a sample of Loro ceramics from Zorropata. This chapter presents and discusses data regarding the second of the three research goals stated above, investigating Loro ceramics in their stratigraphic context.

Preservation of organic material such as textiles and plant remains at Zorropata was particularly good. Paleobotanical samples are still awaiting analysis (see Chapter 9). Chapter 7, Analysis of Woven Artifacts and Weaving Tools, discusses archaeological textiles, cordage, and spinning and weaving tools (e.g., spindle whorls, spindles, chalk) recovered from surface collection and excavation at Zorropata.

Chapter 8, Analysis of Stone Tools and Miscellaneous Artifacts, begins with a discussion of flaked and groundstone artifacts from Zorropata. It includes a discussion of the results of X-ray fluorescence of a sample of obsidian flakes from surface collection and excavation at the site. Most of the remainder of this chapter is devoted to artifacts whose purpose may be ritual or symbolic in nature including figurines, a partial whistle, and adornments. Bone artifacts were not very common at Zorropata and are discussed at the end of Chapter 8.

Chapter 9, Analysis of Ecofacts, discusses faunal bone, shell, and other ecofacts recovered from excavation at Zorropata. Chapter 10, Analysis of Human Crania, discusses the bioarchaeological analysis of eight 'trophy head' individuals recovered from the adobe compound in Sector 1. Stable strontium, nitrogen, and carbon isotope analyses were

conducted on samples from these individuals. Some results from these analyses and cortisol analysis are discussed in Chapter 10.

Chapter 11, *Zorropata: A Local Nasca Village Occupied During Wari Imperial Encroachment*, investigates the first and primary stated research goal above (see also Chapter 3), to investigate the Nasca-Wari relationship and examine a case of empire at periphery using various data from fieldwork at Zorropata (Chapters 4 through 10).

Chapter 12, *Conclusions: External Correlations and Future Directions of Research*, completes this dissertation. The final chapter addresses the two ancillary research goals stated above: 1) to consider Loro ceramics in their stratigraphic context; and 2) to evaluate the prehistoric Middle Horizon community of Zorropata. In addition, this chapter considers avenues for future research at the site.

¹ *Barbacoa* tombs consist of logs or reeds laid horizontally over a cist (Carmichael 1988:188; Tello 2002:20). The form resembles a barbeque, hence the name which is Spanish for barbeque.

² Christina Conlee's work at the Late Intermediate Period sites of Pajonal Alto and La Tiza included excavation of the Middle Horizon components of those sites but targeted mortuary contexts (Conlee 2000, 2003, 2005). In Spring of 2014, Corina Kellner, Verity Whalen, and Alejandra Figueroa excavated at the site of La Marcha located in the Las Trancas Valley (Kellner, Whalen, and Figueroa 2017). Based on surface ceramics it is probable that La Marcha has a substantial Middle Horizon Component. However, data from the 2014 excavations were yet to be published as of the completion of this dissertation.

³ For example, Peruvian Chef Virgilio Martínez celebrates Perú's ecological diversity at his Lima restaurant, Central, which is currently ranked 5th in the world.

⁴ In Perú, the desert along the central and south coast is commonly called the Peruvian Desert rather than the Atacama.

⁵ One rainstorm in 2009 recorded c. 110 mm of precipitation.

⁶ More information about CÓNICA can be found on their website:

<http://www.conservamosica.org/conica/siembra-de-hortalizas-en-el-biohuerto-de-plantas-utiles-en-copara-nasca/>; or visit them on Facebook at

<https://www.facebook.com/C%C3%B3nica-1159627787380641/>. The project is also

described on the RBG, Kew website by scientist Oliver Whaley:

<https://www.kew.org/blogs/kew-science/sustaining-life-and-agriculture-peruvian-desert-0>.

Chapter 2

History of Research and Nasca Culture History

This chapter offers a brief synthesis of the most influential works in archaeological research on the South Coast with an emphasis on research pertaining to the Southern Nasca Region. The primary purpose of this chapter is to frame the succeeding chapters of this dissertation in a geographical and chronological context. The discussion below is organized in more or less chronological order. It is beyond the scope of this dissertation to provide an exhaustive discussion of Nasca archaeological research. Moreover, several excellent syntheses (and edited volumes) on the subject have been written in recent decades (e.g., Carmichael 1992; Proulx 1983; Edwards 2010:80-119; Isbell and Silverman 2008; Silverman and Proulx 2002; Reindel and Wagner 2009; Vaughn 2000:29-67; Whalen 2014:9-45). Therefore, particular attention is paid to more recent research. The present research focuses on the Middle Horizon in Nasca. Research pertaining to the period of Wari Imperial expansion into the Nasca Region is immediately relevant to the goals of the project. Also, this chapter seeks to lay some groundwork for investigating the historical and cultural contexts of Loro pottery.

The discussion below is split into three parts. Part I presents a brief summary of the salient early archaeological research in the Nasca Region from the turn of the last century through the 1950s. Part II constructs a culture history for the Nasca Region by weaving together seminal regional survey and site-based archaeological studies conducted in the last

few decades. Part III deals with research regarding Nasca during the Middle Horizon, in general, and the Loro Period, in specific.

Part I: Early Nasca Archaeological Research

Archaeological interest in and exploration of the South Coast of Perú began over a century ago when scholars first took notice of Nasca pottery. The first polychrome vessels were collected by French Captain François Joseph Amedee de Campe de Rosamel in 1842 from the Ica and Nasca Valleys (Proulx 2006:19). The first publication to include polychrome pottery from Nasca was by Jules Hamy (1898). Jose Moniano Macedo collected Nasca pottery among other Peruvian artifacts in 1881. The Macedo collection was acquired by the Museum fur Volkunde, Berlin in 1884 (Proulx 1983). Thomas Joyce coined the term ‘Nasca’ to describe polychrome pottery on South Coast in his book, *South American Archaeology* (1912).

Max Uhle, among the first archaeologists to take an interest in the Nasca Region, encountered Nasca pottery at the Museum fur Volkunde as a young scholar and sought its source (Uhle 1914:3). The museum had four high-quality specimens that lacked meaningful provenience information. Uhle followed the museum’s catalog for these items to the regions of Ica and Chala on the south coast of Perú. He began a long-term program of archaeological research on the south coast encompassing the Chincha and Ica Valleys, c. 120 km north of the Nasca Region. Excavations uncovered polychrome pottery in Ica that resembled that from the Museum fur Volkunde (Uhle 1914:6). Uhle’s research led him to the Nasca Valley in 1901. His work in the region was quickly followed by that of other archaeologists —

notably, Julio C. Tello, San Marcos University, Lima, Perú, and Alfred Kroeber, the University of California, Berkeley.

Julio C. Tello, perhaps the first indigenous archaeologist to conduct research in the Americas, is considered the ‘Father of Peruvian Archaeology’ (Burger 2009:38-39). During his career he conducted research throughout Perú. In the Nasca Region he excavated, surveyed, and studied collections of artifacts from numerous cemetery sites that spanned the pre-Nasca Early Horizon through the post-Nasca Late Horizon (Proulx 2008:563; Tello 1917, 1918, 1926, 1929, 1940, 1942). In 1915, Tello examined artifacts and human remains taken from mortuary contexts at *Estaqueria*, an archaeological site near the Nasca ceremonial center, Cahuachi, in the Nasca Valley (Tello 1918). In this work, he recognized that ‘trophy heads’ and polychrome ceramics were of great symbolic importance to ancient Nasca people and discussed broad cultural parallels between the Nasca and other Pre-Columbian Andean cultures (Tello 1918). Tello conducted archaeological excavations at sites throughout the Nasca drainage including some of the first investigations at Huaca del Loro (discussed below) in the Las Trancas Valley, Nasca, Perú (Tello 2002:9-16).

Early research documented Nasca and Paracas stylistic motifs represented in polychrome fineware ceramics and finely woven textiles that were housed in museums but ultimately recovered from cemetery sites (Candela 1943; Joyce 1913; Kelly 1930; Kroeber 1937; Kroeber and Strong 1924; O’Neale 1942; Putnam 1914; Stewart 1943; Tello 1917, 1918, 1926, 1942; Uhle 1914). In these early days, objects, especially pottery, were the primary target of academic interest. The context of these artifacts was rarely preserved or recorded in detail. These studies were oriented towards understanding Nasca material culture where more recent work has sought to investigate Nasca people and society. Research of this

era largely took a top-down approach, targeting temples and tombs with little regard for habitation sites (Vaughn 2000:33).

As part of an early foray in constructing a Nasca chronology, Anna Gayton and Alfred Kroeber (1927) produced one of the first comprehensive typologies of Nasca polychrome fineware ceramics that is the basis for much subsequent research. The typology describes four categories of Nasca polychrome fineware and proposes chronological correlations for each type. This typology contributed significantly to the first relative chronology for the region. Gayton and Kroeber studied 660 ceramic vessels collected from throughout the Nasca Region and housed at the University of California, Berkeley (Gayton and Kroeber 1927:2). Vessels were classified according to vessel shape, color(s), and design attributes (Gayton and Kroeber 1927:4-6). They identified 26 different vessel forms and four distinct categories for Nasca style ceramics, Groups A, X (A/B), B, and Y. The authors thought these groups should be arranged chronologically from A to Y with X as an intermediary stylistic trend between A and B (Gayton and Kroeber 1927:43).

Vessels from Group A were most commonly simple, open, low-sided bowls or double-spouted jars decorated with rich but somber colors of slip paint. Designs were not very intricate but “decisively painted” (Gayton and Kroeber 1927:41). Naturalistic designs prevailed including various kinds of animals (birds, fish, killer whale) and vegetation. Some supernatural designs were observed including a cat-demon design and another figure that Gayton, Kroeber, and their contemporaries referred to as the Centipede. Some geometric motifs were observed (Gayton and Kroeber 1927:13).

Vessels from Group B were mostly tall and narrow including vases and goblets. Modeled and painted jars representing human heads and figures were common vessel forms.

The colors used to make designs were the same as those used on Group A vessels with the addition of purple. Designs were more intricate and included a jagged staff demon, heads (probably representing 'trophy head' individuals), bands of heads, interlocking fish, and vegetable motifs (Gayton and Kroeber 1927:14-16).

Group X was considered to be stylistic and chronological intermediary between Groups A and B. Several variations of bowl shapes were common in this group. Jar shapes absent in Group A were present in this sub-assembly. Colors were essentially the same as in Group A, however, backgrounds were lighter – a trend that would continue in Group B. Most designs observed in this group resembled those of Groups A or B (Gayton and Kroeber 1927:17-18).

Gayton and Kroeber's Group Y was composed of specimens that exhibited what was thought to be non-Nasca designs. Vessels exhibited traits that were similar to Groups A, X, or B but diverged stylistically in ways that suggested foreign influences (e.g., Coastal Tiahuanaco, Huari, Ica Epigonal, and Middle Ica) and the decline of Nasca society (Gayton and Kroeber 1927:26). Gayton and Kroeber (1927) assumed that the Nasca ceramic style started simple, became more elaborate as Nasca society fluoresced and grew, then declined into a sloppier version of the style as Nasca society collapsed. It should be noted that the vessels on which this study was based were obtained by Uhle from insecure proveniences.

Kroeber revised this typology to clarify and fortify the original definitions (Kroeber 1956:327). The relations between Groups A, X, B, and Y are reworked and expanded from the earlier work (Kroeber 1956; Kroeber and Collier 1998). This typology fell out of use with the advances made by a seriation devised (but never published) by Lawrence Dawson (discussed below; Kroeber and Collier 1998:20).

William D. Strong conducted archaeological research in the Ica and Rio Grande de Nasca drainages on South Coast of Perú under the auspices of Columbia University in 1952-53 (Strong 1957:1). Strong recognized three broad periods of Nasca culture history based on his work in the region and especially at the Las Trancas Middle Horizon site Huaca del Loro. These periods were: the Florescent Epoch; the Proliferous Epoch; and the Epoch of Fusion. The Florescent Epoch consisted of the main trajectory of Nasca cultural development during the Early Intermediate Period. It would have included the periods know today as Early Nasca, Middle Nasca, and Late Nasca. The Proliferous Epoch keyed in on the Late Nasca period and the elaboration of the polychrome ceramic tradition that occurred during this period. Design motifs, techniques, and the number of slip paint colors proliferated during the Late Nasca period. The Epoch of Fusion described the “Late Nascoïd Horizon at Huaca del Loro superseded by Tiahuanacoïd culture” (Strong 1957:36). Later research would reveal that ‘Tiahuanacoïd’ cultural influences in the Nasca Region were Wari. This period subsumes the Middle Horizon in the Nasca Region. The Columbia University expedition also pursued research agendas at the regional ceremonial center, Cahuachi, mapping the site and documenting material culture found there (Strong 1957:1)

The Dawson Seriation

On the heels of the Columbia University expedition, John Rowe and his students from the University of California, Berkeley began in-depth research projects throughout Perú, including Nasca (Rowe 1956:135). One of the aims of this project was to develop a detailed chronology of Nasca Pottery. Lawrence Dawson, with guidance from Rowe, began work towards this goal at Berkeley using museum collections and grave associations documented

by Uhle, Kroeber, and other earlier investigators (Rowe 1956:135). Dawson used over 200 stylistic features (i.e., design and shape details) to construct a classification with 9 phases (Rowe 1956:146). Dawson continued this work in Perú with museum collections as well as archaeological survey in the Ica Province (Rowe 1956:146). The similiary seriation that resulted from this work formed the basis of the Nasca chronology used by researchers today (Kroeber and Collier 1998:20; although see Silverman 1993:37 for a critique of the sequence). Dawson never published the seriation but parts of the sequence have been published and refined by other researchers (Blagg 1975; Carmichael 1998; Kroeber and Collier 1998; Menzel 1964:28-30, 1977; Pezzia 1969:129-140; Proulx 1968, 1970, 1983, 1989, 1994, 2008:575; Roark 1965; Rowe 1956:146-147, 1960; Silverman 1977, 1993:31-37).

Dawson's 9 phases spanned from the end of the Early Horizon until the Middle Horizon (Rowe 1956:146). Rowe notes that these phases do not necessarily represent separate chronological units and that some phases may have overlapped (Rowe 1956:147). That said, radio carbon dates associated with pottery from different sub-phases across the Nasca Region demonstrate that there is some chronological consequence to these categories (Conlee 2000:114; Proulx 1968:7; Rowe 1959:42; Silverman 1993:39; Vaughn 2009:83; Whalen 2014:202; Unkel and Kromer 2009:14). Dawson's Nasca sequence applies to both the Southern Nasca Region (the Nasca, Taruga, and Las Trancas Valleys) and the northern Nasca drainage (the Palpa Valley) with the exception of Nasca 6, which has not been observed in Palpa (Hecht 2009:13).

According to Rowe, Dawson's Nasca 1 predates Nasca society proper, and correlates with Tello's Paracas Necropolis and Strong's Proto-Nasca (Rowe 1956:147). Dawson's

Nasca 2 is also considered to be Proto-Nasca (Blagg 1975:6). Nasca 3 and 4 correspond to Gayton and Kroeber's Group A plus some materials in Groups X, B, and Y (Rowe 1956:147,1960:41; Silverman 1993:31). Rowe used the term 'Monumental' in reference to Nasca 3 and 4 ceramics because they date to the period of prominence and growth for Cahuachi during the Early Nasca period (Rowe 1956:147, 1959:41). Vaughn includes Nasca 2, 3, and 4 in the Early Nasca period (Vaughn 2000:20).

Rowe cautions that Nasca sub-phases 4 and 5 in Dawson's seriation are contemporaneous (Rowe 1956:147). Nasca sub-phases 6 and 7 were described as 'Proliferous' (Rowe 1956:147; 1959:41; 1960:41). Rowe considered Nasca 4 and 5 to be transitional between the 'Monumental' and 'Proliferous' phases (Rowe 1956:147). Silverman (1993:31) and Vaughn (2000:20) describe Nasca 5 as transitional rather than 4 and 5. Vaughn equates Nasca 5 with Gayton and Kroeber's Group X (Vaughn 2000:20; c.f., Silverman 1993:31).

Rowe (1956:147) correlates Nasca 6 and 7 with Gayton and Kroeber's Group B and Tello's Chanka style. Nasca 6 and 7 ceramic styles correlate to a time marked by increased regionalization and political conflict following the decline of Cahuachi (Kellner 2002:82-83; Tomasto Cagigao 2009:153; Whalen 2014:35). Nasca 6 and 7 styles correspond to the Late Nasca period in the local Chronology (Vaughn 2000:20).

Dawson's Nasca 8 and 9 correspond to Gayton and Kroeber's Group Y (Rowe 1956:147). Nasca 8 has been described as 'Disjunctive' because it constitutes a stylistic departure from earlier sub-phases (Proulx 1968:1). Scholars note a decline in quality or decoration and ceramic technology from Nasca 7 to Nasca 8 (Morgan 2012:33; Silverman 1989:25). Nasca scholars consider Nasca 8 to be synonymous with the Loro style, first

identified as such by Strong at Huaca del Loro (Silverman 1993:36; Strong 1957:36). Nasca 8 and 9 styles correlate with the Middle Horizon – a period of foreign Wari incursion and local upheaval in the Nasca Region (Silverman and Proulx 2002:35-37). Moreover, Silverman (1989:25, 1993:36) suggests that Nasca 8 and 9 occurred after Nasca society began to decline and are therefore not Nasca styles. Patricia Knobloch (1991:248) described Nasca 9 as local productions resembling Chakipampa style pottery, a style that originated from the Wari homeland of Ayacucho (Menzel 1964:25-53).

John Rowe (1963) argued that Nasca was a state oriented around an urban and ceremonial center, Cahuachi, thereby taking major strides towards an analysis of Nasca social organization. Excavations conducted at Cahuachi did not support the interpretation that it was a city, however its importance as a ceremonial center and pilgrimage destination is well supported by the present data (Kantner and Vaughn 2012; Silverman 1994, 1993). More recent Nasca research extends beyond the exploration of temples and tombs to the investigation of regional settlement pattern (e.g., DeLeonardis 1991; Edwards 2010; Isla 2001; Reindel and Isla 1998; Proulx 1998; Schreiber 1999, 2001; Schreiber and Lancho Rojas 2003; Silverman 1993, 2002), habitation sites (e.g., Bautista 2015; Conlee 2000, 2003, 2005; Edwards 2010; Kellner, Whalen, and Flores 2017; Van Gijsegem 2004; Vaughn 2000, 2004, 2005, 2009; Whalen 2014), craft production, consumption, and exchange (e.g., Eerkens et al. 2008; Eerkens et al. 2010; Vaughn 2004, 2005, 2006, 2009; Vaughn et al. 2005, 2006; Vaughn and Glascock 2005; Vaughn and Neff 2000, 2004), foreign influence (e.g., Conlee 2010; Conlee et al. 2009; Conlee and Schreiber 2006), and affects and limitations of the natural environment (e.g., Beresford-Jones et al. 2009; Eitel et al. 2005; Schreiber and Lancho Rojas 1995, 2003).

Regional Survey Studies

Over several field seasons between 1984 and 1996 teams from UCSB under the direction of Katharina Schreiber conducted an intensive archaeological pedestrian survey in the Southern Nasca Region (Tierras Blancas, Aja, Nasca, Taruga, and Las Trancas Valleys)¹ and documented archaeological sites between c. 300 masl and c. 60 km up valley. A total of 1,200 sites was identified as a result of this work ranging the entire period of human occupation in the Southern Nasca Region from the Middle Archaic to Colonial times (Schreiber 1989, 1999; Schreiber and Lancho Rojas 1995, 2003). In 2008, the survey was extended an additional 30 km up the Aja and Tierras Blancas Valleys (Edwards 2010:382). This survey continued Schreiber's earlier research in the Aja and Tierras Blancas Valleys a cumulative 51.3 km up valley to c. 3,000 masl (Edwards 2010:382). Forty-five additional sites were identified spanning from the Archaic period to the Late Horizon (Edwards 2010:385). A major focus of the UCSB survey was to understand what occurred in Nasca during the Wari occupation on the south coast. Edwards has continued to survey ancient roadways between Nasca and the highlands (publication of resultant data are forthcoming).

Archaeological survey of the northern Nasca drainage (Santa Cruz, Grande, Palpa, and Ingenio valleys) has identified petroglyphs, geoglyphs, cemeteries and settlements spanning the Middle Archaic to the Late Horizon (Browne 1992; Browne and Bataybar 1988; Carmichael 1991; Isla and Reindel 2005; Proulx 1998²; Reindel and Isla 1998, 2006; Silverman 1992, 1994, 2002). These survey data document a shared culture history with the Southern Nasca Region. Pertaining to the early Middle Horizon, survey of the Northern

Nasca Region documents a dramatic depopulation of the northern part of the Nasca drainage (Browne 1992:80; Isla and Reindel 2005:63-64; Silverman 2002:133).

The present data for the Southern Nasca Region indicate that the number of habitation sites decreased in the northern two valleys, Nasca (and its tributaries) and Taruga, but increased in the Las Trancas Valley (Conlee 2010:98; Schreiber 2005:248). Sites in all three valleys were established in more defensible locations, but something unique occurred in Las Trancas (Schreiber 1999). As the population there increased, a four-tiered site hierarchy emerged with “a single primate center (Huaca del Loro), secondary and tertiary centers spread throughout the region and very small villages at the lowest level” (Schreiber 2005:248-249).

Archeological survey conducted by Anthony Aveni (1986, 1990) documented geoglyphs throughout the Nasca Region. Other archaeological surveys conducted on the south coast investigate (north to south): 1) the Chincha Valley (Wallace 1971, 1985); 2) the Pisco Valley (Peters 1986, 1994, 1997; Wallace 1971, 1985); 3) the Paracas Peninsula (Carmichael 1991); 4) the Ica drainage (Cook 1999; DeLeonardis 1991; Massey 1986, 1991; Williams and Pazons 1974); and 5) the Southern Acari Valley (Riddell 1989; and Riddell and Valdez Cardenas 1988).

Several of the sites identified in the UCSB survey have been the focus of more intensive research including the Early Horizon site La Puntilla (Van Gijsegem 2004), the Early Nasca sites Marcaya and Upcana (Vaughn 2000, 2004, 2005, 2009), the Late Nasca site Cocahuischo (Whalen 2014), the Middle Horizon Wari site Pataraya (Edwards 2010), La Marcha a probable ceremonial and habitation site in use from at least the Early Nasca Period through the Middle Horizon (Kellner, Whalen, and Flores 2017), and the Late Intermediate

Period sites Pajonal Alto and La Tiza (Conlee 2000, 2003, 2005). Corina Kellner's bioarchaeological research of Las Trancas grave lots contributes a diachronic perspective on health, social practices (e.g., cranial vault modification), and interpersonal violence in Nasca society from the Early Nasca period through the Middle Horizon (Kellner 2002).

Part II: Nasca Culture History

The Origins of Nasca Society

Nasca culture developed indigenously in the desert landscape of southern coastal Perú from Paracas cultural antecedents at the beginning of the Early Intermediate Period (Silverman and Proulx 2002:14). The term 'Paracas' is derived from the Inca language, Quechua, and means 'sand storm' (Proulx 2008:563). In the archaeology of the south coast of Perú, 'Paracas' has additional significance and refers to: 1) a place (i.e., the Paracas Peninsula); 2) two related cultures (i.e., Paracas Cavernas and Paracas Necropolis, named for their type sites on the Paracas Peninsula; and 3) textile and ceramic styles related to Paracas culture (Paul 1991:1; Mejía Xesspe 1950:3). Julio Tello and Toribio Mejía Xesspe are credited with first identifying Paracas culture in the 1920s. Alfred Kroeber also contributed significantly to early archaeological research regarding Paracas (Daggett 1991:44; Paul 1991:6).

At present, the earliest evidence of Paracas culture on the south coast of Perú dates to about a century before the Early Horizon (c. 800 BC – AD 1) (Proulx 2008:563; Silverman 1991:352; Table 1.1). Iconography and stylistic motifs on early Paracas textiles and pottery resemble Chavin material culture. Chavin culture developed prior to the Early Horizon (c.

900 – 200 BC) in the Peruvian highlands c. 500 km north of the Paracas heartland. Several researchers postulate a connection or even Chavin influence on early Paracas culture (Dwyer and Dwyer 1975; Kroeber 1953; Paul 1996; Proulx 2008:564; Wallace 1991). Evidence of Paracas influence has been observed throughout the south coast of Perú (Paul 1991; Proulx 2008:563).

At the start of Nasca civilization, the Southern Nasca Region would have been a hinterland of Paracas culture. Hendrik Van Gijseghem argues that colonization of this frontier occurred as populations grew in lush agricultural lands in the lower Ica Valley and Palpa Region (Van Gijseghem 2006:440). Movement into new territories created new opportunities for pioneers to gain access to resources and status. Moreover, it was an environment that fostered experimentation and innovation (Van Gijseghem 2006:440).

The transition from Paracas to Nasca is marked by a major technological innovation in ceramic production (Conlee 2010:97; Menzel et al. 1964:251; Silverman and Proulx 2002:16). Paracas ceramics were decorated with a post-fire painting technique while Nasca ceramics were decorated with pre-fire slip paints meaning that iconographic designs rendered on Nasca pots had greater longevity and held up to more use and abuse. Kilning was also improved. During the Early Nasca period, fineware ceramics were fired at higher temperatures contributing to the durability of the final product. At this juncture, there was a shift in emphasis from textiles towards pottery as a major carrier of ideology. Ceramic vessel forms included double-spout-and-bridge bottles, bowls, jars, and some effigy forms. Modeling was used to make effigy forms but in general it was not a major technique in ceramic vessel production or decoration (Proulx 1983).

Pigments used to decorate ceramic vessels were also improved. At least 13, but perhaps as many as 15, different pigments were employed in decorations (Proulx 1983, 2008:572). Many elements of the iconography — depictions of plants, mammals, birds, reptiles, and supernatural beings — were reminiscent of Paracas designs (Schreiber and Lancho Rojas 2003:15; Silverman and Proulx 2002:16).

It is probable that the area where Cahuachi is located held some significance to the earliest occupants of the Southern Nasca Region (Paul 1991:6). No Paracas pottery has been observed at Cahuachi, though Strong identified a Late Paracas site in the vicinity (Strong 1957:13; Van Gijseghem 2006:419). However, Instrumental Neutron Activation Analysis (INAA) of Proto-Nasca (Nasca 1) blackwares from the Early Nasca site La Puntilla (a Late Paracas/Initial Nasca site) are compositionally consistent with Early Nasca polychrome ceramics that originate near Cahuachi (Vaughn and Van Gijseghem 2007:816-818; see Chapter 6 for more information about INAA). Moreover, the landscape on which Cahuachi sits is proximal to where Nasca's influent rivers (Chapter 1) reemerge to run on the surface (Schreiber and Lancho Rojas 2003:15). This characteristic was likely known to and appreciated by the first people to live in the drainage (Vaughn and Van Gijseghem 2007:819).

Settlement patterns changed significantly coincident with the changes in ceramic technology. Habitation sites moved to less defensible locations and construction began at the regional ceremonial center, Cahuachi (Van Gijseghem and Vaughn 2008:117). Paracas settlements included spaces for non-domestic communal interaction but in Early Nasca settlements such spaces were omitted (Van Gijseghem and Vaughn 2008:119). Dwelling structures became more private and less distinct in form and location within the settlement

(Van Gijseghem and Vaughn 2008:114). Van Gijseghem and Vaughn (2008:122) suggest that these changes correlate with a shift in how status was acquired and where people of status were based. They argue that these changes in settlement patterns and ceramic production were the genesis of Nasca culture, in general, and of what they refer to as the ‘Cahuachi cult’, in specific (Van Gijseghem and Vaughn 2008:122; Vaughn and Van Gijseghem 2007:818). The ‘Cahuachi cult’ refers to a tradition of pilgrimage and ceremonial feasting associated with the Cahuachi (Vaughn 2006:113; Vaughn and Van Gijseghem 2007:818)

Early Nasca

Early Nasca society constitutes the first complex society to develop in the Nasca Region during the Early Intermediate Period (c. AD 1-750; see Table 1.1) (Conlee 2003:49). Early Nasca peoples were organized into a middle-range society consisting of many rural villages nestled in the Andean foothills in the Rio Grande de Nasca drainage (Conlee 2003:49). Settlement patterns during the Early Nasca period (c. AD 1 – 350; Nasca 2-4; see Table 1.1) indicate that people lived in valley margins and kept the valley bottom open for agriculture (Vaughn 2005:115).

Kevin Vaughn describes the sociopolitical structure as “a loose alliance of chiefdoms with a mixed agropastoral economy” focused on maize (Vaughn 2005:116). Nasca settlements were largely self-sufficient in terms of subsistence production. Thus, economic power, derived from the control of “key resources and goods,” was limited (Vaughn 2005:113). Settlement patterns and data from cemetery contexts do not support that socioeconomic status differences were neither pronounced nor deeply entrenched

(Carmichael 1988:399; Schreiber and Lancho Rojas 2003:146). Socioeconomic status was likely negotiable and plastic. Pilgrimage to and involvement in rituals at Cahuachi (along with the distribution of polychrome finewares) likely played a significant role in how status was enacted throughout the region (Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). Nasca villages were small, rural, and largely independent of one another, but still bound to some extent by shared practices and ideologies (Vaughn 2009:45). These ideologies are illustrated archaeologically by a tradition of polychrome finewares, construction and use of Cahuachi, and the construction of geoglyphs (Figure 2.1) (Conlee 2003:49, 2010:98; Silverman 1993:66).

Kevin Vaughn's excavations at the Early Nasca site of Marcaya observed that Nasca dwelling structures of this period were opportunistically built (Vaughn 2000:118). Houses are round fieldstone structures with mud mortar and c. 3-5 m in diameter. Most houses were associated with at least one abutting patio. Patios are enclosed with fieldstone but unroofed. It is thought that these spaces were used as general loci for household craft and food production. Surface analysis at Marcaya supports a scenario where most activities were organized at the household level. There is no evidence of any large or centrally located area for community organized activities within the confines of the Early Nasca village (Vaughn 2009:74).

Corina Kellner examined human remains from three cemetery sites in the Las Trancas Valley dating to the Early Intermediate Period and Middle Horizon: El Pampon, La Marcha, and Los Medanos (Kellner 2002:35). From these analyses, Early Nasca individuals infrequently exhibit enamel hypoplasia indicating that nutritional resources were generally available during this period. Instances of lesions caused by systemic infection are also low.

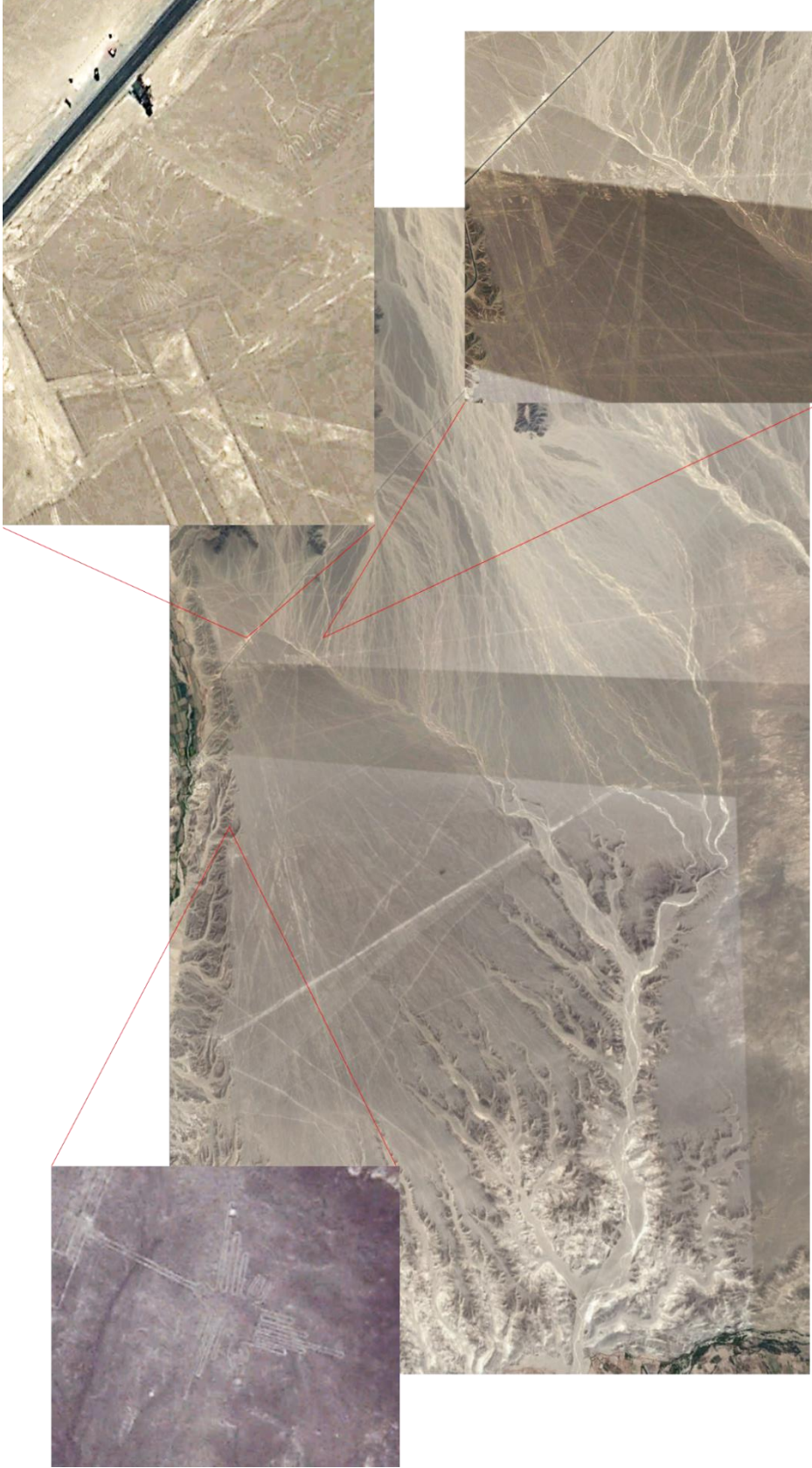


Figure 2.1. Google Images of Some of the Nasca Geoglyphs Including the Hummingbird (Top Left), the Huarango Tree and Human Figure (Top Right), and Several Linear Geoglyphs (Top Right, Bottom Right, and Center).

At least two forms of cranial modification, tabular and annular, were performed and may have been used to indicate different kin-based social groupings (Kellner 2002:96).

Cahuachi. The monumental architecture at Cahuachi modified already existing topographic features with the addition of adobe construction (Silverman 1993:336). The ceremonial center reached 150 ha in size (Vaughn and Neff 2000:77), and was expanded and maintained over several centuries at the beginning of the Early Intermediate Period (Silverman 1993:318). Although construction at Cahuachi ceased sometime around Nasca 5 time (AD 450), its use probably continued. During subsequent sub-periods of the Early Intermediate Period and the Middle Horizon the site was used as an elite cemetery (Schreiber and Lancho Rojas 2003:156; Silverman 1993:81).

Evidence of domestic activities suggests that Cahuachi hosted a small permanent population of probable elites (Vaughn 2009:49). Cahuachi's primary function during the Early Nasca period was to serve as a regional ceremonial center and pilgrimage destination (Silverman 1993:300-319).

As is discussed further in Chapter 6, polychrome pottery was manufactured using clay that is chemically consistent with adobes used to build Cahuachi and probably sourced from nearby (Boulangier and Glascock 2012:6; Vaughn and Neff 2004:1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and Van Gijseghem 2007:816). It is probable that these ceramics were made by Nasca elites at Cahuachi to embody their ideologies (Conlee 2003:49; Schreiber and Lancho Rojas 2003:15; Silverman 1993:302; Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). Pilgrims participated in public rituals at Cahuachi then returned to their villages throughout the region bringing with them polychrome ceramics, thereby

disseminate elite ideologies in material form to the furthest reaches of the Nasca Region (Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). Indeed, excavations at Upcana, a habitation site c. 50 km up valley from Cahuachi occupied from the Late Archaic (c. 3000-1800 BC) into the Early Intermediate Period, documented c. 60% of finewares were Nasca polychrome ceramics (Vaughn and Linares Grados 2006:602).

Middle Nasca

Settlement patterns during the Middle Nasca period (c. AD 350 – 450) expanded to areas of arable land in the middle valley regions (between 1,000 and 500 masl) (Table 1.1) (Schreiber and Lancho Rojas 2003:145). As mentioned above and in Chapter 1, much of the available water in the middle valley region runs in subterranean streams. Therefore, a major infrastructural innovation, *puquios*, was necessary to populate this part of the valley. *Puquios* are a system of aqueducts that tap the phreatic water source and channel it to the surface. Water is collected in reservoirs and canals on the surface where it is available for irrigation and domestic use (Schreiber and Lancho Rojas 2003:35). *Puquios*, in the form of open trenches or covered galleries, average hundreds of meters in length (>200 m – >1,200 m) and several meters in depth (4 - 10 m) (Schreiber and Lancho Rojas 2003:36). They represent major feats of skilled labor and technical planning. In addition to providing water, *puquios* may also have provided a means for controlling and restricting access to water (Schreiber and Lancho Rojas 2003:157-158). How this infrastructural innovation informed Middle Nasca sociopolitical life is still debated.

Coincident with the development of *puquios*, Nasca power structures and elite traditions were under negotiation (Proulx 2006:37-40; Roark 1965:55-60; Whalen 2014:33). Construction at Cahuachi halted and ceramic iconography shifted to include new elements (Orefici 2012:86-87; Silverman 1993:318; Silverman and Proulx 2002:119-120; Vaughn 2000:36-37). Schreiber and Lancho Rojas (2003:17) suggest that the labor organized to expand and maintain Cahuachi may have been redirected towards the construction of *puquios* in response to extreme and prolonged drought conditions (Chapter 1). These events may have been the impetus for constructing *puquios*.

Polychrome ceramic finewares became more heterogeneous across the Nasca Region, a probable result of the decline of Cahuachi as a centralizing influence (Silverman and Proulx 2002:31). Settlements in the Grande, Palpa, Viscas, and Ingenio Valleys aggregated into fewer but larger, more complex habitation sites than had existed during the Early Nasca period (Isla Cuadrado and Reindel 2005:63). Some evidence suggests that the locus of political power may have shifted north to the Palpa Valley (Isla Cuadrado and Reindel 2006; Reindel 2009:454). Excavations at the Middle Nasca site of La Muña in the Palpa Valley identified mausoleum-like subterranean tombs (Isla and Reindel 2006:393). These tombs were looted but Johny Isla Cuadrado and Markus Reindel (2006:392) cite a description of a similar tomb in the Santa Cruz Valley excavated by Julio Tello and Eugenio Yacovleff in the 1920s from which “46 ceramic vessels and various objects of gold, including a mask, nose-ring, two pendants, and a necklace” were recovered (Isla and Reindel 2006:392). The authors suggest that these tombs belonged to high-ranking Nasca leaders involved in a powerful but short lived Middle Nasca state that had fragmented by Late Nasca times (Isla and Reindel 2006:393-394).

Late Nasca

The Late Nasca period (c. AD 450-600) was a time of upheaval and increased competition (Vaughn 2009:5; Table 1.1). Nasca society became more fragmented during the Late Nasca period. Settlement pattern data indicate that the local population began to aggregate into larger settlements (Isla and Reindel 2005:63; Schreiber 1999:167; Schreiber and Lancho 2003:17). Self-sufficient polities, each including one or a few large settlements, were established in different parts of the valleys (Schreiber 1998:263, 1999:168). It was rare for Early Intermediate Period Nasca sites to have defensive structures. That said, many Late Nasca sites, especially those in upper valley regions closer to the highlands, were established in defensible locations with good visibility (Schreiber 2005:246; Whalen 2014:35). Large habitation sites were nested on top of steep hillsides or steeply dropping alluvial fans (Figure 2.2). Sites (e.g., Parasmamarca, Taruga) were also established on broad flat alluvial fans (Whalen 2014:35). These polities appear to have been in conflict with each other but still slightly integrated by Cahuachi (Kellner 2002:80-81; Schreiber and Lancho Rojas 2003:17). Direct evidence of the increased prevalence of interpersonal violence is scant. However, the iconographic representations of warriors, warfare, and 'trophy heads' on polychrome ceramic wares became more common (Browne et al. 1993:277-278; Kellner 2002:93; Knudson et al 2009:247; Proulx 2006:42-44; Silverman and Proulx 2002:236).

Bioarchaeological data from Late Nasca burials at the cemetery sites of El Pampón (n=7), La Marcha (n=2), and Los Médanos (n=35) in the Las Trancas Valley indicate a decline in health and an increased prevalence of interpersonal violence (Kellner 2002). Lesions indicative of systemic infection were more common as the population boomed and



Figure 2.2. Cocahuicho Facing North (Up Valley) Demonstrating a Steeply Dropping Alluvial Fan.

became more centralized (Kellner 2002:58). Stature decreased and the instance of enamel hypoplasia increased, indicators of a decline in the availability of nutritional resources (Kellner 2002:108). Drought, amplified by human activities, caused deforestation (Beresford-Jones et al. 2009:243).

By the Late Nasca period a relationship was shared between the Nasca culture and the Huarpa culture of the Ayacucho region, thought to be the cultural antecedent of the Wari Empire (Knobloch 1983:289-316; Leoni 2010:67; Silverman and Proulx 2002:93-94). Traditional Huarpa ceramics are orange-bodied wares with designs in black and white slip. Huarpa ceramics in the Early Intermediate Period incorporated several Nasca elements including a greater variety of slip-paint colors, Nasca designs, and small open vessel forms (Menzel 1964:5; Knobloch 2005:117). Menzel (1964:388) suggested that the Nasca retained a special status within the Wari Empire as it developed because of this relationship (see also, Knobloch 1983). Silverman takes this argument a step further and states that the Nasca 8 (Loro) style was born as much from “that non-proliferous Late Nasca corpus as from proliferous and foreign influence” (Silverman 1989:29)³.

Part III: Middle Horizon in Nasca

The Wari Empire in Nasca

As presently known, the Wari established three colonies in Nasca during the Middle Horizon (c. AD 600-1000) (Table 1.1). Pacheco was established in the Nasca Valley just below the confluence of its two tributary valleys, Tierras Blancas and Aja (Edwards 2010:469; Silverman 1993:29). This site seems to have had ceremonial as well as

administrative importance (Schreiber 2005:247). According to Tello's field notes and maps (published post-mortem), Pacheco was a substantial habitation site, architecturally similar to Wari administrative centers in other regions (Conlee 2010:96; Tello 2002:9). While looking for the site in 1952, William Duncan Strong was informed by locals that Pacheco had been destroyed by extensive clearing and irrigation work (Strong 1957:43).

Pataraya, a Wari compound, was established 35 km upstream from Pacheco in the Tierras Blancas Valley (Edwards 2010:41). Edwards (2010:78) argues that Pataraya served as an outpost involved in the orchestration of Wari political and economic interests in the region. *Spondylus*, bronze, obsidian, and other imported goods and raw materials suggest that Pataraya was integrated into a long-distance exchange network. Residents of this site likely facilitated the export of local finished goods and raw materials for the Wari state (e.g., cotton for textiles, ceramic wares, clays, or pigments) (Edwards 2010:467-472). Wari weavers employed both cotton and camelid fibers in their textiles. While the Wari might have co-opted local labor for a variety of reasons, cotton is of particular interest because: 1) cotton grows well in the sunny arid environs of the south coast of Perú and was used in textiles in the Nasca region since at least the Early Horizon; and 2) evidence of spinning was ubiquitous at Pataraya suggesting that this activity was of interest to the site's Wari inhabitants (Edwards et al. 2008).

The third colony, Inkawasi, lies nearly 50 km northeast of Pacheco in the upper Aja Valley (Katharina Schreiber, Personal Communication). No data are available as to the function of that site. Aside from Pacheco in the Nasca Valley, Pataraya in the Tierras Blancas, and Inkawasi in the Aja, the evidence of the Wari presence in the Southern Nasca Region consists of Wari-style ceramics and tombs from cemetery contexts (Schreiber

1999:169). No Wari architecture has been documented to date in the Las Trancas Valley and no Wari ceramics have been recovered from Huaca del Loro.

Archaeological Investigation of the Loro Period

As mentioned above and in Chapter 1, the Loro period and associated ceramic style were defined for their type site, Huaca del Loro, located in the Las Trancas Valley, Nasca, Perú (Strong 1957:36-43; Table 1.1). Huaca del Loro was the largest local site in the Las Trancas Valley (formerly the Tunga Valley) occupied during the Middle Horizon and a probable sociopolitical hub (Schreiber 2005:248). It was first investigated archaeologically by Julio C. Tello in the 1920s (Tello 2002:9). Earlier works referred to the site as Tambo de Kopara (Tello 2002:9). Among other finds from the site, Tello excavated adobe structures containing gravel fill that were high-status *barbacoa* style tombs (Tello 2002:20). Similar structures were identified at only one other Las Trancas habitation site, Zorropata (Katharina Schreiber, Personal Communication).

In addition to Tello's work at Huaca del Loro, William Duncan Strong and a team of researchers from Columbia University excavated there in 1952-53 as part of a regionally scaled program of research (Schreiber 1988:69; Strong 1957:1). By the time the Columbia University project took place Tambo de Kopara was known as Huaca del Loro (Strong 1957:36). Strong describes Huaca del Loro as a large habitation site with probable ceremonial component and an associated cemetery (Strong 1957:36). Strong's excavations at the site consisted of a few test units and targeted a possible temple (Strong 1957:36). The temple was described as "thick walls of stone and rubble, coated with red-painted plaster, one entrance/exit and plastered floor, several rooms with thick walls angle off this circular

structure” (1957:36). Deposits excavated from this location appeared to be ritual in nature (e.g., a mummified macaw, llama, guinea pig, and large fossilized whale bones), and Strong interpreted them as sacrifices (Strong 1957:36). Two large stone-walled compounds with internal spatial divisions (northeast of the temple), and a trash midden (west) were also partially excavated, but were not discussed in detail in the single preliminary publication resulting from this work (Strong 1957:36). Christina Conlee and Corina Kellner are in the process of organizing a multi-year project at Huaca del Loro that should elucidate many of the site’s complexities (Christina Conlee, Personal Communication).

Strong published a preliminary report but passed away before completing a more thorough final report of these excavations. In modern times following Strong’s research at Huaca del Loro, the site has been severely impacted by agricultural expansion (Schreiber 1988:69). Huaca del Loro was occupied during a period that Strong and his contemporaries referred to as the Epoch of Fusion. This period was significant for the overwhelming evidence that Nasca locals were interacting with purveyors of the “Tiahuanacoid stylistic trend” (Strong 1957:41) now understood to be the Wari.

One result of Tello’s excavations in the Las Trancas Valley during the 1920s was his recognition of a distinct category of pottery that would come to be known as the Loro ceramic style (Nasca 8 in the Dawson Seriation) (Tello 2002:40). However, Tello’s descriptions of this style lacked detail. Strong outlines the Loro ceramic style in general terms based on local Middle Horizon pottery recovered and observed during the Columbia expedition (Strong 1957:40). According to Strong (1957:40), Loro pottery (a.k.a., Loro Polychrome Fine or Loro Polychrome) is derived from Early Intermediate Period Nasca pottery. Subsequent works discussed Loro vessel construction, shape, surface treatment,

decorative details, and iconography (Silverman 1989:25; Spivak 2015). The most systematic and extensive treatment of Loro ceramics to date is an art historical analysis conducted by Deborah Spivak (Spivak 2015). Spivak considered more than 650 Late Nasca, Loro, and Wari objects housed in museum collections around the world and conducted some surface artifact survey in the Las Trancas and Taruga Valleys (Spivak 2015:71). Loro pottery has been observed at least throughout the Southern Nasca Region including in Middle Horizon graves at Cahuachi (Strong 1957:36-43).

Loro ceramics used a buff or orange colored background though on occasion a white background was used (Strong 1957:40). Loro pottery was slipped painted with white, black, gray, beige, and two shades of red (reddish brown, and dark red) (Spivak 2015:82). Loro potters experimented with slip paint recipes⁴. Alicia Gorman, Jelmer Eerkens, and Kevin Vaughn used Electron Microbe Analysis to investigate the chemical composition of pigments from Early Intermediate Period Nasca, Loro, and Wari vessels (Gorman et al. 2014). Black pigments used on Loro vessels was distinct from those used on Early Intermediate Period Nasca vessels. Loro black was also less consistent from vessel to vessel than its Early Intermediate Period counterpart had been (Gorman et al. 2014). Moreover, a particular resist-painted organic black pigment referred to as “fugitive black” was sometimes used and may have been applied post-fire (Silverman 1989:25; Strong 1957:40). Deborah Spivak gives other examples of experimentation with slip during the Middle Horizon in Nasca. White slip on some Loro vessels is variably used as an extremely thin wash or applied thick but as a result is friable (Spivak 2015:83).

Some vessel forms that were common during the Early Intermediate Period (e.g., double-spout and bridge bottles) became less common in the Loro ceramic style. Meanwhile,

forms such as drums, face-neck jars, and incurving vases with round bottoms became more common (Silverman 1989:25). Spivak defines 14 forms of Loro fineware vessels including plates, various types of bowls, jars, and vases, as well as more unique items such as modeled crescents (Spivak 2015:78-81). Loro ceramics depicted supernatural iconography that was highly abstracted compared with earlier (Nasca 7) variations. Loro designs are characteristically banded in horizontal panels or circular medallions rather than covering the entire external surface of a vessel as is common on Nasca 7 ceramics. Ubiquitous Loro designs included geometric designs, zigzags, chevrons, and crosses (Silverman 1989:25).

Loro pottery represents a significant stylistic departure from earlier Nasca forms. It is thicker, heavier, rougher, and less polished. Use of many Nasca 7 iconographic motifs continued for Nasca 8 pottery however, and these tended to be less well rendered and abstracted (Silverman 1989:25). These changes (discussed further in Chapter 6) occurred as a result of local agency and adaptation perhaps in response to the actions of the Wari. For example, the Wari could have co-opted local skilled labor or preferred resources, forcing local peoples to innovate new ways of making polychrome finewares.

New sites established in the Las Trancas Valley during the Middle Horizon were in more defensible locations (Schreiber and Lancho 2003:18). The apparent relocation of Nasca peoples to the Las Trancas Valley during the Loro period is usually interpreted as a form of resistance, although Conlee (2010:98) makes the point that the relocation may not have been voluntary but instead imposed by the Wari. Whatever the underlying causes, the establishment of new sites in the Las Trancas Valley during the early Middle Horizon resulted in a major reorganization of Nasca society. Helaine Silverman goes so far as to call it the end of Nasca society proper (Silverman 1989:25).

Archaeological investigation of local Middle Horizon sites has been limited. Huaca del Loro has periodically been the subject of research (discussed above), however initial research at the site was conducted nearly a century ago. Moreover, little of the research from Strong's tenure has been published in detail. New archaeological research at this important local site is warranted and would no doubt contribute new and interesting data and research questions to investigations at Zorropata and other contemporaneous sites. Besides Huaca del Loro, two local Late Intermediate Period (AD 1000–1476) habitation and cemetery sites excavated by Christina Conlee, La Tiza and Pajonal Alto, also had limited Middle Horizon occupations (Conlee 2010:99). Excavations of the Middle Horizon components at these sites, however, have primarily targeted mortuary contexts. The site of La Marcha, due south of Zorropata across the Las Trancas Valley, has a local Middle Horizon component (Kellner, Whalen, and Figueroa 2017). Excavations were undertaken at La Marcha in 2014 by Corina Kellner, Verity Whalen, and Alejandra Figueroa but were not published prior to the completion of this dissertation.

Bioarchaeological data from Middle Horizon burials at the cemetery sites of El Pampón (n=6), La Marcha (n=22), and Los Médanos (n=123) in the Las Trancas Valley identified an increase in stress indicators for the local population (Kellner 2002:59). The instance of osteoarthritis increased among the local population suggesting that agricultural production was intensified either to meet the needs of the growing population or because the Wari extracted labor or agricultural products from them (Kellner 2002:74-75). Individuals identified as Wari or associated with the Wari exhibited less osteoarthritis than local people during this period and were probably not subjected to the same intensity of labor requirements (Kellner 2002:110).

After Wari Collapse: The Late Intermediate Period in Nasca

Chaos and balkanization ensued in Nasca (and other conquered societies) when the Wari Empire collapsed at the beginning of the Late Intermediate Period (c. AD 1000-1476; Table 1.1) (Conlee 2000:66). As people in the Nasca Region reconfigured and rebuilt society, many Early Intermediate Period traditions diminished while new traditions developed (Lumbreras 1989:23). Settlement pattern data suggest that the population in the drainage was at an all-time high during the Late Intermediate Period, and settlement sizes increased alongside (Conlee 2003:47). The resources used to establish and maintain power broadened. Polychrome ceramic traditions declined in quality and importance. The decline in quality of polychrome pottery compared with that from the Early Intermediate Period suggests that it was not as important for transmitting political ideology as it had been. Settlements were relocated and reorganized to include communal spaces. The basis of power shifted towards exchange, craft production, feasting, community-based ritual activities, and probably warfare and defense (Conlee 2003:59-61; Lumbreras 1989:23; Hastorf 1993:208).

Late Intermediate Period Nasca society was characterized by a relatively high degree of sociopolitical and economic complexity. Excavations at the site of Pajonal Alto identified segregation in the organization of dwellings according to sociopolitical status (Conlee 2003:47). Indicators of high status were more common at houses in the north of the habitation sector, near a plaza and small mound. Lower status houses were clustered to the south of the site. Local elites became more involved in the production and exchange of ceramics and other material culture. Work areas were associated with elite residences, and elites were involved in both local and long-distance trade of utilitarian ceramics, camelid

fiber, obsidian, and *Spondylus* shell. Ceramic vessels imported from Ica or made in the style of Ica vessels were also used in Nasca and seem to have conferred some prestige to their owners (Conlee 2003:59; 2005:165).

Discussion

As stated above, researchers have argued that Nasca and Huarpa cultures shared a relationship (Conlee 2010:98; Menzel 1964:68; Silverman 1989:27). This relationship is materialized in ceramic style and technology from both cultures dating to the late Early Intermediate Period. Nasca high-firing kilning techniques, slip-paint, and some stylistic elements and motifs in first Huarpa, then Wari pottery suggest an exchange of ideas, and possibly, ideologies (Conlee 2010:98). Menzel thought that religion played a role in Wari expansion and was of particular importance in Nasca. Once the Wari Empire was established, Nasca had unique prestige among other groups that were incorporated into it:

Nasca thus seems to have enjoyed a special privileged position in the new Empire, sharing its prestige in the provinces, perhaps somewhat in the way in which Greece shared in the prestige of the Roman Empire (Menzel 1964:68).

Wari interests in the Nasca region were more than just ideological, and economic incentives were also in play (Conlee 2010:98; Edwards 2010:474). For example, at the Wari Outpost, Pataraya, the site's residents facilitated the export of local finished goods and raw materials for the Wari state (e.g., cotton for textiles, ceramic wares, clays, or pigments) (Edwards 2010:473). Bioarchaeological data from Middle Horizon burials at the cemetery sites in the Las Trancas Valley identified an increase in instance of osteoarthritis among the local

population that may correlate with the intensification of agricultural production (discussed above). These data also suggest that Wari representatives or collaborators may have been exempt from increased labor demands (Kellner 2002:109).

Wari influence may be evident in some local Middle Horizon burial practices. Conlee's excavations of Middle Horizon funerary contexts at La Tiza and Pajonal Alto suggest that, while single burials predominated in the region, multiple burials became much more common during this period. Early Intermediate Period Nasca burial practices were relatively conservative. Thus, the changes evident at La Tiza may indicate direct Wari influence (Conlee 2010:105).

Wari pottery (especially that of the Chakipampa style) contributed elements to local Nasca style (Conlee 2010:96). The Wari co-opted much of Nasca ceramic iconography and technology and perhaps religious ideology and practices. One response seems to have been the relocation of local settlements from the Nasca and Taruga Valleys to the Las Trancas Valley, away from and perhaps in contention with the Wari (Schreiber 2005:248). This mass migration may be an act of resistance — a substantial portion of the local Loro population voting with their feet and opting out of local Wari agendas (Conlee 2005:98; Schreiber 2005:248). Another alternative is that the Wari displaced local settlements for some purpose such as freeing up local agricultural lands or destabilizing local power structures (Conlee 2010:98). A cache of Wari (Robles Moqo) style fineware pottery that appears to have been purposefully broken and deposited in an adobe chamber at Pacheco may indicate *ex post facto* Nasca resistance to the Wari (Conlee 2010:96; Schreiber 2005:250)⁵. Subsequent chapters of this dissertation will consider the experience of a local Nasca settlement (Zorropata) during this period of Wari encroachment in the Nasca region.

¹ The Aja and Tierras Blancas Valleys converge below c. 1,000 masl to form the Nasca Valley. References to the Nasca Valley above pertain to the middle and lower valley regions.

² Proulx's archaeological survey work in the Nasca region also included the lower Rio Grande and Nasca Valleys (1998).

³ The Nasca also maintained networks for the exchange of prestige goods (e.g., *Spondylus*, obsidian, polychrome finewares, etc.), ideas, and perhaps marriage partners with other regions (Whalen 2014:36). These networks extended to: 1) the Estrella tradition in the northern Pisco and Chincha valleys (Menzel 1971: 91, 128; Silverman 1997:456); 2) the southern Moquegua Valley (Goldstein 2000:347); and 3) the Moche to the north (Proulx 1994:100-101).

⁴ To reiterate from above, the application of slip paints prior to firing was a defining technological advancement for the Nasca (Conlee 2010:97; Menzel et al. 1964:251; Silverman and Proulx 2002:16).

⁵ Another alternative is that this deposit was ritual in nature. Scientific excavations at Pacheco were never undertaken, and further work is complicated by the fact that Pacheco was bulldozed in 1953 (Conlee 2010:96-97). Intact or partially intact archaeological deposits may be present but buried beneath the bulldozed surface.

Chapter 3

Theoretical Framework: A Study of Empire at the Periphery

This chapter outlines the theoretical framework of this dissertation and the ideas and assumptions that guide this research. This dissertation investigates a local habitation site, Zorropata, located in the Las Trancas Valley, Perú, during a period of prolonged contact with the earliest known empire to form in the Andes, the Wari. It considers the nature of the relationship between the Wari colonizers and the local Nasca people living in the Las Trancas Valley during the Middle Horizon (AD 600-1000; Table 2.1). Furthermore, it examines the possible impact of Wari colonization on local Nasca sociopolitical and economic practices. It draws on published research (Conlee 2000, 2010; Vaughn 2000, 2009; Whalen 2014) to develop a diachronic perspective of Nasca society.

This chapter is organized into four sections: 1) Imperialism at Periphery; 2) Levels of Analysis; 3) Operationalizing a Study of Empire at Periphery in Nasca; and 4) Research Programs. The first section defines, in brief, an empire as it is understood and used here. This section also discusses effects empires and the peripheral cultures that they conquer have on one another, and the importance of studying empire at periphery. The section on ‘Levels of Analysis’ bridges the gap between regional scales of analysis, at which pervasive cultural trends and interrelationships are often archaeologically visible, and the site level of analysis, at which such trends are created through the actions of individuals. As discussed in Chapters 4 and 5, households are a basic unit of analysis in this research. Therefore, the second section discusses household archaeology and how it is applied here. Section three, ‘Operationalizing a Study of Empire at Periphery in Nasca’, addresses the major assumptions and specific

research questions guiding this research. Section four lays out the research programs that will be pursued in subsequent chapters.

Imperialism at Periphery

The primary focus of this research is the perspective of a local community in the face of foreign imperial encroachment. The Nasca-Wari relationship is an important defining aspect of the Middle Horizon in the Nasca Region (a.k.a., Loro period). A study of empire and the variety of relationships that might form in imperial contact situations is a foundational element to the present research, and an important aspect of the local perspective. Therefore, it is pertinent to define and discuss empire in brief. A significant amount of research has been conducted on archaeological empires towards elucidating what constitutes an empire (Morrison 2001:1-6). It is beyond the scope of this dissertation to address this research in full. Instead, I offer a succinct and functional definition of empire as it is used in the present research.

In general, an empire is the type of political formation that is created and maintained by imperial processes including: 1) territorial and political expansion and the incorporation of other polities (Morrison and Sinopoli 1992:335; Sinopoli 1994:159); and 2) the establishment of sovereignty over incorporated polities (Doyle 1986:45-46). Often an archaic empire accomplishes these tasks by commanding a relatively substantive military force, and uses its clout to extract resources from conquered polities for the benefit of the imperial center (Schreiber 2001:71; Subrahmanyam 2001:43; Tyson 2014:489). As such, an empire is a multiethnic, multilingual, and multicultural entity enmeshed within networks of

relationships between the imperial center, incorporated polities, and non-incorporated peripheral territories (D'Altroy 2001; Schreiber 1992:5; Sinopoli 1995:83). Furthermore, incorporated and peripheral territories are host to a multitude of ethnic groups and local communities each with its own history, identities, and sets of traditions (Sinopoli 1994:161).

Imperial expansion creates a multitude of different relationships between an empire and the polities it incorporates. These interrelationships are complex and driven by the agency and agendas of actors within both the local and imperial populations. Within any imperial context constituent polities will maintain with varying degrees their political, economic, and social autonomy and local cultural identity. The degree to which autonomy, identities, and traditions are maintained and reproduced, or altered and supplanted is contingent upon the relationship between the empire and the sociopolitical entity incorporated into it. Although the relationship between an empire and a local, conquered population is often unequal it is not a unilateral phenomenon, with the empire dominating a passive and compliant local population.

Where early scholarship of empires utilized top-down models of interaction (e.g., core-periphery, acculturation) that presume an empire will inevitably dominate an acquiescent local population, recent scholarship criticizes such reductive approaches (e.g., Lightfoot and Martinez 1995; Silliman 2005; Schortman and Urban 1998; Stein 2002). Such oversimplified, top-down approaches prioritize the imperial perspectives, agendas, and identities while in a large part neglecting indigenous ones (Wernke 2007:149). The relationship between the empire and the host culture, though asymmetrical, involved both imperial and local decision-making and was transformative for both parties (Dietler 2010:55; Lightfoot 1995:202; Schreiber 2005:143-145; Stein 2005:5). The strategies an empire uses to

expand and consolidate new territory largely depend on particularities of local political, social, and economic circumstances (Schreiber 1992:9). Likewise, local individuals and factions interfaced with imperial personnel, goods, and ideas via various strategies informed by local economic, political, cultural, and ideological concerns (Lightfoot 1995:210-211). Thus, investigations of the size, organization, resources, or aims of an ancient empire must look well beyond the imperial center to the peripheral engagements that fueled, shaped, and impacted that empire.

The degree of investment and control of an empire over a given population may usefully be considered on a spectrum. At one end of the spectrum an empire exerts a significant degree of control over a polity, dominating and supplanting its indigenous political organization (Schreiber 1992:14). Heavy-handed approaches require greater imperial investments in terms of resources and human labor. These investments may be demonstrated archaeologically by infrastructure built according to imperial architectural canons, for example: administrative centers, roads, storage facilities, military facilities such as barracks, and state ceremonial or religious monuments, temples, or shrines (Schreiber 1992:14).

At the other end of the spectrum a polity may be incorporated into an empire without heavy infrastructural investments. If a local polity is sufficiently complex and cooperative an empire may exact control, labor, and resources through the local political hierarchy. In such circumstances there may be little or no change in economic or political spheres, and less material evidence may be left behind compared with more direct forms of control (Morris and Thompson 1985; Schreiber 1992:32). Indeed, without written records indirect forms of control may be difficult to demonstrate archaeologically in many cases. The fact remains,

however, that imperial consolidation constitutes an asymmetrical relationship between the empire and the host polity where the former attains some degree of political and economic control over the latter. Even if local sociopolitical or economic organization remains largely intact, production and consumption may be impacted by the availability of new technologies, goods, and ideas; the introduction or development of new social and exchange networks; and imperial demands (Stein 2002:913).

Yet another possibility in the wake of imperial conquest is that an empire is uninterested or unable to successfully subdue the local population due to local agency or limits to its own resources. In the case of resistance or non-compliance on the part of the periphery to imperial agendas, confrontations range from violence to a passive refusal to cooperate (Miller, Rowlands, and Tilley 1989:18). Recalcitrant locals may suffer “refusal costs” (Haas 1982:158) such as: 1) limited or no access to imported and imperial goods; 2) limited or no access to local resources that have been co-opted by the empire; 3) sanctions against, or the destruction of, local elites (Schreiber 1992:27); and 4) physical violence.

Dominance, resistance, and other related concepts are forms of social relationships, and can therefore be fruitfully explored when they are part of a broader approach that incorporates social complexity and inequality (Miller, Rowlands, and Tilley 1989:10)¹. At their roots, social complexity and inequality are the result of the collective actions of individuals, thus agency is key to an exploration of these concepts. Although its roots extend deeper into western thought (see Dobres and Robb 2000:4-6), the concept of individuals as social actors, in a word ‘agency’, was born from social theorists of the last century including Harold Garfinkel (1984), Anthony Giddens (1979, 1984), Pierre Bourdieu (1977), and many others. Its presence as a theoretical framework applied to archaeological research developed

primarily in the 1990s (Dobres and Robb 2000:7). ‘Agency’ can be a nebulous concept as there are numerous understandings and usages of the term even within an archaeological perspective. Questions of intentionality, the relationship of agency to social change, the integration of archaeological data into considerations of agency, and the place of agents within a society all problematize agency (Dobres and Robb 2000:8-10). Herein, an ‘agent’ refers to an individual actor. The accumulative actions and reactions of agents ultimately create, maintain, and transform society and social structures (Dobres and Robb 2000:11).

Levels of Analysis

An archaeological study of colonial encounters and their implications at local and regional scales must consider the multiple groups involved (Stein 2002:907). An archaeological analysis of Wari-Nasca interactions during the Middle Horizon must consider: 1) the local Loro polity centered in the Las Trancas Valley with a primate center at Huaca del Loro, including the various local communities operating at different scales within that polity including villages and towns, socioeconomic groups, family groups, exchange networks, etc. (Marcus 2000:32); and 2) the Wari Empire, which influenced these communities in significant ways. In this context the term ‘communities’ refers to geographic communities, which are defined by a shared group identity associated with a shared living space such as a village (MacSweeney 2011:42).

The archaeology of a regional network (e.g., the Loro polity) comprises the study of regional settlement patterns, culture history, and sociopolitical, ceremonial and economic organization (Vaughn 2009:27). In addition, each settlement within a polity has its own

ontology. Just as agents drive the creation, maintenance, and transformation of society, settlements are an analogous component of regional networks – creating, maintaining, and transforming society at the site level. In turn, households can be described as a basic socioeconomic unit composing settlements (Hendon 2006:172). Households, as represented by material culture and archaeological features recovered and observed at habitation terraces, also served as the basic unit of analysis in the excavation phase of this study.

In an anthropological sense the household is a point of articulation between agents (or social groups) and various community and regional scale economic, political, and ecological processes (Wilk and Rathje 1982:618). A household is a unit of economic and social cooperation that is often but not always or necessarily couched in a single dwelling structure (Wilk and Rathje 1982:620). Richard Wilk and William Rathje identify three elements of households:

(1) *social*: the demographic unit, including the number and relationships of the members; (2) *material*: the dwelling, activity areas, and possessions; and (3) *behavioral*: the activities it performs (Wilk and Rathje 1982:618).

Archaeological research methods, with an emphasis on material culture, are well suited to investigation of the physical remains of households (i.e., house structures, activity areas, possessions, etc.) (Wilk and Rathje 1982:619). Therefore, in the archaeological excavation and analysis of households, emphasis is given to the archaeological remains of houses and associated activity areas (Wilk and Rathje 1982:618). The social aspects of a household, the quotidian interactions and communications of its members, may be impossible to reconstruct archaeologically when there is no written record from which to draw inferences (Marcus 2000:240). Despite these challenges, the household approach has the potential to allow researchers to make connections between ancient agents and their regional sociopolitical and

economic situations. Households are incorporated into sociopolitical, ceremonial, and economic spheres of interaction and are often the places where ritual performance, social and political meetings, and the production of goods occur (Beaudry 2004; Stanish 1989:7).

As discussed in Chapter 2, extensive archaeological pedestrian surveys have been conducted throughout the Nasca Region (Aveni 1986, 1990; Browne 1992; Browne and Baraybar 1988; Carmichael 1991; Edwards 2010:382; Isla and Reindel 2005; Proulx 1998; Reindel and Isla 1998, 2006; Schreiber 1988, 1999; Schreiber and Lancho Rojas 1995, 2003; Silverman 1992, 1994, 2002). Numerous sites identified during various survey projects have been the target of intensive archaeological excavation (e.g., Bautista 2015; Conlee 2000, 2003, 2005; Edwards 2010; Kellner, Whalen, and Flores 2017; Silverman 1993; Van Gijseghem 2004; Vaughn 2000, 2004, 2005, 2009; Vaughn et al. 2013).

Middle Horizon Nasca settlement pattern data indicate that a dramatic transformation to Nasca culture transpired during this period (Schreiber 1999, 2005). Excavations targeting the Imperial Wari administrative center, Pacheco (Conlee 2010:96; Silverman 1993:39; Tello 2002:9), and outpost, Pataraya (Edwards 2010), contribute significant data to the picture of what the Wari did and valued in the Nasca Region. Excavations of the local Middle Horizon components at the sites of La Tiza and Pajonal Alto also contribute some data regarding the Loro period (Conlee 2000, 2010). However, prior to this dissertation, the Loro phase has not been the primary focus of previous site-based archaeological excavations at habitation sites in the Southern Nasca Region². This study, with a focus on a local Las Trancas community occupied during the Middle Horizon, complements previous archaeological studies for this period and contributes significant new data about the Loro period in Las Trancas.

Moreover, excavations have been conducted at local habitation sites occupied during the Early Horizon (Van Gijsegem 2004), Early Intermediate Period (Silverman 1993; Vaughn 2000, 2004, 2005, 2009; Whalen 2014), and Late Intermediate Period (Conlee 2000, 2003, 2005). These studies document similarities in Nasca material culture (e.g., polychrome pottery), infrastructure (e.g., *puquios*), and ideology (ceremonial-pilgrimage tradition to Cahuachi) between sites, but notable differences are evident that suggest regional variation. For example, Nasca domestic architecture seems to differ by valley or location within the valley (e.g., upper, middle, or lower valley). The Early Intermediate Period habitation sites, Marcaya and Cocahuischo, both located in the Tierras Blancas Valley (or upper Nasca Valley), exhibited circular house structures made of locally available fieldstone. At Zorropata, located in the middle valley region of the Las Trancas Valley, domestic architecture was not made from stone and may have been constructed of organic materials, such as reeds and/or wood posts (see Chapters 4 and 5). The present study contributes to the growing body of Nasca research that allows for investigation of broader regional trends, and nuanced comparisons between and among sites through time and space.

Operationalizing a Study of Empire at Periphery in Nasca

The primary driving research question of this dissertation is whether or not people living at Zorropata in the Las Trancas Valley during the Middle Horizon were incorporated into the Wari Empire. This section discusses the alternatives (i.e., incorporation or maintained independence) and the archaeological data necessary to test them.

Incorporation

Wari interests in the Nasca Region led to the establishment of at least three colonies (Pacheco, Pataraya, and Inkawasi) in the Nasca and Tierras Blancas Valleys. Archaeological survey of Las Trancas has yet to identify any Wari built administrative sites, outposts, or other Wari architectural features. Therefore, it is probable that if the Wari controlled locals living in Las Trancas, it was indirect – orchestrated through Pacheco and Pataraya c. 10 km and 35 km away, respectively, in the Nasca and Tierras Blancas Valleys and facilitated by local leaders who were co-opted by the empire. Even indirect control could have resulted in pronounced changes to local sociopolitical and economic relationships and practices, resulting in their renegotiation.

Production and Consumption. Wari interests in the Nasca Region could have been material, ideological, or both. The Wari outpost, Pataraya, appears to have been instrumental in bringing goods and resources in and out of the Nasca Valley (Edwards 2010:19). In cases where the data indicate Wari control of an area, agricultural production was, generally, intensified (Green and Goldstein 2010:25; Jennings 2010:7). High rates of osteoarthritis amongst Loro populations living in Las Trancas during the Middle Horizon indicate that agricultural labor was intensified, however, it is unclear if this was a result of Wari demands or rapid population growth in the Las Trancas Valley (Kellner 2002:75). Stable isotope analysis indicates that local diet did not change significantly between the Late Nasca period and the Middle Horizon (Kellner and Schoeninger 2008:236-237). If agricultural production was intensified to meet the needs of a growing population other subsistence activities, such

as hunting, may also have been intensified. Nitrogen and Carbon stable isotope assays conducted of human bone samples from Zorropata are awaiting results (see Chapter 10).

Agriculture could have been intensified to produce a non-subsistence resource, such as cotton. Cotton grows well on the south coast of Perú and may have been of interest to the Wari (Edwards 2010:53-54; Edwards et al. 2008). Cotton spun and collected on skeins would be more easily transported than unprocessed cotton. Thus, if locals at this site were producing cotton for the empire there would likely be an increase in spinning activities. If the inhabitants of Zorropata were spinning cotton for tribute to the Wari there would have been an increase in the frequency of spindle whorls per household compared to Early Intermediate Period habitation sites, suggesting the intensification of spinning activities. Preservation of textiles and cordage at Zorropata was excellent. If the Wari had control of Zorropata and incited local weavers to work for the empire they may have required that goods be made according to imperial styles and standards. A discussion of spun and woven artifacts and the tools used in their production can be found in Chapter 7 of this dissertation.

Chipped stone and groundstone artifacts can also be a proxy for various subsistence- and non-subsistence-related activities. At Marcaya chipped stone artifact types included bifaces, knives, scrapers, projectile points, cores, utilized flakes, flakes, and shatter made of basalt, obsidian, and chalcedony (Vaughn 2000:411). Groundstone artifacts, made from igneous rock, were classified according to use as subsistence related (e.g., slabs called batanes, and associated cobbles, or manejas, used for grinding food) or non-subsistence related (e.g., polishing stones, hammerstones, etc.) (Vaughn 2000:420). Stone tools from Zorropata are classified according to form, function, and material, and discussed in Chapter 8.

Local leaders who helped to orchestrate local labor for the Wari may have been excused from manual labor. This scenario may be supported by Kellner's (2002:109-110) work in Las Trancas, which identified individuals from burials that may have been Wari representatives or local elites cooperating with the Wari. These individuals, identified by the inclusion of Wari-style ceramics in their burials, exhibited significantly less osteoarthritis than their Loro contemporaries but were four times as likely to exhibit cranial trauma, usually a result of interpersonal violence (Kellner 2002:110). This could indicate that some local elites cooperated with the Wari but most of the local population resisted to the point of doing violence to collaborators in their midst. Another alternative is that the Wari used a combination of strategies both enticing collaborators with imperial goods and coercing the reluctant by force when necessary. If local Loro elites were excused from manual labor in exchange for assisting the Wari I would expect elite households at Zorropata to be associated with fewer than average agricultural tools. Early Nasca households were self-sufficient and economically independent (Vaughn 2000:478). Thus, the above scenario would constitute a marked and archaeologically visible shift in the distribution of local labor.

Macro- and microbotanical remains provide data on subsistence and non-subsistence related agricultural production, and environmental conditions. Botanical remains and soil samples that likely contain paleoethnobotanical data were recovered during excavations at Zorropata, Analysis of these samples has yet to be conducted (see Chapter 9).

As discussed in Chapter 2, a long-standing relationship may have existed between the Nasca and the Huarpa culture of Ayacucho, from which the Wari Empire likely developed (Schreiber 2005:246). Huarpa pottery portrays evidence of Nasca influence and some Nasca design elements were adopted by Huarpa potters (Knobloch 1976, 2005:117; Schreiber

2005:246). Thus, it is reasonable to assume that the Wari may have been interested in aspects of the Nasca aesthetic ideology if not deeper ideologies. They may also have had an interest in Nasca clays or slips. The analysis of ceramics from Zorropata is discussed in Chapter 6.

Status Differences. An invading empire has the potential to instigate significant change to local lifeways. As mentioned above, imperial agendas and interests can influence resettlement of the local population. The empire may relocate indigenous settlements to establish control, access local resources, or organize labor to meet imperial goals. Another alternative is that locals relocate their settlements away from imperial colonies as a form of avoidance or resistance. Whatever the cause, such alterations in settlement patterns can result in significant disruptions to the established sociopolitical and economic interrelationships between individuals and factions.

Imperial interests can alter a population's access to local (e.g., skilled local labor, subsistence or non-subsistence goods, and raw materials) and foreign (e.g., imports and goods made according to imperial standards) resources. Local populations may have their access to subsistence or non-subsistence goods and resources limited. New networks for trade and exchange may be introduced that create new economic opportunities. Changes in access to materials may be reflected in different stylistic and material choices in the local production of goods. If some form of tribute was imposed the locus or mode of production may also be altered. Local craft producers may be pressured or enticed to produce goods in a more standardized way, or to incorporate new imperial stylistic motifs. The scale and organization of production may be altered to meet imperial specifications. New techniques and technologies may become available including those for transport and storage.

An influx of imports and goods made according to imperial canons can create unprecedented opportunities for the development and display of socioeconomic status differences. Local leaders who cooperated with the Wari's endeavors at Zorropata may have gained privileged access to various resources including Wari fineware pottery, Wari tapestry-woven textiles, and imported goods. Such exotics have the potential to become sources of sociopolitical power because of their rarity, or the labor investment or skill level that they represent (Goldstein 2000:335-336; Schortman and Urban 2004:189). Therefore, privileged access to Wari symbols of power and material wealth could have enabled local leaders to build and maintain power on an unprecedented scale and resulted in more substantive manifestations local status differences.

Wari style fineware pottery and tapestry-weave textiles were likely purveyors of Wari imperial ideologies (Owen 2010:57). As powerful symbols of state status and ideology, distribution of these items or the knowledge of how to make them would likely have been tightly controlled. Thus, it is expected that imported Wari goods or locally produced goods made according to imperial canons would only be available at Zorropata if the site's inhabitants were incorporated into the empire. Moreover, Wari pottery or textiles have, to date, never been recovered from habitation contexts in Las Trancas. Their presence in such contexts at Zorropata would be significant. If found in association with other Nasca indicators of socioeconomic status these data could support that some individuals had privileged access to both Wari materialized ideology and other exotic resources. The methods and results of ceramics analysis are discussed in Chapter 6. Textiles and cordage are discussed in Chapter 7.

Elite contexts (elite households, elite burials, and public spaces) may be associated with a greater number, variety, or quality of prestige items than lower status contexts. Evidence for social stratification during the Early Intermediate Period in Nasca is minimal and suggests that socioeconomic status differences were not deeply entrenched (Vaughn 2009:57; Whalen 2014:335-337). Dwelling structures designated as possible elite dwellings at Marcaya tended to be larger in size, contain internal architectural features, and have walls or thresholds built from cut stone rather than fieldstone (Vaughn 2009:506). Elite residences were correlated with a wider variety of polychrome vessels including headjars, cup bowls, modeled vessels, and collared jars. Elites may have had some preferential access to polychrome fineware vessels, however, they did not have exclusive access to these wares, which were ubiquitous at the site (Vaughn 2000:508, 2004:68). Excavation at Zorropata generated the data necessary to test whether these architectural canons and artifact patterns formed the basis of status differences at local habitation sites during the Middle Horizon, or whether new architectural forms were innovated or introduced. Architectural analysis (Chapter 4) documents construction methods, building materials, external and internal walls, rooms, openings such as doorways, and other architectural features. Artifact patterning and analyses of various classes of material culture are discussed in Chapters 4 through 10. These data enable quantifiable comparisons of the quality and organization of house construction.

As in the case of Sausa and Wanka cultures during the period of Inca expansion in the Mantaro Valley, imperial control can have a significant impact on local traditions and, in particular, foodways (e.g., Hastorf 1990; Spencer 1988). Vessels for food processing, cooking, serving and storage can be used as proxies for food preparation and consumption (Wilson 2008:97-127). Comparisons of the ceramic assemblage from Zorropata with those

from Marcaya and Cocahuischo will provide important information concerning how and in what ways ceramic vessel manufacture and use may have changed from the Early Intermediate Period to the Middle Horizon. Cocahuischo, a large village site, is of comparable size to Zorropata, however, Marcaya is a much smaller village site. Thus, comparisons between the assemblages of the Early Intermediate Period habitation sites and Zorropata are normalized by cubic meters excavated.

Trade. The Wari presumably would have controlled local trade networks. During the Middle Horizon interregional exchange flourished (Jennings 2010:7), and William Isbell (2010:237) argues that exchange networks were under Wari control. Pottery styles and goods from societies that the Wari incorporated (e.g., Recuay and Cajamarca) co-occur with Wari pottery styles and imported goods (e.g., *Spondylus*, obsidian, fine textiles, and gold and bronze objects) at Middle Horizon sites throughout Perú (Isbell 2010:237-238). Unincorporated societies (e.g., Moche) do not appear to have participated in interregional exchange (Isbell 2010:238). Moche goods were even sparse at the nearby community of Huamachuco (Topic and Topic 2010:207), and uncommon “throughout the sphere of Wari trade” (Isbell 2010:238). If Zorropata was incorporated into the empire I would expect exotics and trade items to be associated with at least some Middle Horizon contexts at the site. Long-distance trade was minimal and limited to obsidian from the Quispisisa source, some *Spondylus* shell from Ecuador, imported ceramics, and metal objects (Eerkens et al. 2010:826; Vaughn 2000:491). Comparisons of various classes of materials between assemblages at Cocahuischo, Marcaya and Zorropata provide a diachronic perspective for the types and frequency of imported goods at these sites. Artifact patterns for imported goods serve as a

proxy for trade networks. A comparison of these materials and their distribution at Marcaya, Cocahuischo, and Zorropata may document if and how these patterns changed from the Early Intermediate Period to the Middle Horizon.

Autonomy

Menzel and others have suggested that the Nasca region retained a special status within the Wari Empire (Menzel 1964:68). Perhaps Nasca people living in the Las Trancas Valley maintained their autonomy and were never incorporated into the Wari Empire. Coincident with the Wari presence, fewer and smaller local settlements were established in the Nasca, and Taruga Valleys; and more and larger settlements were established in the Las Trancas Valley (Schreiber 2005:248). Settlements may be relocated so that an empire can take advantage of local land or labor. However, as may be the case in the Nasca region, local settlements could be rearranged significantly because of local agency, perhaps in response to, rather than a direct result of, imperial agendas. Researchers suggest that locals may have relocated away from the Wari in contention (Conlee 2005:98; Schreiber 2005:248). Therefore, this dissertation also considers evidence from Zorropata that addresses a narrative of resistance. Even if Las Trancas was not incorporated into the empire there is ample evidence from Pacheco, Pataraya, and various local sites to suggest that the broader Nasca Valley *was* incorporated. In this scenario I would expect local trends for production, consumption, community organization and the enactment of status differences evident at local habitation sites during the Early Intermediate Period to continue largely unchanged during the Middle Horizon, in contrast to those other Wari-controlled sites.

If people living at Zorropata were not compliant to the Wari Empire, “refusal costs” (Haas 1982:158) may have been levied against them. These policies may have affected local production and consumption especially of exotic or imported goods. Access to local raw materials might have been interrupted if the Wari gained control of such regional resources. Also, the Wari may have enacted violence against non-cooperative locals.

It is argued above that Wari goods and trade networks were tightly controlled by the empire. If Zorropata was not incorporated into the empire it is likely that the site’s inhabitants would not have had access to imperial or imported goods or their access would have been severely restricted. Without access to Wari goods or imported exotics a primary mechanism for building and maintaining power would have been severely restricted. Therefore, if inhabitants of Zorropata were not incorporated into the Wari Empire the local Early Intermediate Period pattern of little to no social stratification is expected to continue. Evidence for status differences would be restricted to locally produced Loro style polychrome ceramics and other locally available goods in this scenario. Even if minor socioeconomic differences are evident among various houses at the site, households will not be organized into sectors along socioeconomic lines.

If Zorropata was not incorporated into the empire, households are unlikely to have had access to Wari fineware ceramics or tapestry-weave textiles. Wari style ceramics or other diagnostic Wari artifacts are expected to be extremely rare or absent from the site. Wari ceramic styles may still have had an influence on local ceramic traditions, and foreign stylistic motifs may be present on wares made in local styles, but Wari ceramics made according to state standards will be absent.

As stated above, there is existing evidence that agricultural production was intensified. If locals intensified production to support themselves, it is expected that any artefactual evidence for agricultural intensification recovered from domestic contexts at Zorropata will be accompanied by evidence for the intensification of other subsistence-related activities. Ceramics and stone tools related to food production, preparation, and serving are expected to be present at Zorropata in frequencies that are not significantly different from the frequencies of these artifacts at Marcaya and Cocahuischo. These artifacts should also be present in the assemblages associated with both commoner and elite houses.

Access to local resources could have been impacted. Sourcing of a sample of Loro style sherds from Pacheco, Huaca del Loro, and Pataraya indicate that potters at those sites had access to the same clay source(s) for finewares that Early Intermediate Period Nasca potters used (Katharina Schreiber, Personal Communication). Instrumental Neutron Activation Analysis (INAA) of a sample of Loro sherds from Zorropata provides the data necessary to investigate whether potters at that site retained access to traditional clay sources or whether their access was restricted due to Wari activities in the region.

Likewise, if the Wari controlled access to the Southern Nasca Region from the sierras it is likely that they controlled the Quispisisa and Jampatilla obsidian sources ~100 km northeast of the modern town of Nasca in the highlands. Quispisisa was the closest obsidian source to the Nasca region and the dominant source for the SNR during the Early Intermediate Period, Middle Horizon, and Late Intermediate Period (Eerkens et al. 2010:826). The Wari could have cut off local access to these quarries. If Zorropata was not incorporated into the empire I would expect all stone tools from the site to be made of other local materials such as chert, quartzite, or basalt. If obsidian is present I would expect X-ray

Florescence (XRF) to indicate that it came from a source other than Quispisisa or Jampatilla such as Alca, Anillo, Lisahuacho, Potreropampa, or Puzolana, all of which are within 250 km of the Southern Nasca Region, but not directly controlled by the Wari, as far as we know.

Physical violence could be evident archaeologically from human skeletal remains. Excavation at Zorropata recovered eight ‘trophy head’ individuals (Chapter 10); however, these remains are not securely dated to the Middle Horizon. In addition, no post-cranial human remains, which might exhibit defensive wounds or other indicators of violence, were recovered. Evidence of defensive structures or weapons could potentially speak to a concern with the threat of violence (Chapters 4 and 8).

Research Programs

Research at Zorropata contributes a case study of a local, peripheral culture in a period of imperial expansion. In more specific terms, this research investigates the relationship between the Wari colonizers and the local Nasca people living in Las Trancas Valley. Work was conducted in three primary phases: 1) Surface Analysis; 2) Excavation; and 3) Artifact Analysis. Surface analysis and excavation were designed to delve into and document household and community organization at Zorropata. Excavations allowed for an in-depth examination of potential habitation and ceremonial-funerary contexts defined during surface analysis towards ascertaining the nature of these contexts. Artifacts and various archaeological samples collected during surface analysis and excavation were analyzed to produce the data necessary to address the described research goals and theoretical themes.

The research programs employed in this project are summarized below. Parenthetical notations indicate the chapters relevant to each program and in which methods and results are discussed in detail:

- 1) Define site and sector boundaries (Chapter 4).
- 2) Map all structures, architectural features, topography, site, and sector boundaries with a TC405 total station and prisms, borrowed from the University of California, Santa Barbara, Department of Anthropology (Chapter 4).
- 3) Conduct surface architectural analysis, archaeological pedestrian survey and surface artifact collection (Chapter 4).
- 4) Identify domestic contexts based on surface analysis (Chapter 4).
- 5) Generate detailed sketches/photos documenting identified houses/habitation terraces and artifacts and features (Chapter 4)
- 6) Collect uncommon artifacts from surface (e.g., obsidian, *Spondylus*) (Chapter 4)
- 7) Excavate within habitation terraces to test assessment of archaeological households with emphasis on obtaining data from a variety of structure types to determine functional differences and possible temporal and status differences (Chapter 5).
- 8) Excavate within the adobe compound in Sector 1 (Unit 1/*Recinto* A1) that has parallels to *barbacoa* style tombs identified at Huaca del Loro with an emphasis on identifying its probable function and temporal associations (Chapter 5).
- 9) Analyze all artifacts recovered; identify all artifacts; drawing of diagnostic ceramics; photos of ceramics (Chapter 6); textiles, cordage, and related spinning and weaving tools (Chapter 7); flaked and groundstone tools (Chapter 8); identify

ecofacts including faunal and shell remains (Chapter 9); physical anthropological analysis of human remains (Chapter 10).

10) Specialized analyses performed in US: AMS ^{14}C dating of carbon samples (Chapter 5); INAA of a sample of Loro ceramics (Chapter 6); X-Ray Florescence of obsidian (Chapter 7); Isotope and cortisol analysis of human remains (Chapter 10).

¹ Complexity is most often defined for the Peruvian Andes, in general, and within the Nasca region, in specific, as the stratification of society and the institutionalization of inequality. Susan Alt (2010) cautions that complexity studies bare the most fruit when inquiry becomes qualitative, asking “How were people complex” (Alt 2010:1) rather than remaining merely quantitative (“How complex were people” (Alt 2010:1)). I agree and argue that the criteria for evaluating political and social complexity in a region should be relative and referential to its unique history and trajectory of development. Research in Nasca has explored Nasca social complexity through at least four lines of investigation: (1) regional settlement patterns and habitation sites; (2) the organization of labor; (3) the performance of ceremonial and ritual activities; and (4) the construction and performance of status differences. Nasca society was shaped by endogamous factors but it was also impacted by exogamous factors. Exogamous factors affecting the organization of Nasca society included (a) contact with people from other regions either directly or through the modicum of extra-regional exchange that took place, and (b) the austere physical environment.

² During the same excavation season that work began at Zorropata Corina Kellner, Verity Whalen, and Alejandra Flores conducted archaeological fieldwork at the ceremonial site of La Marcha, located across valley from Zorropata in Las Trancas (Kellner, Whalen, and Flores 2017). This site has a habitation component and was in use during the Early Intermediate Period and Middle Horizon. The results of this research are not currently available in published form.

Chapter 4

Surface Analysis at Zorropata

This chapter discusses surface analysis at Zorropata. Extensive archaeological survey and surface artifact collection discussed in this chapter generated data necessary to accomplish the following two primary goals: 1) Define Zorropata's site and sector boundaries and describe in its immediate environmental context; 2) Document various spaces at Zorropata including but not limited to identifying domestic spaces and determining the function of the adobe compound documented by the 1990s USCB archaeological survey. These data structure a discussion of household and community organization at Zorropata, and serve as a prelude for discussing the sub-surface analysis (Chapter 5). Methods and results of these analyses are described in detail below.

Surface analysis commenced in July 2014 with extensive mapping, architectural analysis, and systematic surface artifact collection. During this stage all architectural features, terraces, and other surface features were documented, mapped, and analyzed where appropriate. In addition, 6,476 diagnostic ceramic sherds were recovered (see Chapter 6). The vast majority of sherds that could be identified stylistically were Late Nasca and Loro suggesting that the site was occupied primarily during the late Early Intermediate Period and Middle Horizon. Chronology is discussed further in Chapters 5 and 6.

Site Selection

Over several field seasons between 1984 and 1996 teams from the University of California, Santa Barbara (UCSB), under the direction of Katharina Schreiber conducted an intensive archaeological survey in the Southern Nasca Region and documented archaeological sites between c. 300 masl and c. 60 km up valley. A total of 1,200 sites was identified because of this work ranging the entire period of human occupation in the Southern Nasca Region from the Middle Archaic to Colonial times (Schreiber 1999). In 2008, the survey was extended an additional 30 km up the Aja and Tierras Blancas Valleys (Edwards 2010:7). A major focus of the UCSB survey was to understand what occurred in Nasca during the Wari occupation on the south coast.

From the pool of 1,200 sites identified in the UCSB surveys four criteria were used to determine possible sites for excavation. Criteria were as follows. The site must be 1) affiliated with ancient local Nasca peoples; 2) primarily occupied during the Middle Horizon; 3) a domestic site or have a substantial domestic component; 4) and relatively well preserved.

The research goals of this project (Chapter 3) necessitated the selection of a local site occupied wholly or primarily during the Middle Horizon for excavation. Surface ceramics documented during the UCSB survey were used as a proxy for potential subsurface deposits. A site with a relative abundance of Loro ceramics was expected to have had a significant local occupation during the Middle Horizon.

In addition, the ideal site was either a single component site or last occupied during the Middle Horizon. While investigating the period of imperial occupation and imperial collapse would make an interesting project, other research has aimed at investigating these processes (Conlee 2000). Limits to this project's resources in terms of time, money, and personnel made the selection of a site whose occupation ended in the Middle Horizon

important. A site with this chronological specification would allow us to get to the strata relevant to the goals of this project as quickly as possible. Therefore, sites with substantial evidence of occupation during the Late Intermediate Period or later periods were eliminated from consideration for this project. A site also occupied during the Late Nasca period could potentially generate data that allowed for investigation of the conditions of life before Wari encroachment. Thus, sites with a relative abundance of evidence of occupation during the Late Nasca and Loro periods were targeted.

This project had as a major research goal to study the impact of Wari imperialism on local Nasca lifeways and quotidian practices. It was anticipated that a habitation site would have the potential to produce the relevant data. Archaeological evidence of habitation included domestic architecture (houses, patios, or habitation terraces), and an abundance of ancient domestic debris including but not limited to: utilitarian and fineware ceramics, numerous mortars, pestles, manos, grinding surfaces, flaked stone tools, etc.; and a dearth of humans remains.

Looting is an endemic problem at archaeological sites in the Nasca Region. The behavior is conspicuous, especially at cemeteries, which are recognizable from aerial photos or Google Earth as pockmarks on the landscape. Cemeteries and ceremonial sites have been targeted for their well-preserved, fine textiles, polychrome pottery, and other grave goods for at least the last century. The damage from looting tends to be less at habitation sites. Damage also occurs to sites because of modern development and agricultural growth. Natural processes including wind and water erosion also impact sites. The ideal site for this research should exhibit minimal damage from natural or modern cultural factors.

Zorropata

Zorropata was selected for this research because it met all the above criteria and exhibited a few additional features that were relevant and interesting in terms of this project's research goals (discussed below) (Figure 4.1). Zorropata was identified in Schreiber's UCSB archaeological survey as a relatively large domestic site with a possible ceremonial function.

Zorropata consists of more than 120 habitation terraces on a c. 25-degree slope. It is located on the northern aspect of the Las Trancas Valley, in the middle valley region (between c. 650 and 800 masl), at the foot of the mountain Cerro Hualluri. Zorropata is c. 650 masl at the foot of the site with a maximum elevation of c. 800 masl.

The site was designated as N90-48 during the survey. I named the site Zorropata during the initial stages of this project. Zorropata was so named because of its location on a hillside known locally as *Huaca del Zorro*, which translates roughly to 'sacred place of the fox'. Fox colonies inhabit this hillside. 'Zorro' is Spanish for fox, a reference to the hillside's residents. 'Pata' in the indigenous language Quechua means place¹. Thus, Zorropata, is 'Fox-place.'

As mentioned above, surface ceramics observed at Zorropata suggested that the site had significant Late Nasca and Loro components. The present evidence suggests that Zorropata was first occupied during the Late Nasca period and abandoned just after the early Middle Horizon (Table 1.1).

In addition to meeting the basic requirements of this research Zorropata had two unique features relevant to this project, an adobe compound and what appears to be a perimeter wall. The UCSB survey identified one and maybe two adobe compounds



Figure 4.1. Zorropata from the Foot of Sector 4, Facing North.

Table 4.1. Habitation Terraces by Sector.

Sector	No. of Terraces
1	81
2	0
3	possible 7
4	0
5	29
6	9
Total	126

containing gravel fill at Zorropata and these were described as similar to an adobe structure documented by Julio C. Tello at Huaca del Loro in the 1920s (Tello 2002:22-25). Huaca del Loro was the largest habitation site in the region (c. 100,000 m²) and has been described as the primary politico-ceremonial center of the local polity that developed in the Las Trancas Valley during the Middle Horizon (Schreiber 2005:248). The intact adobe cells were *barbacoa* style tombs – a tomb style correlated with higher status graves (Carmichael 1988:293). Zorropata is the only other Middle Horizon site in the valley where similar structures were identified. As discussed in Chapters 5 and 10, these structures may be tombs of high status members of the Zorropata community.

Sometime during the latter half of the last century Huaca del Loro was severely impacted by the expansion of modern agricultural operations in the Las Trancas Valley. The site was bulldozed destroying or covering a significant portion of archaeological deposits. While Huaca del Loro might have provided interesting data for addressing the research questions of this dissertation it would also have provided many logistical and technical challenges that would have made it an imprudent choice for a dissertation project.

Surface analysis in 2014 documented segments of a large wall or system of walls along the western and southern edges of Sector 1 and the eastern edge of the site in Sector 3 (Figure 4.2). These wall segments were built using two courses of fieldstone with gravel fill, average around 1 to 2 m thick, and were more than 1 meter tall from the base (Figure 4.3). Fieldstone walls made of one course of stone with no fill extend along other sections of the perimeter (Figure 4.4). Although not continuous these stretches of wall clearly extend around the perimeter of the main habitation area of the site. They would have complicated entry into the site in areas with a relatively gentle slope that otherwise would have allowed easy access.

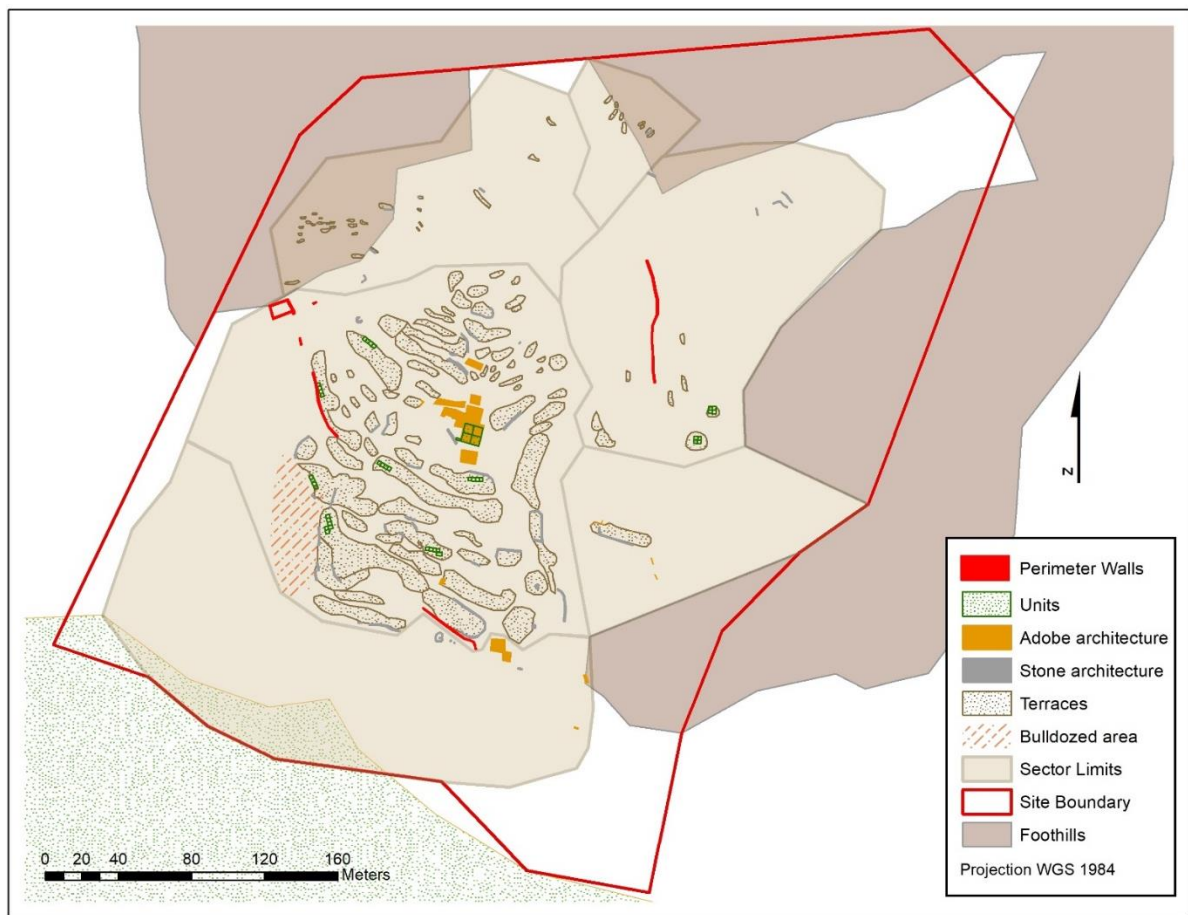


Figure 4.2. Map of Zorropata with Perimeter Wall Sections Composed of Two Courses of Field Stone with Gravel Fill Indicated in Red.



Figure 4.3. Perimeter Wall composed of Two Courses of Field Stone with Gravel Fill (Plan, Closeup).

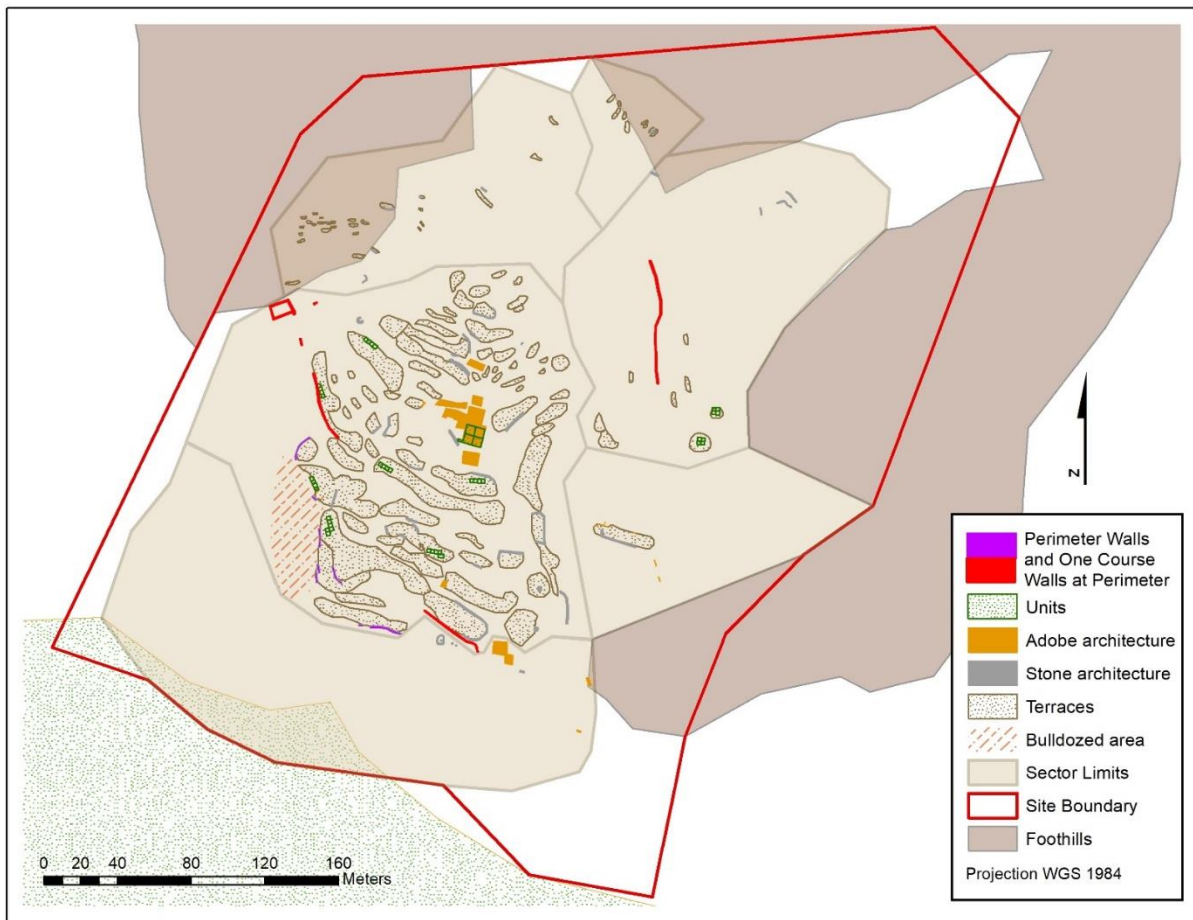


Figure 4.4. Map of Zorropata with Perimeter Wall Sections indicated in Red and Walls Along the Site Perimeter Composed of One Course of Field Stone Indicated in Purple.

Site Boundaries and Context

Zorropata is located c. 37 km from the modern town of Nasca, Perú. It is just off the main road through the Las Trancas Valley behind a homestead (Figure 1.2). The site is easily accessible from the road but obscured from view somewhat by the tree line. It is c. 6 km up valley from the modern town of Copara (Figure 4.5)². During the surface analysis and excavation phases of this project the crew lived and worked in the Copara municipal building. Huaca del Loro sits on the main road through the Las Trancas Valley at mouth of the road leading to Copara c. 6 km from Zorropata.

Cerro La Marcha³, one of two local sand covered mountains, is directly across the valley from Zorropata and clearly visible from the site. Cerro La Marcha and its counterpart in the Nasca Valley, Cerro Blanco, hold significance for local people in the Southern Nasca Region and are *huacas*, sacred places in the Nasca landscape (Reinhard 1988). From Schreiber's survey work in the valley and my own observations, Cerro la Marcha is marked with geoglyphs, cemeteries, and evidence of habitation from throughout the entire period of occupation of the Nasca region. Observations made during recent excavations at La Marcha supported the initial findings from Schreiber's survey work in the region (Kellner, Whalen, and Flores 2017).

Zorropata's site and sector limits are etic boundaries established based on the needs of this research project. Emic boundaries for this site may have included agricultural lands, grazing lands, corrals, and other resources not in the immediate landscape of the site as demarcated for this project. Zorropata's boundaries were defined based on the preponderance



Figure 4.5. Original Crew of Zorropata 2014 Field Season in Front of the Copara Municipal Building, Las Trancas, Peru (Left to Right: Alejandra Tazza, Chloe McGuire, Sarah Kerchusky, Maria Llana, Kyra Kim, Luis Manuel Gonzalez LaRosa; Molly Kaplan not Pictured).

of archaeological material culture, artifacts and architectural features, on the landscape (Figure 1.4). Official boundaries of sites in Perú are submitted to the Ministry of Culture and serve to define the site in every official capacity.

Six sectors were identified during preliminary reconnaissance at Zorropata in 2013 and the mapping phase of the project in 2014. Sectors were designated based on apparent function and divided by natural boundaries such as *quebradas*. Sector 1 has the densest concentration of cultural material and is the main habitation area at the site. This sector is around 30,000 m² in size though the site including all sectors is at least twice that size.

Sector 1 is the largest and consists of the main habitation area, containing 81 terraces and an adobe compound that seems to have served a funerary or ceremonial function. This sector was the primary focus of the 2014 season. Sector 2 contains an adobe structure and a stone structure but no habitation terraces. Sector 3 contains a large stone wall, additional stone structures, and 7 possible habitation terraces. Sector 4 is an associated cemetery. Sector 5 consists of 29 habitation terraces located to the west of Sector 1, up the *quebrada*. Sector 6 consists of 9 habitation terraces northeast of Sector 1. A total of 126 habitation terraces was identified. Smaller terraces were less than 10 m long by 5 m wide, while the largest terrace was around 65 m long and 10 m wide. Larger terraces could each have hosted several houses (Table 4.1).

Impacts on Zorropata

The modern population of the Las Trancas Valley depends on agricultural economy.

Infrastructure is under continuous expansion and development. The main road through the valley was expanded and paved in 2013. The previous thoroughfare was a two-lane dirt road

but the reopening of a mine in the Las Trancas upper valley region brought with it more resources and the need for better infrastructure. In 2014, while fieldwork for this project was under way, the drainage system along the road was also under development. While these improvements are necessary for Las Trancas residents they also threaten sites that extend to the road such as Huaca del Loro (Figure 4.6). Agricultural lands have also been expanded over the years, often threatening sites (described above). The *quebrada* just west of Zorropata shows evidence of bulldozer caused damage. An air photo of Zorropata dating to the 1940s indicates that this damage is decades old (Figure 4.7). Due to Zorropata's location off the road, behind a homestead, impacts to the site from infrastructural development have been minimal.

Tourism brings revenue for locals and encourages interest in Nasca prehistory. This interest has been beneficial where it has helped to bring attention to archaeological resources and gain support for their preservation. However, it has done little to inhibit the continued looting of local sites. Government support in the Nasca Region is not sufficient to protect many archaeological sites. As we witnessed during the 2014 season, pot hunting is considered a fun family outing on holidays in at least some places on the south coast of Perú⁴. Zorropata, like most other sites in the region, has been looted to some extent. Damage was worst at the adobe compound, which is thought to be funerary and/or ceremonial. Habitation terraces exhibited little to no disturbance from looting. Architectural features at the adobe compound (discussed below and in Chapter 5) were well preserved enough that excavation of this context provided clues about how this space was used by this site's ancient inhabitation.



Figure 4.6. View of Huaca del Loro from the Road, Facing West. Damage to Site is Due to the Expansion of Agricultural and Road Infrastructure.

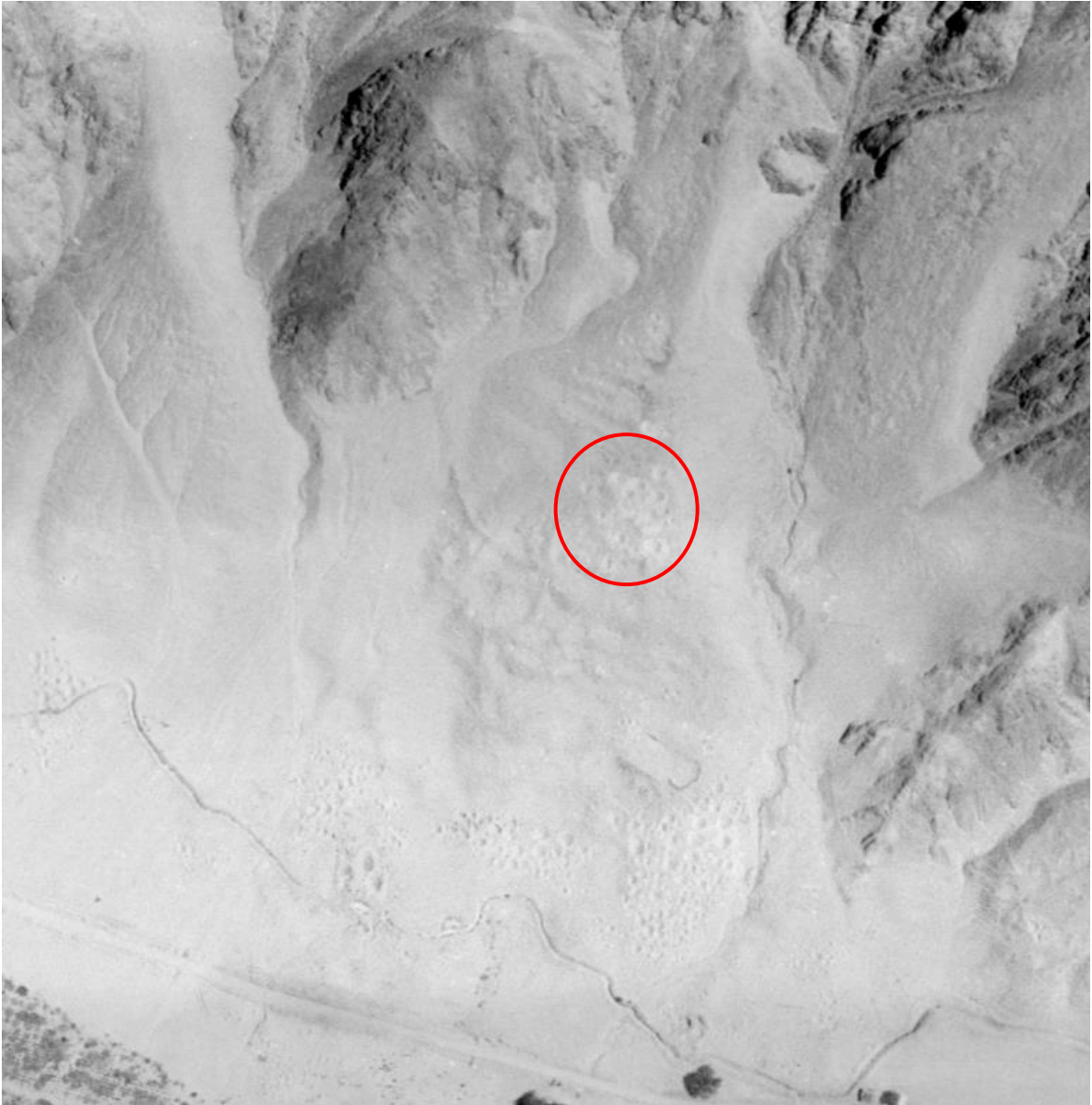


Figure 4.7. Zorropata from an Air Photo Dating to 1944. Note the Looters Pits in the Location of the Adobe Compound (Center).

Project Crew and Schedule

I, the project director, arrived in Nasca in late June 2014 to finalizing living, working, transportation, and food arrangements. The first crew members, Chloe McGuire and Luis Manuel Gonzalez, joined me in Nasca in July 2014. The crew relocated to Copara to set up the dig house. Mapping at Zorropata began during the first week of July. Gonzalez is the project's Peruvian co-director and a professional archaeologist with years of experience working of the south coast. McGuire was one of three US students to join the project, an experienced archaeologist, and an intern at the American Museum of Natural History (AMNH). The other two US students were Kyra Kim, a recent UCSB graduate, and Molly Kaplan, a Vassar graduate and AMNH intern. Kim arrived in early July and Kaplan joined the project for the last month of fieldwork. Maria Llana and Alejandra Tazza, two Peruvian students from San Marcos University in Lima, Perú, joined the project for about a month during the second week of mapping. Despite multiple attempts to recruit more students, hire Peruvian archaeologists, or hire local workers the crew for this project remained almost perilously small. We never had more than 6 members at a time and more than once we were down to three members including Luis Manuel, one of the US students, and myself. We accomplished all the research goals of this project through a regimented and rigorous work schedule, a very capable and hard-working crew, and probably a little luck.

From the beginning of the project we implemented a six-on-one-off schedule for the duration of the field work. Six days a week we worked at the site and returned to the dig house in the evening to process artifacts. Later in the season we went into the field Monday through Friday and did lab work on Saturdays. The crew finished much of the basic

processing and inventorying of artifacts (e.g., washing of ceramics and lithics, weighing and counting artifacts, and the initial processing and some preliminary analysis of human remains by Molly Kaplan). All other analysis was conducted or completed during the dedicated laboratory phase of this project in Nasca between October 2014 and March 2015.

Mapping Procedures

Mapping was accomplished with a TC405 total station and prisms borrowed from UCSB with the permission of Stuart Smith. A tripod and prism pole were obtained in Ica, Perú. Two data were established at Zorropata to map all 6 sectors. Data locations were arbitrarily selected based on visibility. The primary datum was established above the northernmost habitation terrace in Sector 1 on a relatively flat area with good visibility to most of the site including Sectors 1, 2, 3, 4, and 5. Additional terraces located north of Sector 1 in a ravine were identified and called Sector 6. A secondary datum was established north of the primary datum just above Sector 6. The path to the secondary datum was treacherous to get to even without mapping equipment. Although it had good visibility of most of the site it would have been impractical as a primary datum.

Mapping proceeded with few issues aside from the occasional sandstorm and an earthquake up the coast that knocked out power in Copara for a few days. During the power outage we were unable to charge the total station, walkie talkie, or camera batteries. The setback lasted only a few days and we spent the time establishing the grid and surveying the site.

Mapping began before excavation and continued in four phases throughout the project (described below). Surface artifact collection began at the end of July 2014 after we gained permission from the Ministry of Culture to collect archaeological samples. Mapping and surface collection were conducted in tandem. Depending on the goals for a given day we either worked together as a group of 6 on a single task (mapping or surface collection) or broke into two teams of three archaeologists each working on a different task. Phases 1-3 and surface collection were completed before excavation began. Phase 4 of mapping was completed at the end of the field season, after excavation.

In the first phase a grid was established covering Sector 1 in its entirety. The grid consisted of 267 10 x 10 meter squares each subdivided into four 5 x 5 meter squares according to cardinal directions (northeast, northwest, southeast, and southwest) (Figure 4.8). The grid was laid across the site's surface using wooden skewers and nylon string. Skewers were used instead of nails to save both money and time. Nails are much more expensive than wooden skewers. In addition, Vaughn documented the theft of nails used to mark units at Marcaya (Vaughn 2000:190). The thefts necessitated that excavation units at Marcaya be reestablished daily. To avoid similar potential issues at Zorropata, we used a cheaper material to establish the grid in the hope that it would be a less tempting target. The grid and units established at Zorropata remained intact for the duration of the season. The grid facilitated surface artifact collection and served to orient ourselves during the rest of surface analysis and excavation.

In the second phase, all architectural features and habitation terraces that were identified during 2013 and 2014 were mapped in all six sectors. Architectural features were also analyzed (discussed below). To map architectural features, a sketch was draw for

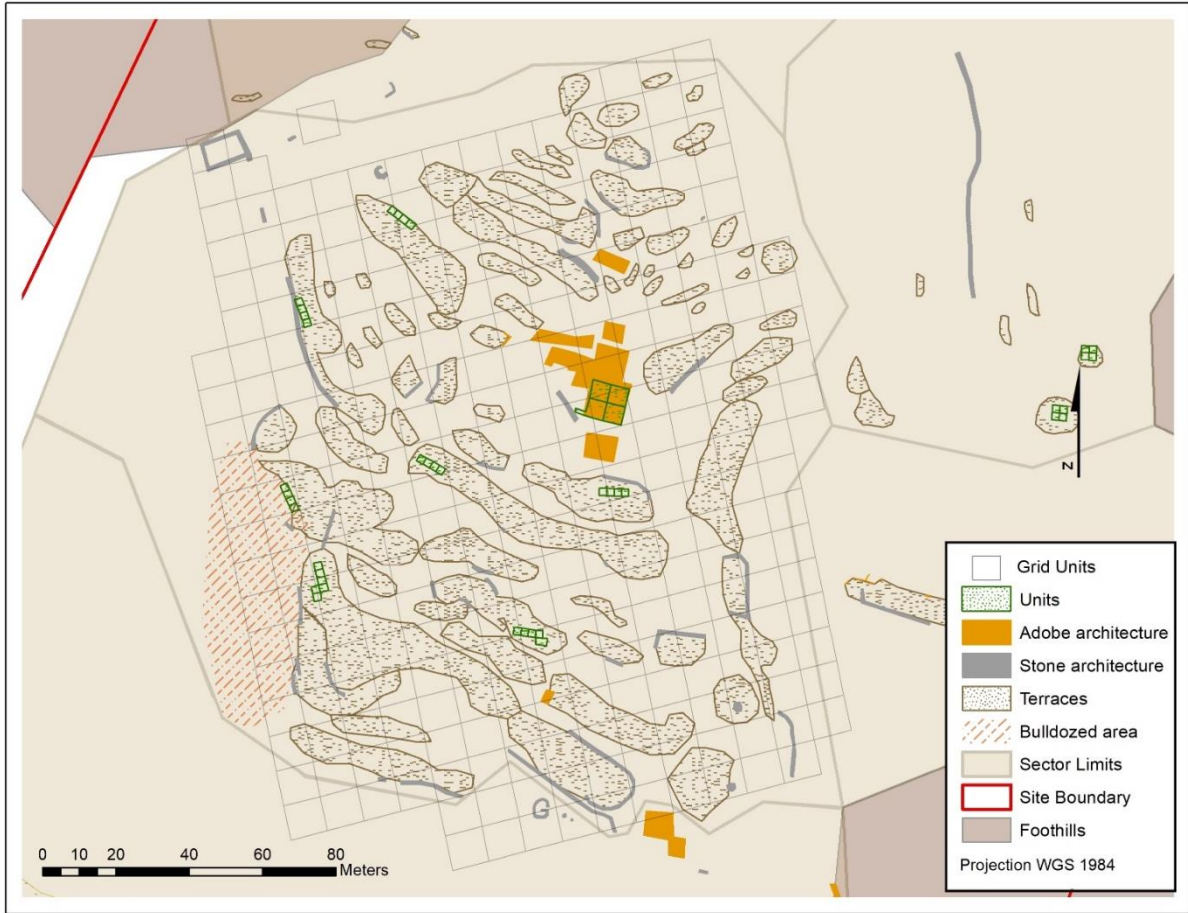


Figure 4.8. Sector 1 with Surface Artifact Collection Grid.

reference and points were taken for each structure. A point was taken for each end of a straight wall. We took as many points as were needed to define the shape of longer stretches of wall or other structures (e.g., the rectangular rooms making up the adobe compound). Small terraces were mapped by a central point, sketched, and described for reference. Terraces that were at least c. 10 m long or wide were mapped with at least 4 points. Terraces tended to be roughly rectangular. Thus, a point was taken at least at each corner. Points were also taken along the long axis of larger terraces. Sector 4 has the telltale pockmarks of a heavily looted Nasca cemetery. A central point was taken for each looted grave we observed. No intact graves were identified; however, this sector was not the focus of the 2014 field season.

Third, excavation units were mapped. Each unit had a unit datum established to collect unit specific elevation data and for point proveniencing artifacts and features. The original research plan for this project specified that surface artifact collection would inform a judgmental sampling strategy for establishing excavation units for the 2014 season. The surface collection data described in this chapter will no doubt provide valuable insights for any future archaeological work at Zorropata, however, their use for the 2014 season could not be fully implemented (discussed further in Chapter 5).

The fourth and final phase of mapping accomplished a few goals. First, final depths for excavation units were recorded using the total station. Second, control points were taken throughout the site with the total station to help ensure the accuracy of the mapping data. We simultaneously recorded the same control points with a handheld Garmin Etrex 20 GPS unit to facilitate georeferencing in the lab using ArcGIS. Points were taken in a wide berth around the perimeter of Zorropata to establish the site boundary. Zorropata's official boundary

extends to the Cerro Hualluri mountain range to the east and north, a *quebrada* to the west, and the road to the south. This area includes the entire site as indicated by architecture, terraces, and a plethora of other material culture observed during mapping and surface collection.

Surface Artifact Collection

This section discusses the methods and results of surface artifact collection at Zorropata. Schreiber and her team used a judgmental sampling strategy that targeted diagnostic pottery sherds and other artifacts from the surface of Zorropata during archaeological survey in the 1990s. Diagnostic ceramic included sherds exhibiting decoration (including body sherds), rim sherds, neck sherds, bases, and lugs/handles. Whole decorated or plainware vessels would also have been diagnostic if any were present. Schreiber and teams' research helped to establish the initial chronology (Late Nasca/Loro) of the site. Site size was estimated based on the observed density of surface artifacts. During the 2014 field season systematic surface artifact collection was performed in Sector 1. Artifact collection in all other Sectors was conducted using a judgmental sampling strategy. Artifacts on the surface of sectors 2, 3, 4, 5, and 6 were collected from habitation terraces and architectural features.

For Sector 1, collection was made using the grid described above⁵. While the grid is, in effect, capable of 5 x 5 meter resolution the results of surface collection are described below according to the 10 x 10 meter resolution. The goal of systematic surface artifact collection was to generate detailed data about any spatial patterns visible in the distribution

of artifacts across the surface of Zorropata. Surface collection data were visually analyzed using ArcGIS at both the 5 x 5 meter and the 10 x 10 meter resolution. Spatial patterns in the distribution of artifacts across the site were apparent from the 10 x 10 meter data. This level of resolution was therefore considered sufficient for the purposes of this dissertation. Sector 1 surface collection is expected to be relatively representative of subsurface deposits.

The Peruvian Ministry of Culture granted us permission to begin collecting archaeological samples at the end of July 2014. All crew members participated in the pedestrian archaeological survey. For each grid square the following classes of artifacts were collected: 1) diagnostic ceramics; 2) lithics; 3) small groundstone (less than c. 1,000 grams); 4) shell; 5) textiles and cordage; 6) weaving and spinning related artifacts; and 7) anything else of note including but not limited to figurines, beads and pendants, and obsidian.

Non-diagnostic ceramic sherds and groundstone larger than c. 1,000 grams were counted and documented in field but not collected. Non-diagnostic pottery was not collected because it was expected to have little research value for this project. Large groundstone included at least two boulder-sized stone grinding surfaces and a few two handed manos (Figures 4.9 and 10). These were not collected due to logistical and safety concerns.

Faunal bone and human bone were observed on the surface of the site but not systematically documented or collected. Human post-cranial remains were seen near the adobe compound and on the surface of Sector 4. Due to exposure to the elements, bones from the surface of the site were very friable. They remained neither intact nor identifiable once they were collected. Therefore, bone was only collected from excavated contexts, where it tended to be better preserved.



Figure 4.9. Example of Large, In Situ Grinding Surface Near Unit 2 at Zorropata.



Figure 4.10. Two-Handed Mano, Surface of Sector 1, Due West of Adobe Compound.

As mentioned above the crew for this project was small, sometimes posing logistical concerns. To improve the efficiency of surface artifact collection, artifacts from the same provenience were sometimes bagged together in the field. Fragile artifacts like textiles were always bagged separately from more durable artifacts like stone or ceramic. Artifacts bagged together in field were separated according to class, rebagged, and retagged each night in the lab. Artifacts were also washed/cleaned (as needed), weighed, counted, and entered into an inventory in Excel each evening. Given the personnel constraints rebagging and washing were given the greatest priority. Weighing and counting could be done easily in Nasca but the lab space in Nasca could not accommodate washing artifacts and laying them out to dry for hours or overnight.

Results of Surface Collection

Ceramics. Diagnostic ceramics from surface collection (n = 5,665) were analyzed to establish a chronological framework for Zorropata⁶. Most sherds from Zorropata that could be identified stylistically belonged to the Late Nasca or Loro periods. Non-diagnostic surface ceramics (n = 26,043) were common across the site but seemed more concentrated on habitation terraces than at the adobe compound (Figure 4.11).

A total of 9 Early Nasca sherds and 3 Middle Nasca sherds was recovered from the surface of the site (Chapter 6; Figure 4.12). These sherds might represent subsurface deposits from early Early Intermediate Period occupations. However, there was no evidence of an Early or Middle Nasca occupation at Zorropata from excavation. It is more plausible that these sherds were from a small number of early vessels kept as heirlooms. Most Early and Middle Nasca sherds were found around the adobe compound — thought to have a funerary

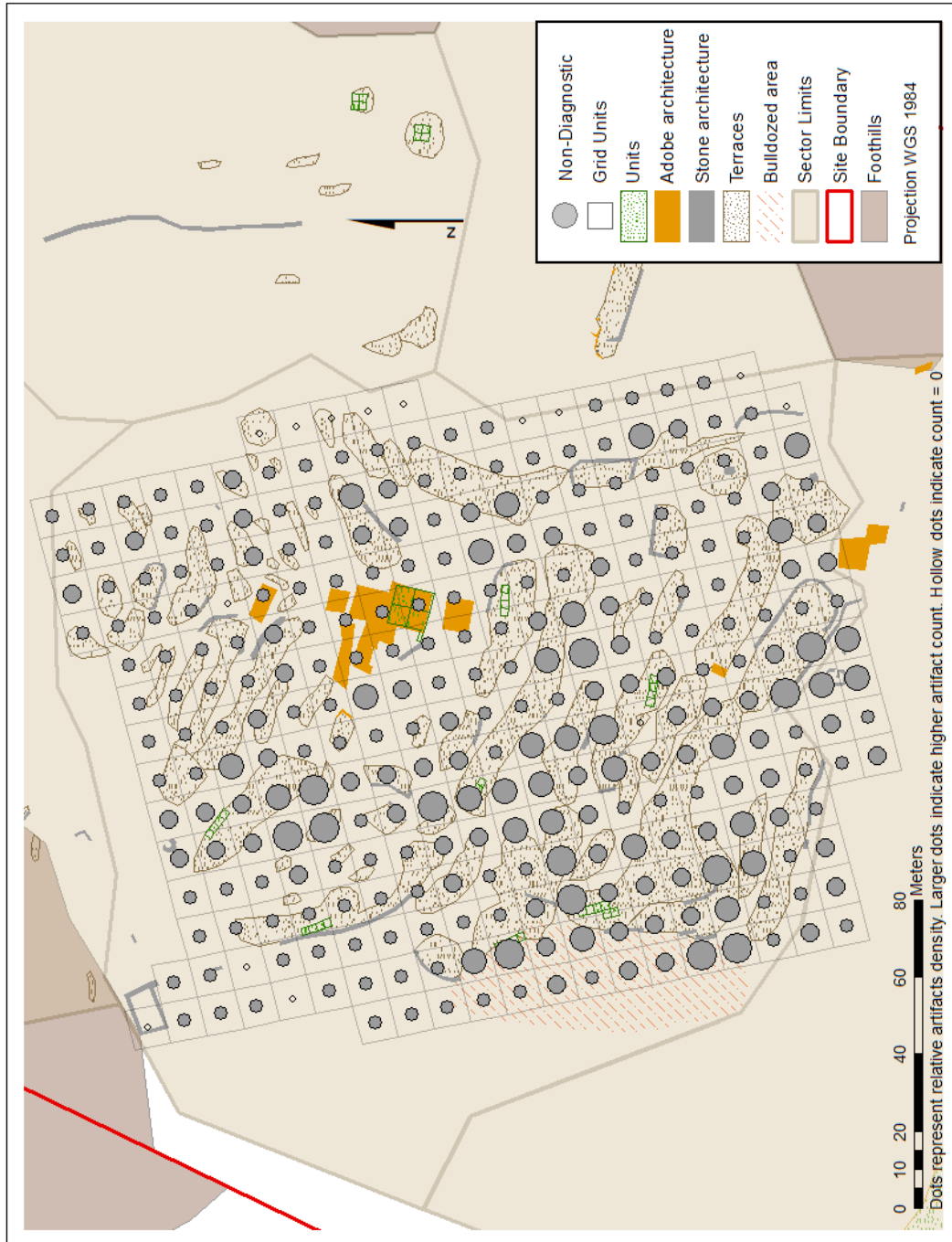


Figure 4.11. Non-Diagnostic Ceramic Sherds from Surface Artifact Collection.

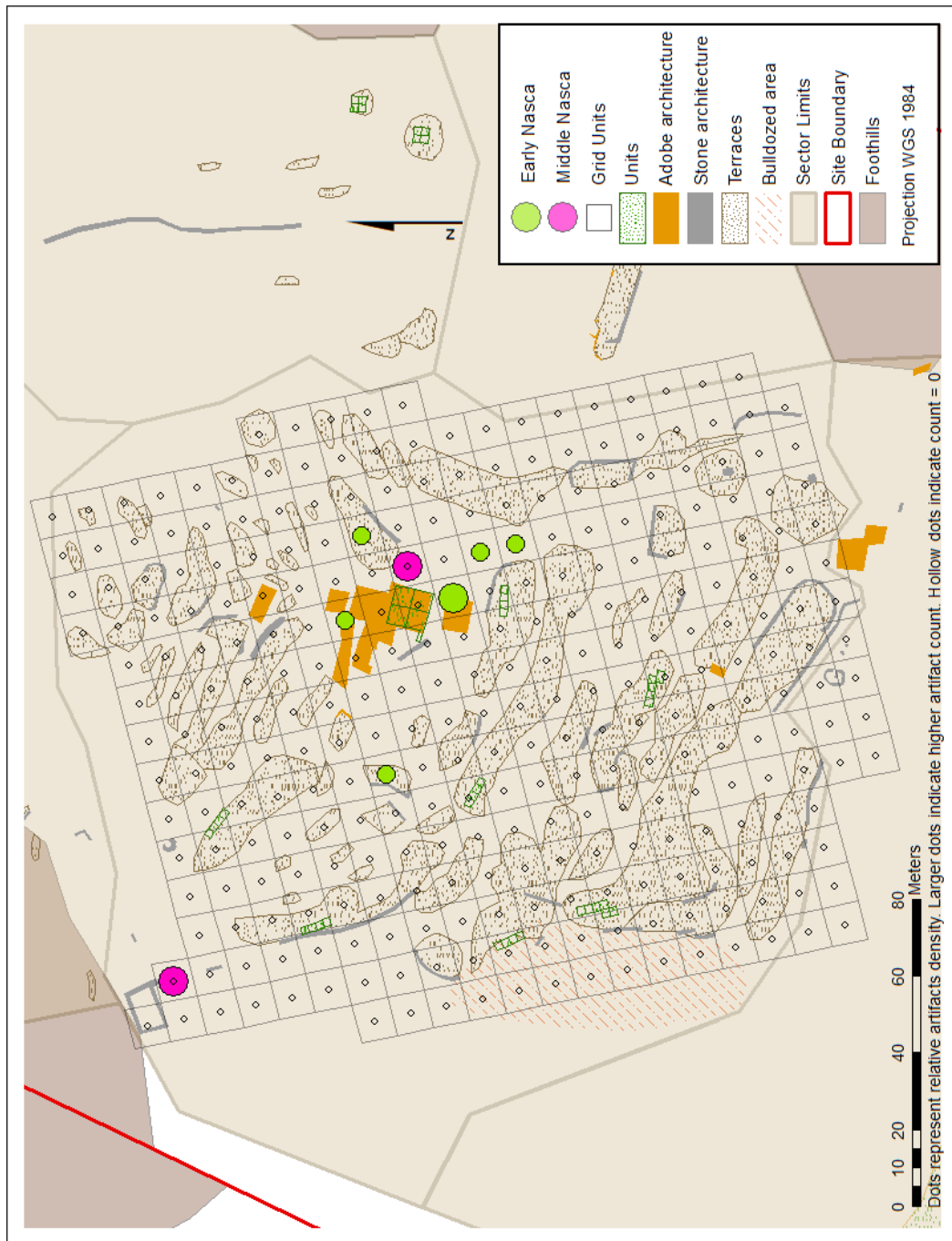


Figure 4.12. Early and Middle Nasca Ceramic Sherds from Surface Artifact Collection.

or ceremonial function (Chapter 5). Therefore, heirloom vessels may have been included in burial or offering deposits in this context.

Another alternative is that these sherds were brought to Zorropata from an Early or Middle Nasca site nearby because of looting. In at least one technique Nasca looters use, a metal rod is forcefully plunged below the surface where an archaeological deposit is expected to be present. If a looter strikes an artifact with the rod they dig down to it and retrieve it. This process can be destructive not only to archaeological deposits but to the artifacts themselves. Early or Middle Nasca ceramic vessels could have been taken from other sites using this method, damaged in the process, and been left on the surface wherever the flaw was discovered by the looter.

Late Nasca ceramics (n = 342) were ubiquitous at Zorropata (Figure 4.13). Evidence from surface collection and excavation suggests that the site was first occupied during the Late Nasca Period. Loro sherds were likewise ubiquitous (n = 295) (Figure 4.14). No pottery stylistically consistent with later periods was identified from surface collection nor excavation. Therefore, based on the current evidence, Zorropata was likely abandoned at some point during the Middle Horizon. AMS dates for the site (Chapter 5) support this chronology.

Loro sherds were recovered from all areas across the surface of Zorropata from which Late Nasca sherds were recovered. The Loro ceramic style and chronological phase was named for the type site Huaca del Loro (Strong 1957). The style was described by William Duncan Strong (1957:34) as consistent with Gayton and Kroeber (1927)'s 'Nasca Y' style. The Loro style has been further investigated and clarified by Conlee (2010), Silverman (1989), and Spivak (2014) (see Chapters 6 and 12). Loro sherds were also concentrated to the

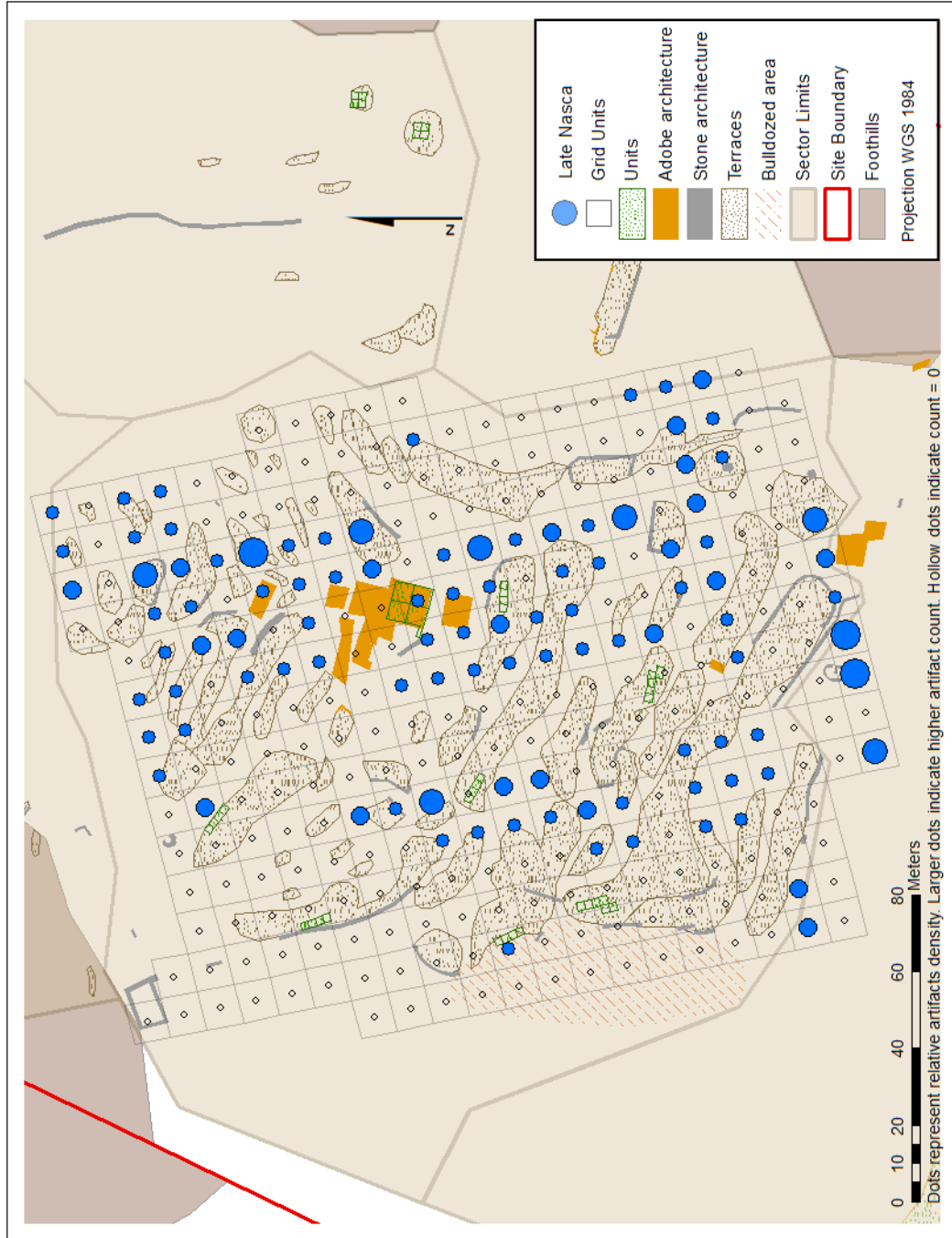


Figure 4.13. Late Nasca Ceramic Sherds from Surface Artifact Collection.

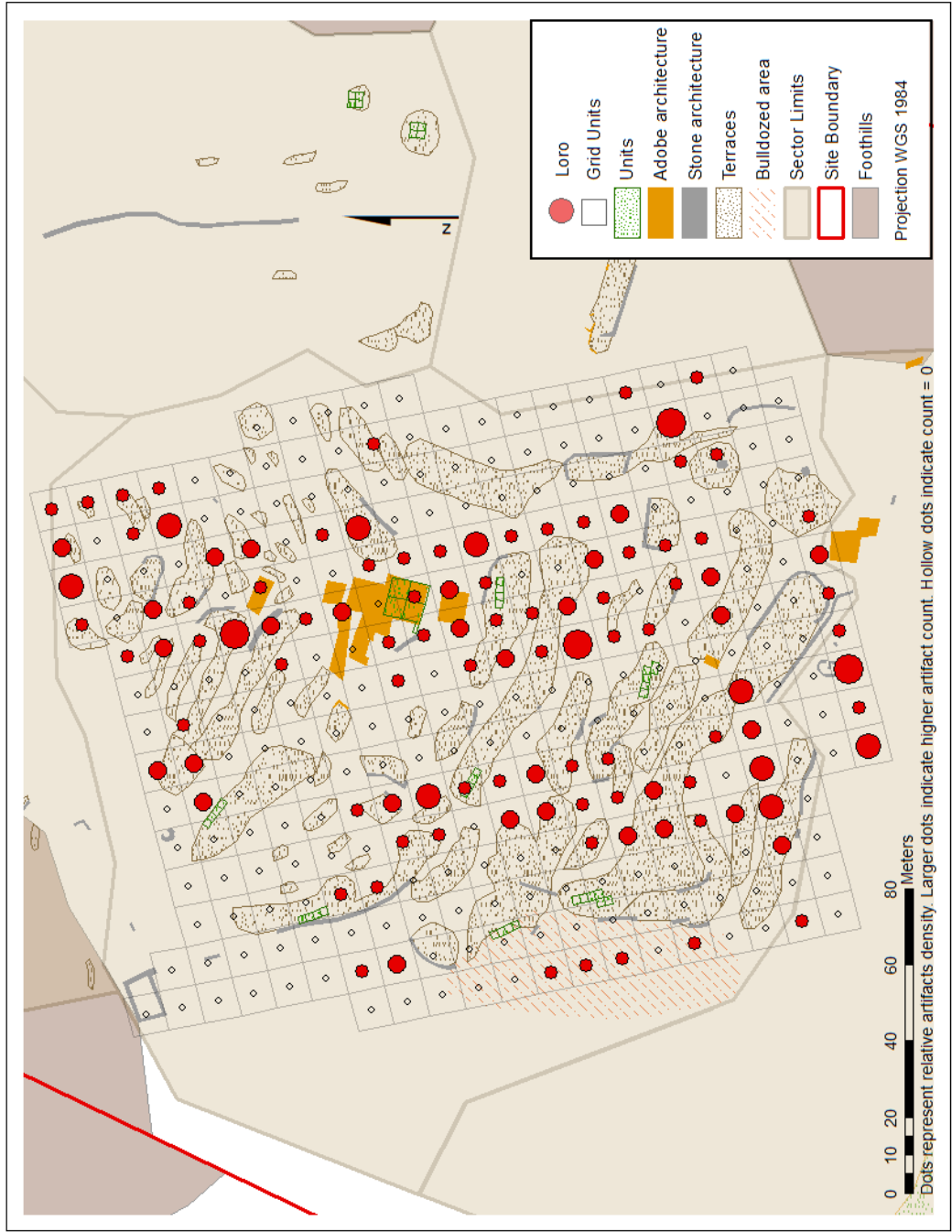


Figure 4.14. Loro Ceramic Sherds from Surface Artifact Collection.

west of the site near the perimeter wall, where Late Nasca sherds were absent (Figure 4.14). AMS dates for the western perimeter wall (Chapter 5) suggest that the structure was built or in use by the Late Nasca period. Surface sherds near this structure may indicate the period of final use. The lack of Late Nasca sherds on the surface may indicate that the area around the western wall was not disturbed much by modern human activity. It should be noted that no non-local Middle Horizon Wari ceramics (or other diagnostic artifacts) were recovered from any context, surface or excavated, at Zorropata.

A small number ($n = 56$) of ceramic sherds were identified as Transitional between Late Nasca and Loro styles. This Transitional form may be like those identified elsewhere in the Southern Nasca Region, by Christina Conlee at Pajonal Alto in the Taruga Valley, and by Verity Whalen at Cocahuischo in Tierras Blancas Valley (Conlee 2000:204; Whalen 2014: 254). Transitional ceramic sherds were most common in northeastern half of Zorropata near the adobe compound and at higher elevation habitation terraces (Figure 4.15).

Lithics. Most flaked stone tools, including unifacial and bifacial flaked stone as well as debitage/shatter, were made expediently out of locally available materials (e.g., chalcedony, quartzite, and fine grained volcanic rock (e.g., basalt, andesite, or rhyolite)) (Chapter 8). Flaked stone from surface collection was recovered from all areas at the site but seemed to be concentrated on habitation terraces and the talus slopes directly below larger terraces (Figure 4.16). More research is necessary to determine if these areas represent lithic production locations.

In addition, a handful ($n = 8$) of obsidian tools were recovered from surface collection. Obsidian from surface collection included 4 points and 4 flakes. For details about

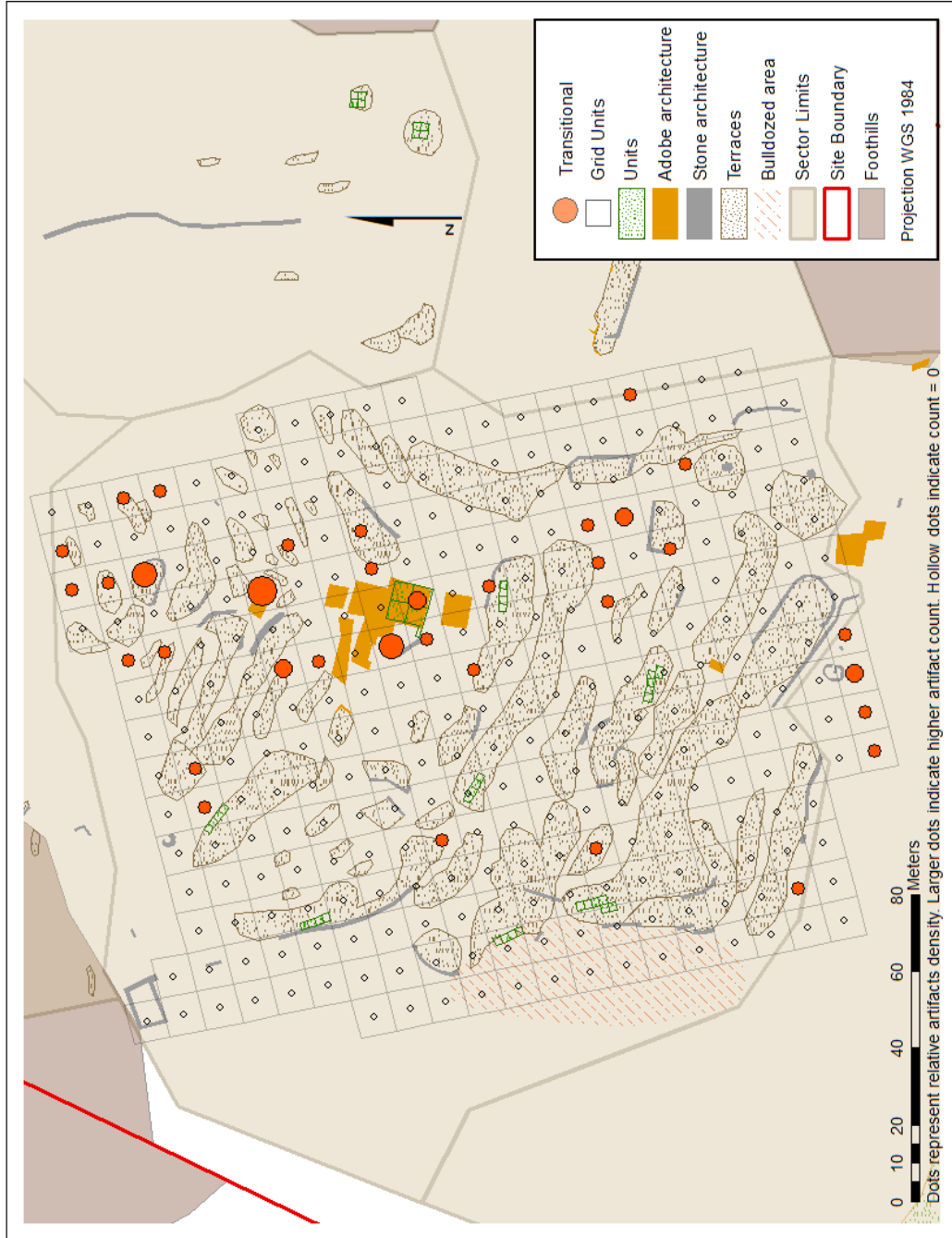


Figure 4.15. Transitional Ceramic Sherds from Surface Artifact Collection.

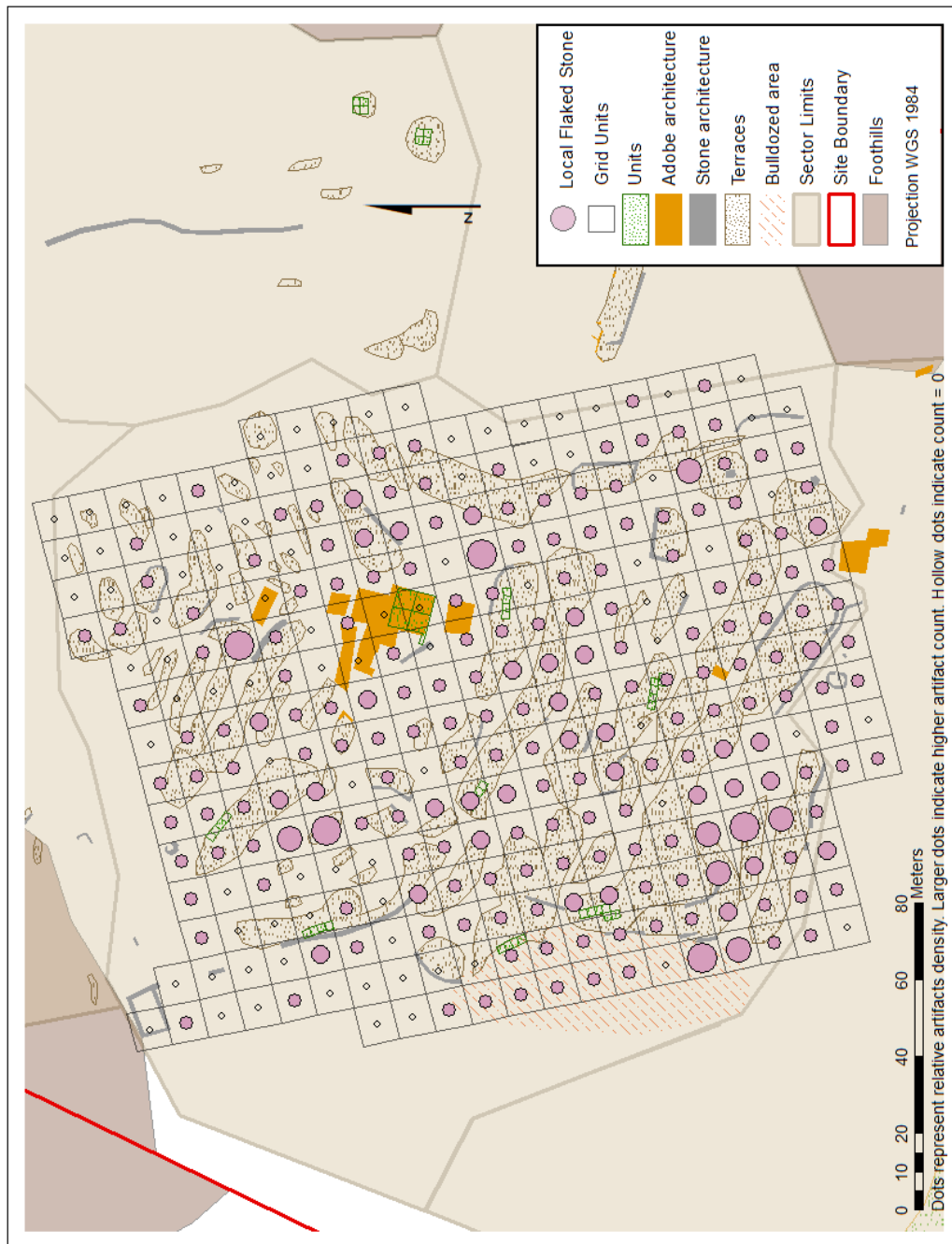


Figure 4.16. Flaked Stone Tools produced from Locally Available Materials from Surface Artifact Collection.

the artifacts please refer to Chapter 8. Most of the obsidian recovered from Zorropata was found west of the adobe compound (Figure 4.17). No concentrations of obsidian flakes suggestive of lithic reduction or production areas were identified.

Groundstone included several forms of artifacts used in craft or food production (e.g., one-handed and two-handed manos, mano fragments, pestles and pestle fragments, mortars, polishing stones, and large boulder features used as grinding surfaces). Groundstone was made from fine grained volcanic rock (Chapter 8). Groundstone artifacts were observed across the entire surface of Zorropata (Figure 4.18).

Sling Stones. A total of 202 sling stones was recovered during surface collection. These were c. 3 to 4 cm diameter spherical nodules of volcanic stone and may have been used as ammunition for a sling in defense by the former inhabitants of Zorropata (Chapter 8). Sling stones were recovered from all over the site but were somewhat more common in the southern half (Figure 4.19).

Shell. About 8 kilograms of various species of shell were recovered from the surface of Zorropata. In general, shell species recovered from surface collection were consistent with those recovered from excavation (Chapter 9). Surface shell was most common at habitation terraces to the west and south of the adobe compound in Sector 1 (Figure 4.20).

Textiles and Cordage. Five textiles and one piece of cordage were recovered from the western edge of Zorropata. Most of these artifacts were smaller than 2 cm², very light weight, and ephemeral. In fact, surface textiles could have been transported by the wind and cannot

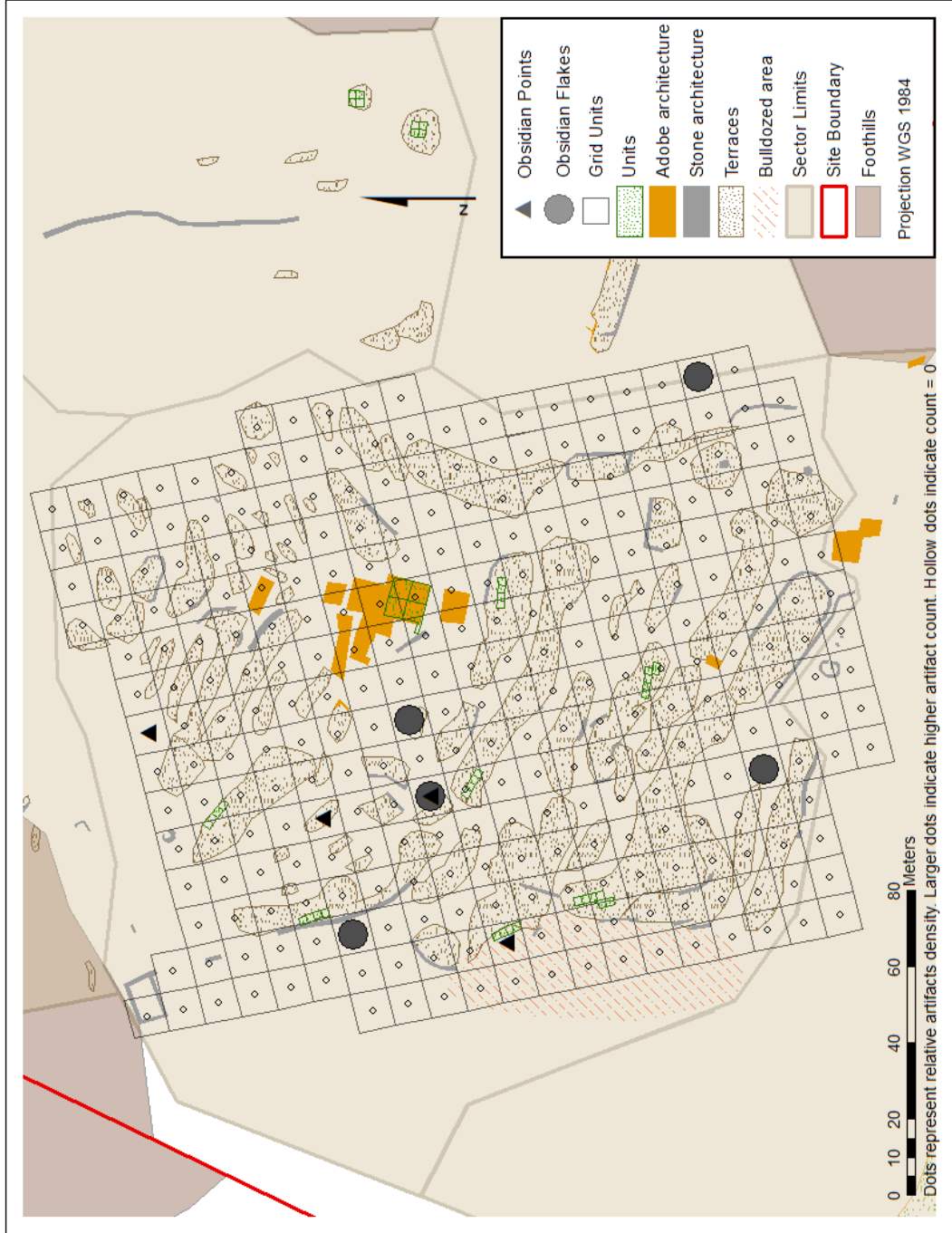


Figure 4.17. Obsidian from Surface Artifact Collection.

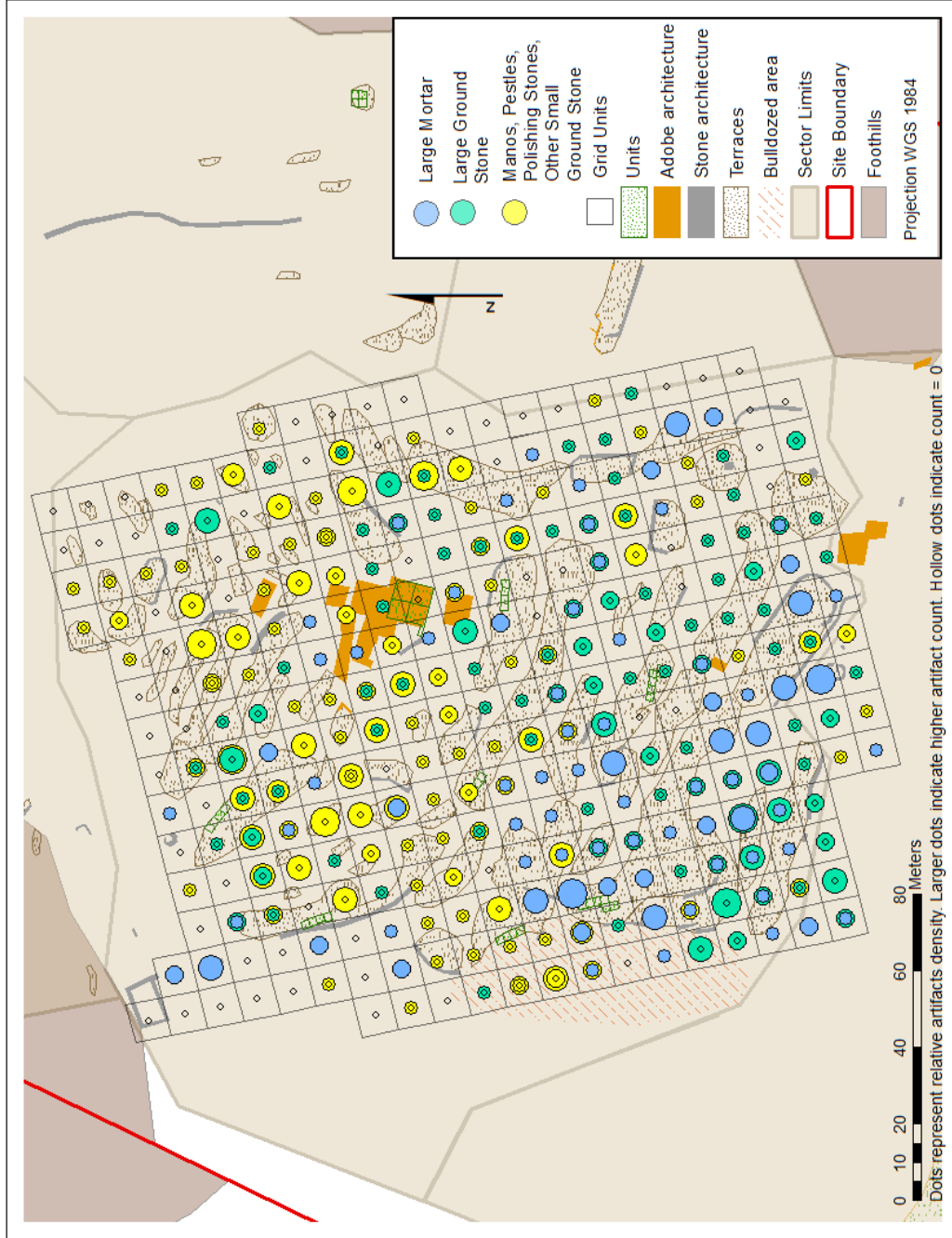


Figure 4.18. Ground Stone from Surface Artifact Collection.

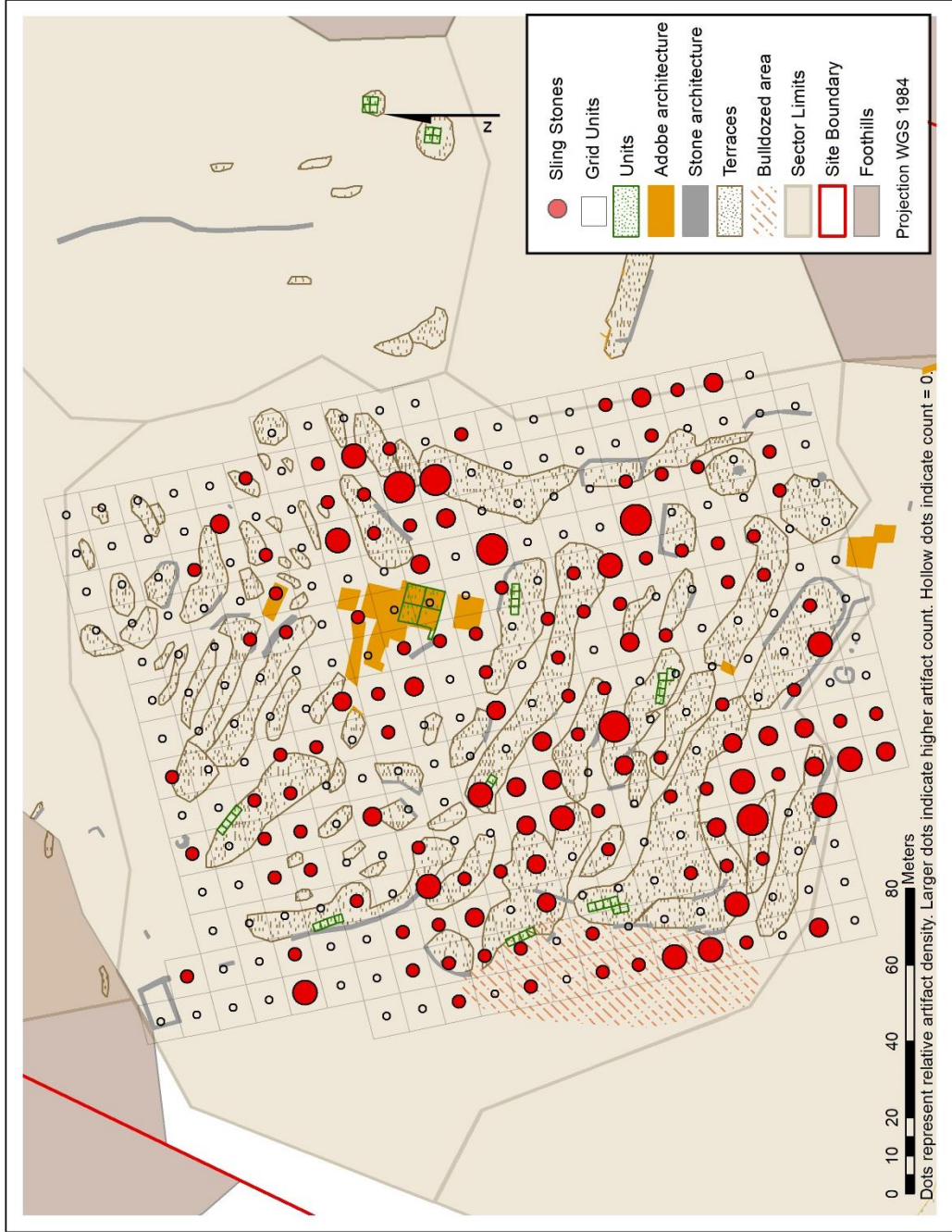


Figure 4.19. Sling Stones from Surface Artifact Collection.

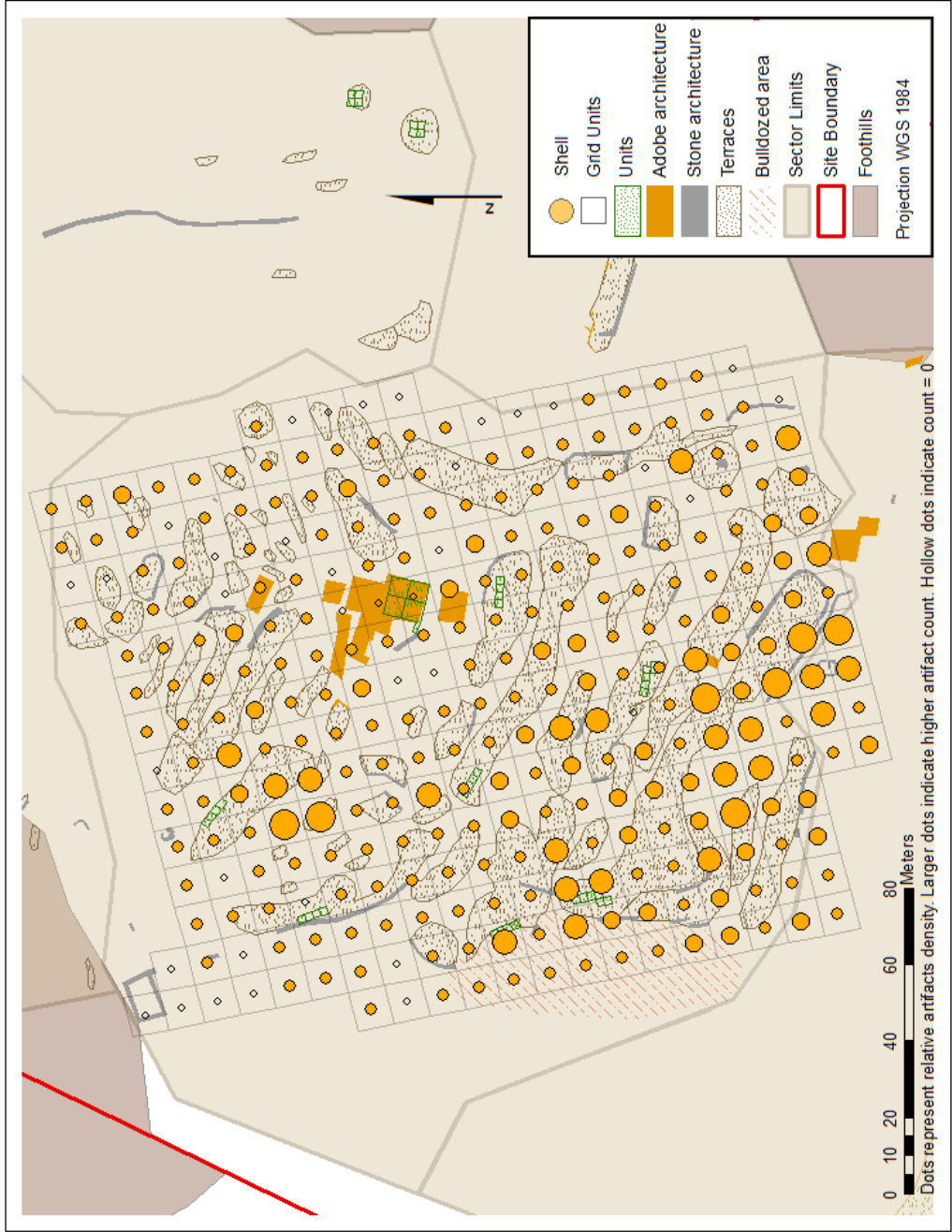


Figure 4.20. Marine Shell from Surface Artifact Collection.

be assumed to have been found near their primary context. One textile from Sector 4, discussed in Chapter 7, was particularly elaborate and almost complete. It is probable that this more intact textile was from a nearby grave in Sector 4.

Eleven disks were recovered from surface collection in Sectors 1 and 3. At least 5 of these are spindle whorls, a disk with a central hole used with a spindle to spin fibers into cordage. The remaining 6 disks do not have a central hole but may spindle whorl blanks that were never completed. Disks and whorls are discussed in detail with spinning and weaving tools in Chapter 7. Disks/whorls were recovered from several different habitation terraces (Figure 4.21).

Other Artifacts. Two additional categories of artifacts collected from the surface of Zorropata should be mentioned, figurines and beads. Thirty-five figurines were recovered from the surface of Zorropata. Figurines are discussed in detail in Chapter 8. Figurines were recovered from the surface and surrounding areas of several habitation terraces (Figure 4.22). This distribution could support that figurines were used in some type of household based ceremonial activity (discussed further in Chapter 8).

One bone, 2 stone, 13 shell beads were recovered during surface artifact collection. These artifacts seem to be clustered in three areas of Sector 1: 1) the habitation terraces directly west of the adobe compound; 2) the western edge of the site near Unit 9; and 3) the south of the site near what is suspected to be a plaza or communal space (Figure 4.23).

Discussion of Surface Artifacts. An abundance of domestic debris across the site (e.g., utilitarian and fineware ceramics, numerous mortars, pestles, manos, grinding surfaces,

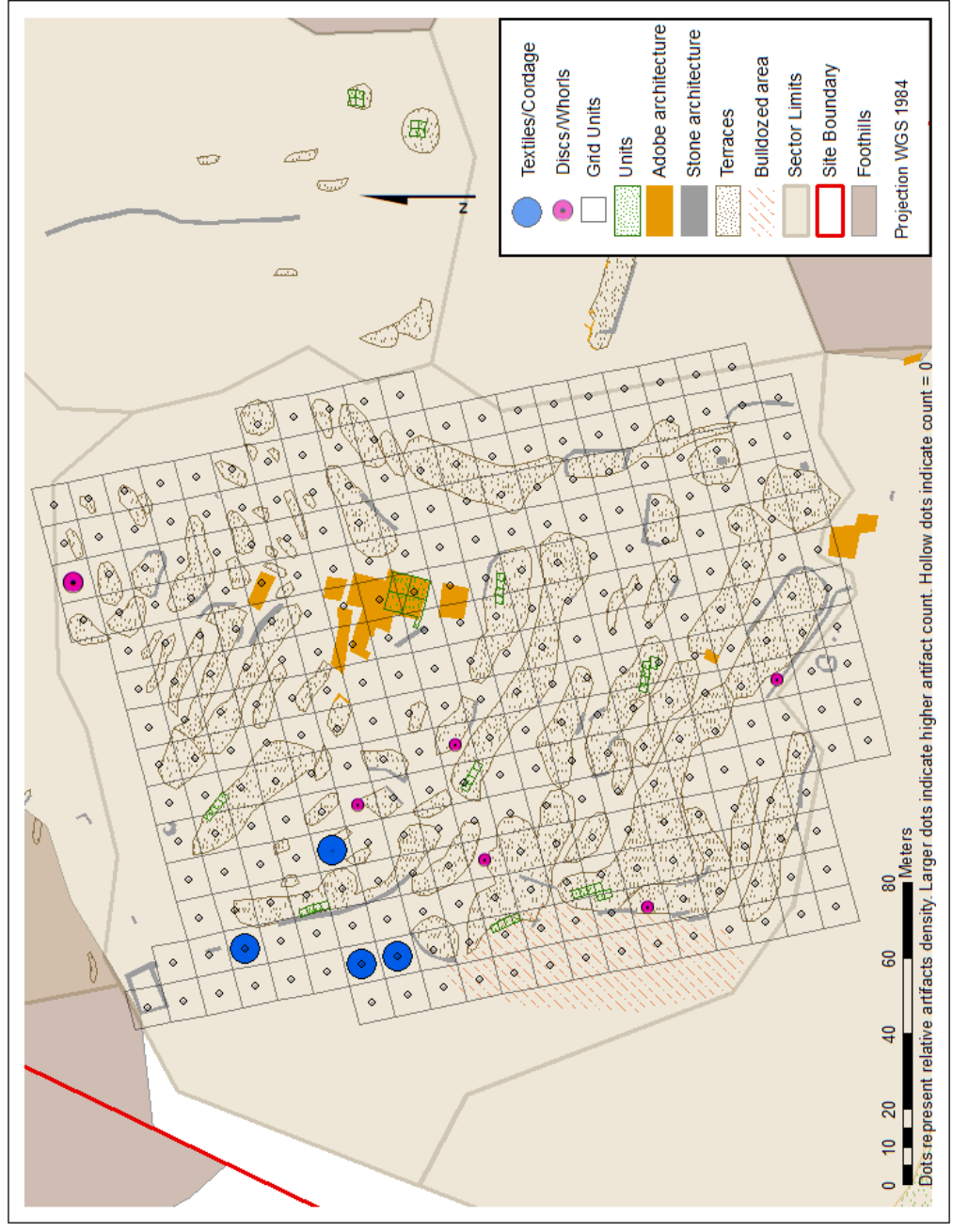


Figure 4.21. Textiles, Cordage, and Discs/Spindle Whorls from Surface Artifact Collection.

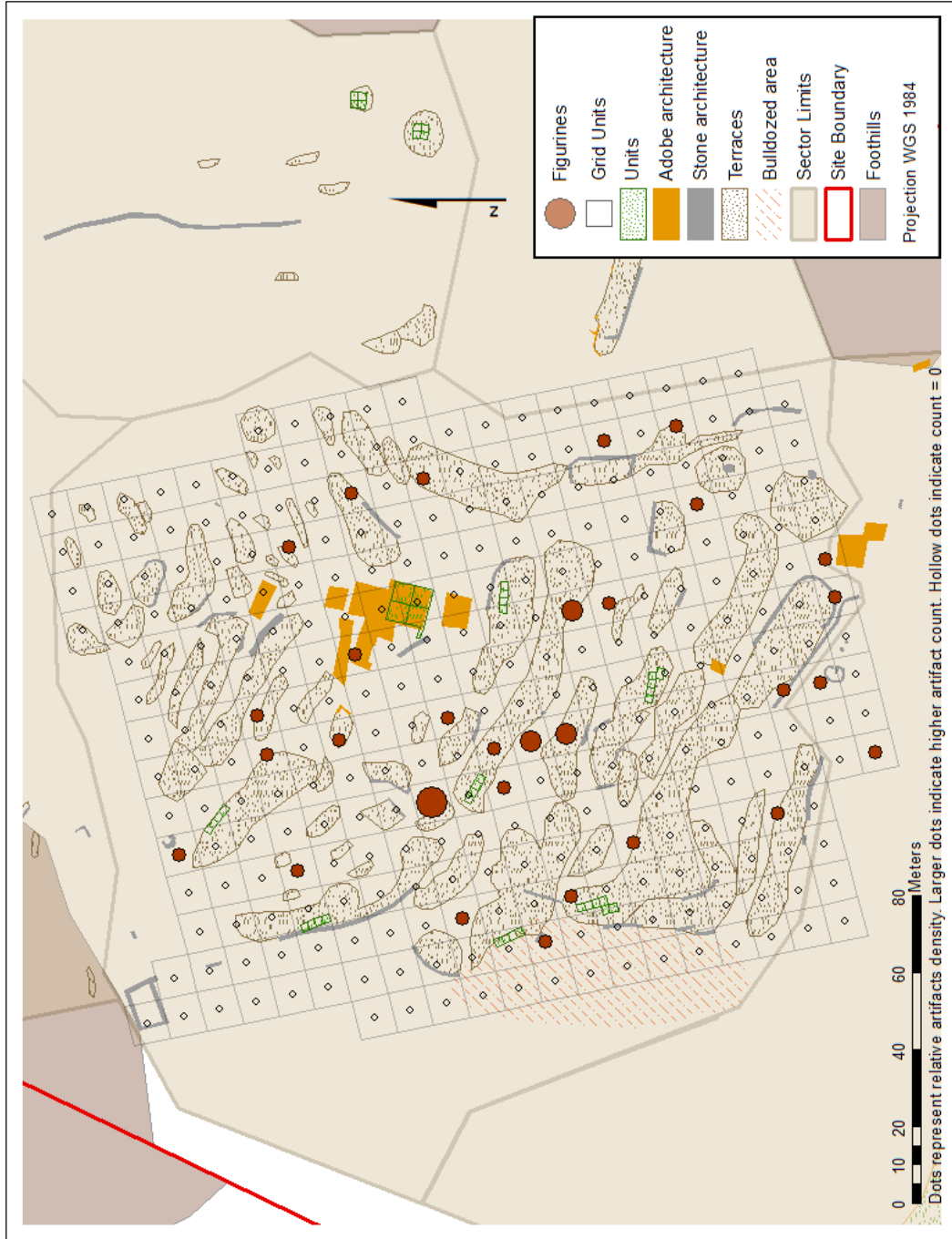


Figure 4.22. Figurines from Surface Artifact Collection.

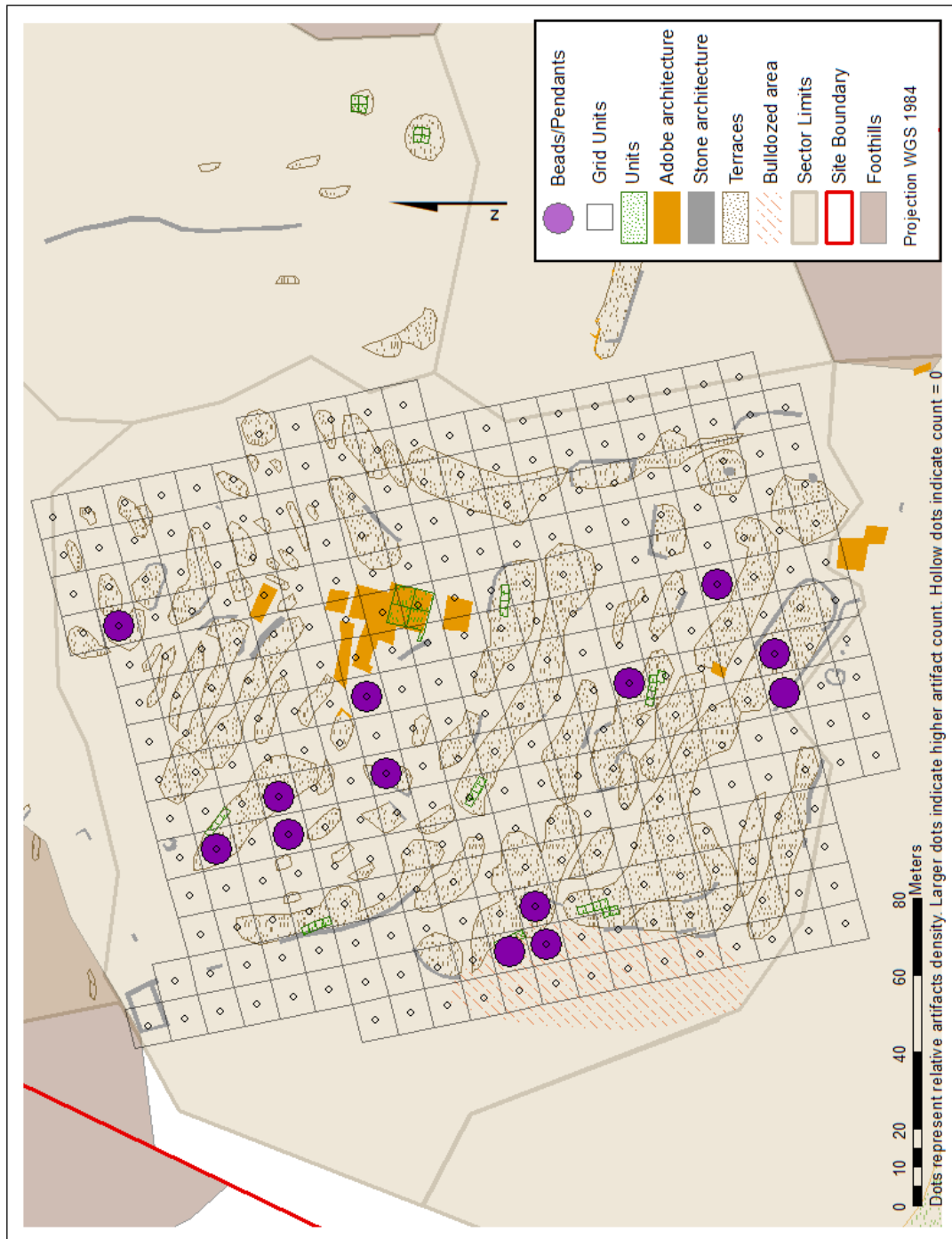


Figure 4.23. Adornments from Surface Artifact Collection.

flaked stone tools, spindle whorls, etc.) supports that Zorropata was a relatively large village site wherein food production, craft production, and other aspects of quotidian life were performed by local people during the Late Nasca period and early Middle Horizon. Data do not support a Wari Imperial presence. As stated above, no Wari artifacts were recovered during surface collection (or excavation) during the 2014 season.

The presence of human remains was circumscribed to Sector 4, a probable cemetery associated with the habitation at Zorropata, and the immediate vicinity of the adobe compound, a probable funerary/ceremonial context. Surface analysis data from this project strengthens and supports Schreiber's observation from the UCSB survey — Zorropata is a relatively large habitation site. The adobe compound at Zorropata was associated with: 1) ceramic finewares; 2) textiles and cordage including dyed and wool specimens that may have come from fine garments or textile objects; 3) eight 'trophy' head individuals; and 4) very few artifacts related to subsistence or economic activities. The types of artifacts represented are consistent with an interpretation of this context as funerary/ceremonial in nature (see Chapter 5). Moreover, the ubiquity of figurines throughout contexts otherwise associated with domestic debris provides data necessary for a nuanced investigation of Nasca domestic ceremonial life, although such a study is not explored at length in this dissertation.

Summary of Surface Architecture

This section discusses the human built landscape at Zorropata. Various observed architectural features identified during surface analysis at Zorropata are described and discussed. Judging by the layout of terraces and architectural features, Zorropata appears to

have developed as a product of opportunistic growth rather than civic planning (Williams Leon 1980:477). Four major categories of structures were observed including two types of stone walls, adobe structure, and habitation terraces. The first form of stone wall discussed below consists of a single course of fieldstone used to build walls and structures. A second, more complex type of stone wall consists of two parallel courses of fieldstone walls with gravel fill in between them. This type of construction composed large walls and at least two enclosures or structures. Adobes were used to build a few structures at the site, most notably the adobe compound at the heart of Sector 1 but also other structures in Sectors 2 and 4. Terraces are considered an architectural feature here because they are a human altered landscape at this site. The inhabitants of Zorropata created at least 126 of these flattened, tiered spaces upon which to live.

In addition to the location and a basic description of each observed architectural feature, the following information was recorded: 1) dimensions of the structure; 2) dimensions of the typical stone or adobe block; 3) construction method (e.g., arrangement of rows, was mortar used, etc.); 4) estimated degree of preservation; 5) the presence and style of other aspects of construction (e.g., thresholds or interior walls); and 6) associations with other structures. Each feature was also photographed. Dimensions, construction methods, other aspects of construction and associations are discussed below according to structure type. The degree of preservation ranged between 10% and 100% with a mean of 40%. Structures were numbered in the order that they were recorded during surface analysis.

Stone Architecture

Stone architecture was ubiquitous at Zorropata. More than 50 stone architectural features were identified across the site. Smaller walls were made from a single course of locally available fieldstone. Larger walls were made from two courses of fieldstone with gravel fill. Stone used on these structures was minimally prepared and none was cut stone. Stone was used to build what appear to be sections of perimeter wall, retaining walls, other walls, round and rectangular structures, and one or two possible plazas.

Perimeter Walls. During early stages of the mapping process a section of wall was discovered along the western edge of Sector 1 that was made from two courses of stone with gravel fill (Structure 34; Figure 4.3). Structure 34 seems to have once extended through the *quebrada* but only a small section of wall remains in this area (Figure 4.24). The section of wall seemed to line up with a rectangular structure located to the northwest of the site where the foothills of Cerro Hualluri meet the valley floor (Structure 3; Figure 4.25). As mapping continued more sections of two course (Structures 46 and 51) and one course (Structures 35, 36, 47, 48, 49, and 50) fieldstone wall were identified along the western, southern, and southeastern approaches to the site (Figure 4.2). Sections of perimeter wall varied in width. Single course walls were c. 0.3 m thick while two course walls were c. 1-2 m in thickness. A well-preserved segment along the western edge of the site was at least 1 meter high (Figure 4.26).

The sections of wall seem to surround the western, southern, and southeastern parts of the main habitation area, Sector 1. They do not extend to include the ancient cemetery in Sector 4. On the east side of the site built on the hillside in Sector 3 is another long stretch of wall with two courses of stone and gravel fill (Structure 64). The wall in Sector 3 was



Figure 4.24. View of Structures 3 (Foreground) and 34 (Background) Across a *Quebrada*.



Figure 4.25. Structure 3, Facing East.



Figure 4.26. Section of Western Perimeter Wall at Unit 4, Facing East.

identified in the UCSB survey and is substantial enough to be seen from an aerial photograph or Google Earth (Figure 4.27).

In areas where walls are absent around the west and south of Sector 1 the slope tends to be at least c. 50 degrees or greater with wide flat terraces above. In other words, areas not protected by a wall would have been difficult to assail without being spotted by the inhabitants of Zorropata. Moreover, inhabitants would have had the tactical advantage of higher ground over would-be invaders. Sections of perimeter wall are located where the slope appears to be more gentle and accessible. The wall in Sector 3 could have complicated entry into Sector 1 from the most accessible path over Cerro Hualluri from the Taruga Valley. Another alternative is that the Sector 3 wall was built as an attempt to terrace the steep hillside or prevent erosion.

Perimeter walls around a habitation site define a space on the landscape. They enclose a community and create a physical barrier between what is inside and what is outside a site (Means 1999:35). They can also serve a line of defense. It is not common for Nasca village sites to have perimeter walls. Many Early Intermediate Period Nasca habitation sites are in defensible locations but few have architectural features that could be construed as explicitly defensive (Bautista and Rojas Pelayo 2013; Schreiber 2005:246; Vaughn 2000:107; Van Gijseghem 2006:426; Whalen 2014:6). As discussed above, more than 200 sling stones were recovered from surface collection and excavation of Zorropata (Figure 4.28). While a perimeter wall can serve community building and defense purposes simultaneously here data support that defense was a concern. Defensive features are more common at Late Paracas Period settlements (Reindel 2009:450). However, there is no indication that Zorropata was

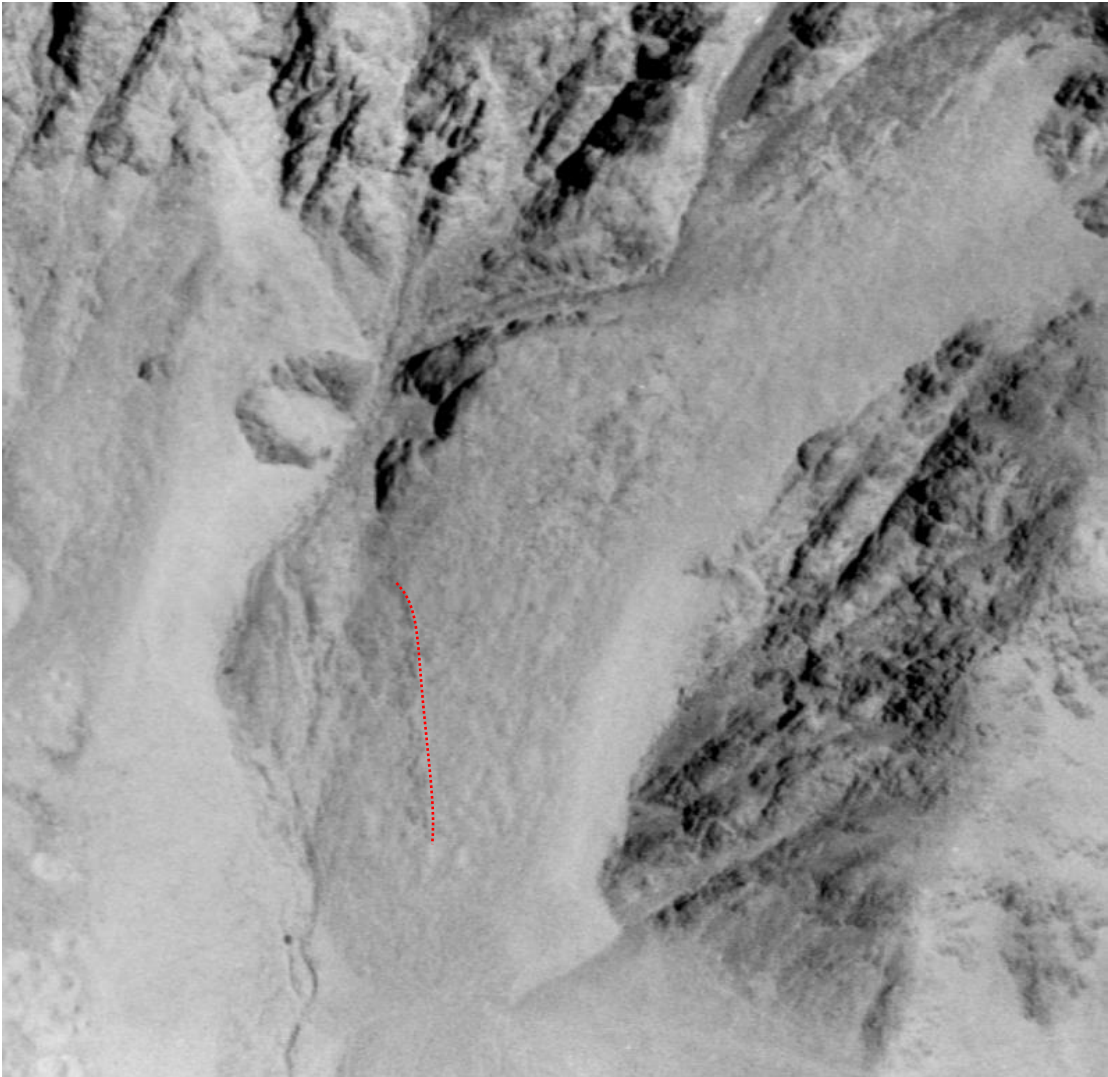


Figure 4.27. Air Photo Showing Structure 64, the Eastern Perimeter Wall, in Sector 3.



Figure 4.28. Examples of Sling Stones from Zorropata.

established before the late Early Intermediate Period. Here, if this wall system was built for defense, it was either in response to conflicts with other local groups, the Wari, or both.

Retaining Walls. A handful of habitation terraces were supported by retaining walls, each made from a single course of fieldstone and ranging in length from c. 1 to 4.85 m (Figure 4.29). In Sector 1 these include Structures 13, 18, 26 31, 40, and 42 (Figure 4.30). In Sector 5 retaining walls included Structures 55, 56, 60, and 65. In Sector 6, there was one retaining wall associated with the lowest elevation terrace, Structure 62.

Other Walls. Ten additional walls were observed during surface analysis which may have served to demarcate space or some other function (Structures 12, 16, 28, 30, 37, 39, 57, 59, 66, and 72) (Figure 4.31). These structures were documented in Sector 1. They do not appear to be parts of larger structures, nor to support habitation terraces as retaining walls.

Rectangular Structures. Nine structures were documented at Zorropata that were either rectangular or composed of two or more walls that met at c. 90-degree angles to form a corner. The clearest example is Structure 3, which was mentioned above in association with Structures 34 and 51, sections of perimeter wall (Figure 4.32). Structure 3 was made of fieldstone walls that were two courses thick with gravel fill. The structure was 10 m by 6.5 m with its long axis oriented east to west. This structure was not targeted for excavation during the 2014 season and its function is not certain. If the associated perimeter wall (discussed above) served a defensive purpose perhaps this structure also did. Structures 14, 38, 41, and 52 each consist of two, single-course fieldstone walls that join to form a corner of unknown



Figure 4.29. Structure 55, an Example of a Retaining Wall at a Small Terrace (19) in Sector 5.

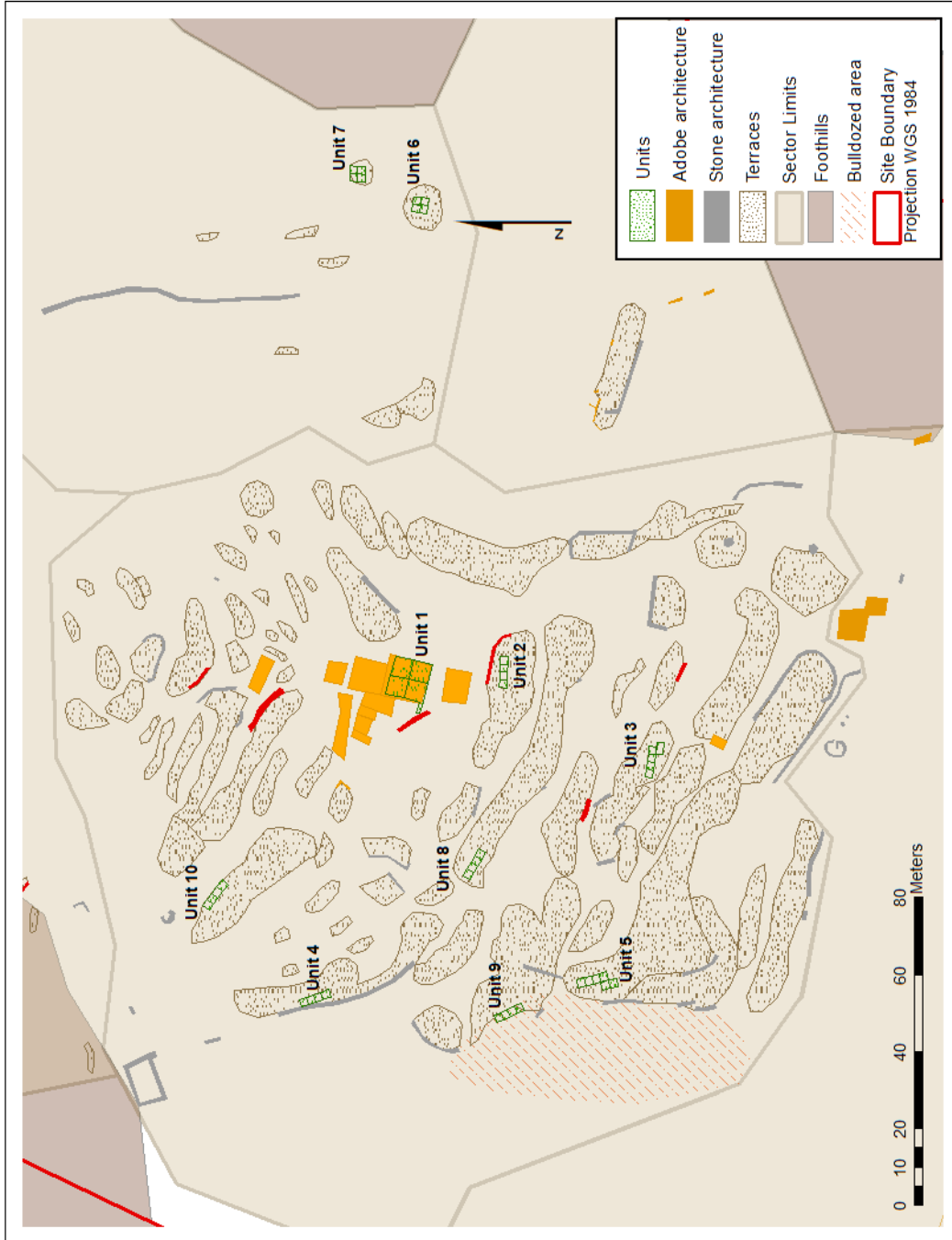


Figure 4.30. Map of Zorropata with Field Stone Retaining Walls Indicated in Red.

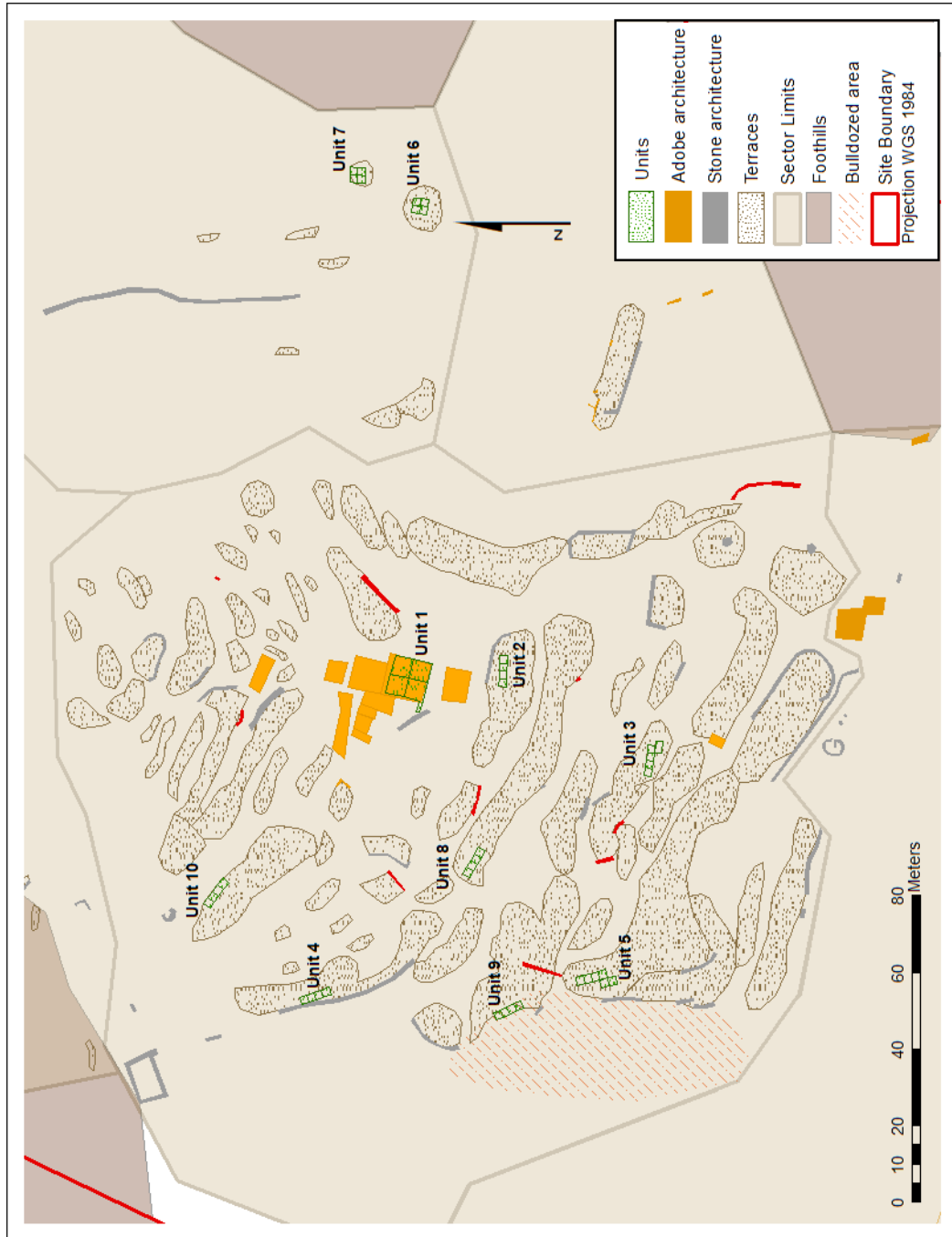


Figure 4.31. Map of Zorropata with Other Walls Made from a Single Course Field Stone Indicated in Red.

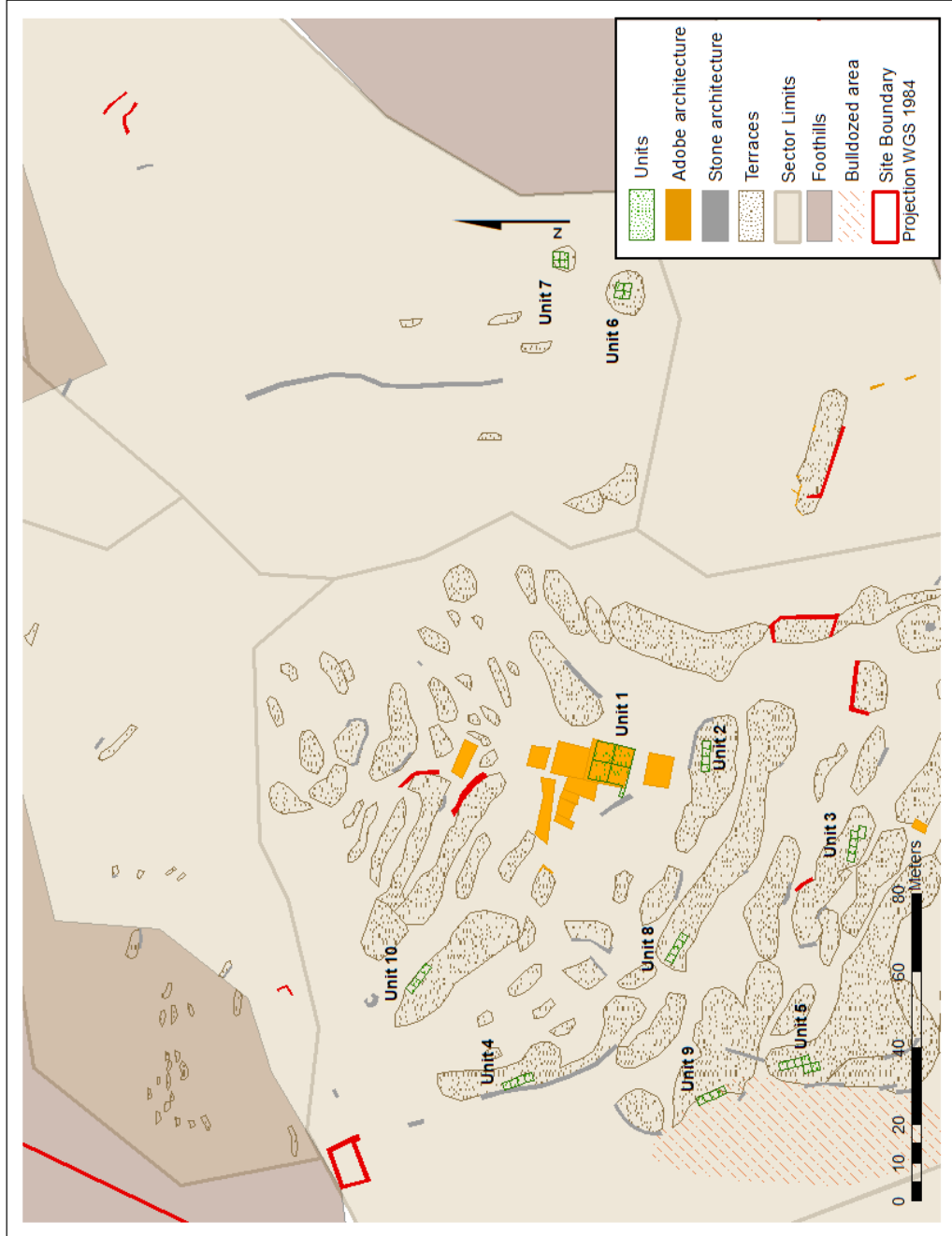


Figure 4.32. Map of Rectangular Field Stone Structures or Partial Rectangular Structures Indicated in Red.

architectural features, possibly rectangular structures. Structure 61 consists of three, single-course fieldstone walls that meet to form two corners. This structure, located on the southeast edge of the site, may have supported the habitation terrace it is on. Another alternative is that Structure 61 is what is left of a larger, probably rectangular structure.

Structure 8, the only stone architecture identified in Sector 2 to date, is composed of two walls each made of two courses of fieldstone with gravel fill that meet at a corner. The southernmost wall is c. 27 m long and abuts the western wall (c. 14.5 m long) at the southwest corner. The western wall was less well preserved. The function of this structure is not known. Surface collection was less systematic for Sector 2 than for Sector 1 and Structure 8 was not the subject of excavation during the 2014 field season.

A possible rectangular structure with walls constructed of a single course of fieldstone was observed in Sector 3 (Structures 10 and 11). This structure is in the northeast of Sector 3 at 700 masl elevation. The purpose of this structure is not clear and this context was not a major focus of the 2014 field season, but cache of sling stones was found nearby (Figure 4.33).

Round Structures. Seven round structures were documented in Sectors 1 (Structures 2, 33, 43, and 44), 3 (Structure 9), and 4 (Structure 67 and 68) (Figure 4.34 and 35). Most of these structures are piles of fieldstone between c. 1.5 and 3 m in diameter and poorly preserved. Luis Manuel Gonzalez, the project's co-director, suggested that these round stone structures could mark graves. Structure 67 appears to be 'G' shaped (Figure 4.36). These structures were not excavated during the 2014 field season and their purpose remains enigmatic.



Figure 4.33. Apparent Cache of Sling Stones from the Surface of Sector 3 Near Structure 10.

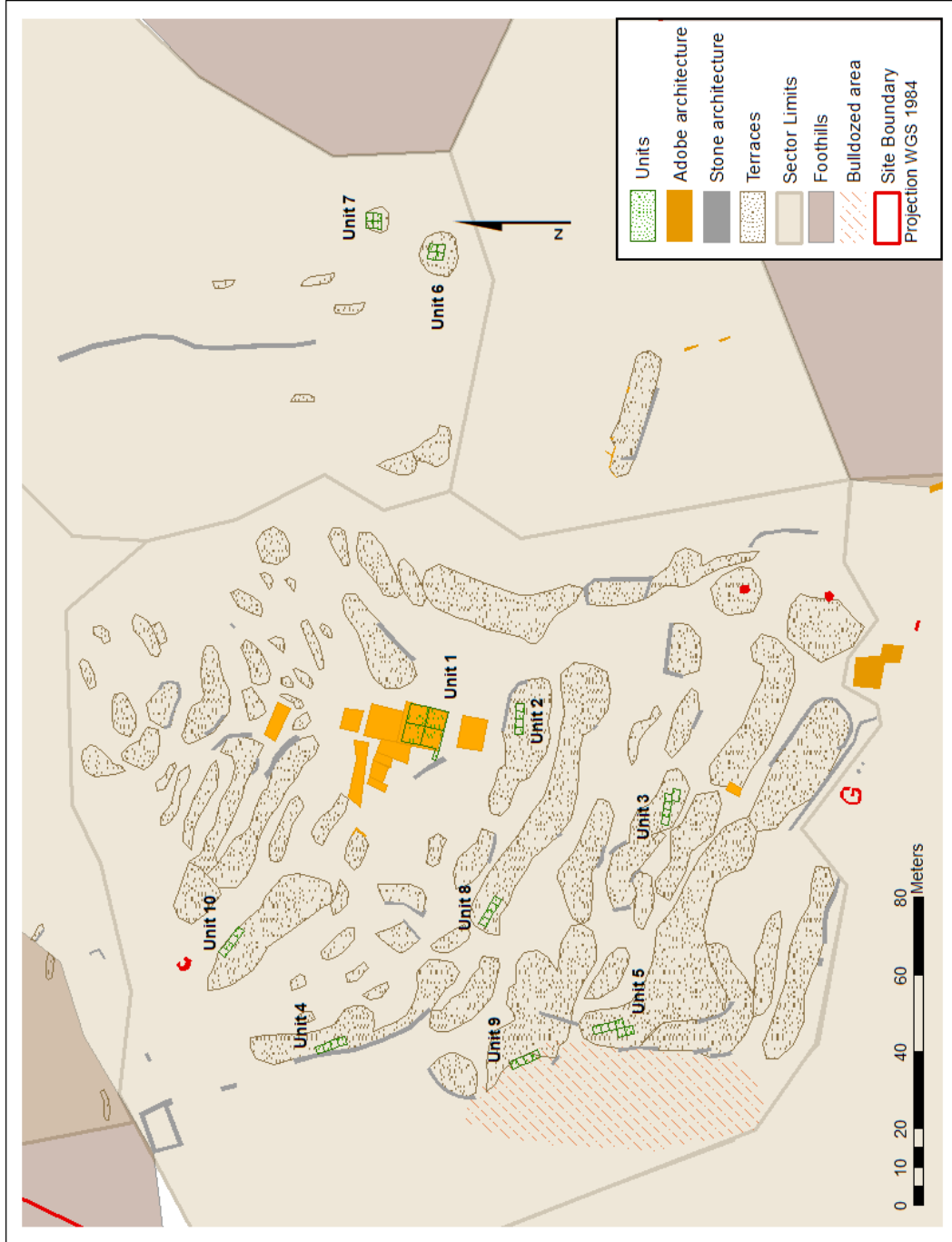


Figure 4.34. Map of Round Stone Structures at Zorropata Indicated in Red.



Figure 4.35. Structure 2, an Example of a Round Filed Stone Structure, in the Northwest of Sector 1.

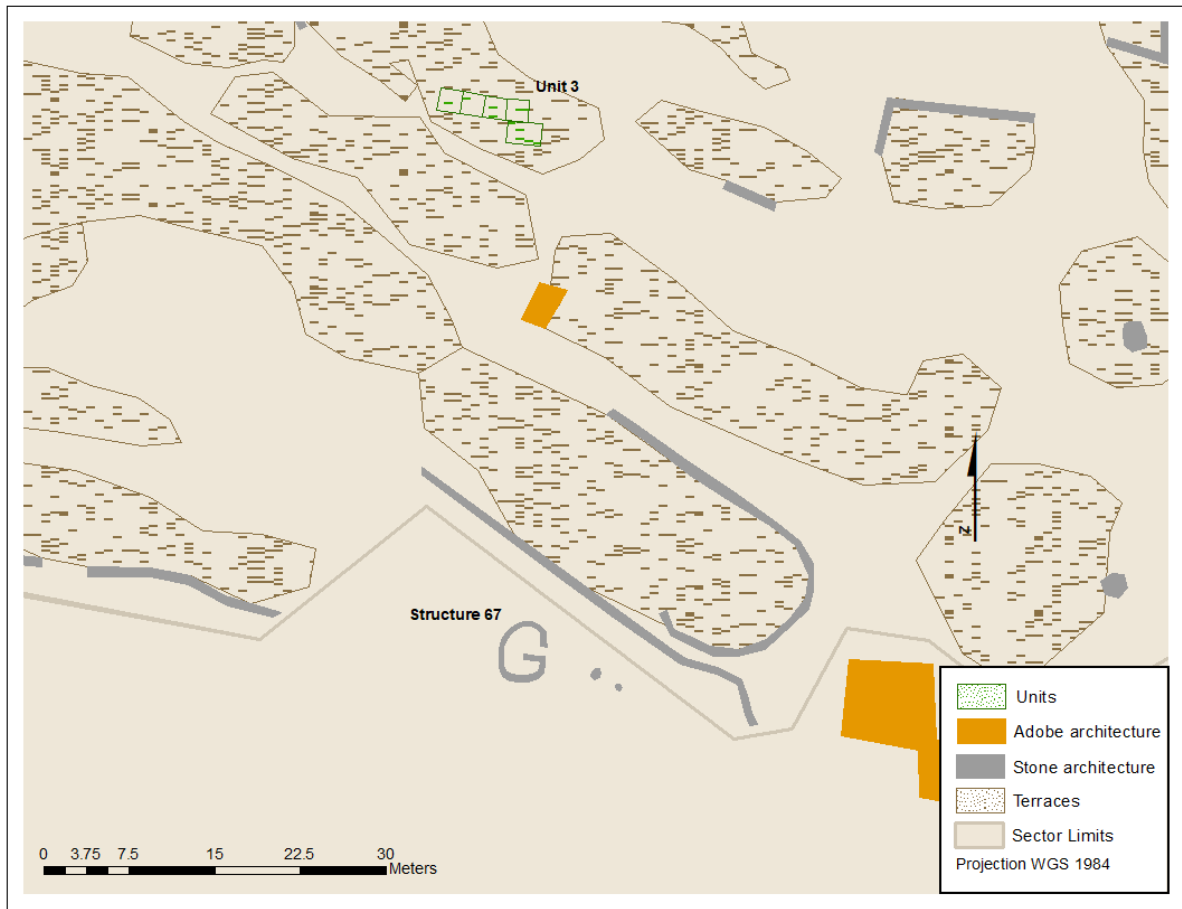


Figure 4.36. Structure 67, A 'G'-Shaped Field Stone Structure Just South of Possible Plaza in Sector 1.

Plazas. Structure 45 is hypothesized to be a plaza or public space. This structure is a J-shaped wall composed of two courses of fieldstone with gravel fill (Figure 4.37 and 38). A section of the wall to the northwestern extent of the structure can be seen in profile and uses adobe mortar (Figure 4.39). It surrounds a 22.5 by 14 meter ovoid space oriented with the long axis north to south. The space is banked to the south by Structure 46, part of the system of perimeter walls. This space sits at the southeast edge of Sector 1, just above Sector 4. No excavation has been conducted at this location, however surface collection revealed little to no evidence of cooking, craft production, or other quotidian activities – a common condition for Nasca plazas, which were kept relatively clean of artefactual debris (Van Gijsegem and Vaughn 2008:125; Whalen 2014:344).

Structure 1, a J-shaped wall around a terrace in the north of Sector 1, could potentially be a second, smaller plaza (Figure 4.40). This structure was an 11.5 meter by 8-meter ovoid space with the long axis oriented east to west. Surface artifact collection of this structure recovered comparatively few artifacts. This may suggest that the area was kept clean of debris. Another plausible interpretation is that this structure was a retaining wall or wall to demarcate a specific domestic space.

Adobe Structures

Adobe architectural structures were identified in Sectors 1, 2, and 4 during the 2014 field season. In structures that were well enough intact to identify and exposed to the surface, adobe blocks were paniform, rectangular with a domed top, rounded edges, and flat bottom (Figure 4.41)⁷. Blocks were made by hand using locally available materials to the dimensions of between 20 and 30 cm long, 25 and 35 cm wide, and 12 and 28 cm high. In wall



Figure 4.37. Possible Main Plaza in Sector 1, Outlined in Red, Facing West.

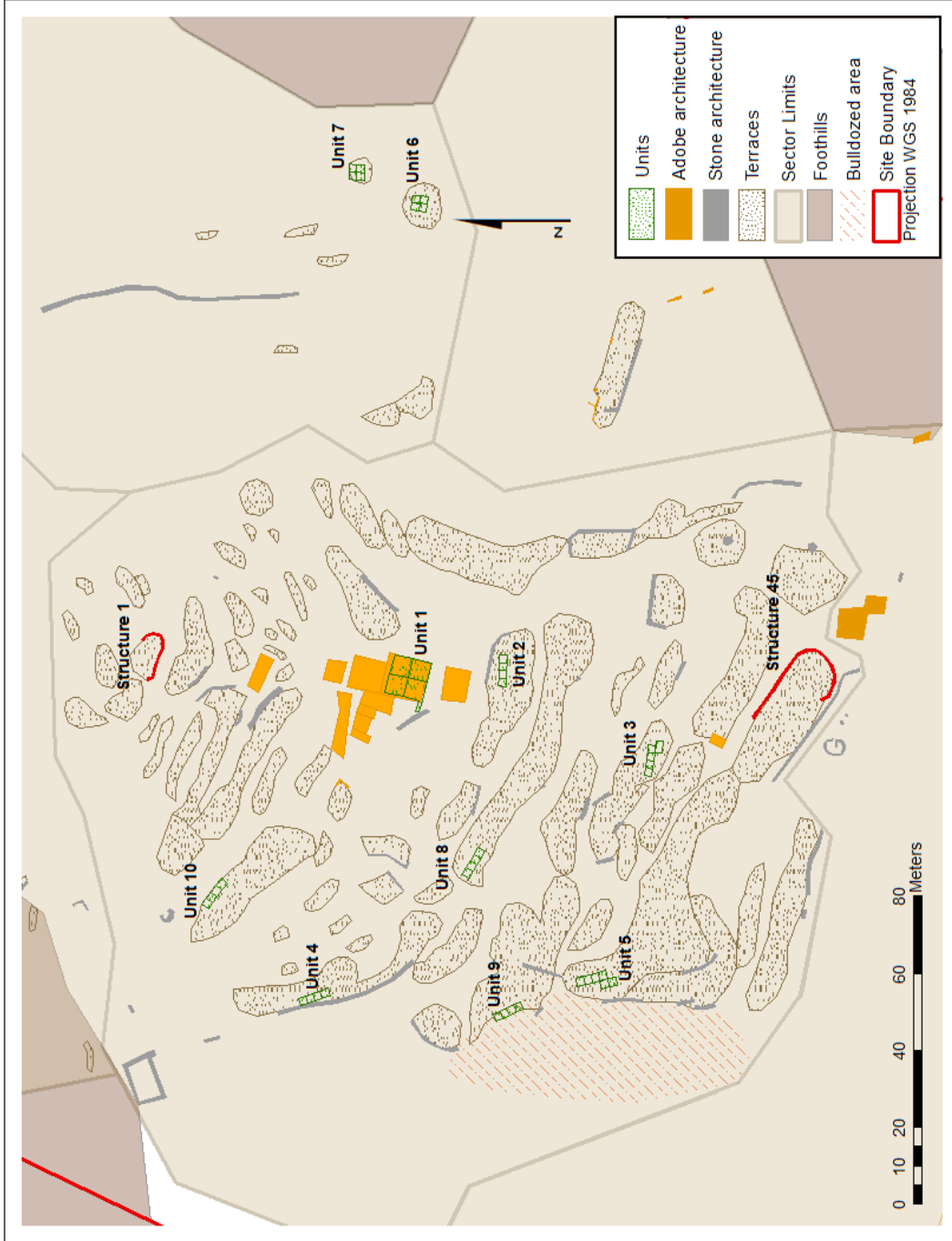


Figure 4.38. Possible Plazas in Sector 1, Outlined in Red.



Figure 4.39. Adobe Mortar Between Field Stones in the North Wall of the Probable Main Plaza.



Figure 4.40. View South of Possible Small Plaza in the North of Sector 1.



Figure 4.41. Examples of Paniform Adobe Blocks from the Surface of Zorropata.

construction, adobe blocks were stacked in rows with the rounded surface of the block facing up and the flat part down. Adobe mud was used as mortar between blocks (Figure 4.42).

Walls were at least one course of blocks thick but may have been two or more courses thick (Figure 4.43). In at least one instance an adobe wall was also coated in adobe plaster (Figure 4.44).

Paniform adobes were used in construction of some parts of Cahuachi and Huaca del Loro (Silverman 1993:95; Strong 1957:15) (Figures 4.45 and 46). Other block shapes including ovoid, conical, and square adobes were used in the region at different periods. Adobe block shapes may correlate with different chronological periods (Strong 1957:21), or structurally and culturally informed construction choices (Silverman 1993:95). Square blocks are thought to be post-Nasca (Silverman 1993:95). Paniform adobes were in use in the Nasca Region since at least the late Early Nasca period (Orefici 2011:23).

The primary adobe structure in Sector 1 is the adobe compound. This structure consists of six conjoined cells/rooms (Structures 20, 21, 22, 23, 24, and 25). Three additional rectangular structures (Structures 17, 19, and 27) may also be associated with the compound but are not directly abutting the main, multiroom structure (Figure 4.47). Structure 15 is another rectangular adobe structure c. 20 m north of compound and may or may not be associated (Figure 4.48). Two other Sector 1 adobe walls were poorly preserved (Structures 32, 58) (Figures 4.49). Structure 21, the largest cell of the adobe compound, was sampled during excavation (Chapter 5). Based on the present evidence from surface collection and excavation the function of this structure appears to be funerary/ceremonial. Other cells were not excavated during the 2014 season and may have served the same or a different function.

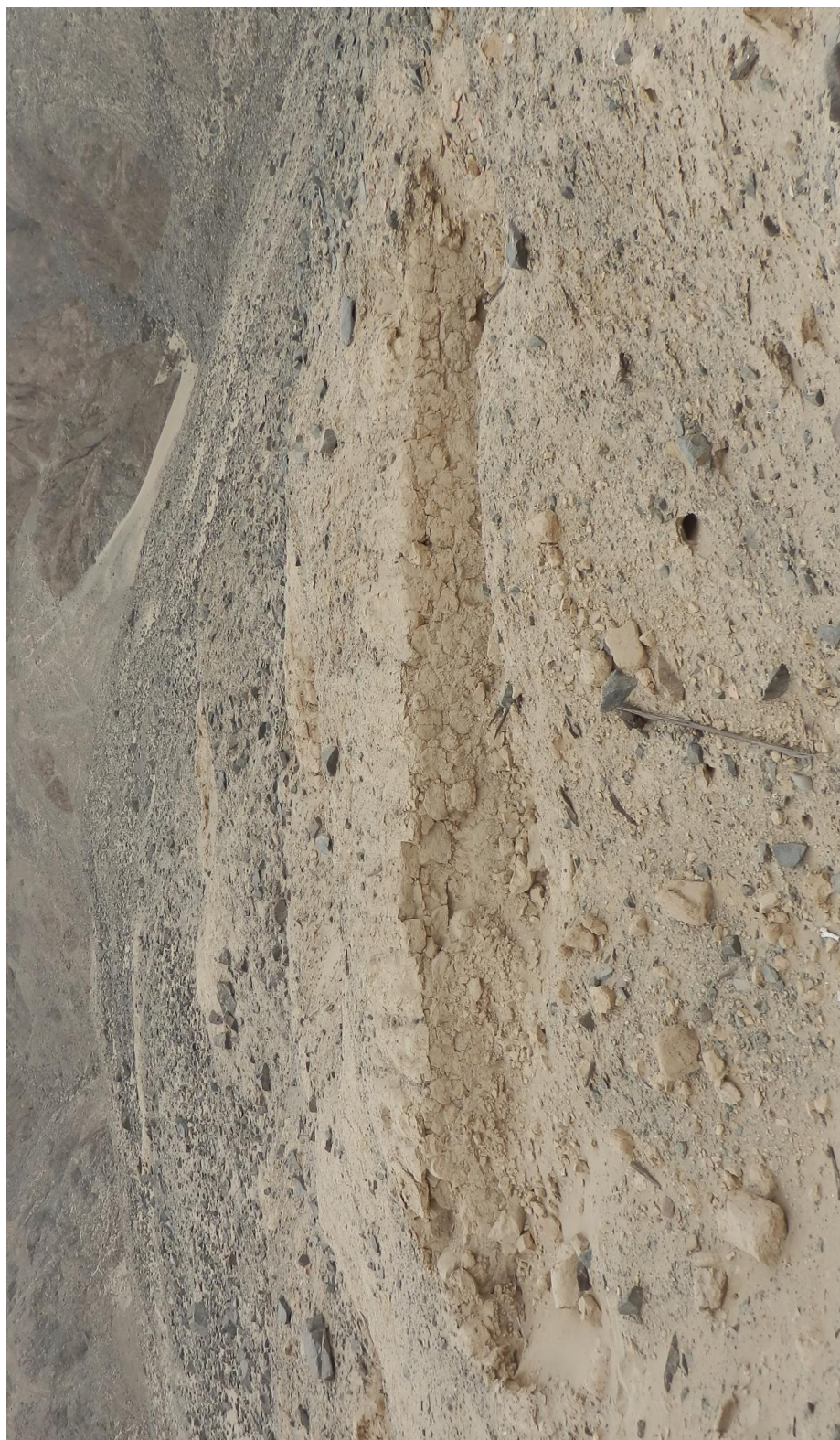


Figure 4.42. Northern Wall of Structure 21 Showing Paniform Adobe Blocks Held Together with Adobe Mortar.



Figure 4.43. Partial Cross-Section of Eastern Wall, Structure 21.



Figure 4.44. Plastered Adobe Wall in West of Tomb Chamber, Structure 21.



Figure 4.45. Paniform Adobes in a Wall at Cahuachi.



Figure 4.46. Paniform Adobes in a Structure at Huaca del Loro.

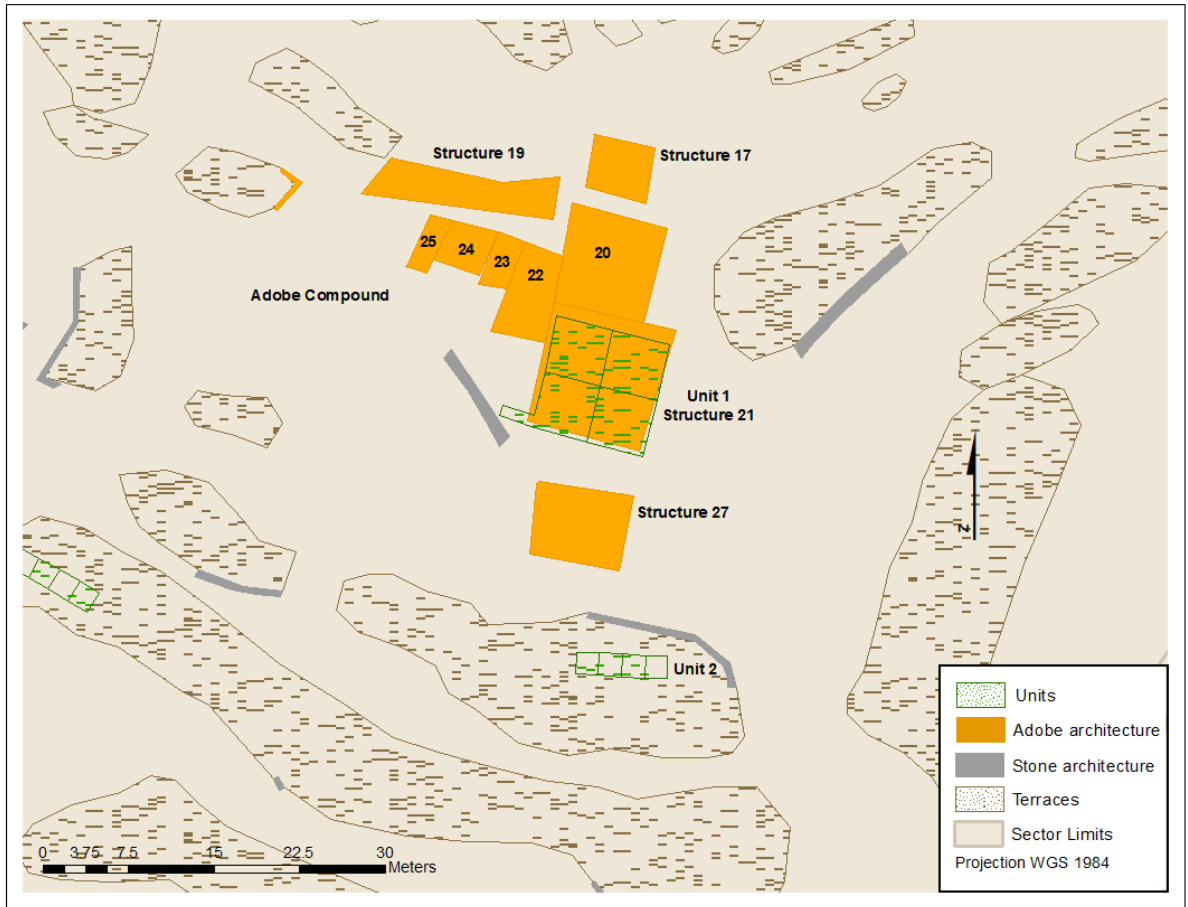


Figure 4.47. Adobe Compound Including: Structures 20, 21, 22, 23, 24, and 25. Three Additional Rectangular Structures (17, 19, and 27) May Also Be Part of the Compound but Are Not Contiguous.

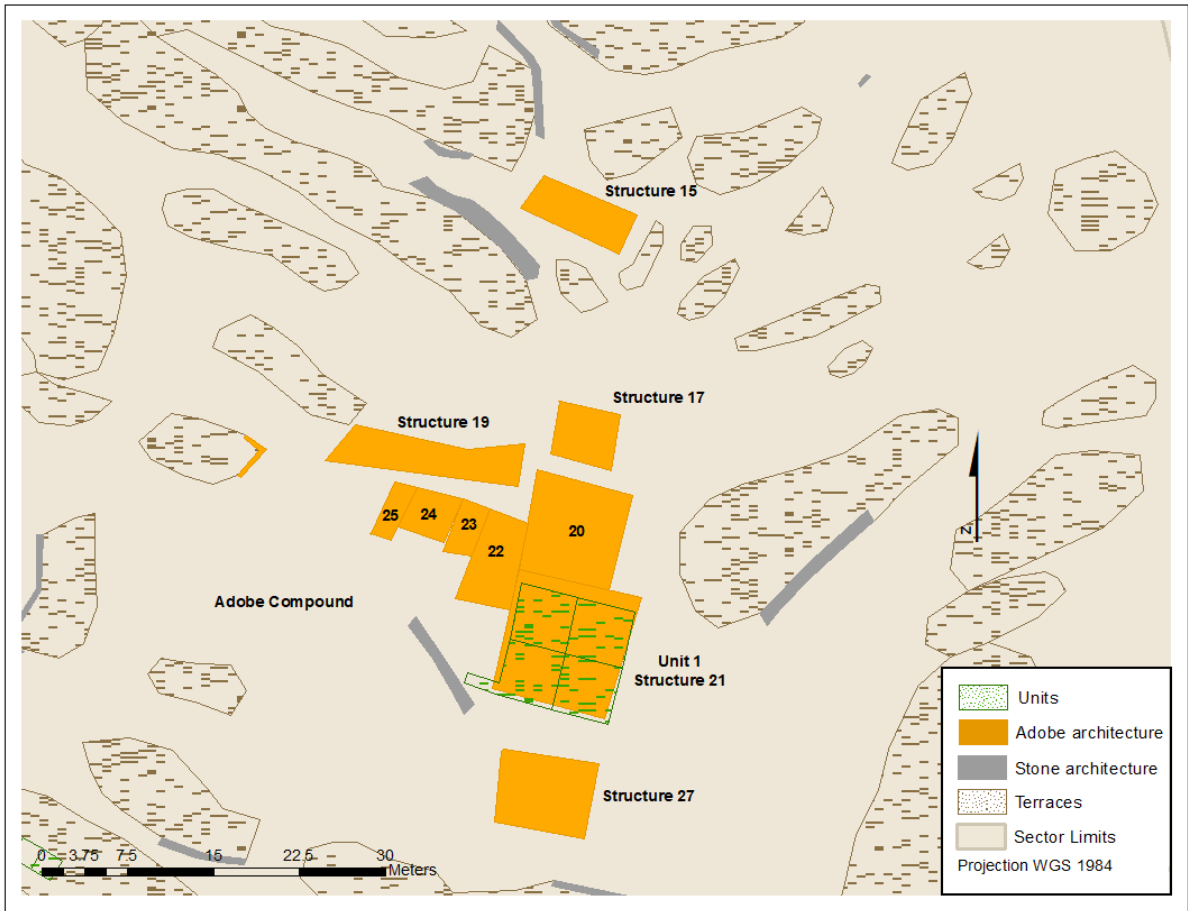


Figure 4.48. Structure 15 in Proximity to the Adobe Compound.



Figure 4.49. Structure 32, Sector 1.

Three adobe structures were identified in Sector 2. In general, these were less well preserved than the adobe compound in Sector 1. An adobe wall (Structure 5) is visible from the surface in the south of Sector 2. Another small section of wall or badly deteriorated, small adobe structure (Structure 7) is visible in the northeast of Sector 2. A set of adobe walls (Structures 4) in the northwest of Sector 2 may be what remains of a small, multiroom, adobe structure. These walls are poorly preserved but appear to compose more than one conjoined or proximal, rectangular, adobe room (Figure 4.50 and 51).

Three adobe structures were identified in Sector 4 (Figure 4.52). The largest adobe structure (70) in Sector 4 is in the southeast of the sector near the edge of Sector 1. It is poorly preserved but appears to be composed of at least two conjoined, rectangular rooms. The two other adobe structures are at the eastern edge of Sector 4. One structure (69) is built into the rock at the foot of Cerro Hualluri. The other structure (71) is c. 25 m due south of Structure 69. The latter two structures may be tombs based on the artifacts and human bone observed on the surrounding surface. The larger structure's function is not known. All three structures were significantly damaged by looting (Figure 4.53).

Terraces

Habitation terraces are considered the primary domestic unit at Zorropata and are the best representation of Las Trancas households from the present evidence. At many other domestic sites in the Nasca Region the basic domestic unit representing a household consists of a circular house and one or more oval shaped patio areas made of fieldstone or sometimes cut stone (e.g., Vaughn 2000:129, 2009; Whalen 2014:88).



Figure 4.50. Map of Structures in Sector 2.



Figure 4.51. Sector 2 Adobe Architecture (Structure 4).

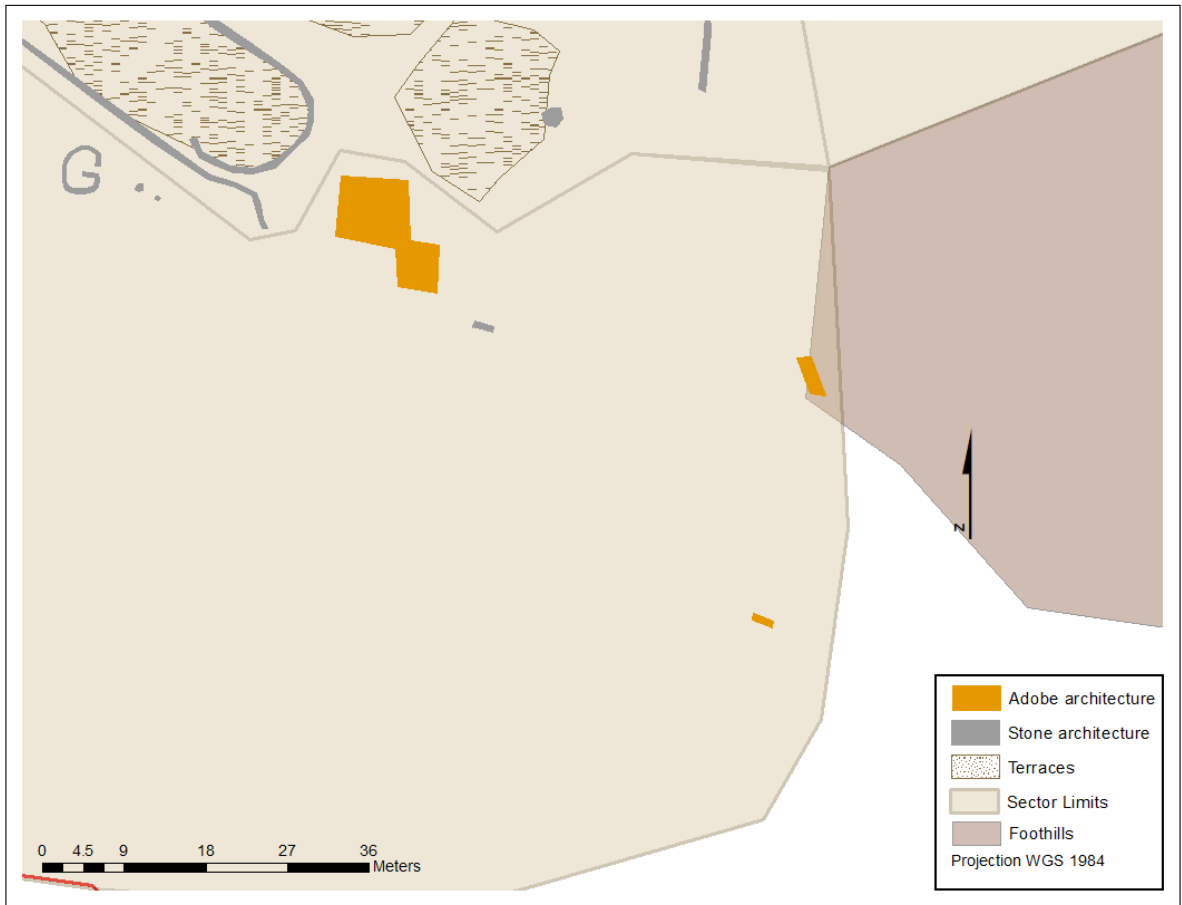


Figure 4.52. Map of Structures in Sector 4.



Figure 4.53. Structure 69 in Sector 4, a Probable Small Adobe Tomb Structure.

At Zorropata, stone walls surround the site, act as retaining walls for some terraces, and appear to divide space on some especially large terraces. Adobe architecture composes many structures including at least two graves and a compound with funerary/ceremonial function. A high density of domestic debris is evident from the systematic surface collection of Sector 1. Domestic architecture made from stone or adobe is conspicuously absent. The stone and adobe structures at the site support that Zorropatans had access to the tools, knowledge, and raw materials to make their homes from these materials. Terraces represent a substantial augmentation of the landscape and created flat living surfaces on a sloped terrain.

The present data from Zorropata only allow for speculation as to how and from what materials Zorropatans may have constructed their houses. No direct evidence of house structures was recovered during surface analysis nor excavation during the 2014 field season. The hypothesis proposed here is that domestic architecture at the site was made from *quincha*. *Quincha* walls are made of posts between which reeds or small sticks are woven to provide a sub-straight for layers of mud plaster that are used to finish the wall. Houses built by this technique are almost entirely organic⁸. *Quincha* walls were observed for the Middle Horizon site Pajonal Alto located in the Taruga Valley but were not the subject of in-depth archaeological research (Conlee 2000:98). The site of La Marcha, across the Las Trancas Valley from Zorropata at the foot of Cerro La Marcha, may also have an ancient example of *quincha* architecture (Kellner, Whalen, and Flores 2017). Further excavation at Zorropata is necessary to investigate the above hypothesis.

Discussion

Zorropata is at least 6 hectares in size including all 6 sectors. The main habitation area of the site is c. 30,000 m². For perspective, the next largest site in the Las Trancas Valley is Huaca del Loro with an area c. 100,000 m² (Schreiber 2005:248). Surface analysis defined habitation areas in Sectors 1, 3, 5, and 6 based on a preponderance of domestic debris (e.g., utilitarian and fineware ceramics, numerous mortars, pestles, manos, grinding surfaces, flaked stone tools, shell, faunal bone, etc.). As discussed in Chapter 5, mud floor living surfaces were exposed during the excavation of multiple habitation terraces. Human remains were observed on the surface near Sector 4 and the adobe compound in the heart of Sector 1. The purpose of Sector 2 is not well understood at present as it was not the target of archaeological fieldwork during the 2014 season. The site includes spaces for quotidian life (habitation terraces), funerary/ceremonial contexts (Sector 4 and the adobe compound in Sector 1), and potential plaza(s) or communal space(s) in Sector 1 (discussed below).

Definition of domestic space facilitates investigation of the primary research goal of this dissertation (Chapter 3), which examines the potential social and economic impacts the Wari had on this Las Trancas community (Chapter 11). To reiterate from Chapter 3, households are a point of articulation between different scales of analysis (Wilk and Rathje 1982:618). Whether the Wari incorporated Zorropata or not, data from habitation contexts could indicate how agents were affected by regional events. For example, if the Wari imposed a tribute system or refusal costs, local social and economic practices visible at the household level are likely to be impacted. Also, data from habitation terraces are used to consider daily life at Zorropata and how various architectural traditions and domestic practices were changed or maintained during the Middle Horizon compared with the Early Intermediate Period (Chapter 12).

Habitation

Surface analysis suggests that that site was a relatively densely populated village site. At least 126 habitation terraces were documented at Zorropata. Terraces could have been used for houses, patios spaces, or both. Larger terraces could have hosted multiple patio groups. It may be necessary to excavate a broad exposure of one or more habitation terraces to generate the data necessary to investigate the number and organization of Zorropata patio groups. Doing so is beyond the scope of the present research.

As discussed above, the absence of house structures visible from the surface complicates investigation of households as a social unit at Zorropata. Habitation terraces must be treated as the basic unit representing households based on the present data. That said larger terraces could have hosted more than a single house structure. Moreover, there is insufficient data from this or other habitation sites in the region to understand if houses on the same terrace might represent larger family groups or multiple family groups. In addition, Early Intermediate Period habitation sites document the presence of patios, 7 to 14 m long, flat, ovoid spaces associated with houses (Vaughn 2000:123; see also Whalen 2014). Patios likely served as family centered social spaces and food and craft production areas. Patio groups (patio and house) represent the nuclear family archaeologically in the Nasca Region (Vaugh 2009; Whalen 2014:88). Analogous spaces may exist on terraces at Zorropata but they are not visible from the surface. Therefore, it is difficult to generate a working estimate of the number of households that may have occupied Zorropata at any given time.

Communal Activity Areas

Surface analysis data from Zorropata also provide evidence that may suggest a potential reorientation of sociopolitical behavior. During the Late Intermediate Period (c. AD 1000-1476) settlements in the Southern Nasca Region became increasingly complex. The locus and organization of ceremonial activities shifted away from the Early Intermediate Period pattern of regionally scaled activities centered at Cahuachi, the region's main ceremonial center, towards smaller, more localized events that took place at settlements (Conlee 2003:53). Data from Zorropata may provide early evidence of the development of the Late Intermediate Period pattern in the form of one, and possibly two, plaza in Sector 1 (discussed above).

Verity Whalen notes three small plazas were in Sectors III and V at the site of Cocahuischo in the Tierras Blancas Valley of the Nasca drainage. These plazas were described as "10-20m wide oblong spaces" (Whalen 2014:344). In general, public spaces such as these plazas were not a common feature Nasca habitation sites before Cahuachi's decline as a regional center, and they may have been used for local ceremonial activities and feasting (Whalen 2014:344).

Defense

During the 2014 field season, segments of a large wall or system of walls along the western and southern edges of Sector 1 and the eastern edge of the site in Sector 3 was documented (Figure 4.2). These wall segments were built using two courses of fieldstone with gravel fill, average around 1 to 2 m thick and more than 1 m tall from the base. Fieldstone walls made of one course of stone with no fill extend along other sections of the perimeter. Although not continuous, these stretches of wall clearly extend around the

perimeter of the main habitation area of the site. They would have complicated entry into the site in areas with a relatively gentle slope that otherwise would have allowed easy access. Taken together with the 229 sling stones recovered from surface collection and excavation there is a strong indication that the inhabitants of Zorropata were concerned with defense.

¹ Those who know me will not be surprised to hear the site's name is a pun. 'Pata' in *Quechua* means 'place', but the same phoneme in Spanish means 'paw.' Therefore, the site has two alternate English translations, Fox-place, if the site name is translated from a Spanish/*Quechua* hybrid, or Fox-paw, if translated from just Spanish. The dual possibilities were, of course, intentional.

² My team and I are very grateful to the Copara municipality for their hospitality. The people of Copara supported this project by allowing my crew and I to live and work in an apartment in the municipal building. Their support helped to make this project a success.

³ Cerro La Marcha, meaning 'the March,' is a relatively recent name for this landmark dating back to the War of the Pacific (1879-1884). There is a local ghost story to go with the name. A military band was marching to the front to battle the Chilean army. They cut across Cerro La Marcha but the sands shifted swallowing them whole. Locals told us that military band music could be heard emanating from La Marcha for almost a century after that fateful day. When asked if the music could still be heard we were told that an exorcism had been performed and the ghosts had departed. Another version of this ghost story is set on Mt. Huayurí, also located in the Las Trancas Valley, instead of La Marcha (Katharina Schreiber, Personal Communication).

⁴ While excavating one day during the 2014 field season a family on vacation from Ica, Perú came to the site with shovels and a bag. We spoke to them about the research we were doing and the importance of preserving archaeological sites for research by not looting them. Eventually they left but may have merely relocated to another archaeological site that was not under excavation at that time.

⁵ We considered using a handheld GPS for surface collection but the satellite coverage for the Southern Hemisphere (at least in 2014) is less than that for the Northern Hemisphere. Lower cost (c. \$500 or less) handheld GPS units are designed to work with the satellite coverage of the Northern Hemisphere. These units can have very good accuracy when used how and where they were designed to be used. When used in the Southern Hemisphere my inexpensive handheld unit was only accurate within c. 10 m. These units can also give false confidence readings when used in the Southern Hemisphere. Significantly more expensive models can produce significantly better results but were over budget for this project.

⁶ Due to several factors (i.e., many diagnostic surface sherds were from undecorated vessels, many others were not well preserved, and time constraints during analysis), 4,960 of the 5,665 diagnostic ceramic sherds recovered from surface collection could not be ascribed to a stylistic phase. Further analysis of surface ceramics is warranted and may add to the numbers mentioned in this chapter for Early Nasca, Middle Nasca, Late Nasca, or Loro ceramics.

⁷ Some sources refer to this style of adobe brick as ‘loaf’ shaped (Silverman 1993:76; Strong 1957:15).

⁸ Modern houses in the Las Trancas Valley are still made using this technique. Houses are rectangular and can have one or more rooms. Modern houses tend to have aluminum roofs but some have thatch.

Chapter 5

Excavations at Zorropata

This chapter focuses on excavation at Zorropata. The chapter begins by outlining the research methods employed during the 2014 excavations at Zorropata. The sampling strategy, unit selection, and excavation procedures are discussed. The stratigraphy for habitation units and the adobe compound is evaluated and described. Results of excavation for each unit are discussed including but not limited to the features identified, artifacts recovered, and any specialized samples taken (e.g., carbon samples from AMS dating). At its close, this chapter summarizes excavation and discusses the major conclusions that can be deduced from the present evidence.

Research Methods

Sampling Strategy

Excavations at Zorropata pursued research agendas at two distinct types of context, domestic and funerary/ceremonial. Surface analysis (Chapter 4) supports initial observation about Zorropata's status as a habitation site with a probable ceremonial component. The goals of excavation were to gain a more in-depth understanding of each of these two contexts than could be gained through surface analysis alone. In specific, excavation was conducted with the following four goals in mind: 1) to further test the assumption that terraces were associated with domestic activities; 2) to obtain information about the kinds of socioeconomic activities performed on terraces; 3) to obtain data necessary to assess if

socioeconomic differences were evident between different terraces, and if so, how status differences may have been performed; and 4) to test assumptions about the adobe compound in Sector 1 as a high status *barbacoa* style tomb or ceremonial structure similar to one observed at Huaca del Loro (Tello 2002:22).

Chapter 4 identified habitation terraces as a basic unit of analysis for domestic contexts at Zorropata. As discussed in Chapter 3, a household or community is a complex and negotiated social entity that does not necessarily equate to a geographic locus in a simple way (Hare 1995:79; Mac Sweeney 2011). However, houses (patio groups, villages, neighborhoods, etc.) were the physical loci for social, political, and economic life (Stanish 1989:7). Geographic (or archaeological) households are associated with domestic groups and domestic activities (Hendon 2006:171). Moreover, these contexts are visible in the archaeological record. The present evidence supports the conclusion that terraces at Zorropata were domestic spaces. As such they may be analogous in some ways to patio groups identified at other habitation sites in the Nasca Region. Thus, habitation terraces were targeted for excavation to generate the data necessary to address the first three goals listed above.

Zorropata was the only site besides Huaca del Loro where an adobe compound has been identified in the entire Las Trancas Valley. If the compound at Zorropata is comparable to the one at Huaca del Loro, prior to looting it consisted of several rooms or cells each containing one or more high-status *barbacoa* style tomb. Damage to the compound from looting is evident from an air photo dating to 1944 (Figure 4.9). All cells of the compound appear to have been damaged by looting, however, archaeological evidence collected from

Structure 21 (a.k.a., *Recinto A1*, and the locus of Unit 1) may still provide some evidence concerning the use life of these structures.

Looting exposed parts of all four external walls, and some internal walls of Structure 21. Cultural deposits were likely damaged and the stratigraphy was all but destroyed. This damage constitutes a terrible loss of information. However, the architecture of Structure 21 was intact enough to provide valuable information about this context. We undertook a salvage operation on the partially exposed structure aimed at investigating the space's function and construction. This gambit produced useful information for addressing the fourth goal mentioned above.

The focus of this project is habitation contexts not mortuary contexts. The compound was targeted because it was suspected to be elite *barbacoa* style tombs. Elite contexts were expected to have a greater frequency of imported or Wari goods if these items were present at the site, or Loro materials, if they were not. Therefore, excavation of the adobe compound was expected to provide valuable data for investigating the hypotheses discussed in Chapter 3. Salvage excavations of the compound targeted and were limited to disturbed areas to minimize the impact of excavation on the site and to recover whatever data possible from the looted contexts. For ethical reasons, no potentially intact cells were touched.

Domestic and mortuary contexts are constructed through very different behaviors and choices. Domestic contexts are formed by the numerous and various choices and actions of daily life (Rapoport 1969). Households and domestic spaces are a seat of both economic functions (e.g., food, shelter and craft production) and social/kin relationships (Bender 1967:11). Speaking archaeologically, domestic deposits rarely represent primary contexts. If a cooking pot breaks on a living surface during the act of cooking a meal it is not left in

place, conveniently near a hearth, and the house abandoned. Instead, the floor is cleaned or otherwise maintained, and the pot and food remains are collected and discarded in a trash pit or other secondary location. In addition, post-depositional processes (e.g., erosion, looting, etc.) may affect deposits and therefore interpretations (Rodgers 1995).

Mortuary contexts, and the behaviors that create and use these spaces, differ from habitation contexts in several important ways. Funerary practices performed by the living commemorate the deceased but also serve to renegotiate relationships and identities after the loss of a community/family member (Parker Pearson 1999:5; Smith 2010). Funerary contexts tend to be intentionally constructed. Objects buried with the deceased tend to represent particular identities and ideologies. In contrast, domestic assemblages are the consequence of both intentional and non-intentional behaviors. Furthermore, at abandonment, objects that are still useful may be taken from a house, thereby altering the material culture and artifact patterning an archaeologist might use to interpret the space. If undisturbed, the intentionality of funerary contexts means that they may be better preserved than domestic contexts. But, since graves are more likely to include high quality and intact artifacts they are often targeted by looters.

Looting has a significant impact on the integrity and interpretations of archaeological data. As described throughout this dissertation, looting at Unit 1 was extensive. In Sector 1, Units 2, 3, 4, 5, 8, and 10 were intact and not looted. Unit 9 was impacted by a looter's pit in subunit B. The affected sub-unit was not excavated and efforts were made to avoid the disturbed areas during excavation as much as possible (see Figure 5.32). While the damage at Unit 9 was substantial, deposits were at least partially intact. Disturbances at Unit 9 complicated interpretation of the unit specific stratigraphy. The most intact deposits and

artifacts from this unit came from the northern half of subunit C and subunit D. Please see below for details about Units 6 and 7 in Sector 3.

Unit 1 stratigraphy was critically damaged by looting. For this reason, stratigraphy at this unit was arbitrary (see below). Finds from this location are problematic in that they are clearly disturbed and it is probable that looters took, displaced, or destroyed significant finds (e.g., intact polychrome pottery, complete or larger and more elaborate textiles, and human remains). The artifacts we recovered and the contexts and associations in which they were found may not be fully representative. However, intact and in situ sections of the structure itself give some indications about the form and function of this context and support an interpretation of this context as a *barbacoa* style tomb.

Artifact patterning at Unit 1 speaks to the looting process at least as much, if not more than, past human behavior. However, the frequencies of artifacts, especially ceramics, textiles, and stone tools, are broadly consistent between Unit 1 and mortuary contexts at other Nasca sites (discussed below and in Chapter 11). Also, the human ‘trophy’ heads recovered from Unit 1 were relatively well preserved. One head (Individual 1) was associated with intact, and very friable textiles and soft tissue (human skin and hair). It is probable that these remains were minimally disturbed by looting activities (Chapter 10).

Due to the limitations of the Unit 1 dataset interpretation about this context in this dissertation are offered with some caution. Interpretations concerning the use and chronology of Structure 21 are largely based on in situ architectural features and only secondarily on other finds. No doubt the loss of data resultant from looting at this context has stymied our understanding of this space. Never-the-less the data recovered have been useful in illustrating a basic picture of this context. And, as one of only two identified sites in the Las Trancas

Valley with an adobe compound, even salvage excavation of this context can give important insights.

Domestic and mortuary data from Zorropata represent very different depositional and post-depositional processes. An attempt is made to distinguish between various contextual factors (domestic, mortuary/ceremonial, looted, intact) throughout the data and interpretation chapters of this dissertation. On occasion it is useful to discuss Zorropata's dataset in toto. For example, the recovery and frequency of Wari pottery, Wari textiles, or imports like *Spondylus* or obsidian from any context at Zorropata could speak to the research goals of this dissertation. Local polychrome ceramics from all over the site can help to establish a relative chronology. Intact contexts provide important insight into the ancient human behaviors associated with various artifacts. But even disturbed contexts, like Unit 1, can contribute useful data.

Problems Encountered. As mentioned in Chapter 4, the initial plan for selecting units for excavation was to use surface analysis data in a judgmental sampling strategy. Instead, a stratified sampling strategy, using random sampling with adjustments based on a judgmental sampling strategy, was employed. The change in strategy was prompted by sudden changes in standards and enforcement of Peruvian laws in regard to gaining permission to excavate and collect archaeological samples following a political election in Perú.

Just before the fieldwork for this project began a Peruvian election resulted in a significant change in personnel and policy in the Ministry of Culture. These changes resulted in revisions to the legal processes to gain permission from the Peruvian Ministry of Culture to excavate or collect archaeological samples from archaeological sites. In its previous form Peruvian law allowed archaeologists to select the number of units they planned to excavate

and give general location information for units. A new rule stipulated that the exact locations for all excavation units be selected prior to the start of the project. UTM coordinates must be provided for each unit and approved by a Ministry of Culture inspector after a site visit before collection could begin. During a site inspection, a Ministry of Culture inspector is obligated to measure each unit's exact spatial location using a GPS device. No artifacts, including surface artifacts, could be collected prior to gaining permission from the Ministry of Culture. To gain permission for this research project expediently, it was necessary to select units at random for excavation using data from my 2013 observations at Zorropata.

It was possible to make a few minor adjustments to unit locations as the season progressed. For example, we got permission to expand excavation Units 3 and 5 to follow cultural deposits. Each change required a site visit from an official inspector. Requesting changes to all unit locations may have resulted in our application for permission to excavate getting rejected after months of effort.

Excavation Units

Excavation units on habitation terraces were composed of four 2 x 2 meters subunits. 2 x 2 meter units are a standard size for the region (Conlee 2000:105; Vaughn 2000:188). At many sites in the Nasca Region, sediments consist primarily of windblown deposits and sterile soil may be reached at about 40 cm from the surface (Vaughn 2000:197). Based on personal experience and other archaeological work in the region it was anticipated that the project's crew could excavate and map c. 50 2 x 2 meter subunits during the 2014 field season. Thus, 40 2 x 2 meter subunits at habitation terraces and one 10 x 10 meter unit

encompassing the largest cell of the adobe compound were selected for excavation. It was suspected that preservation would be better on the interiors of habitation terraces rather than the edges. Thus, four consecutive 2 x 2 meter subunits were planned for the centers of 10 habitation terraces. Units were named 1 through 10 according to the order in which they were excavated.

Data from my 2013 reconnaissance at Zorropata were used as the basis of a random sampling strategy. To generate a random sample, habitation terraces that I identified in 2013 were numbered. Eight habitation terraces in Sector 1 and two suspected terraces in Sector 3 were selected using a random number chart. Once surface analysis commenced in 2014 some adjustments were made to the unit locations to improve our chances of getting good data for testing the hypotheses laid out in Chapter 3. For the most part adjustments were minor. Units 1, 2, 5, 8, 7 and 9 did not require adjustment. Units 3 and 10 were adjusted within a meter of their original proposed locations. Unit 4 was close to the western perimeter wall identified in Sector 1 during surface analysis. The location of this unit was adjusted to abut the wall's interior and investigate this structure. Unit 6 in Sector 3 was moved from its original location near a *quebrada* at the edge of the sector to a suspected habitation terrace up slope.

The largest change to habitation terrace unit locations was the dissolution of a unit in the center of Sector 1. This unit was immediately downslope from the adobe compound and had a large looter's pit in it. Instead of excavating four 2 x 2 meter subunits into this disturbed context we sought permission from the Ministry of Culture to expand excavations at two other units later in the season. Units 3 and 5 exposed sections of mud floor living surfaces. After a site visit from a Ministry of Culture Inspector (Ruben Garcia Soto) we

received permission to expand excavations at Units 3 and 5 by up to two additional 2 x 2 meter subunits each.

As mentioned above, we initially hoped that surface analysis data could inform the selection of excavation units at habitation terraces. In the original research design units would have been selected after surface analysis. Surface features and artifacts patterns identified in the mapping and surface analysis phase of this project may have facilitated a more targeted approach to unit selection than the random sampling strategy used. Ideally, results from the first units to be excavated would have further informed selection of subsequent units. Such a strategy may have made more efficient use of our limited time and resources and produced more targeted data. We might have been able to investigate domestic space and architecture at Zorropata more explicitly. However, a solely judgement-based strategy might have introduced bias in unit selection and impacted the comparability between domestic units. The random strategy used in this project reduced the potential for sampling bias. Latitude for judgement-based alterations (e.g., adjustments to Units 3 and 10) and addendums (e.g., amplifications at Units 3 and 5), while limited, helped us to target areas that were expected to produce data consistent with this project's stated research goals and to avoid most areas where damage from looting or erosion was evident from the surface.

Excavation Procedure

Units, including subunits and unit data (for unit elevations and point proveniencing), were mapped with a total station during the surface analysis phase of this project. At each unit the surface was mapped, photographed, and surface elevations were recorded using each

unit's datum prior to excavation. Excavations proceeded by artificial 10 cm levels until a natural stratum was reached then by natural stratigraphy. All units were photographed and mapped prior to the start of excavation. When a feature or new natural level was exposed the surface was photographed and mapped.

Pit features were excavated according to their own stratigraphy in 5 cm intervals (discussed below by unit). All fill from pit features or ash features was retained for later dry sieving using geological sieves. Dry sieving is preferred to flotation in the Nasca Region because of the consistent arid conditions. Exposure to moisture, as during flotation for example, could damage desiccated plant or other archaeological remains. All other matrix excavated from units was dry sieved through a ¼ inch mesh screen. Features, in situ artifacts, and stratigraphic floors and profiles were mapped to scale and photographed prior to removal, excavation, or backfilling. All units were backfilled at the end of excavation.

Soil samples were collected from each level at each unit and retained for later soil and paleoethnobotanical analysis. Samples were arbitrarily taken from the northeast corner of the northern or eastern most unit (depending on the orientation) in which they were exposed wherever possible, and another corner/unit where necessary due to obstruction or poor representation of a level. Soil samples were 3 liters in volume wherever possible. The research design for this project included paleoethnobotanical analysis of these samples. As of the completion of this dissertation, permission has yet to be granted by the Ministry of Culture for a specialist to access these samples for analysis (see Chapter 9). I performed basic soil analysis on these samples, documenting the color and consistency of soil across the site (discussed below in Site Stratigraphy).

Artifact locations were recorded including the unit and subunit. Artifact recovered in situ were point provenienced to record the exact easting, northing, and elevation of each object within the excavation unit. Tags for artifacts recovered from the screen recorded the level and, where applicable, feature for each object. Artifacts were cataloged in the lab during and after the excavation phase of this project.

Catalog numbers were composed of a unit number and an item number. Unit numbers included the letters 'ZA' to designate the site Zorropata, a number (1 – 6) to indicate the sector, and a number to indicate the unit. Unit numbers used the original designations for each unit. Designations were updated in the lab to facilitate description in this dissertation¹. Item numbers were sequential for each unit and tended to be organized by artifact class. Thus, the carbon sample ZA133-92 was the 92nd item recorded for the Unit originally called 33 (now Unit 9) in Sector 1. This system has the benefit of recording some of the provenience data associated with the artifact directly in the catalog number. Provenience data can therefore be discerned at a glance and is less likely to be separated from the artifact over time. It also generated a count of artifacts and samples cataloged for each unit.

Site Stratigraphy

Habitation Terraces

A general stratigraphic sequence is apparent from domestic contexts in Sector 1 at Zorropata (Figure 5.1). Some slight variations exist and will be discussed for each unit in the 'Summary of Excavation' section later in this chapter. Factors affecting deposition included wind deflation and deposition, steep slopes at the edges of habitation terraces, and modern

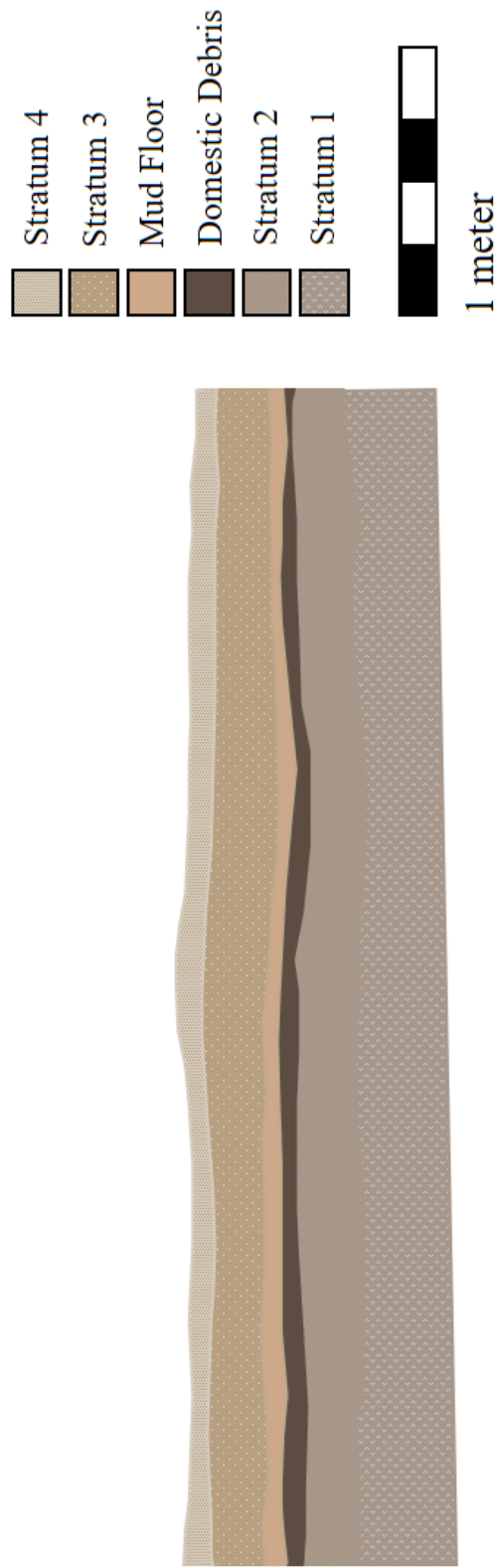


Figure 5.1. General Stratigraphic Sequence for Habitation Context Units.

disturbances (e.g., pedoturbation, looting, rodent burrowing, and other forms of bioturbation). The following sequence does not apply well to Units 6 and 7 in Sector 3, nor to Unit 1, the adobe compound. The unique stratigraphic situations of Units 1, 6, and 7 are discussed at the end of this section. The following sequence is organized in order of deposition with Stratum 1 deposited first and Stratum 4 as the most surficial layer encountered during excavation.

Stratum 1 is the deepest stratum identified during excavations at Zorropata. This stratum was very compact and sterile of material culture. It contained at least 40-50% inclusions of gravel and small rocks in a matrix of fine sand. The matrix was gray in color (2.5Y7/1 to 10YR6/1). This stratum appears to be the natural surface of the site. The present evidence suggests that this stratum preceded human occupation.

A prepared mud floor living surface was identified at Units 2, 3, 4, 5, 8, 9, and 10. Floors were built on a c. 2 -5 cm thick substrate of organic material in most cases. This layer of organic material was best preserved in the stratigraphy of Units 3, 4, and 8 (Figure 5.2). The pre-floor substrate was documented in field. Samples of the matrix and botanical material making up this layer were collected where it was possible to do so without destroying the preserved mud floor. Thus, this layer contributed little material to the artifact assemblage from the 2014 field season at Zorropata. Strata beneath the floor level were exposed wherever possible without damaging mud floor features (for unit specific details see below).

Stratum 2 was beneath these prepared floors and organic substrate, but above Stratum 1. Stratum 2 ranges in consistency from a relatively compact fine sand to a slightly loamy fine sand, but is much less compact than Stratum 1. It is gray in color (2.5Y6/1 – 10YR6/1);



Figure 5.2. Example of Domestic Debris Layer Under Mud Floors.

and contains between 5% and 20% inclusions of gravel, small rocks, and plant remains. Some artifacts were recovered from Stratum 2 but they were significantly fewer in number than for the strata above the mud floors. At Units 3 and 4 Stratum 2 was sterile. At Units 5, 8, 9, and 10 fewer than 10 artifacts each were recovered from Stratum 2. Artifacts may have been from previous living surfaces. In this scenario, the floors identified archaeologically at various units may represent the final and most recent occupation at each habitation terrace.

The mud floor feature identified at the habitation context excavation units is very compact in areas where it is well preserved and c. 1 – 2 cm thick. It is gray (2.5Y6/1) to light brownish gray (10YR6/2) in color. Where it is most friable the texture of this layer is fine sand to slightly loamy fine sand with few inclusions. Mud and fine sand were probably processed to remove naturally occurring inclusions like small rocks. The sediment was then mixed with water and spread over a surface of domestic debris and organic material. The floor in Units 4 and 8 were the best preserved. Floors at Units 3, 5, and 10 were relatively well preserved. Floors in units 2 and 9 were only preserved in small patches.

The domestic debris substrate directly below the floors in most units consisted of plant remains, charcoal, and some artifacts. This feature seems to have been part of the construction process for the floor. The debris layer was deposited across the living surface, then the mud floor was laid over it and dried in place. This layer was most distinct at Units 3, 4, and 8, and at Units 2 and 9 under well preserved sections of floor. It was not well defined at Units 5 or 10. Floors and associated debris layers are treated and discussed as features in this stratigraphic sequence.

At Units 2, 4, 5, 8, and 9 the presence of ash on and orange discolorations of the floor may indicate the surface was exposed to fire. Burning in localized areas may represent a

hearth (see Unit 8 below). In other cases, fire may have been used in floor construction or maintenance/cleaning. Another alternative is that the surface was burned at abandonment, perhaps as part of a house closing/killing or some other ritual purpose (see Unit 2 below).

Stratum 3 was identified above the floor features at Units 2, 3, 4, 5, 8, 9, and 10. This stratum was composed of fine sand or slightly loamy fine sand and was generally less compact than Stratum 2. The percentage of inclusions varied from 1-50% with an average of 12% and included small rocks, and fragments of adobe. The stratum ranged in color from gray (10YR6/1 or 2.5Y6/1) to brownish gray (2.5Y6/2). Artifacts were numerous in this stratum.

Stratum 4 was the superior most stratum at all units including habitation units and Units 1, 6, and 7. In general, this stratum was less than 10 cm thick and loosely packed. The sediment was very fine windblown sand. The stratum color was gray (2.5Y6/1 or 10YR7/1). The percentage of inclusions ranged from 0-20% with an average of 7%. Where adobe architecture was nearby Stratum 4 included small fragments of adobe or became slightly loamy and lighter in color (2.5Y6/2, light brownish gray) from pulverized adobe blocks. The surface of Stratum 4 was exposed to and affected by bioturbation, especially pedoturbation, and wind erosion.

The preponderance of archaeological features and artifacts from habitation contexts came from Strata 3 and 4, above the mud floors in units where these features were intact. Although the assemblage of artifacts from surface collection seems broadly consistent with subsurface finds it should be noted that analysis and interpretations offered in the remainder of this dissertation focus primarily on subsurface deposits. Data and discussions below and in the following chapters deal solely with excavated data unless explicitly stated otherwise.

Sector 3

Despite a promising scatter of surface artifacts at Units 6 and 7, these units were sterile below the surface. All four subunits from Units 6 and 7 were sampled (discussed below) but the only stratum encountered fits the description of Stratum 4. It is probable that the artifacts identified on the surfaces of these units came from actual cultural deposits up slope in Sector 3 and were probably deposited at Units 6 and 7 by gravity.

Ceremonial Context

Unit 1, at the adobe compound, was a highly disturbed context. Two disturbed layers were identified to distinguish between the matrix above the roof of a *barbacoa* style tomb (Disturbed Layer 1) and below it (Disturbed Layer 2) (Figure 5.3). Both layers are loosely packed loamy sand ranging in color from gray (2.5Y6/2) to light brownish gray (10YR6/2). Disturbed Layer 1 is the more surficial layer and contained 10-20% inclusions of gravel, fine adobe fragments, and windblown plant material. Disturbed Layer 2 was relatively more compact and had 0-10% inclusions. Late Nasca and Loro ceramics were recovered from both layers but were almost certainly not in their primary context.

Summary of Excavation

A total of 10 units was established at Zorropata during the 2014 season. These are discussed in detail below. One 10 x 10 meter unit was established to sample the adobe compound. Nine units were established at habitation terraces. Habitation terrace units



Figure 5.3. Gravel on Top of the Intact Section of Adobe Tomb Roof.

consisted of four consecutive 2 x 2 meter subunits. In addition, amplifications of two 2 x 2 meter subunits expanded excavations at Units 3 and 5 to follow floor features. All crew members excavated, mapped, screened, bagged, and tagged, etc. but the more experienced members (Gonzalez, McGuire, and I) did most of the excavating at the beginning of the season.

Excavation at Zorropata began with Unit 1 in late July just after permission to excavate was obtained from the Ministry of Culture. In keeping with local custom, before excavation began we went to an area above Sector 1 where no cultural remains were present and made a *pago* (offering) of cigarettes, pisco, and coca leaves². Excavation then proceeded to units at habitation terraces in Sector 1 and 3. At the end of the season we returned to Unit 1 to continue excavation at the adobe compound (discussed below).

The Crew

As mentioned in Chapter 4 this projects crew included four archaeologists with field experience (Luis Manuel Gonzalez La Rosa (Peruvian Co-director), Chloe McGuire, Molly Kaplan, and myself (Project Director)) and students with little practical archaeological experience outside of the classroom (Alejandra Tazza, Maria Llana, and Kyra Kim)³. Also mentioned in Chapter 4, this project had some issues with recruitment. Thanks to the hard work of an amazing group of students and archaeologists we still addressed all this project's goals for the 2014 season. The crew contributed to excavations by either working in one group or split into two teams lead by Gonzalez and me, respectively (discussed below in respect to each unit).

Gonzalez assisted with all aspects of fieldwork and interfaced with the Peruvian Ministry of Culture during all phases of the project. McGuire, Kim, Llana, and Tazza were with the project from the beginning of fieldwork and participated in both surface analysis and excavation. Llana and Tazza left the project around mid-August when classes resumed at San Marcos University, in Lima, Perú. McGuire was with the project into September and left to accept an internship position at the American Museum of Natural History, New York, New York. Kim was with the project until we wrapped in October. In September 2014, Kaplan joined the project until fieldwork ended. I directed all phases of the project as well as making practical contributions to surface analysis, excavation, and lab analysis. I made all logistical and financial decisions for this project. I also kept the official notes for all surface analysis and excavation. All team members were encouraged to keep notebooks for their own observations during surface analysis and excavation. Team member observations amplified and elaborated the official notes for the project. Excavation ended on October 10th and was followed by an end of season inspection from a Ministry of Culture official and backfilling of all units.

The Weather

Nasca is perennially sunny and hot. Winds from the west started late each morning and grew in intensity each afternoon. A few times during the field season a *paracas* (sandstorm) hit, halting or impeding work. Strong winds wreaked havoc on west facing profiles, crew, and electrical equipment. Because the sediment at Zorropata contains a lot of sand and little to no humus, a strong breeze at the wrong time could collapse a windward

profile. We adapted to these conditions by working on western facing profiles before the winds picked up as often as possible.

Unit 1

An adobe compound located in Sector 1 at the site of Zorropata was observed to be potentially akin to one identified by Julio C. Tello at Huaca del Loro (Katharina Schreiber, Personal Communication; Tello 2002:22). Tello (2002:20) described the compound at Huaca del Loro as several square or rectangular chambers. At the surface these were adobe and generally flush with the ground surface. Small chambers were less than half a meter square in size while the largest chamber was c. 9 meters square. The largest tomb at Huaca del Loro had an antechamber. The tomb roofs at Huaca del Loro consisted of several (c. 8 - 10) huarango beams placed horizontally over the chamber, parallel to each other, then capped with mud and covered with gravel and fine sand. Within the tombs human remains were customarily positioned facing west and buried with “los utensilios necesarios” (e.g., ceramic vessels for food and water) (Tello 2002:20). The bottom of the tomb chamber was the natural surface consisting of sand and gravel, usually reached at a depth of at least 2 meters (Tello 2002:20).

The compound at Zorropata likewise consisted of several, variously sized, square or rectangular chambers/cells made from adobe. The largest chamber (Structure 21) had an antechamber similar to what Tello observed at Huaca del Loro (see below). Fill consisting of gravel and fine sand is visible at the surface for cells of the adobe compound at Zorropata.

At Huaca del Loro this compound was high-status *barbacoa* style tombs. The largest cell of the compound at Zorropata, referred to herein as *Recinto A1*, was excavated during

the 2014 season. The present data support that the compound at Zorropata was also *barbacoa* style tombs. *Recinto* A1 was badly damaged due the looting which, from air photos taken in the 1940s, occurred or began decades ago (Figure 4.9). *Recinto* A1 consists of a chamber with adobe walls — at least one of which was coated with adobe plaster but not painted (Figure 4.45). The chamber was capped with large *huarango* beams oriented north-south that were juxtaposed to one another and covered with a clay or adobe seal and capped with a layer of gravel, all of which is similar to what Tello describes for Huaca del Loro (Figure 5.3; Tello 2002:22-25). Above the chamber and visible at ground level the structure was surrounded by a square antechamber built with adobe blocks. Looters entered this context from multiple directions doing significant damage to the walls and roof of the structure.

Excavation Unit 1 was a 10 x 10 meter unit composed of four 5 x 5 meter subunits oriented according to cardinal direction. This unit encompassed the tomb and antechamber of *Recinto* A1. Subunit ‘A’ was located in the northwest corner, ‘B’ was in the northeast corner, ‘C’ was in the southwest corner, and ‘D’ was in the southeast corner. A 3 x 1 meter trench was established later during excavation of this structure. The trench extended from the southwest corner of subunit ‘C’ with its long axis east to west.

The purpose of excavation was to expose and investigate the structure and function of the adobe compound. The south wall of the structure exhibited substantial damage. It was eroded, confounding architectural details (Figure 5.4). The east and west walls were both collapsed in sections (Figure 5.5 and 6). It is probable that this damage occurred during looting events. The north wall of the adobe compound (also referred to herein as *Recinto* A1) was the best preserved and clearly defined (Figure 5.7). The trench was established with the

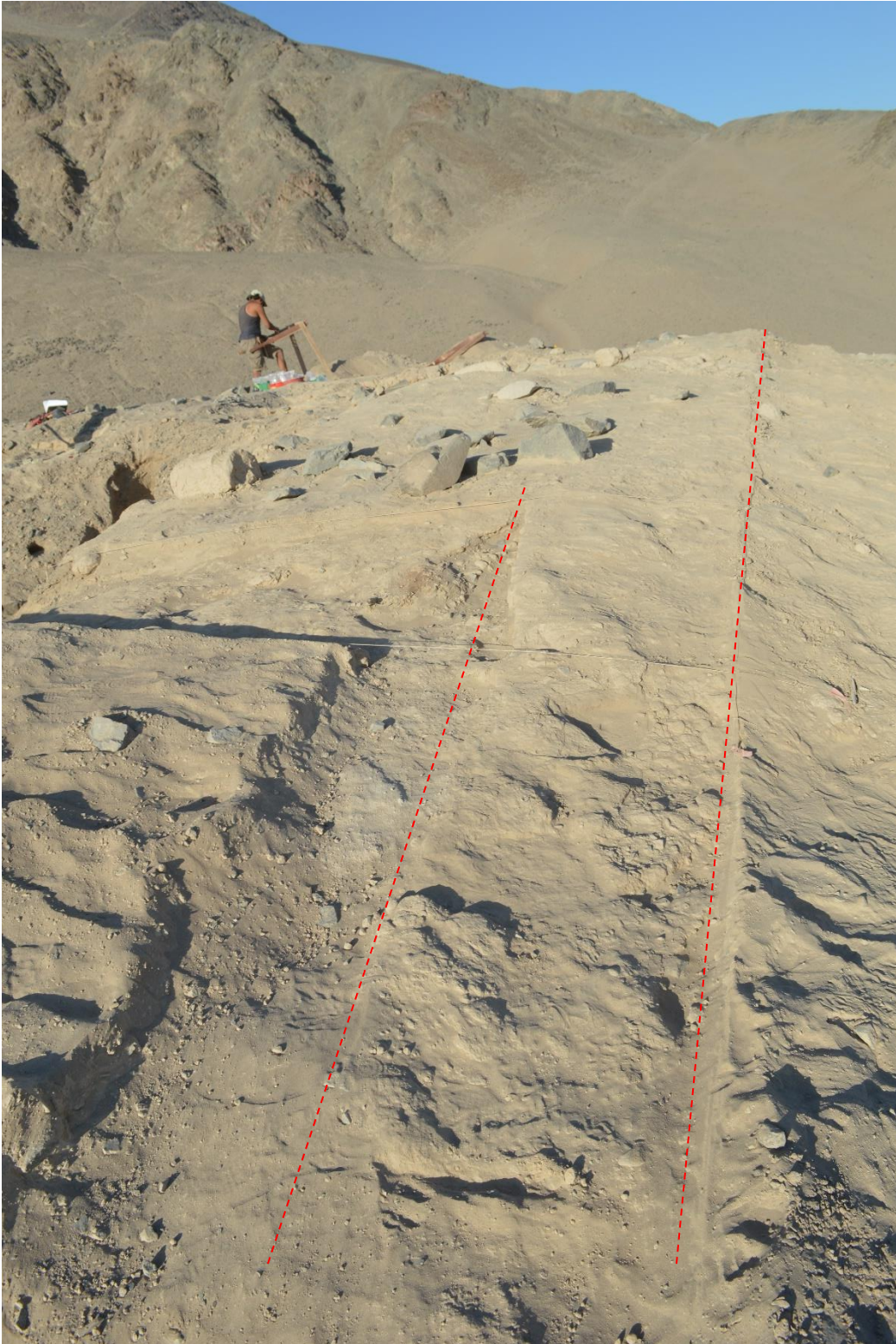


Figure 5.4. Deteriorated South Wall of Structure 21.



Figure 5.5. East Wall of Structure 21.



Figure 5.6. West Wall of Structure 21.



Figure 5.7. North Wall of Structure 21.

aim of exposing more of the western wall of the adobe structure to better define its limits. The datum for this unit was at ground level to the northwest of the unit.

The excavation of Unit 1 began in late July. *Recinto A1* consisted of at least an upper and lower chamber. Time and human power did not allow the removal of all fill from this structure. Future excavations could reveal even more complexities to this cell of the compound.

When excavation commenced at Unit 1 the crew was split into two groups. McGuire headed a team including Tazza and Llana to conclude surface artifact collection. Gonzalez, Kim, and I took photos and mapped the surface of Unit 1 in preparation for breaking ground. The unit limits were mapped in by total station when the unit was first established during surface analysis. Once surface collection was complete, McGuire, Tazza, and Llana joined the rest of the team working at Unit 1. At first, McGuire, Gonzalez, and I excavated while Kim, Tazza, and Llana screened but eventually all crew members contributed to each of these different tasks.

Two weeks into excavation an intact section of the roof of a *barbacoa* style tomb was uncovered c. 70 cm from the Stratum 4 surface. A meter sized section of the tomb roof was exposed and seemed to be intact. Thinking that looters may have missed a deeper deposit, we delayed excavation of the area beneath the tomb roof until the end of the season. Had the tomb been intact, excavating it at the beginning of the season may have attracted unwanted attention from local looters and resulted in further damage to the site. It may also have inhibited excavation at habitation context units. We returned to Unit 1 during the last two weeks of excavation to expose the tomb roof and potentially investigate beneath it. As it

turned out, the c. square meter of intact roof was the largest intact section of an otherwise very looted structure.

Stratum 4, naturally occurring windblown sand, was present in a thin layer across the surface of all four subunits and the trench to the west of subunit C. Only Stratum 4 was removed from the trench. The deteriorated remains of the western wall were discernable just below the surface in the trench.

Disturbed Layers 1 and 2, described above, are arbitrary and served to organize work at this unit. These layers likely resulted from the same processes (i.e., looting) and probably from the same looting event(s). Disturbed Layer 1 was the looted remains of the fill in the upper portion of *Recinto A1*. Excavations were conducted into this layer in all four subunits. Disturbed Layer 2 was the looted remains of the fill from below the tomb roof and was only exposed in subunit C and the western edge of subunit D.

To efficiently excavate such a large, disturbed structure, the work targeted 10 Areas (Figure 5.8). Areas are described below in sequential order but were excavated by different crew members working simultaneously⁴. Features described below were numbered in order of their discovery (Table 5.1). Features from each excavation unit (Units 1 through 10) are numbered independently (i.e., Unit 1, Features 1 through 8 bear no relation to Unit 2 features, etc.).

Area 1 was a 2 x 3 meter unit in the northwest corner of subunit C. Area 1 was established to expose an intact section of the western wall of *Recinto A1* for architectural analysis. The trench mentioned above was an extension of this area.

Area 2 was a 1 x 2 meter unit located roughly in the center of Unit 1. To be more specific Area 2 extended into all four subunits but was mostly located in subunits C and D. It

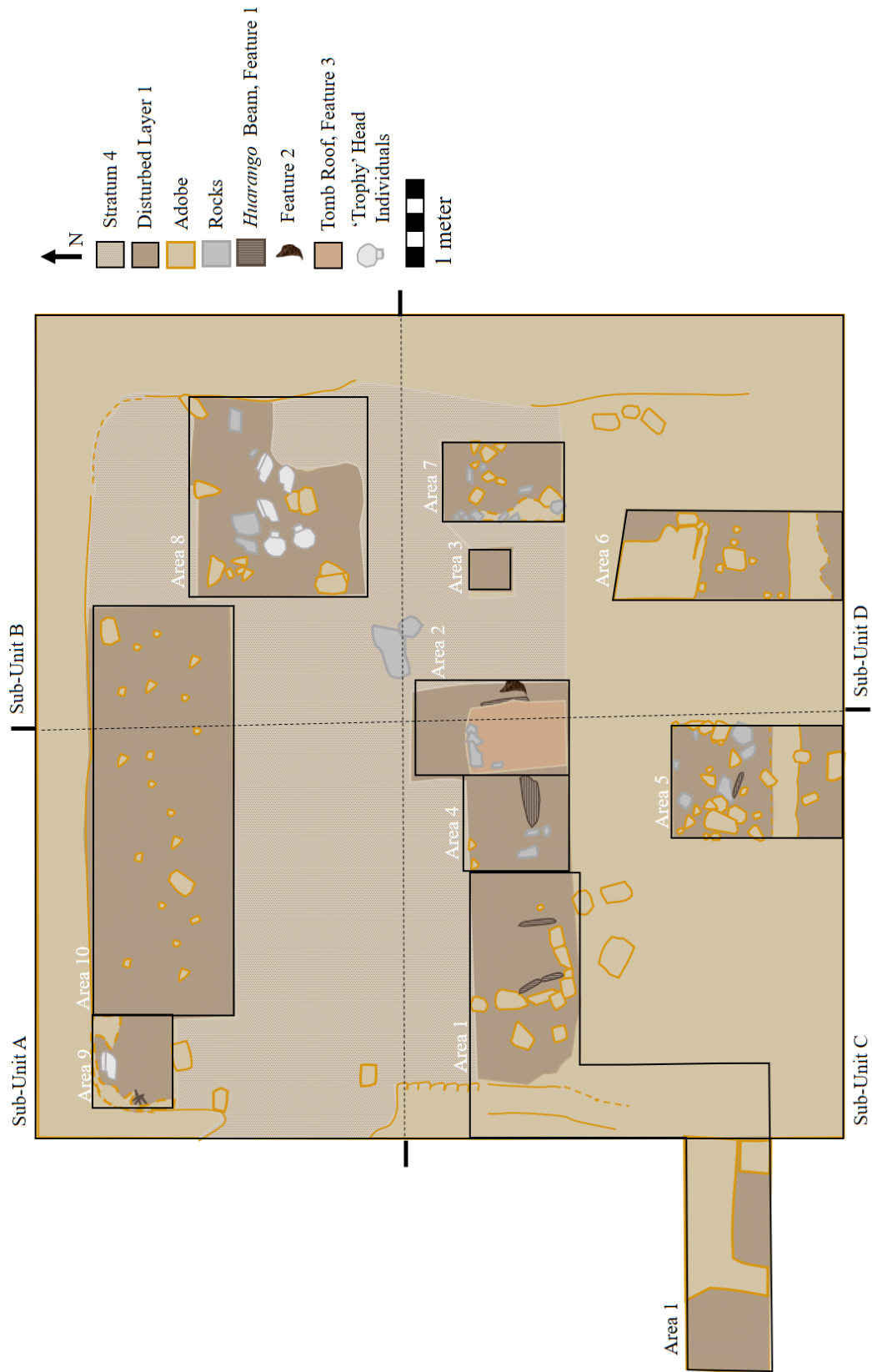


Figure 5.8. Plan Map of Unit 1 Showing Excavation 'Areas'.

Table 5.1. Archaeological Features by Unit.

Feature Number	Description
Unit 1	
<i>Feature 1</i>	<i>Huarango</i> post later identified as an upturned beam from the tomb roof
<i>Feature 2</i>	Possible in situ coca leaves
<i>Feature 3</i>	Exposed intact 1 x 1 meter section of <i>barbacoa</i> style tomb roof
<i>Feature 4</i>	"Trophy head" individual 1
<i>Feature 5</i>	Cache of 6 "trophy head" individuals
<i>Feature 6</i>	Canine remains (modern ?)
<i>Feature 7</i>	Canine remains (modern ?)
<i>Feature 8</i>	"Trophy head" individual 8
Unit 2	
<i>Feature 1</i>	Charcoal and plant remains in Structure 31 wall fill
<i>Feature 2</i>	Possible pit feature in Subunit A
<i>Feature 3</i>	Series 3 overlapping ash lenses in the north of Subunits A and B
<i>Feature 4</i>	Plant remains beneath a section of mud floor in Subunit B
Unit 3	
<i>Feature 1</i>	Possible pit feature in Subunit E
Unit 4	
<i>Feature 1</i>	Charcoal and plant remains in Structure 34 wall fill
<i>Feature 2</i>	Ash deposit with burnt faunal bone in the northeast corner of Subunit D
<i>Feature 3</i>	Small deposit of plant material in the southeast corner of Subunit D
<i>Feature 4</i>	A charcoal sample used to produce the AMS ¹⁴ C date for this unit
Unit 5	
<i>Feature 1</i>	A small pile of domestic debris on the surface of the section of mud floor in Subunit C.
Unit 8	
<i>Feature 1</i>	A pit feature near the center of Subunit D
<i>Feature 2</i>	An ash lens below the floor in the southeast of Subunit A
<i>Feature 3</i>	Possible hearth on the mud floor surface in Subunit C
<i>Feature 4</i>	A whole large sea urchin placed on the floor surface
<i>Feature 5</i>	Raised rectangular area in the floor surface along the northern edge of Subunit B
Unit 9	
<i>Feature 1</i>	A thin ash lens deposited on the mud floor surface in the northwest of Subunit D
<i>Feature 2</i>	Pit feature in the southeast corner of Subunit C
Unit 10	<i>No Features</i>

also extended about 15 cm into adjacent portions of subunits A and B, respectively. This Area was established with the aim of exposing a section of the southern wall of *Recinto A1* for architectural analysis. About 85 cm below the surface in this location McGuire exposed the intact section of the tomb roof (Unit 1, Feature 3) (Figure 5.9).

Just 10 cm east of the edge of the tomb roof in Area 2 a deposit of what appears to be unprocessed or minimally processed coca leaves was found (Figure 5.10). This deposit (Unit 1, Feature 2) was collected for paleoethnobotanical analysis. The eastern edge of the section of roof exposed in Area 2 did not appear to be broken. The sediment below the level of the roof just east of where it was exposed in Area 2 was fine sand with few inclusions. Feature 2 lay on top of that sediment. It is possible that Feature 2 was an ancient offering that was still in situ. More analysis of both the structure and the botanical remains is needed to determine if ancient deposits may have been left in situ despite the substantial destruction at *Recinto A1* from looting activities.

Area 3 was a 50 x 50 cm test unit into Disturbed Layer 1 in subunit D. Area 3 was located where Disturbed Layer 1 appeared to be the thickest. It was hoped that this less deflated looking area might reveal some intact stratigraphy. It was excavated to a depth of 47 cm but only revealed more evidence of disruption. This area may have been a back-dirt pile left when the lower areas of the tomb were looted. Excavations at this Area were halted when it looked like further excavation could destabilize the west-facing profile of Area 2.

Just after excavation began at Unit 1, what appeared to be a *huarango* post was identified in subunit C. The potential post was designated Feature 1. Area 4 was a c. 1 x 1 meter unit whose purpose was to allow investigation of Feature 1. As Area 2 was excavated



Figure 5.9. Feature 3, Unit 1, Intact c. 1 x 1 Meter Section of Tomb Roof.

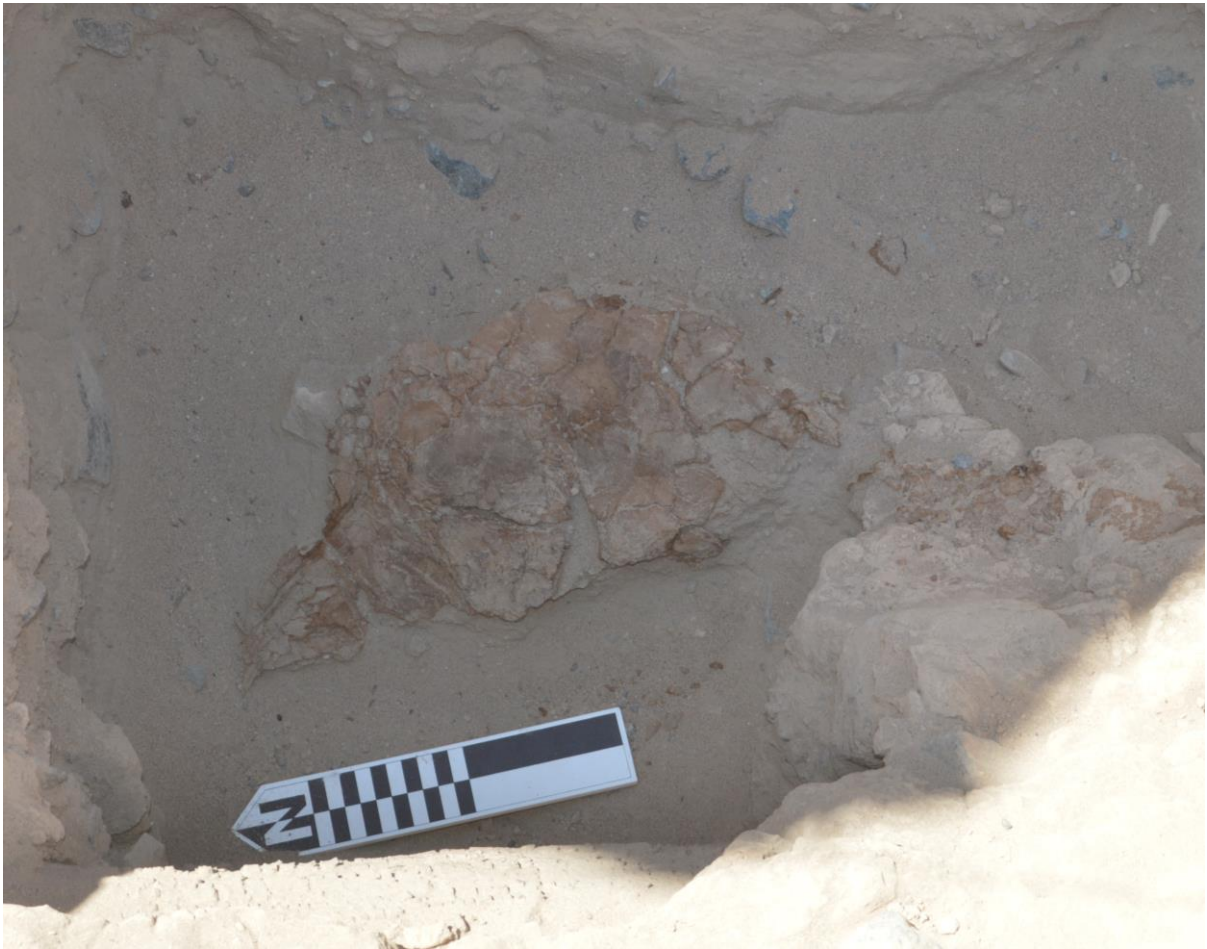


Figure 5.10. Feature 2, Unit 1, Possible In Situ Deposit of Botanicals (Coca?) Just East of the Tomb Roof.

and the tomb roof was exposed we discovered that the *huarango* post was an upturned beam pried up from the roof by looters (Figure 5.11).

Area 5 was a 2.2 x 1.4 meter unit located in the southeast of subunit C. Area 6 was a 2 x 1 meter unit in subunit D c. 1.5 meters due east of Area 5. The purpose of excavation in these two Areas was to expose the southern wall of *Recinto A1* for architectural analysis. In addition, Area 6 and 7 (a 1 x 1.5 meter unit) targeted a location in subunit D where there appeared to be an internal wall. Excavations in Areas 6 and 7 uncovered the deteriorated remains of a partial interior adobe wall but did not document how this wall related to the external walls of *Recinto A1*.

Area 8, a 2.5 x 2 meter unit in the center of subunit B, targeted what appeared from the surface to be human remains. It was thought initially that these remains, a human mandible and some hair, might be what was left from a looted burial. Excavation in this Area uncovered a cache of six ‘trophy head’ individuals (Individuals 2 through 7) (Figure 5.12). This cache was designated Unit 1, Feature 5. These individuals were represented by five crania, two with an associated mandible, and one individual was represented by only a mandible (see Chapter 10).

Area 9 was a 1 x 1 meter unit in the northwest corner of subunit A that targeted human remains in that location. Remains were represented on the surface by a tuft of human hair on a partially exposed cranium. Excavation in this Area exposed another ‘trophy head’ individual (Individual 1) (Figure 5.13). This individual was designated Feature 4.

It is not clear whether Features 4 and 5 were recovered from their original locations. Feature 4 was found tucked in the northwest corner of *Recinto A1*. It was at least somewhat disturbed because it was partially visible from the surface. However, there is reason to



Figure 5.11. Feature 1, Unit 1, Upturned *Huarango* Beam Pried from Tomb Roof.



Figure 5.12. Feature 5, Unit 1, Cache of Six 'Trophy Head' Individuals 2 Through 7.



Figure 5.13. Feature 4, Unit 1, 'Trophy Head' Individual 1.

suspect that it did not move far from its original location. This ‘trophy head’ individual still had delicate soft tissue, a headdress, and fragile cordage tying the mandible to the cranium. If it was moved from another location it was probably not moved far. Handling by looters was likely minimal; and it is probable that the feature was covered again a short time after it was exposed. It is probable that the ‘trophy head’ individuals in Feature 5 were not in their original locations. These individuals were not as well preserved as Feature 4. Aside from a small sample of scalp associated with Individual 4 at Feature 5, these ‘trophy head’ individuals were not associated with soft tissue. They were also found close to the surface (c. 13 cm below the surface). Perhaps looters tossed the heads into a pile to get them out of the way when going after artifacts of higher value on the black market.

Area 10 4.5 x 2 meter unit aimed at clearing surface rubble around the northern wall base to facilitate architectural analysis. There was a significant amount of adobe rubble in this location. Excavations at Area 10 also probed into Disturbed Layer 1 to determine if there was an underlying internal wall or structure. No architecture was exposed during excavation. It is probable that the adobe rubble observed in this Area came from the northern wall of *Recinto A1*.

When excavations at *Recinto A1* re-commenced at the end of the field season Areas 1, 2, and 4 in subunit D were targeted for excavation. It became apparent that Area 2 (the tomb roof) and Area 4 (the *huarango* beam) were part of the same structure. Area 1 appeared to be the part of the *barbacoa* style tomb roof with the most severe damage. Excavations clearing below the level of the roof treated these three Areas as one. Features 6 and 7 were canine remains found just under the level of the tomb roof in subunit D. Modern debris including a cigarette butt and fragments of newspaper were found in the deepest areas of

Disturbed Layer 2 that were reached during the 2014 field season (maximum depth reached 353 cm below datum (cmbd)). Therefore, it seems probable that Features 6 and 7 were modern dog burials (carcass dump). The homestead at the foot of the site kept a pack of dogs, and feral and pet dogs have been ubiquitous in the Nasca Region for decades. Feature 8, the 8th and final ‘trophy head’ individual (Individual 8 in Chapter 10) was recovered from below the tomb roof at a depth of 353 cmbd (Figure 5.14).

Most artifacts from this unit came from Disturbed Layer 1. It is likely that artifacts ended up in this layer because of repeated looting. Looters gutted primary contexts taking items of value and leaving everything else on the surface. Windblown sand covered the surface, burying these artifacts again. Artifacts recovered from this unit included diagnostic and non-diagnostic ceramics, some flaked stone and groundstone tools, marine shell, textiles and cordage, beads, and human figurine fragments (Table 5.2).

Stylistically identifiable diagnostic sherds were mostly Late Nasca and Loro, but a few Early Nasca sherds were also recovered (see Chapter 6). Looting at this unit is problematic for establishing its chronological context based solely on ceramic data. It is not clear to what extent ceramic sherds recovered from this location were dislocated or redeposited. They may have been broken and discarded from the looting of Structure 21, other cells of the adobe compound, or elsewhere. An AMS date for this unit was taken from charcoal imbedded in the in situ architecture and is therefore reasonably secure despite the looting (below).

Fineware ceramic sherds were more than three times as common in the assemblage from this unit than they were from the habitation unit assemblages on average. Utilitarian ceramic sherds were present but slightly less common than average (discussed further

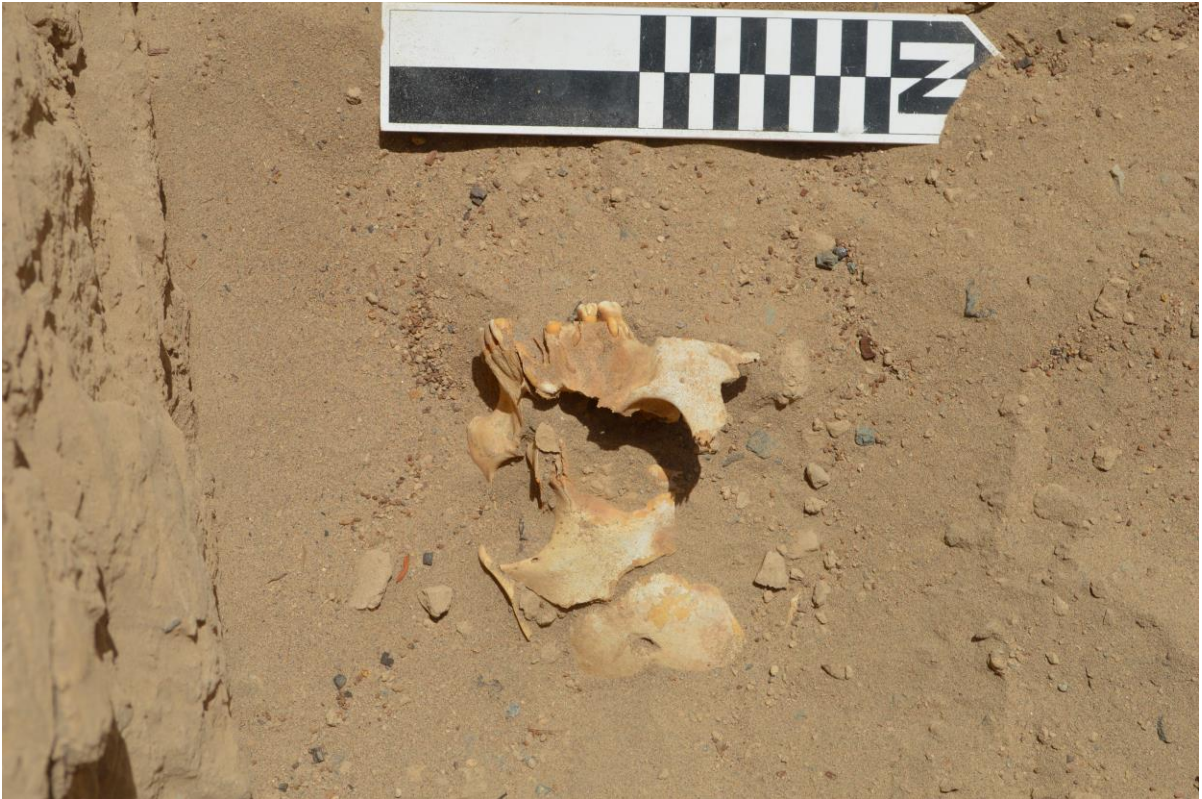


Figure 5.14. Feature 8, Unit 1, 'Trophy Head' Individual 8.

Table 5.2. Artifact Counts and Weights (Grams) for Sector 1 Units.

	Textile		Cordage		Spindle		Diagnostic Ceramics		Non-Diagnostic		Figurines	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
Unit 1	31	1.31	38	1.31	1	13260.73	250	4512.04	213	4	119.14	
Unit 2	0	0	0	0	0	761.3	59	1574	228	1	21.94	
Unit 3	0	0	0	0	0	506.68	67	1828	241	2	2.24	
Unit 4	4	0	7	0	0	253.84	45	1310.6	158	0	0	
Unit 5	0	0	0	0	0	966.94	135	3663	694	5	77.46	
Unit 8	4	0	1	0	0	915.02	108	2643.3	452	3	35.97	
Unit 9	1	0	3	0	0	378.42	70	1166.4	254	1	43.89	
Unit 10	0	0	0	0	0	265.29	16	771.13	64	0	0	
Total	40	1.31	49	1.31	1	17308.22	750	17468.47	2304	16	300.64	

Table 5.2. Artifact Counts and Weights (Grams) for Sector 1 Units (Continued).

	Local Flaked Stone		Obsidian		Mano		Polishing Stone		Sling stone	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
Unit 1	5	69.8	1	2.7	3	3780	8	140.69	3	275.3
Unit 2	143	450.67	2	7.38	3	1976.1	1	11.26	2	147.82
Unit 3	22	89.37	1	0.18	3	2967.9	0	0	0	0
Unit 4	23	43.39	3	1.97	2	488.46	0	0	4	264.6
Unit 5	113	305.27	3	0.86	17	6087.3	3	15.62	2	267.87
Unit 8	60	123.27	3	2.03	3	1758	3	21.31	6	498.84
Unit 9	50	104.64	0	0	0	0	0	0	2	205.69
Unit 10	22	59.43	0	0	0	0	1	3.65	2	191.4
Total	438	1245.84	13	15.12	31	17057.76	16	192.53	21	1851.52

Table 5.2. Artifact Counts and Weights (Grams) for Sector 1 Units (Continued).

	Ground Stone		Shell		Faunal		Shell Bead		Spondylus Bead	
	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight
Unit 1	2	71.17	89	90.76	1296	735.93	2	2.62	2	0.38
Unit 2	0	0	130	119.9	258	112.85	0	0	0	0
Unit 3	1	900	312	162.29	150	76.42	0	0	0	0
Unit 4	2	274.41	149	106.8	271	217.33	0	0	0	0
Unit 5	2	245.05	593	257.21	292	162.91	0	0	0	0
Unit 8	0	0	367	206.11	301	165.25	2	7.05	1	1.77
Unit 9	2	568	326	119.07	185	161.24	0	0	0	0
Unit 10	1	90.27	92	74.53	68	39.34	4	3.19	0	0
Total	10	2148.9	2058	1136.67	2821	1671.27	8	12.86	3	2.15

Table 5.2. Artifact Counts and Weights (Grams) for Sector 1 Units (Continued).

	Bone Tools		Chalk		charcoal		Total	
	Count	Weight	Weight	Weight	Weight	Count	Weight	
Unit 1	1	4.14	24.83	158.21	1949	23249.75		
Unit 2	2	3.71	4.02	398.08	829	5589.03		
Unit 3	0	0	0.05	431.14	799	6964.27		
Unit 4	0	0	0.69	481.01	668	3443.1		
Unit 5	0	0	0	709.36	1859	12758.85		
Unit 8	0	0	1.14	466.98	1314	6846.04		
Unit 9	0	0	2.58	246.52	894	2996.45		
Unit 10	2	0.64	2.81	117.39	272	1619.07		
Total	5	8.49	36.12	3008.69	8584	63466.56		

below). At habitation context units the ratio of fineware to utilitarian wares was between 7:3 and 8:2. The ratio at Unit 1 was greater than 9 fineware sherds to each utilitarian sherd (see below and Chapter 6). This ratio is consistent with mortuary contexts at other Nasca sites and may give some inkling as to the integrity of this disturbed context (Carmichael 1988:211).

A handful of expedient flaked stone tools ($n = 7$) made from locally available materials were recovered from Unit 1. In addition, two obsidian projectile points were recovered (Chapter 8). Obsidian flakes and tools from Zorropata originated at an obsidian source in the highlands at least 100 km away, likely Quispisisa (Chapter 8). Some groundstone made from local volcanic rock was also recovered from this unit.

Most of the textile and cordage assemblage was recovered from Unit 1. Please see Chapter 7 for a thorough discussion about this artifact class. Fragments of at least three human figurines were recovered (Chapter 8). Four beads were recovered, two of which were made from *Spondylus* (Chapter 8).

Sector 1 Domestic Contexts

Unit 2. Unit 2 consisted of four consecutive 2 x 2 meter subunits established at Habitation Terrace 59, c. 20 m south of *Recinto* A1 (Figure 5.15). Subunit A was the western most subunit and D was the eastern most with B and C in between. Subunits were just south of a retaining wall, Structure 31. Excavations at this unit began in Mid-August and were perpetrated by Gonzalez, McGuire, Kim, and me.

Strata at Unit 2 were less distinct than at the other habitation context units (Figure 5.16). Stratum 4, windblown sand, was c. 20 cm thick but it was interspersed with a scatter of

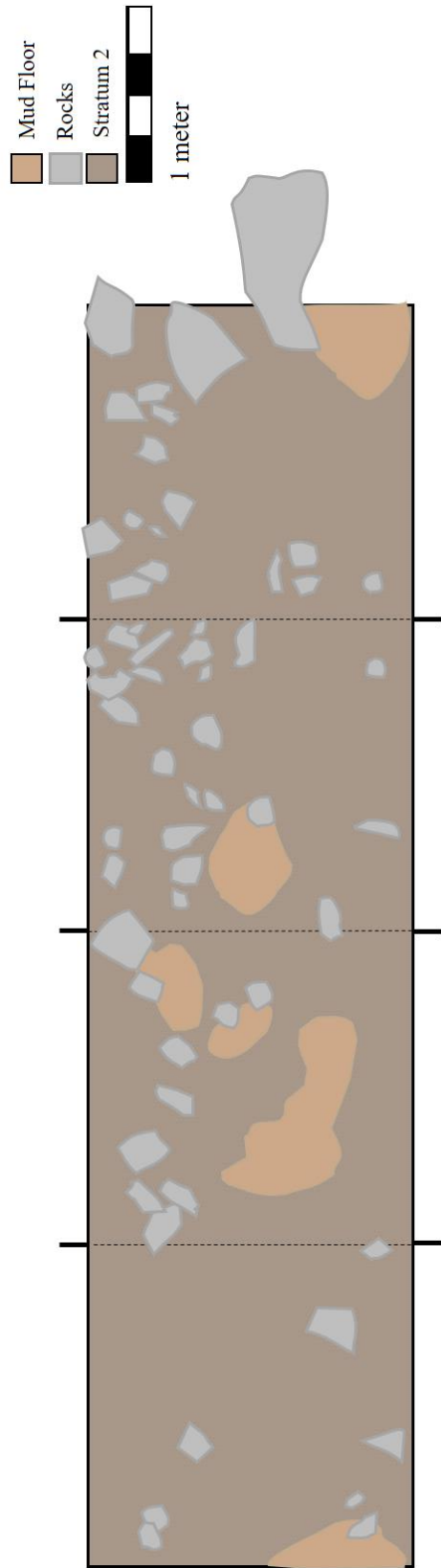
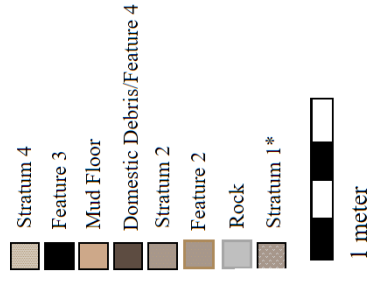


Figure 5.15. Plan View of Unit 2.



Sub-Units A, B, C, and D, North Wall Profile

* Hash marks indicate where stratum was exposed but not excavated.

Figure 5.16. Unit 2 Stratigraphic Profile.

stones in subunits C and D — wall fall from Structure 31. Stratum 3 was either absent or indistinct from Stratum 4. At a depth c. 20 cm in subunits C and D fragments of a mud floor were detected. We followed the floor into subunit B and a small section of deteriorated floor was found in the southwest corner of subunit A. The floor was highly fragmentary and appeared to have been burned in some areas. Some sections of the floor exhibited orange discolorations from heat exposure. Ash deposits were also prevalent on and just below the level of the sections of floor in subunits A and B. Stratum 4 in subunits C and D contained a high amount of charcoal and ash relative to other habitation units. The stratum below the floor, Stratum 2, had an abnormally high concentration of artifacts compared to Stratum 2 at other habitation terraces with more intact floors (Tables 5.2 and 3).

Feature 1 consisted of charcoal and plant remains amid wall fall from Structure 31 in Stratum 4 in subunits C and D. Feature 2 may be a pit feature dug into Stratum 2 and the sterile Stratum 1 surface, observed in subunit A. Due to the poor preservation of the living surface this feature is most clear in the north profile of subunit A. The bottom of the pit was lined with rocks. No artifacts were recovered from this feature. Feature 3 was a series of at least 3 overlapping ash lenses in the northern halves of subunits A and B at the level of the fragments of floor in Unit 2. Feature 4 was a deposit of plant remains and artifacts directly beneath intact sections of mud floor in subunit B. As mentioned above, at habitation units where the floor was relatively intact a concentration of plant remains, charcoal, artifacts, and other apparent habitation detritus was present beneath the floor and may have been part of its construction. Feature 4 appears to be what is left of this debris deposit at Unit 2.

Evidence suggests that this terrace may have been abandoned earlier than most of the other, excavated, habitation contexts at Zorropata. Obsidian projectile points and diagnostic

Table 5.3. Percentages of Unit Artifact Assemblages by Count.

	Ceramics			Stone Tools		
	Fineware	Utilitarian	Non-Diagnostic	Local Flaked Stone	Obsidian	Ground Stone
Unit 1	19.4%	1.3%	41.9%	1.1%	0.4%	3.2%
Unit 2	7.0%	4.3%	39.1%	25.4%	0.4%	1.0%
Unit 3	7.5%	1.6%	36.9%	3.5%	0.2%	0.7%
Unit 4	6.2%	1.6%	42.2%	6.2%	0.8%	2.1%
Unit 5	4.8%	2.1%	44.7%	7.6%	0.2%	1.5%
Unit 8	7.3%	1.7%	45.7%	5.4%	0.3%	1.2%
Unit 9	5.8%	1.9%	36.5%	7.3%	0.0%	0.6%
Unit 10	6.6%	0.0%	32.5%	11.2%	0.0%	2.0%
Mean	8.1%	1.8%	39.9%	8.5%	0.3%	1.5%
Max	19.4%	4.3%	45.7%	25.4%	0.8%	3.2%
Min	4.8%	0.0%	32.5%	1.1%	0.0%	0.6%

Table 5.3. Percentages of Unit Artifact Assemblages by Count (Continued).

	Textile	Cordage	Shell	Figurines	Beads	Total
Unit 1	6.7%	8.2%	16.4%	0.6%	0.8%	100%
Unit 2	0.0%	0.0%	22.8%	0.2%	0.0%	100%
Unit 3	0.0%	0.0%	49.4%	0.3%	0.0%	100%
Unit 4	1.1%	1.6%	38.2%	0.0%	0.0%	100%
Unit 5	0.0%	0.0%	38.6%	0.3%	0.0%	100%
Unit 8	0.4%	0.1%	37.3%	0.3%	0.2%	100%
Unit 9	0.1%	0.4%	47.1%	0.1%	0.0%	100%
Unit 10	0.0%	0.0%	46.7%	0.0%	1.0%	100%
Mean	1.0%	1.3%	37.1%	0.2%	0.3%	
Max	6.7%	8.2%	49.4%	0.6%	1.0%	
Min	0.0%	0.0%	16.4%	0.0%	0.0%	

ceramics in the Late Nasca style, as well as a Late Nasca calibrated AMS date from a charcoal sample (discussed below; Figure 5.17; Table 5.4) support that Habitation Terrace 59 was occupied during the Late Nasca period. No evidence of a Middle Horizon occupation of this terrace was recovered during the 2014 field season.

Rock fall from Structure 31 and bioturbation due to ancient and/or modern foot traffic may have contributed to mixing of strata resulting in less well-defined stratigraphy. Unit 2 is just south of the adobe complex along a convenient path from the foot of the site to the compound. Ash and discoloration of the mud floor surface was extensive at this unit. It is hypothesized here that the living surface at Unit 2, represented by the floor, may have been ritually killed by burning when the terrace was abandoned during the Late Nasca period.

Artifacts from this unit came from above the level of intact sections of floor. Artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone tools, marine shell, and one human figurine fragment (Table 5.2). Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Stylistically identifiable diagnostic sherds were Late Nasca. Expedient flaked stone tools were made from locally available materials. Two obsidian projectile points were also recovered (Chapter 8). Flaked stone was more common at Unit 2 than at other units. Flaked stone comprised 9.5 % of habitation unit artifact assemblages on average by count. At Unit 2 flaked stone comprised 25.4% of the assemblage (Table 5.3). Perhaps lithic production took place at this unit. Groundstone made from local volcanic rock included polishing stones, sling stones, manos and other fragmentary groundstone tools.



Figure 5.17. Late Nasca Obsidian Projectile Point on the Stratum 2 Surface at Unit 2.

Table 5.4. AMS Dates and Ceramic Styles Associated with Sector 1 Units.

Unit	Ceramic Style	Calibrated AMS dates
1	Primarily Late Nasca and Loro, some Transitional and Early Nasca	AD 416-532
2	Late Nasca	AD 592-651
3	Late Nasca and Loro	-
4	Transitional and Loro	AD 420-536
5	Transitional and Loro	AD 596-657
8	Late Nasca and Loro	AD 589-650
9	Late Nasca and Loro	-
10	Loro and some Late Nasca	AD 646-765

Unit 3. Excavations at Unit 3 began in late August after Unit 2 excavations concluded. Unit 3 was located on the eastern end of Habitation Terrace 117, c. 40 m south of the adobe compound. This unit consisted of four 2 x 2 meter subunits (A through D) and one 2 x 3 meter subunit (E) (Figure 5.18). Subunits A through D were consecutive and oriented west to east. Subunit E extends from the south edge of subunit D and half of subunit C. Fragments of a mud floor living surface were exposed in the southeast corner of subunit D approximately 28 cm below the surface. Subunit E was established to try to expose more of this living surface just south of where it was first identified. No stone or adobe architecture was observed above the surface or during excavation of this unit.

At this stage in excavations at Zorropata it was necessary to break into two teams to stay on schedule. Gonzalez and McGuire started working at Unit 4 (below). Kim and I excavated Unit 3.

Strata at Unit 3 follow general pattern described above. Stratum 4, windblown sand, covered the unit to a depth of c. 2 cm. Stratum 3 was thicker in subunits C, D, and E than it was in subunits A and B (Figure 5.19). A small section of mud floor was uncovered in the southeast corner of subunit D at a depth of 28 cm below the surface, directly below Stratum 3. Excavations followed the floor surface into subunit E. Given the present evidence it seems like Unit 3 is situated on the western edge of a living surface. Deposits indicative of ancient human activity were the most substantial in subunits C, D, and E, and taper out in subunits A and B. Stratum 3 in subunits C, D, and E contained charcoal, shell, and artifacts. There is a 1 to 2 cm thick layer of domestic debris (described above) immediately beneath the intact sections of floor. Stratum 1, compact fine sand with high gravel content and sterile of material culture, was exposed in subunits A, B, and C beneath Stratum 3 at a depth of c. 15

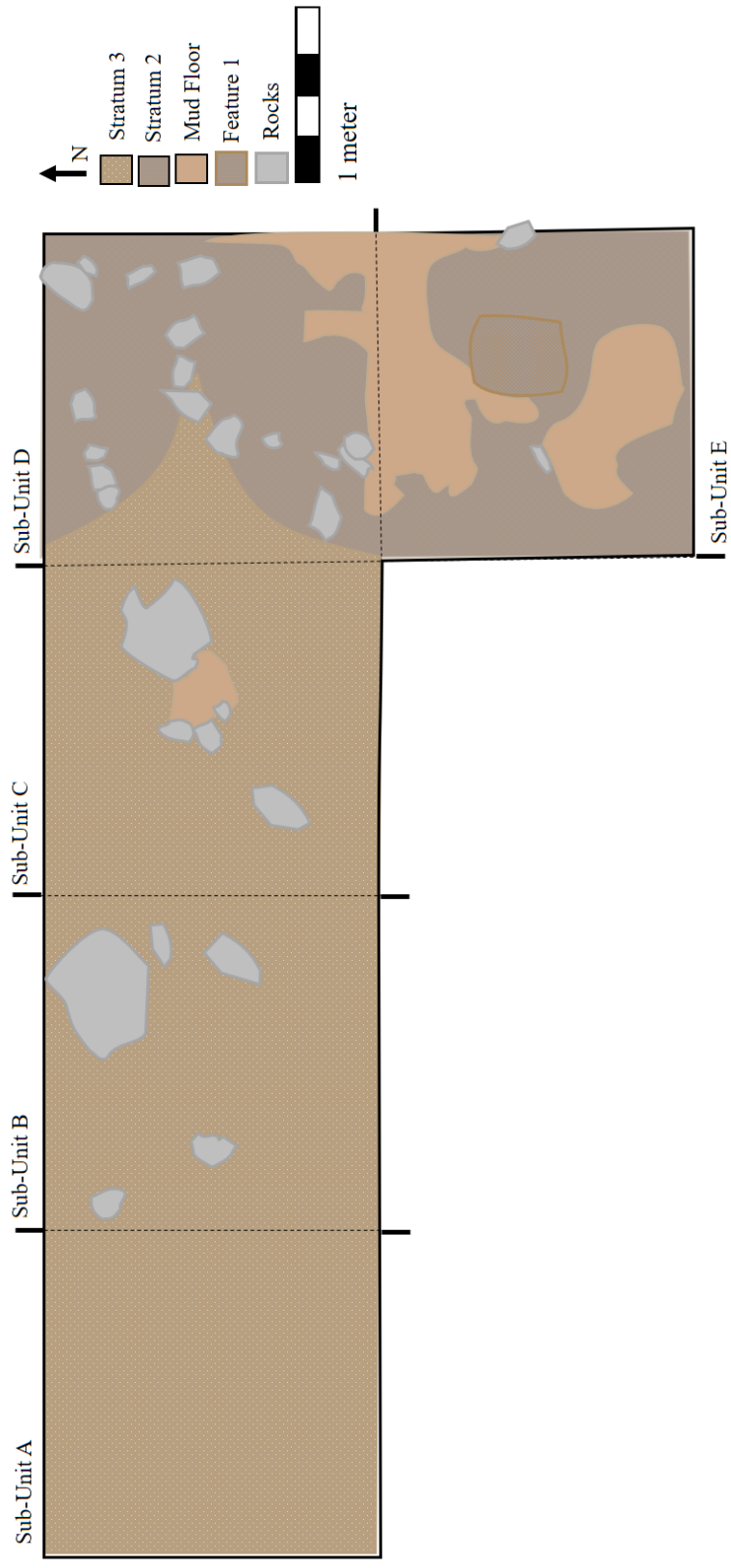
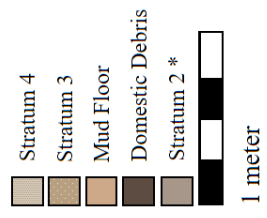


Figure 5.18. Plan View of Unit 3.



* Hash marks indicate where stratum was exposed but not excavated.

Figure 5.19. Unit 3 Stratigraphic Profile.

cm. Stratum 2 was identified in subunit D under the floor and domestic debris layer at a depth of c. 28 cm. In subunit E, Stratum 2 was 20 cm thick and Stratum 1 was observed below it. Strata 1 and 2 were devoid of artifacts at Unit 3.

Excavations in subunit E identified a possible pit feature (Unit 3, Feature 1; Figure 5.20). This feature did not have clearly defined edges. It appeared as an ovoid break in the floor surface near the center of subunit E c. 50 cm in diameter. The floor around the pit was damaged. From the level of the floor the pit is a total of 43 cm deep. The bottom of the pit was dug c. 20 cm into Stratum 1. A 3-liter soil sample was taken of the fill from the pit, which appeared consistent with Stratum 3 in color and texture. One diagnostic ceramic, one non-diagnostic ceramic, and two fragments of shell were the only artifacts recovered from the pit. Vaughn identified several stone lined pits with clay lined bottoms at Marcaya that were potentially used for storage (Vaughn 2000:214). At least one unlined pit was identified at Marcaya. It was described as 50 cm wide, roughly the same size as a storage pit, and containing few artifacts (Vaughn 2000:229). No back-dirt pile was observed for the pit at Marcaya. Thus, Vaughn concluded that it was probably not a looter's pit. The pit feature at Unit 3 was likewise not lined and did not have a back-dirt pile associated with it.

Artifacts from this unit came from Strata 3 and 4 in all subunits but were more concentrated in subunits C, D, and E. Artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone tools, marine shell, and two human figurine fragments (Table 5.2). Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Stylistically identifiable diagnostic sherds were Late Nasca and Loro. Expedient flaked stone tools were made from



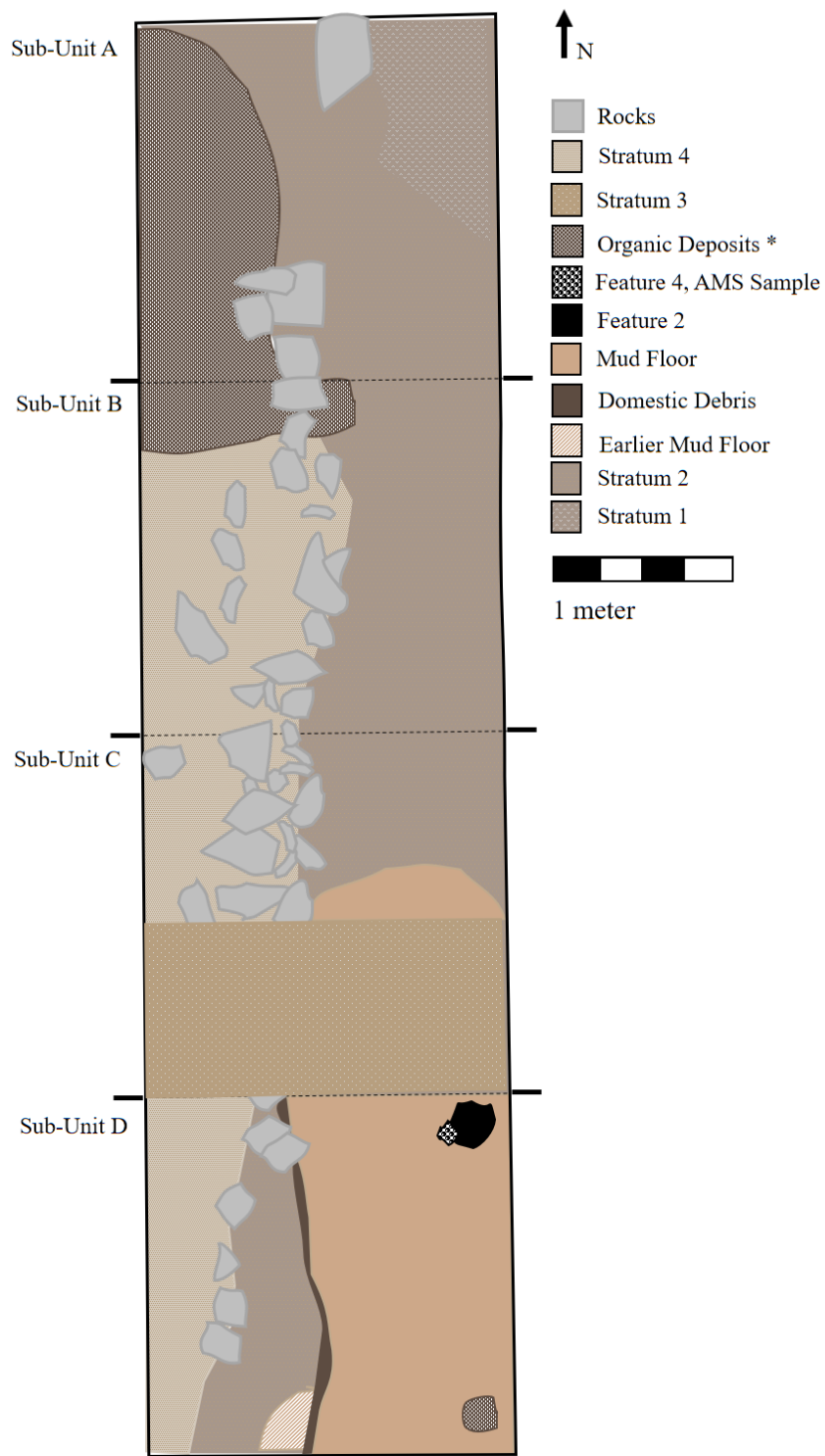
Figure 5.20. Feature 1, Unit 3, Possible Pit Feature, After Excavation.

locally available materials. One obsidian flake was also recovered (Chapter 8). Groundstone made from local volcanic rock included manos and other fragmentary groundstone tools.

Unit 4. Unit 4 was located along the western edge of Sector 1. It is oriented south to north on Terrace 98 along a section of the perimeter wall (Structure 34) described in Chapter 4. This unit consisted on four consecutive 2 x 2 meter subunits abutting the interior of the western most section of the fieldstone perimeter wall at Zorropata (Figure 5.21). Subunit A was the northernmost subunit and subunit D was the southernmost. Excavation at Unit 4 began in late August simultaneous with the excavation at Unit 3. Gonzalez and McGuire initiated work at this unit, and Kim and I joined after excavation at subunits A through D at Unit 3 were complete.

In general, strata at this unit follow the pattern described above (Figure 5.22). Stratum 4 at this unit contained c. 20% gravel — on the high side for this stratigraphic level. The adjoining section of Structure 34 was constructed from two parallel courses of fieldstone with gravel fill between them. The relatively high gravel content of Stratum 4 at Unit 4 may be due to damage to the wall from erosion releasing some of the fill onto the surface.

Feature 1 also appears to have come from the wall fill. Feature 1 consists of decayed plant material⁵, charcoal, and other organic flotsam. It contained faunal bone including burnt bone from an artiodactyl, perhaps a camelid, as well as ceramics, flaked stone tools, and a hammer stone. Feature 1 was very similar in content and consistency to the layer of domestic debris observed beneath mud floors at several of the habitation context units. It was mixed in with the gravel fill in the wall and visible from the surface in all four subunits but most concentrated in subunit A. A 3-liter sample was taken for Unit 4, Feature 1 but has not yet



* Sub-Unit A, Feature 1; Sub-Unit D, Feature 3

Figure 5.21. Plan View of Unit 4.

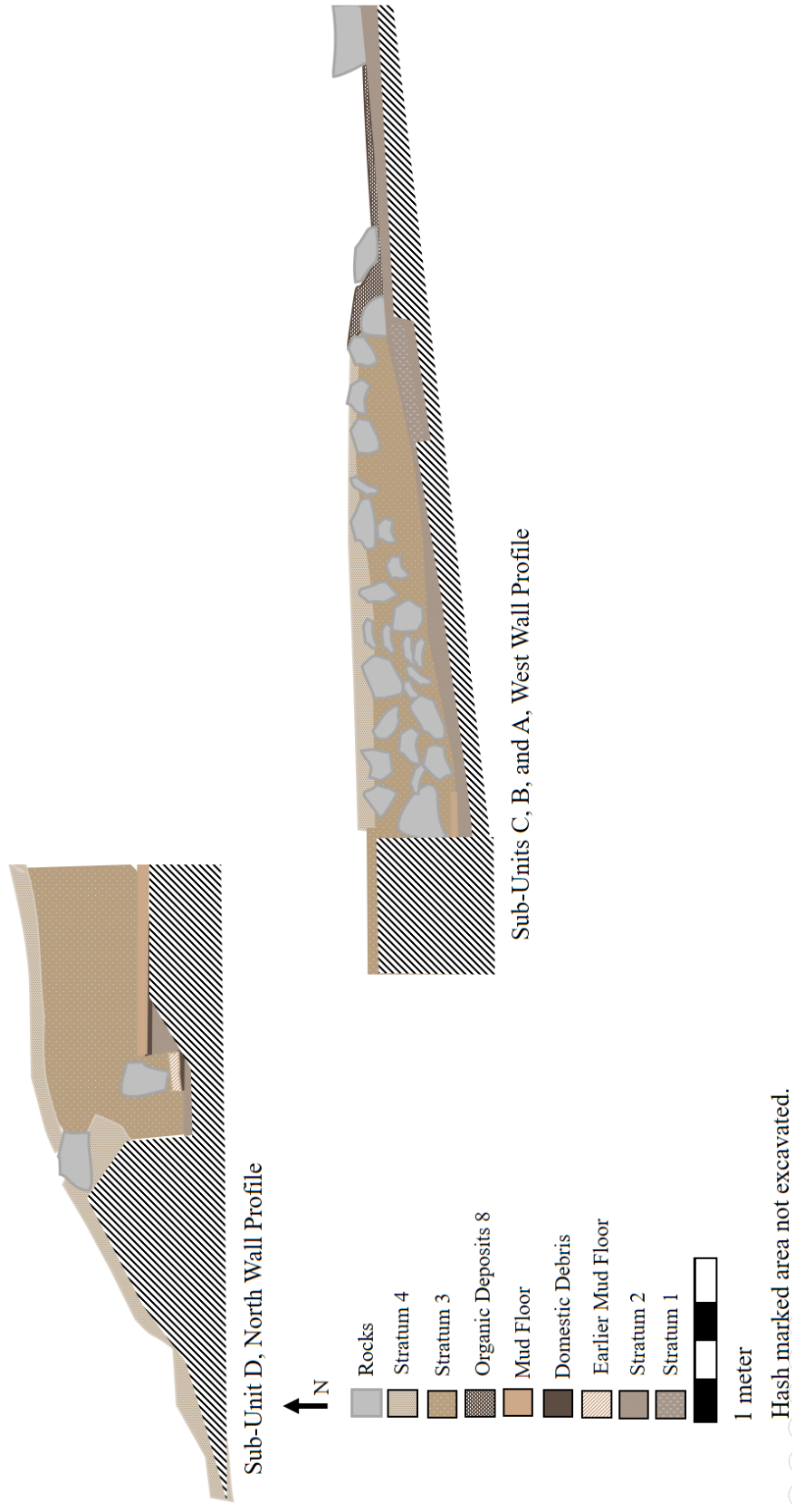


Figure 5.22. Unit 4 Stratigraphic Profile.

been analyzed (see Chapter 9). This feature was voluminous. An additional 22 liters of material were extracted and screened through a fine mesh (1.28 mm) to reduce the volume of sandy matrix while collecting most of the ecofacts and artifacts it contained.

Stratum 3 was identified c. 5 cm below the Stratum 4 surface in all subunits. A thin (< 1 cm) crust of dried mud on the Stratum 3 surface in the southern half of subunit C was formed after this surface was exposed to water in the past, perhaps during flash flooding or runoff from the nearby *quebrada*. As mentioned in Chapter 4, there is surface evidence that water erosion may have damaged or covered part of the western section of the perimeter wall. This portion of subunit C was left pedestalled as excavation continued into subunits D and the rest of C. The pedestalled section also provided an additional north profile for subunit D and a south profile for subunit C.

A mud floor was observed in subunit D and the southernmost 15 cm of subunit C below Stratum 3 at a depth of c. 40 cm below the surface. Three features were identified on this surface: 1) Feature 2, an ash deposit with burnt faunal bone in the northeast corner of subunit D; 2) Feature 3, a small deposit of plant material in the southeast corner of subunit D; and 3) Feature 4, a charcoal sample used to produce the AMS ^{14}C date for this unit. Features 2 and 3 were collected for later analysis. The analysis of Feature 4 (and the charcoal samples used for AMS ^{14}C dating of other units) is discussed below. Immediately beneath the floor there was a layer of domestic debris, and 4 cm below the first floor there was the edge of another floor that may be an earlier living surface. A layer of domestic debris was also observed beneath the second, deeper floor. Neither floor surface continued into subunits A, B, or C.

Stratum 2 was reached at a depth of c. 41 cm below the surface in the northern half of subunit C. Stratum 3 became progressively thinner and shallower from south to north. Stratum 1 was observed in the northeast corner of subunit A, below a very thin Stratum 3, at a depth of c. 9 cm. Stratum 2 was also reached at c. 50 cm below the surface in the west of subunit D between the edge of the floor features and the perimeter wall. Two fragments of shell from the surface of Stratum 2 could be cultural in origin but otherwise, Strata 1 and 2 were sterile of cultural deposits in all subunits of Unit 4.

Artifacts from this unit came from Strata 3 and 4 in all subunits. Artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone tools, marine shell, and textiles and cordage (Table 5.2). Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Stylistically identifiable diagnostic sherds were Transitional and Loro. Expedient flaked stone tools were made from locally available materials. Three obsidian flakes were also recovered (Chapter 8). Groundstone made from local volcanic rock included manos, sling stones, and other fragmentary groundstone tools. Four textiles and 6 fragments of cordage were recovered from this unit. One was a Type I textile made from Type II cotton cordage. Two were Type I textiles made from Type III cotton cordage. One was a Type I textile made from Type III dyed gray camelid fiber cordage. Cordage fragments included three Type III cords, two spun from cotton and one from gray dyed camelid fiber. One Type V cord was spun from cotton. A Type VIII and a Type X cord were each spun from brown dyed camelid fibers.

Unit 5. Unit 5 consists of 6 2 x 2 meter subunits (A through F) on Habitation Terrace 105. Subunits A through D are consecutive and oriented from north to south. Subunit A is the

northern most subunit. Subunit E extends from the western edge of subunit D, and Subunit F extends from the southern edge of Subunit E (Figure 5.23). Excavation of Unit 5 commenced in early September when the crew was down to just three individuals (Gonzalez, Kim, and me). Excavations began with subunits A through D. A small fragment of mud floor was exposed in the southwest corner of subunit D. Subunits E and F were established to expose more of the living surface. No stone or adobe architecture was observed above the surface or during excavation of this unit.

Terrace 105 is in the southwest quarter of Sector 1. It is at a similar elevation to Habitation Terrace 117, where Unit 3 is located. Unit 5 is located on the western extent of Habitation Terrace 105 away from the outside edge of the Terrace.

Strata 4 and 3 were present in all six subunits (Figure 5.24). Stratum 4 was c. 4 – 10 cm thick. Stratum 3 was reached at a depth of 6 cm below the surface in subunits D, E, F. Below Stratum 3 in these subunits a mud floor living surface was observed. The floor was reached at a depth of 11 cm below the surface (142 cm below the datum). It was best preserved in subunits E and F and the southwest corner of subunit D. A small fragment of mud floor was also observed in subunit C at a depth of 141 cm below the datum. This fragment may have been the same surface as the floor observed in D, E, and F but continuity between the two sections was not observed. In general, the two sections of floor were at the same elevation below the datum. The layer of plant material and domestic debris observed under floors at other habitation context units was not observed here.

Stratum 2 was observed in subunit D below the level of the floor. This stratum contained very few artifacts including a leg from a human figurine (see Chapter 8). Stratum 1 was encountered at 12 cm below the Stratum 2 surface in subunit D. Subunit A was

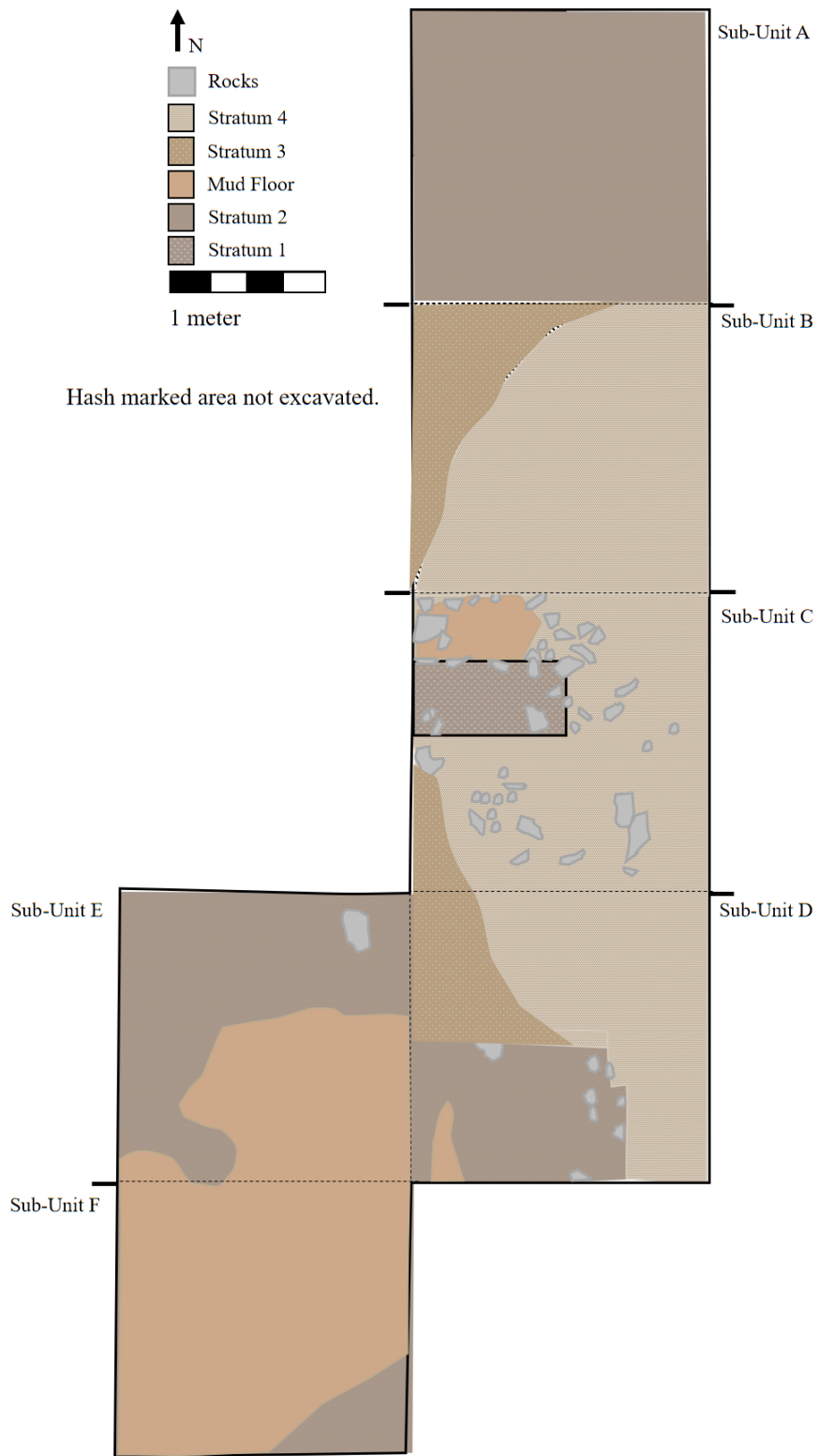


Figure 5.23. Plan View of Unit 5.

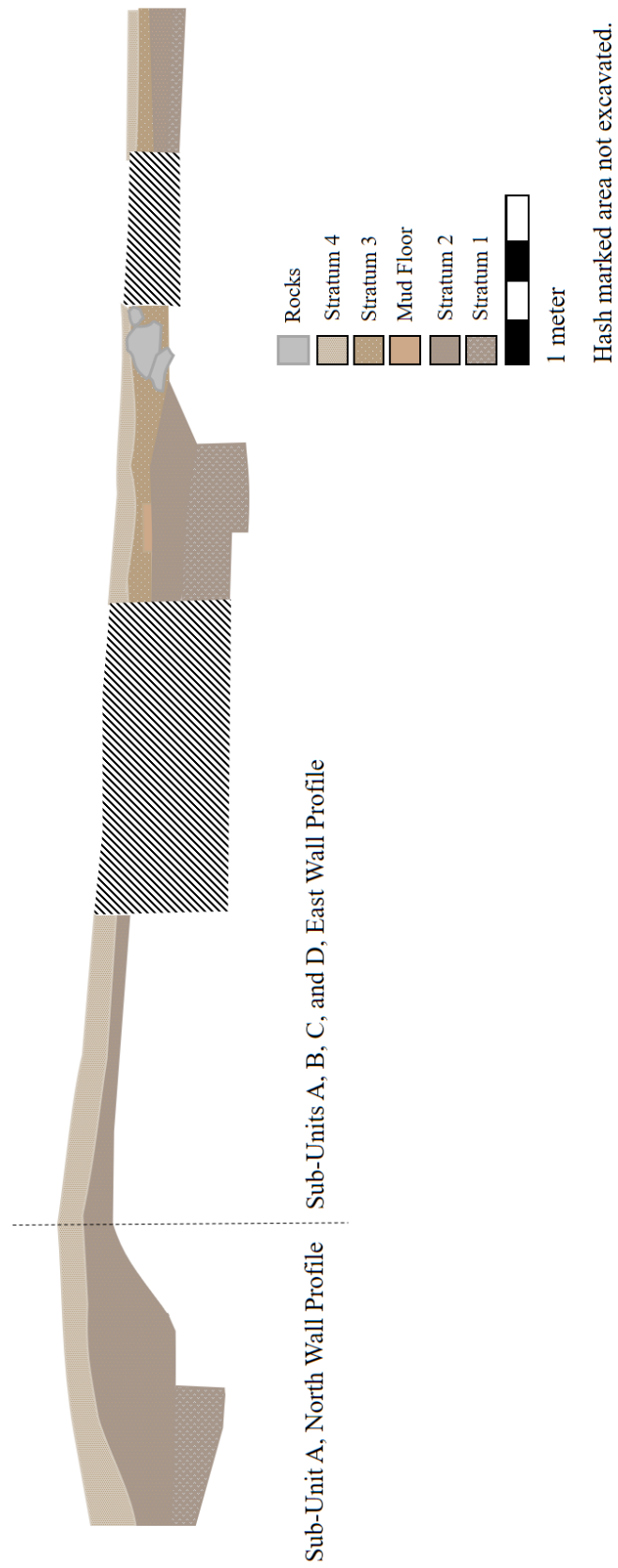


Figure 5.24. Unit 5 Stratigraphic Profile.

excavated to c. 1 m in depth below the surface. Stratum 2 was exposed in this subunit below Stratum 4. Stratum 1 was reached at a depth of 70 cm below the surface. A 1 x 1 meter test unit was established in the northwest corner of subunit A. Excavations proceeded c. 30 cm into the Stratum 1 surface in the test unit but no artifacts or cultural deposits were encountered. The only feature at this unit (Feature 1) was a small pile of domestic debris on the surface of the section of mud floor in subunit C.

Artifacts from this unit came from Strata 3 and 4, above the mud floor living surface. Artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone tools, marine shell, and figurines (Table 5.2). Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Stylistically identifiable diagnostic sherds were Transitional and Loro. Expedient flaked stone tools were made from locally available materials. Three obsidian flakes were also recovered (Chapter 8). Groundstone made from local volcanic rock included manos, polishing stones, sling stones, and other fragmentary groundstone tools. Five figurine fragments were recovered for this unit.

Unit 8. Unit 8 consists of four consecutive 2 x 2 meter subunits oriented west to east on the western edge of Habitation Terrace 103 (Figure 5.25). Subunit A was the westernmost subunit and D was the easternmost. Unit 8 is located 55 m east of Unit 4 and 37 m north of Unit 5. Habitation Terrace 103 is located near the center of Sector 1 c. 35 m southwest of the *Recinto* A1. Gonzalez, Kim, and I began excavation at this unit during the second week of September. Kaplan joined the project later in September and helped with the final maps and

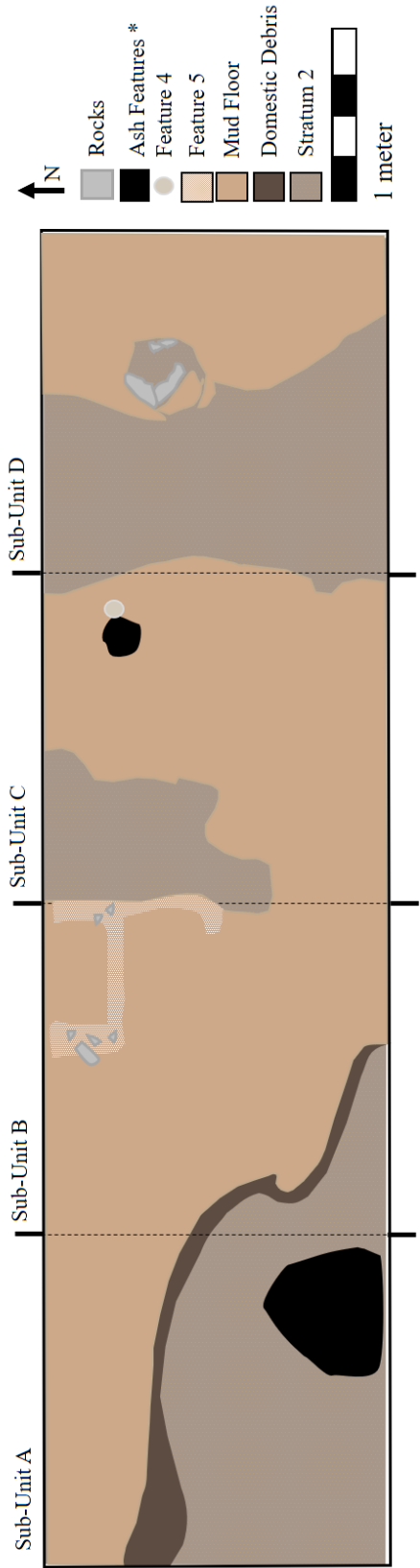


Figure 5.25. Plan View of Unit 8.

photos for this unit. No stone or adobe architecture was observed above the surface or during excavation of this unit.

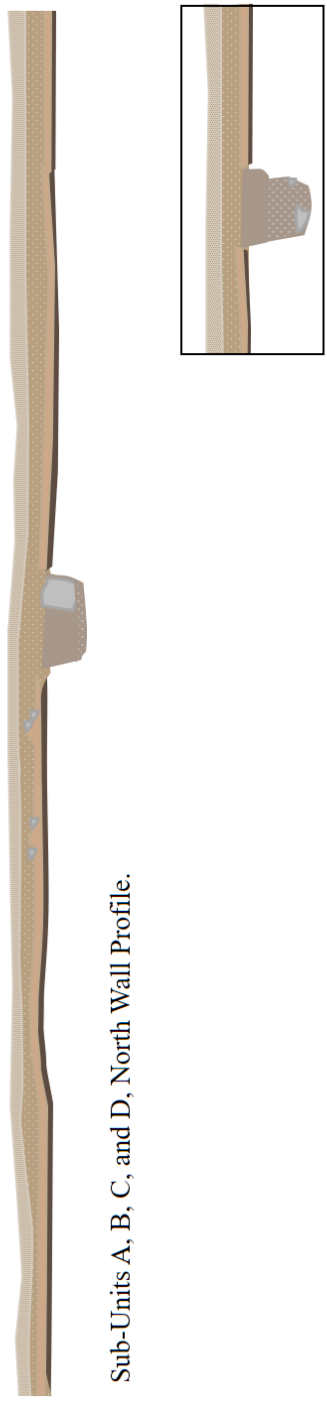
In general, the stratigraphic sequence at this unit follows the general model described above (Figure 5.26). Strata are deeper in subunit D than they are in subunit A. Stratum 4 was c. 4 cm thick in subunit A, became progressively thicker from west to east, and was c. 10 cm thick in subunit D. Stratum 3, encountered directly below Stratum 4, was c. 10 cm thick across all four subunits. A mud floor living surface was encountered just below Stratum 3 at a depth between 14 and 20 cm below the surface in all four subunits (Figure 5.27). Some areas of orange discoloration on the floor suggest that it was exposed to fire at some point in antiquity (discussed further below).

Subunit A is on a slight slope (c. 15 degrees) and the floor is broken in the southern half of the subunit exposing a layer of domestic debris. The domestic debris layer, which contains plant remains, charcoal, ceramics, an obsidian point, and an *Olivella* shell bead, was also observed at a break in the floor in subunit C. This unit exhibited perhaps the best-preserved example of the trend of a layer of domestic debris under a mud floor living surface.

A c. 100 x 65 cm break in the surface of the floor in north of subunit C afforded the opportunity to investigate below the floor surface in Unit 8 without damaging it. A test unit established in the break was excavated to the Stratum 1 surface, c. 20 cm below the floor surface, through Stratum 2. Stratum 2 contained 6 non-diagnostic sherds, two flakes made from local materials, and some shell. No material culture was recovered from Stratum 1.

Five features were identified during excavation at this unit. Feature 1 was a pit feature near the center of subunit D (Figure 5.28 and 26). This feature was first identified by a round opening in the mud floor surface in subunit D c. 22 cm in diameter. This pit feature was

- Stratum 4
- Stratum 3
- Rocks
- Mud Floor
- Domestic Debris
- Stratum 2
- Stratum 1
- 1 meter



Sub-Units A, B, C, and D, North Wall Profile.

Sub-Unit D, Feature 1 (North Profile).

Figure 5.26. Unit 8 Stratigraphic Profile.



Figure 5.27. Mud Floor Across All Subunits at Unit 8.



Figure 5.28. Feature 1, Unit 8, Pit Feature, After Excavation.

found to have a stone lined bottom and to be 35 cm deep. The general description of this pit feature is consistent with storage pits identified at other Nasca sites (Conlee 2000:120; Silverman 1993:340; Vaughn 2000:229). Two non-diagnostic ceramic sherds were recovered from this feature. A small amount of charcoal and plant material was visible in the matrix filling the pit, which was collected for future analysis. Two large rocks (c. 25 cm) line most of the bottom of the pit.

Feature 2 was an ash lens below the floor in the southeast of subunit A. This feature was at around the same level as the domestic debris layer and may have been an ash dump.

Feature 3 was a possible hearth on the mud floor surface in subunit C. Sections of mud floor under and around an ash deposit in subunit C were discolored orange/red, indicating burning in place (Figure 5.29). The ash from this feature was collected in its entirety for later analysis.

Around 15 cm east of Feature 3 a whole large sea urchin, c. 9 cm in diameter, was placed on surface of the mud floor (Figure 5.30). This deposit is Feature 4. Given the intactness of the sea urchin when it was exposed during excavation it is probable that it was placed on the surface while it was still fresh and held together by soft tissue. Sea urchin internal organs are enclosed in a hard endoskeleton called a test that is covered by a thin layer of skin. Once the skin and other soft tissue is gone, the test becomes a fragile collection of plates. The sea urchin at Feature 4 did not keep its shape once the sand surrounding and supporting it was removed during excavation. An *Olivella* shell was found under the sea urchin. This deposit may have been placed on the surface as part of ceremonial activities at the end of the use life of this living surface.



Figure 5.29. Feature 3, Unit 8, Probable Hearth in Cross Section.



Figure 5.30. Feature 4, Unit 8, Sea Urchin Placed on Mud Floor.

Feature 5 is a raised rectangular area in the floor surface along the northern edge of subunit B (Figure 5.31). The area within and around this rectangular structure does not exhibit any ash or discoloration of the mud floor from heat exposure. It is unlikely that this feature was a hearth. It may be what is left of an above ground rectangular structure such as a storage bin or *cuy* (guinea pig) pen. The upper portion of such a structure could have been made from field stone, adobe, or *quincha*. A similar feature was observed at Pataraya and identified as a *cuy* pen (Edwards 2010: Figure 32). No direct evidence of *cuy* was identified in this feature. Moreover, this feature was located less than a meter from the probable hearth, Feature 3. Thus, it is more likely that this structure is the foundation of an above ground storage bin.

Artifacts from this unit came from just above the floor surface in Stratum 3, and, to a lesser extent, from the debris layer just beneath the floor. Artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone artifacts, textiles and cordage, beads, and figurines (Table 5.2). Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Diagnostic ceramics that could be culturally identified were Late Nasca and Loro. Flaked stone artifacts included expedient tools made from locally available materials, two obsidian flakes, and one obsidian point. Groundstone artifacts included manos, polishing stones, and sling stones (Chapter 8). Four Type I textile fragments were recovered, three of which were made from Type III cotton cordage, and one which was made of Type IV cotton cordage. One Type IV cord made from dyed gray camelid fibers was also recovered. Two adornments were recovered from Unit 8 including an Olivella shell bead and a *Spondylus* shell bead. Three figurine fragments were also recovered (see Chapter 8).

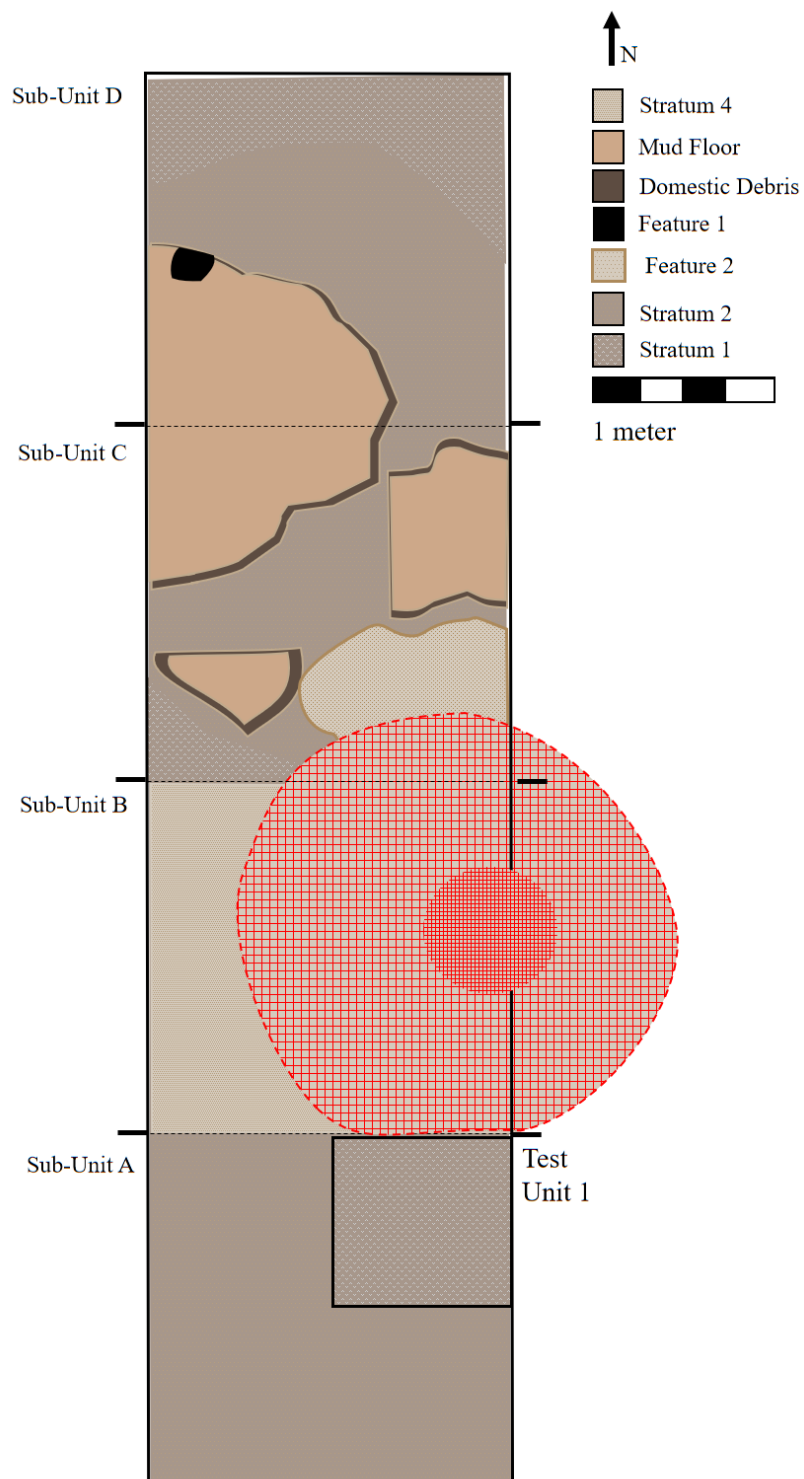


Figure 5.31. Feature 5, Unit 8, Raised Rectangular Area on Mud Floor Surface.

Unit 9. Unit 9 consisted of four consecutive 2 x 2 meter subunits oriented roughly south to north at Habitation Terrace 94 (Figure 5.32 and 33). Subunit A was the southernmost subunit and D was the northernmost. Habitation Terrace 94 was located along the western edge of Sector 1 above what appears to be some damage from earth moving machinery, possibly a bulldozer. Unit 9 was on the western edge of the terrace above the damage in terms of elevation and a few meters east of the edge of the terrace. A looter's pit proximal to the unit encroached on subunit B. In consideration of the limits to human power during this season and because subunit B was disturbed by modern activity, only subunits A, C, and D were excavated. Gonzalez and Kaplan began work at this unit in late September and were joined by Kim and me once we completed Unit 10 excavations. No stone or adobe architecture was observed above the surface or during excavation of this unit.

Stratigraphy at this unit was somewhat disturbed by the nearby looter's pit. Stratum 4 was c. 4 cm deep below in subunits A, C, and D. Stratum 3 was interrupted in the southeast corner of subunit C near the looter's pit in subunit B. In the northwest of subunit C and the adjoining region in the west of subunit D, Stratum 3 was c. 10 cm in depth below Stratum 4. Below Stratum 3, a badly damaged mud floor was identified. The mud floor was not observed in subunit A. Stratum 3 in subunit A was relatively thick (c. 40 - 50 cm) but few artifacts and only 5 diagnostic ceramic sherds were recovered.

A layer of domestic debris, like that identified below mud floors at other units, was observed below intact fragments of floor. Charcoal and plant materials were also observed mixed in the disturbed Stratum 3 matrix in the southeast of subunit C. Stratum 2 was best preserved in areas near where the mud floor was more intact. A single diagnostic Loro



Looter's pit and apparent affected area indicated in red.

Figure 5.32. Plan View of Unit 9.

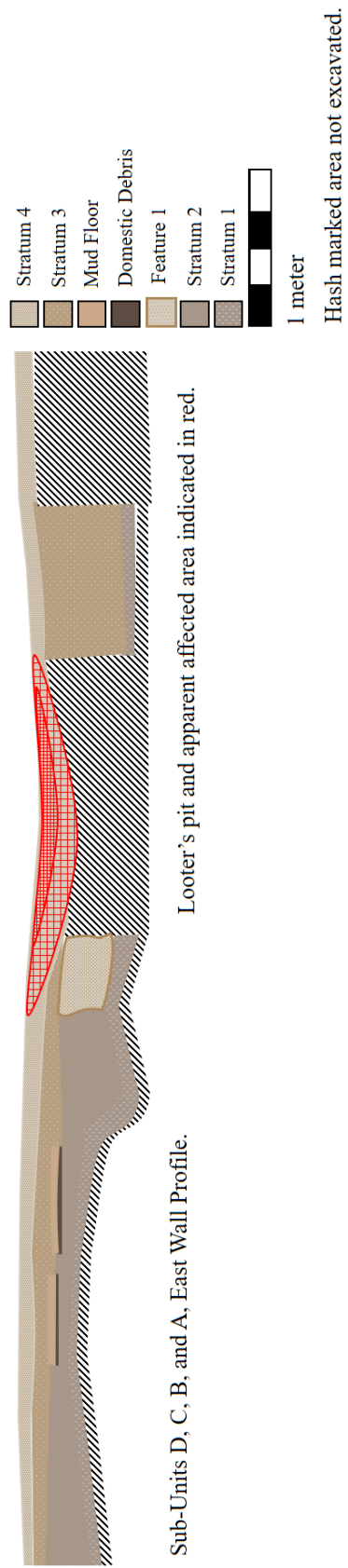


Figure 5.33. Unit 9 Stratigraphic Profile.

ceramic sherd was recovered from Stratum 2 in subunit D. Stratum 1 was reached at a depth of c. 50 cm below the surface in subunits A, C, and D.

Two features were identified during the excavation of Unit 9. Feature 1 was a thin ash lens deposited on the mud floor surface in the northwest of subunit D. There are no data to indicate that the ash resulted from burning in place. This feature appears to merely be an ash dump. Feature 2 is a pit feature in the southeast corner of subunit C. The fill from this feature consisted of fine windblown sand with few inclusions. This feature is below the level of Stratum 3 but given its proximity to the looter's pit in subunit B it may be related to modern looting activities rather than ancient domestic practices.

Recovered artifacts included diagnostic and non-diagnostic ceramics, flaked stone and groundstone tools, marine shell, textiles and cordage, and a partial animal figurine. Artifacts came primarily from Strata 3 and 4 in subunits C and D. Diagnostic ceramics were stylistically consistent with both the Late Nasca and Loro periods. Diagnostic ceramics were present in a ratio consistent with domestic spaces at other Nasca habitation sites (see below and Chapter 6). Stone tools were made from locally available materials. The animal figurine recovered from this unit was the only non-human figurine recovered from Zorropata (Figure 8.13; see Chapter 8). The textiles and cordage recovered from this unit were very fragmentary. They included a Type IV undyed camelid fiber cord, a Type VII cotton cord, and a Type IX red dyed camelid fiber cord. The textile was a Type I plain weave made from Type III cotton cordage (see Chapter 7 and Appendices 7.1 and 7.2).

Unit 10. Unit 10 consisted of four consecutive 2 x 2 meter subunits oriented west to east on the western extent of Habitation Terrace 99 (Figure 5.34). Subunit A was the westernmost

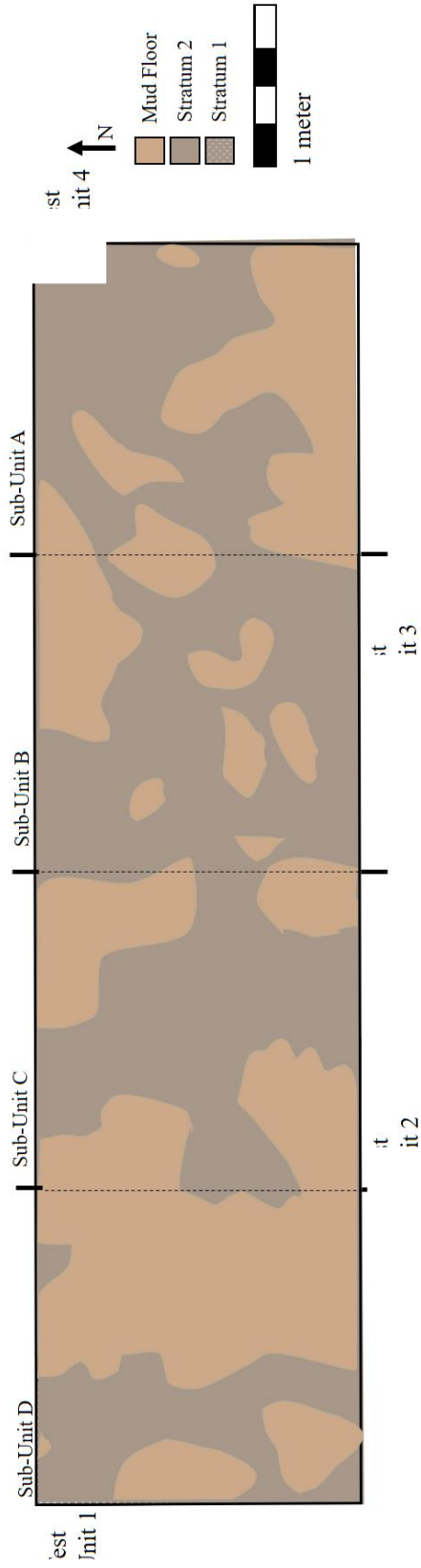


Figure 5.34. Fragmentary Mud Floor Across All Subunits at Unit 10.

subunit and D was the easternmost. Unit 10 was c. 45 m north and upslope from Unit 4, and c. 80 m due west of Unit 1. Kim and I began excavating this unit at the end of September just after work began at Unit 9. Excavations proceeded through Stratum 4 to expose a very deteriorated mud floor living surface. Stratum 3 was not observed at this unit. The mud floor surface was exposed in all subunits but was the best preserved in subunit A. The floor was reached at a depth between 2 and 5 cm below the surface. No stone or adobe architecture was observed above the surface or during excavation of this unit.

Once the fragmentary floor surface was exposed and mapped in all subunits excavations proceeded by test units (Figure 5.35). The aim in establishing the test units was to sample deposits below the level of the floor while doing the least amount of damage to the floor itself. The floor in subunit A was well preserved where it was intact but did not extend to the western half of the subunit. The test unit in this subunit was excavated below the level of the floor off its western edge. For this reason, the test unit in subunit A was roughly the western half of the subunit and c. 1 x 2 meters in size.

The test unit in subunit B was 1 x 1 meter in size and located in the southwest corner of the subunit. Subunit C's test unit was a 1 x 1 meter unit located in the southeast corner of the subunit. A 1 x 1 meter test unit was established in the northeast corner of subunit D. The test units excavated into Stratum 2 in all subunits and were continued until Stratum 1 was reached (Figure 5.36). Test units in subunits B, C, and D recovered few artifacts or other material culture. Stratum 2 was culturally sterile in all subunits. Stratum 1 was encountered at a depth of 31 cm below the surface in subunit A becoming progressively shallower in subsequent subunits. Stratum 1 was reached at 11 cm below the surface in subunit D. The layer

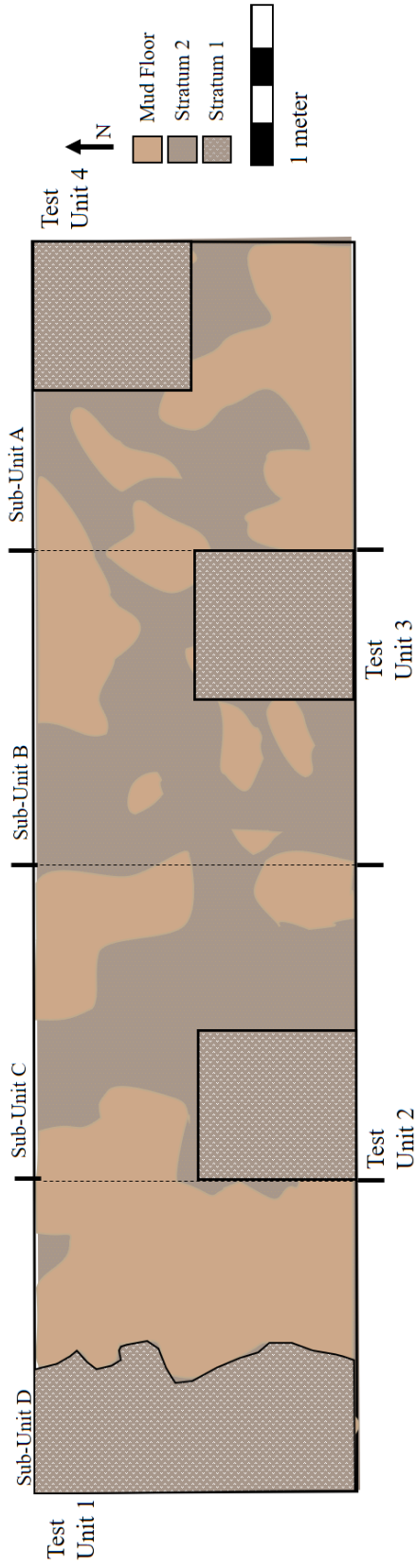
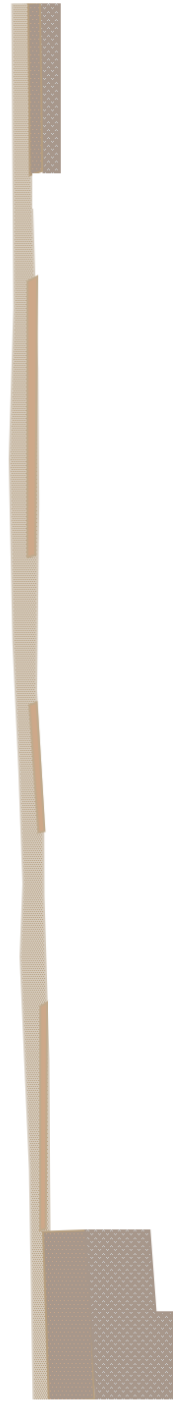
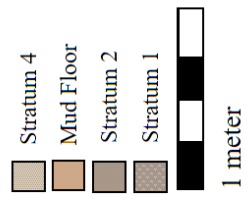


Figure 5.35. Unit 10 Test Units.



Sub-Units A, B, C, and D, North Wall Profile

Figure 5.36. Unit 10 Stratigraphic Profile.

of domestic debris including plant material, charcoal, and artifacts found below the mud floors at several of the other habitation units (described above) was not observed here.

Ceramics, charcoal, faunal bone, shell, and chalk recovered from the level of the badly deteriorated mud floor in subunits A and B (Table 5.2). Fewer artifacts were recovered from this unit than other habitation units even though a mud floor surface was identified here. This unit appears to have been on the edge of the living surface. Strata were depleted, probably by natural processes such as wind erosion. Excavation in subunits C and D recovered almost no cultural material. Diagnostic ceramics recovered from subunits A and B were Loro and Late Nasca styles (see Chapter 6). The diagnostic ceramic assemblage from this unit was small ($n = 13$) and only contained fineware. The assemblage of non-diagnostic sherds from this unit ($n = 64$) likely includes utilitarian wares. Flaked stone and groundstone tools made from local materials were recovered (see Chapter 8). Marine shell recovered from above the floor surface could have been brought to the site for food or craft productive uses (see Chapter 9). Two Olivella shell beads were also recovered from this unit (see Chapter 8).

Sector 3

Units 6 and 7. Two units were established in Sector 3 with the aim of investigating domestic contexts in this part of the site. Unit locations here were established because of a stratified sampling strategy. Initial locations were selected randomly then adjusted judgmentally based on surface artifact scatter. Units 6 and 7 each consisted of four 2 x 2 meter units arranged in a square (Figures 5.37 and 38). Excavations at these units began during the first week of September but ended within a couple of days. It became apparent that the surface artifact scatter at these two units did not represent the subsurface deposits. Both units were sterile below the surface. To be thorough, we excavated 50 x 50 cm test pits at the northwest corner (subunit A), northeast corner (subunit B), southwest corner

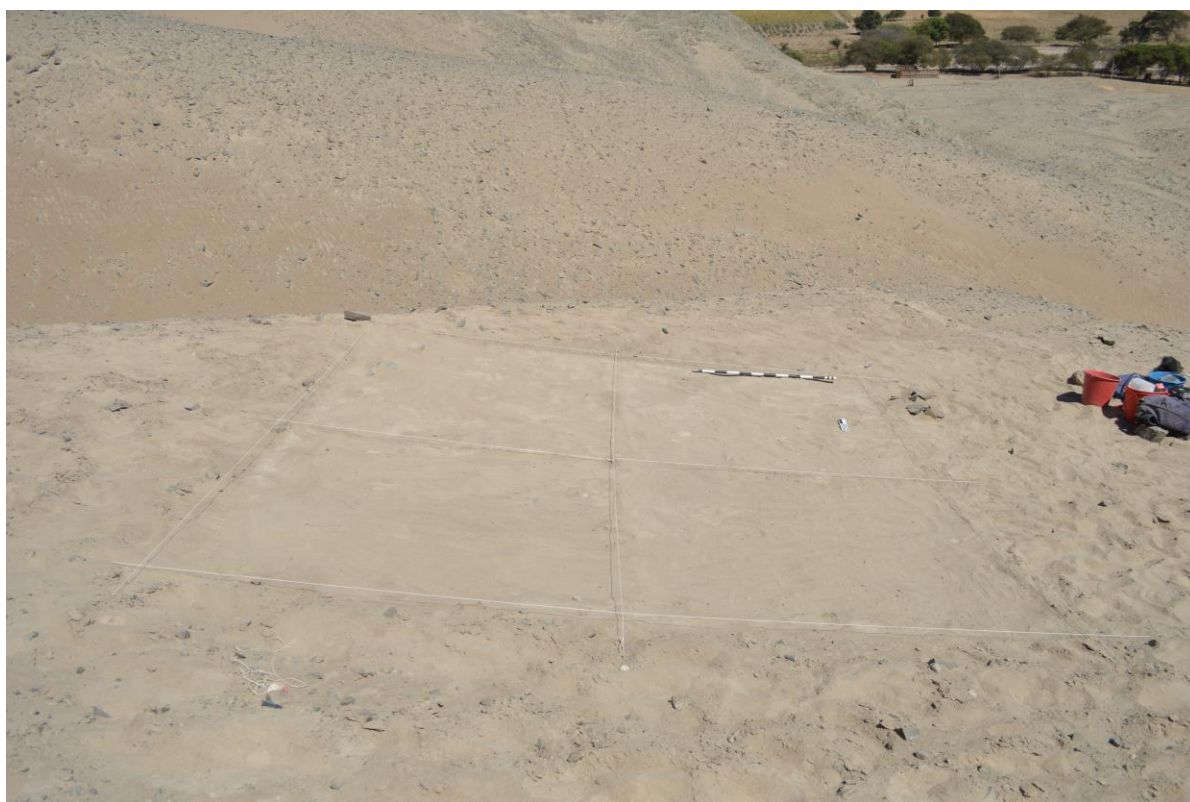


Figure 5.37. Unit 6 Surface Before Excavation, Sector 3, Facing South.

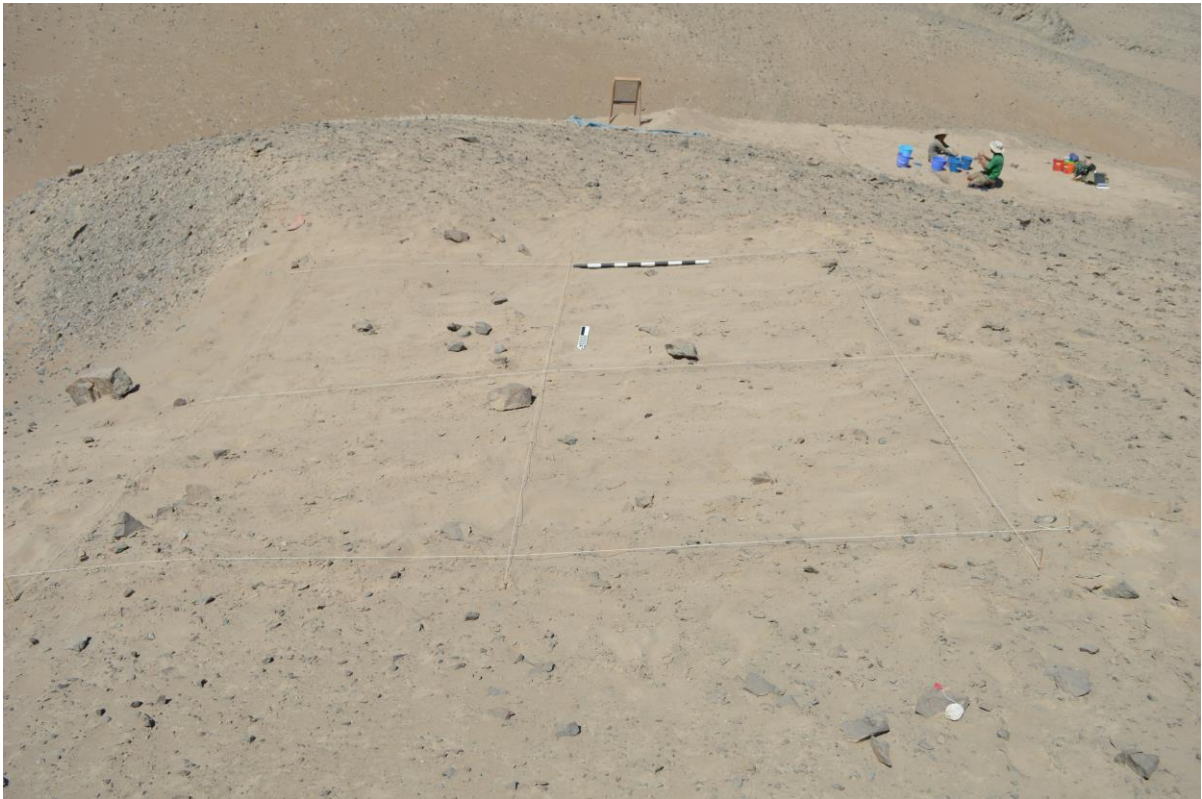


Figure 5.38. Unit 7 Surface Before Excavation, Sector 3, Facing South.

(subunit C), southeast corner (subunit D) and center of each unit to a depth of 50 cm below the surface (Figure 5.39). In both units, these test pits were sterile of material culture. Strata at these units was consistent with Stratum 4. No other stratigraphic layer was reached. Artifacts on the surface at these two units, including fineware and utilitarian ceramics, shell and a few groundstone artifacts, came from upslope in Sector 3 where fieldstone structures (Structure 9, 10, and 11) and a sling stone cache were observed (Figure 5.40 and 41). The structures upslope in Sector 3 were not the subject of archaeological investigation during the 2014 field season.

Laboratory Phase

General lab work began during the field season in tandem with excavation. The project crew dispersed at the close of the field season in October 2014. Equipment, artifacts, and samples were relocated to the new project headquarters in Nasca, Perú. I returned to the United States briefly to return borrowed field equipment (i.e., the total station) and re-equip herself with specialized lab equipment (e.g., a Dinolite handheld digital microscope). The dedicated lab work phase of the project began when I returned to Nasca at the beginning of November and lasted until analysis was completed in mid-March. Artifacts and samples collected during the 2014 field season were taken to the Ica Regional Museum in Ica, Perú as per the requirements of the Peruvian Ministry of Culture.

The dedicated lab work phase of the project accomplished several goals including artifact processing, cataloging, photography, more specialized analyses of different artifact types, and selection of samples for specialized analyses (below). Processing included cleaning, counting, and weighing of artifacts where appropriate. All samples and artifacts were also catalogued. Artifact processing began in Copara during the field season and was

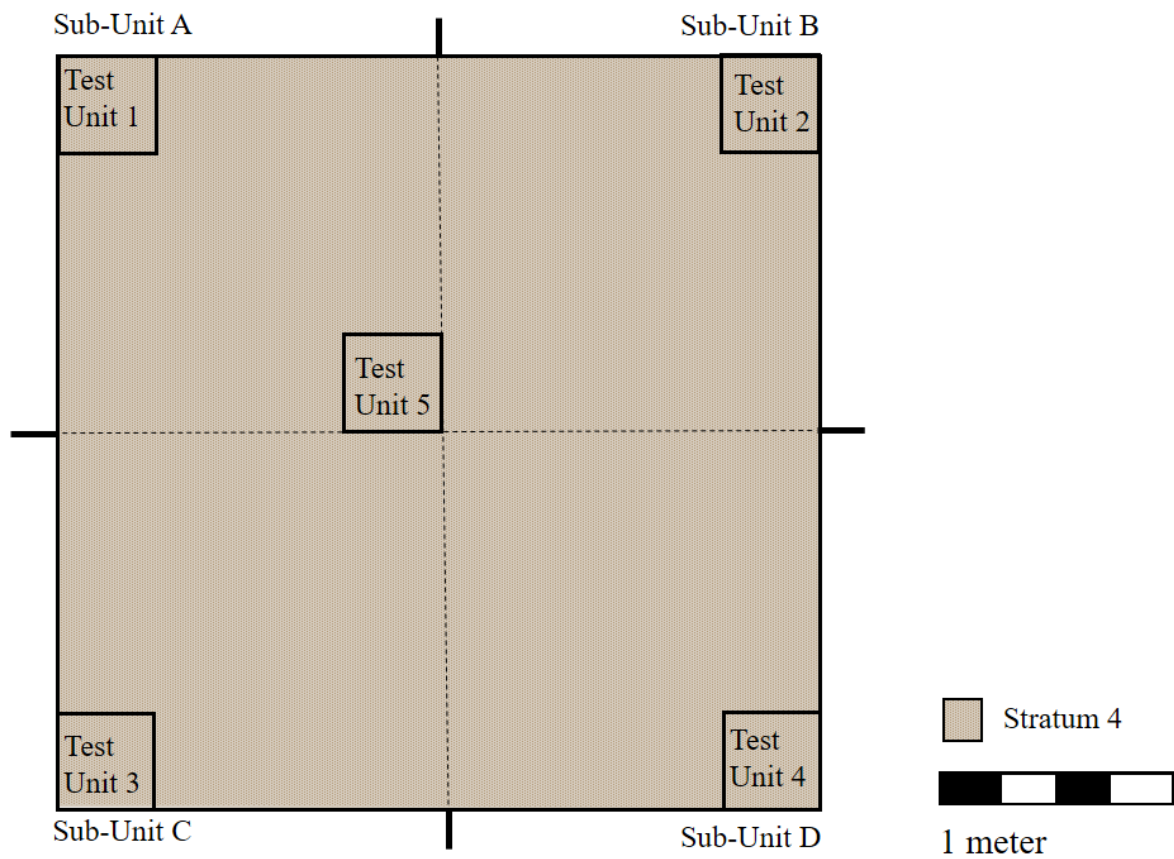


Figure 5.39. Schematic of Test Units at Units 6 and 7.

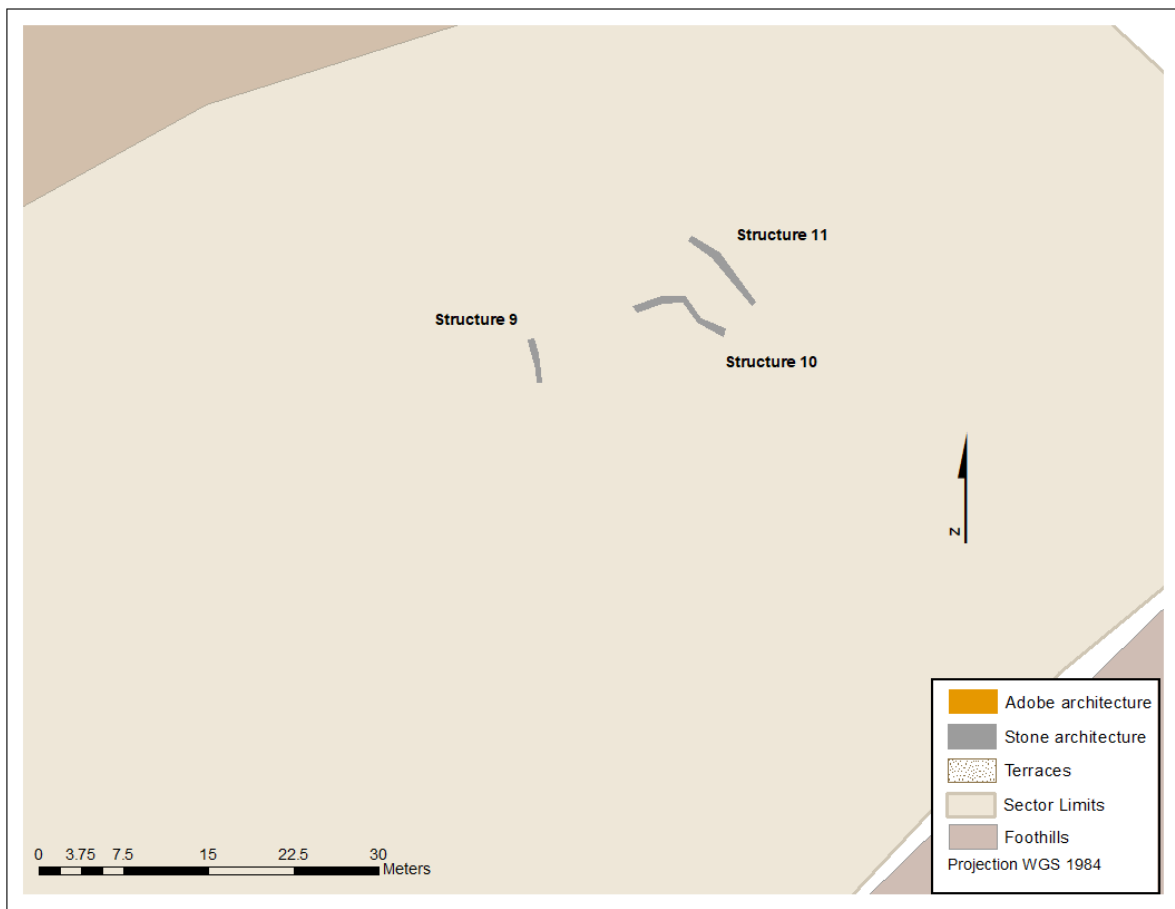


Figure 5.40. Map of Structures 9, 10, and 11 at Sector 3.



Figure 5.41. Photo of Structures 10 and 11 in Sector 3.

completed by me in Nasca. More specific analysis of various artifacts and ecofacts are discussed in the following chapters.

Ceramic artifacts were expected to be of particular interest (Chapter 6). Although the Nasca ceramic sequence is well known and provides a chronological framework for archaeological study in the region, the Loro style has never been defined in stratigraphic context. Ceramics were analyzed to determine the minimum number of vessels and classified according to vessel form. All diagnostic sherds (e.g., decorated sherds, rim sherds, base sherds, jar neck fragments, lugs, handles, or other appendages) and all complete or nearly complete vessels were analyzed and drawn to scale.

Textiles and cordage underwent attribute analysis (Chapter 7). Artifacts related to textile or cordage production are discussed in the same chapter. The analysis of all other artifacts (e.g., lithics, figurines, and beads) is discussed in Chapter 8. Shell, faunal bone, and other ecofacts were identified to whatever degree was possible based on preservation and available reference tools during the laboratory phase (Chapter 9).

Corina Kellner collaborated with the project to conduct bioarchaeological analysis of the eight human ‘trophy head’ individuals recovered from Unit 1 (Chapter 10). She and I collected hair, bone, and tooth samples for strontium, carbon, and nitrogen isotope and cortisol analyses (Chapter 10).

Samples for Special Analyses

In the spring of 2015, I and Luis Manuel Gonzalez La Rosa began to arrange for the export of sample for archaeometric analysis including: 1) 9 carbon samples for AMS dating at the University of Arizona (below); 2) 53 Loro ceramics for Instrumental Neutron

Activation Analysis at the University of Missouri Research Reactor Center⁶ (Chapter 6); 3) 14 obsidian flakes for X-Ray Florescence analysis to be conducted by Jessica Kaplan at the University of California, Santa Barbara (Chapter 8); 4) 16 samples of human bone from 7 trophy heads that are undergoing isotope analysis in order to get at the diet and mobility of these individuals (Chapter 10); and 5) 2 samples of human hair with scalp from ‘trophy head’ individuals that were tested for cortisol levels (Chapter 10). Permission was finally obtained in January 2016, and I traveled to Perú to collect the samples. Samples were immediately disseminated to various laboratories and specialists⁷.

Radiocarbon Dates

A total of 6 wood charcoal samples was submitted to the University of Arizona for AMS ¹⁴C dating. AMS samples came from secure excavated contexts from six different units in Sector 1 including Units 1, 2, 4, 5, 8, and 10. As discussed above, strata at habitation context units were often depleted. For Unit 1, the *Recinto A1*, strata were also highly disturbed. Therefore, to ensure that dates obtained would be representative of the ancient occupation of Zorropata the six samples came from features whose antiquity and preservation could be considered reasonably secure from excavation contexts. For the habitation contexts, samples came from the layer of domestic debris directly under mud floors and thought to be related to their construction. For the adobe compound the sample came from charcoal imbedded in an intact portion of the structure. The raw ¹⁴C dates were calibrated using the OxCal 4.2 calibration program (Bronk Ramsey 2010) and the SHCal13 curve (Reimer et al. 2009). The dates obtained help to establish an absolute chronology the duration of occupation

at Zorropata. They also verify and inform the relative chronological framework for the site based on fineware ceramics.

Sample 1 was taken from Unit 1/*Recinto* A1. Although this unit was disturbed and badly damaged by looting it produced at least one carbon sample from a secure context. An in-situ sample of charcoal was found imbedded in the preserved c. 1 x 1 section of the tomb roof exposed in Area 2 in the first weeks of excavation. The charcoal sample, an obsidian flake, and a non-diagnostic ceramic sherd were likely incorporate into the mud used to make the tomb roof while it was wet. Perhaps these objects were in the dirt used to make the mud or on a work surface used to mix it. Ceramic fragments from Unit 1 were primarily Late Nasca and Loro however, two possible Early Nasca sherds were recovered (Figure 5.42; see also Chapter 6). The AMS ^{14}C sample dated to between 416 and 532 calibrated years BP (95% confidence) (Table 5.4). If the traditional Nasca chronology is used this date range corresponds to the late Middle Nasca period. A revised chronology was proposed by Verity Whalen (2014:205, Table 5.23) based on direct association between Late Nasca and Transitional ceramics and AMS ^{14}C dates from Cocahuischo. In the revised chronology the date range from Unit 1 at Zorropata corresponds to the early Late Nasca period. No Middle Nasca ceramics were recovered from Unit 1 and few were recovered from any other context at the site of Zorropata (see Chapter 6). Given the present evidence it seems unlikely that there was a Middle Nasca occupation at Zorropata. Therefore, the data from Zorropata support the revised chronology that places the construction and early use of the adobe structure at Unit 1 during the Late Nasca period. An abundance of Loro ceramics suggests that use of the structure continued into the Middle Horizon.

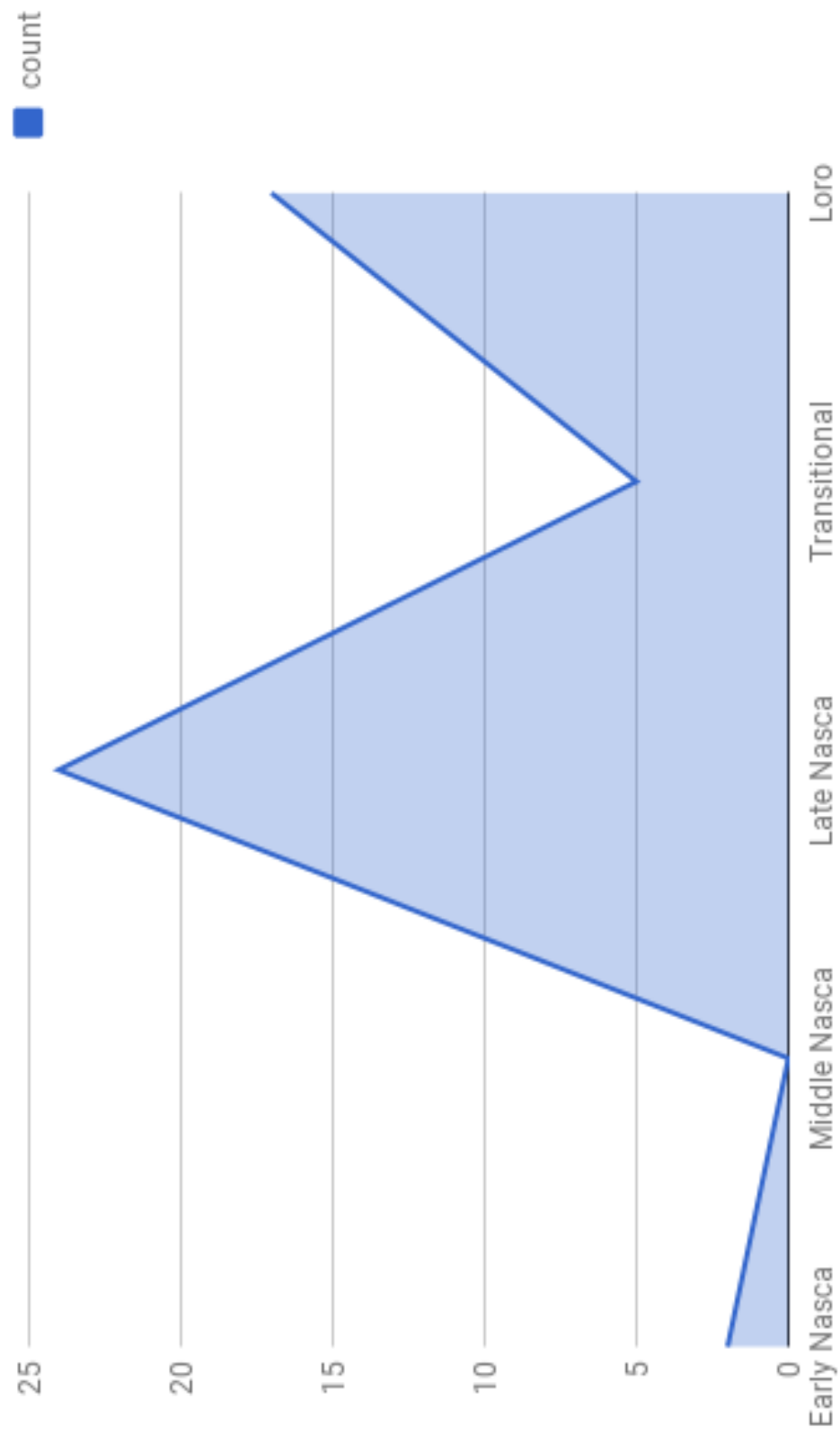


Figure 5.42. Frequencies of Ceramic Styles at Unit 1.

Sample 2 was taken from the mud floor in Unit 5. This sample was in direct association with a sherd from a Loro period flaring bowl. In general, ceramics from this unit were Loro style suggesting a Middle Horizon date for this terrace (Figure 5.43). The AMS ¹⁴C sample produced a date range from 596 to 657 calibrated years BP (95% confidence) supporting a Middle Horizon occupation under the revised chronology (Table 5.4).

Sample 3 came from just beneath a break in an otherwise well-preserved mud floor at Unit 8. Ceramics from this context were nearly half Late Nasca and half Loro in style with a couple of possible Transitional ceramic sherds (Figure 5.44). The AMS sample produced a date range of 589 to 650 calibrated years BP (95% confidence). In the revised chronology these dates correspond to the end of the Late Nasca period and beginning of the Middle Horizon (Table 5.4).

Sample 4 was taken from the surface of the mud floor that abuts the western perimeter wall at Unit 4 (described in Chapter 4 and above). Ceramics associated with this unit were primarily Loro with some Late Nasca and possibly Transitional stylistic forms (Figure 5.45). One sherd from a Loro flaring bowl was recovered in association with the surface from which Sample 4 came. The AMS sample produced a date range between 420 and 536 calibrated years BP (95% confidence) (Table 5.4). These dates correlate roughly to the Late Nasca period in the revised Chronology. Ceramic and AMS ¹⁴C data from this unit support that this terrace was established around the early Late Nasca period but that its use continued into the Middle Horizon. As discussed above, the floor in Unit 4 appears to have been constructed after the perimeter wall was built. Therefore, this segment of the perimeter wall was likely constructed during the Late Nasca period. The present data give no indications about why the wall was built or if it was constructed in response to foreign forces

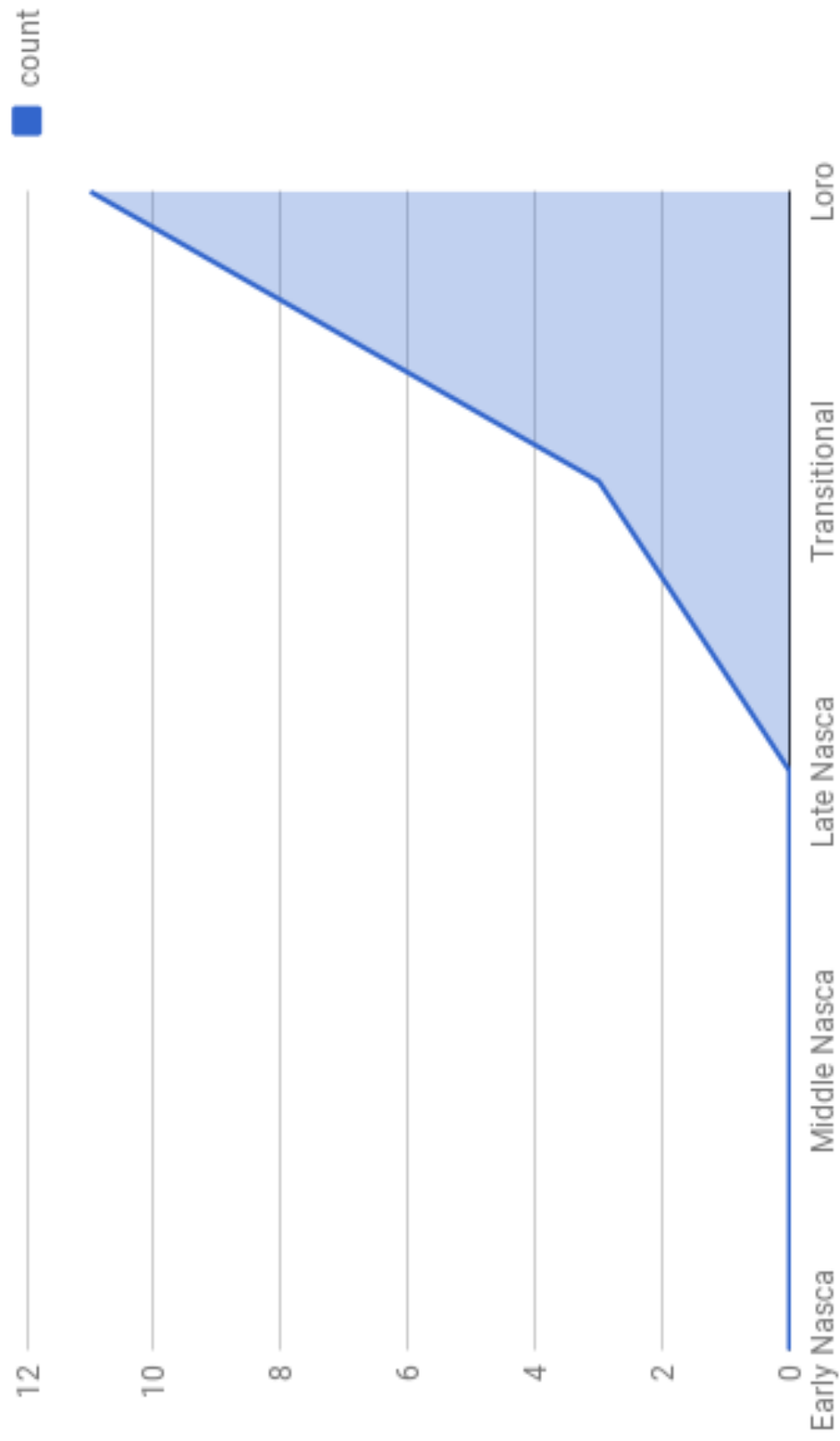


Figure 5.43. Frequencies of Ceramic Styles at Unit 5.

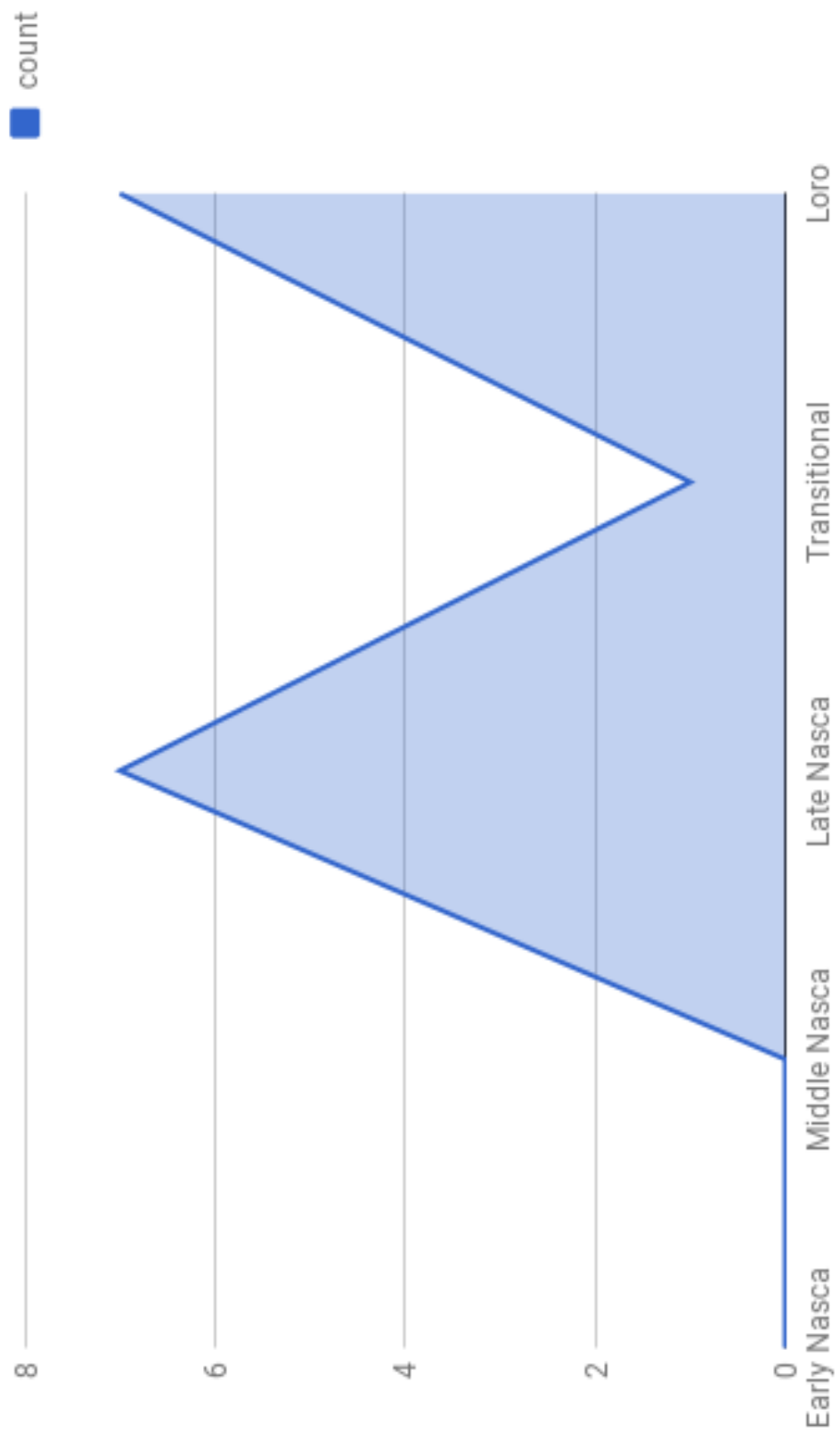


Figure 5.44. Frequencies of Ceramic Styles at Unit 8.

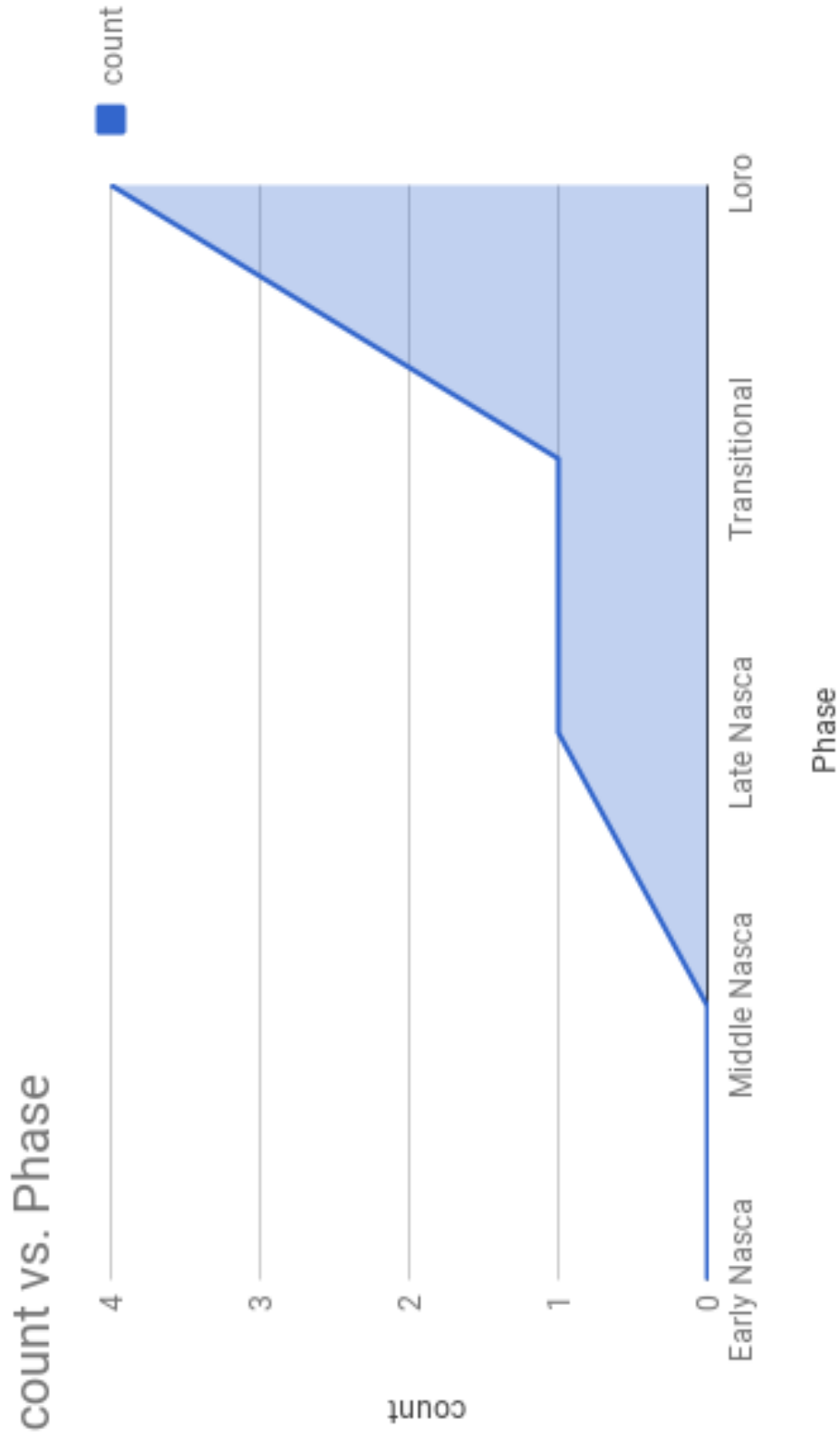


Figure 5.45. Frequencies of Ceramic Styles at Unit 4.

or local factions. These data do support a scenario wherein the wall was used or maintained more or less continuously from the Late Nasca until at least the early Middle Horizon.

Sample 5 was recovered from Feature 4 at Unit 2, directly beneath a section of mud floor. Artifacts including polychrome ceramics and formal obsidian tools recovered from this context were stylistically consistent with the Late Nasca period (Figure 5.46). The AMS sample dated to the Late Nasca period according to the revised chronology and produced dates ranging between 592 and 651 calibrated years BP (95% confidence) (Table 5.4).

Sample 6 was recovered from the surface of a deteriorated mud floor at Unit 10. No ceramics were found in direct association with this sample however, the assemblage of diagnostic ceramics from this unit was c. 66% Loro and 33% Late Nasca (Figure 5.47). The AMS sample dated to between 645 and 765 calibrated years BP (95% confidence) (Table 5.4). In both the traditional and revised chronologies these dates correspond to the Middle Horizon and possibly the late Late Nasca period.

The six samples date Zorropata to the late Early Intermediate Period and early Middle Horizon. In the local chronology this site was occupied during the Late Nasca and Loro periods (Table 4.1). The prevalence Late Nasca, Transitional, and Loro pottery further illuminate these results and suggest that this site was occupied during the height of Nasca civilization in the Early Intermediate Period and continued in use during the period of Wari encroachment during the Middle Horizon (Figure 5.48). These ceramic data as well as the presence of a possible transitional Late Nasca–Loro form suggests that the people of Zorropata had access to polychrome ceramics during a period of stylistic transition and innovation that culminated in the Loro style. AMS ^{14}C dates, ceramic data, and other

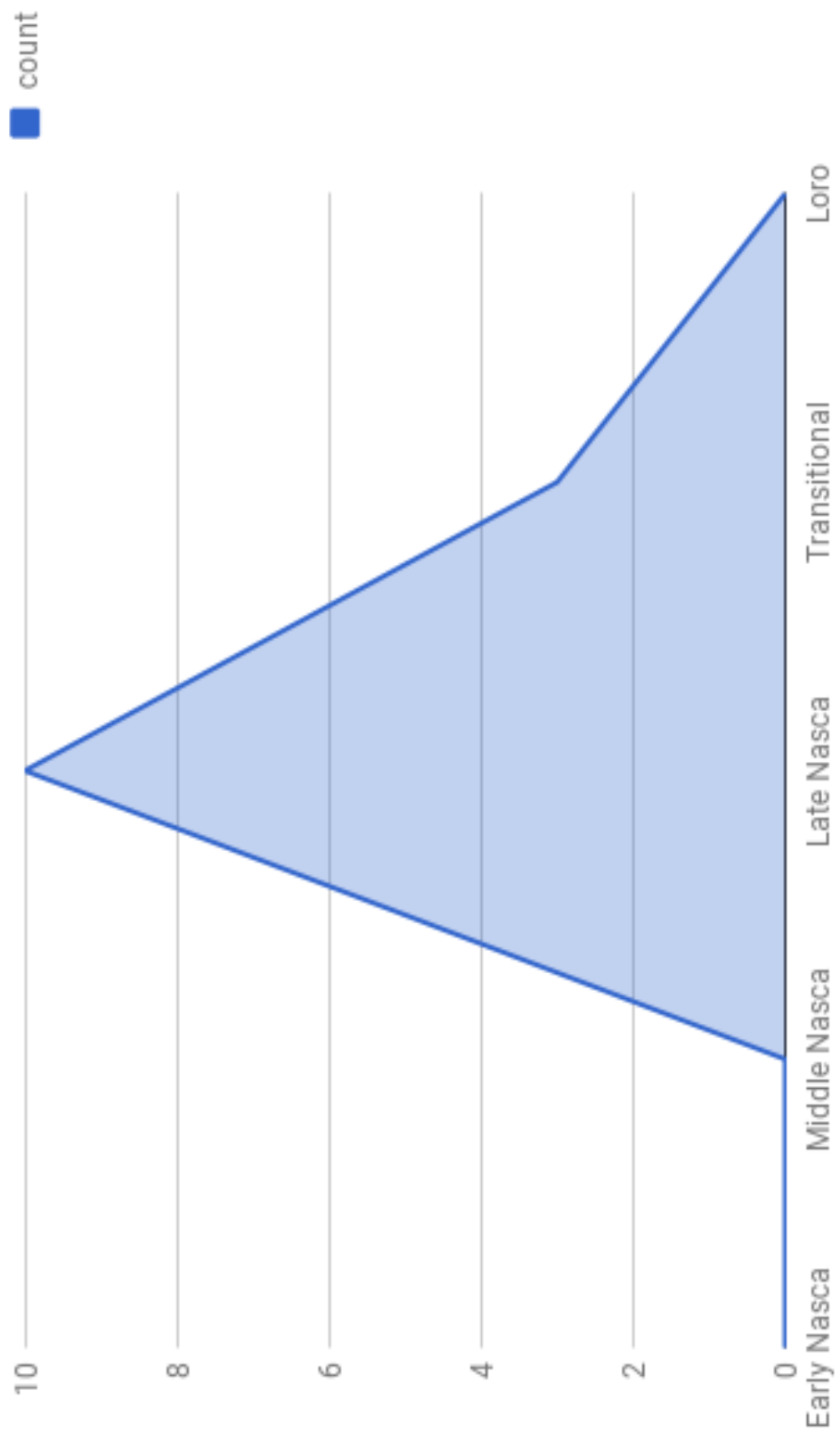


Figure 5.46. Frequencies of Ceramic Styles at Unit 2.

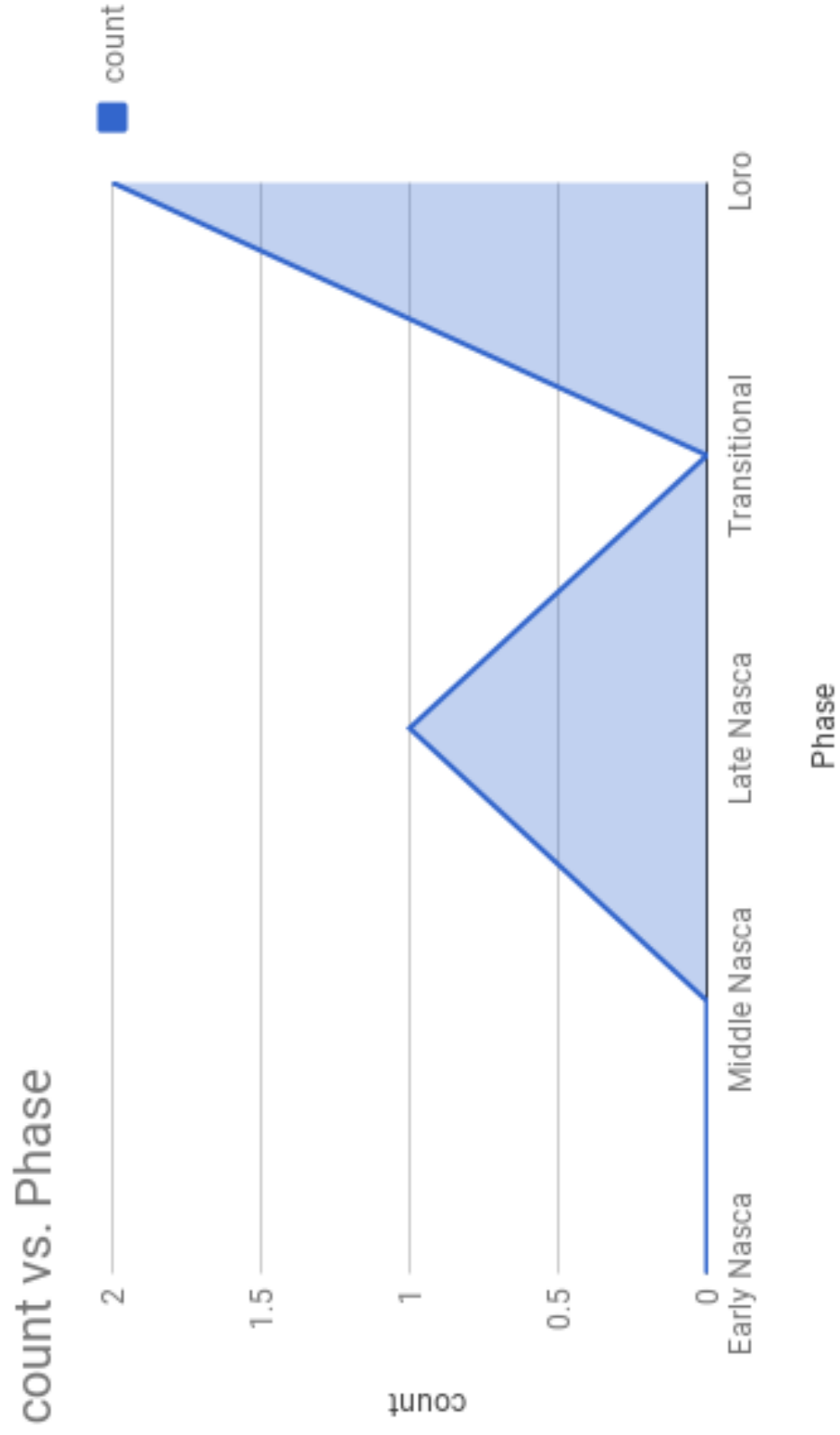


Figure 5.47. Frequencies of Ceramic Styles at Unit 10.

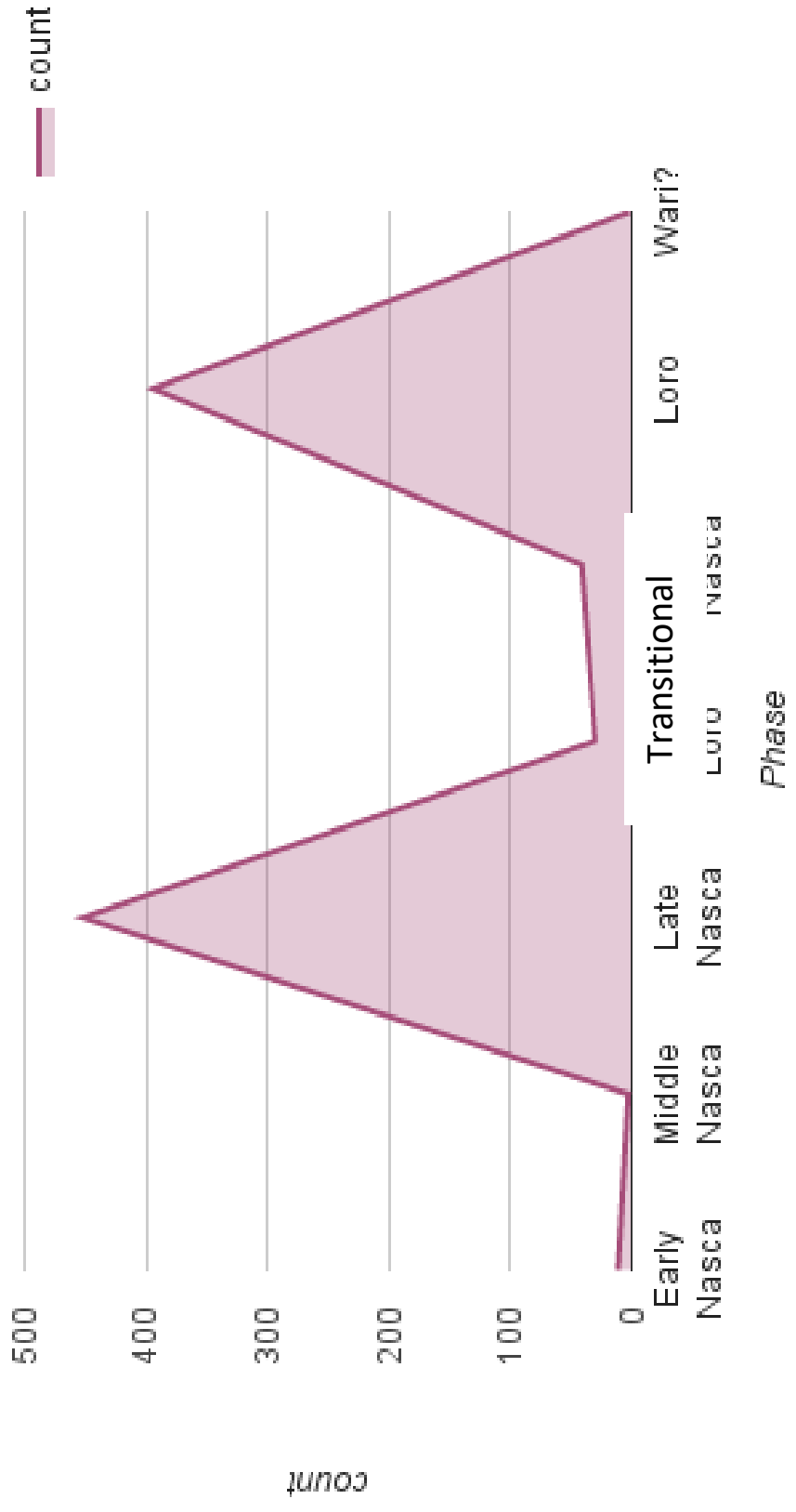


Figure 5.48. Frequencies of Ceramic Styles at Zorropata.

artefactual evidence from Zorropata support the revised chronology offered by Verity Whalen (Whalen 2014: Table 5.23).

Discussion

Domestic Life at Zorropata

The first goal of excavation mentioned at the beginning of this chapter was to investigate the terraces at Zorropata as the seat of domestic life. Evidence of domestic life includes but may not be limited to evidence of the demarcation of domestic spaces, subsistence activities (i.e., preparing, cooking, storing, serving, or eating food), and economic/productive activities (Stanish 1989:11). Excavations at Units 2, 3, 4, 5, 8, 9, and 10 produced data consistent with an interpretation of terraces as domestic spaces (Table 5.5).

The present evidence suggests that domestic architecture at Zorropata was not made from stone or adobe. As mentioned in Chapter 4, domestic architecture at Zorropata may have consisted of organic walls woven from reeds and sticks covered with mud plaster (*quincha*) (Figure 5.49). Being organic, exposed parts of these structures may have decayed not long after a house structure was abandoned. If future work is conducted at this site, a broad exposure of a sample of habitation terraces could provide evidence of post holes or buried remnants of *quincha* walls.

Living surfaces identified as hardened mud floors, or fragments thereof, were identified at all units at Sector 1 habitation terraces (Table 5.5). In general, these floor features followed a canon of construction. A 3 to 4 cm thick layer of domestic debris containing charcoal, plant remains, faunal bone, and artifacts was spread across the Stratum 2

Table 5.5. Features and Artifacts Associated with Subsistence Activities or Craft Production at Habitation Context Units in Sector 1.

	Unit 2	Unit 3	Unit 4	Unit 5	Unit 8	Unit 9	Unit 10
Subsistence Activities							
Faunal Remains*	X	X	X*	X	X	X	X
Cooking Vessels	X	X	X	X	X	X	X
Serving Vessels	X	X	X	X	X	X	
Very Large <i>Ollas</i>				X	X		
Grinding Platform Within 50 meters	X		X		X		X
Grinding Tools (mortars, manos)	X	X	X	X	X	X	X
Hearth					X		
Domestic Production							
Weaving Tools (Awls, Needles, Spindles)	X		T		T	T	X
Chalk	X	X	X		X	X	X
Polishing Stones	X			X	X		X
Lithic Debitage	X	X	X	X	X	X	X
House Features							
Mud Floor	X	X	X	X	X	X	X
Domestic Debris Layer Beneath Floor	X	X	X	X	X	X	
Storage Pit	possible	X			X		
Above Ground Storage					possible		
Adornments/Exotics							
Beads/Pendants					X		X
<i>Spondylus</i>					X		
Obsidian Points/Flakes	X	X	X	X	X		
Figurines	X	X		X	X	X	
Other							
Marine Shell	X	X	X	X	X	X	X

* Indicates that at least some faunal remain were burnt.

T Textiles recovered from this context.



Figure 5.49. Partially Exposed *Quincha* Wall from Archaeological La Marcha, Across the Las Trancas Valley from Zorropata.

surface at Units 2, 3, 4, 8, and 9. The mud floor was laid on top of the debris layer and allowed to dry in place.

Subsistence Activities. Ceramic vessels types can be usefully classified into functional categories based on their form and the context in which they were found. As discussed in detail in Chapter 6, functional categories in the Zorropata assemblage include cooking, service, storage (Sinopoli 1991:84) and other (Mills 1989) vessels. Cooking, service, and storage vessels can contribute to an investigation of subsistence activities at archaeological sites. A variety of cooking and serving vessels was recovered from each habitation context units in Sector 1 (Table 5.5). For most Zorropata habitation units the ratio of fineware diagnostic ceramics to utilitarian diagnostic ceramics was between 70 and 80% finewares to between 30 to 20% utilitarian wares⁸. The ratio of finewares (c. 56%) to utilitarian wares (c. 44%) was also high at Marcaya (Vaughn 2000:356).

Very large *olla* sherds (described in Chapter 6) were recovered from habitation context Units 5 and 8. A rim sherd from the vessel from Unit 8 was estimated to be c. 35 cm in diameter. Very large *ollas* such as these would have been heavy and cumbersome to carry. They may have served as stationary storage vessels. Another alternative is that very large *ollas* were used to cook large communal meals.

Unit 8, Feature 3 excavations contributed evidence of a probable hearth. Discoloration of the mud floor under an ash lens in subunit C resulted from burning in place. Further investigation of the contents of this feature is warranted and could strengthen the interpretation that it is a hearth. Unit 4, Feature 2 may also contribute evidence of cooking. Faunal bone was recovered during excavation at each Sector 1 habitation context unit. Some

of this bone was probably invasive (e.g., members of the order Rodentia). Others, such as Artiodactyl (e.g., deer, llama, alpaca) or possible *cuy* (guinea pig), may have been remnants of meals. Cut marks are evident on some of the bone (Figure 5.50) and the tip of a projectile point was found imbedded in an os coxa of a medium sized mammal from Unit 4 (Figure 5.51). Bone recovered from Feature 2 at Unit 4 was burnt, possibly a result of cooking.

At least two pits were observed during excavation (Table 5.5). An unlined pit c. 50 cm in diameter was dug into the mud floor surface at Unit 3. A c. 20 cm diameter pit with a stone lined bottom was dug into the mud floor surface at Unit 8. These pit features fit the general description of storage pits from other Nasca habitation sites where such features have been identified (Silverman 1993:340; Vaughn 2000:260). A pit feature was also identified at Unit 2 but the stratigraphy demonstrates that this pit may not have been dug until after the living surface at this terrace abandoned. The pit at Unit 2, however, has a stone lined bottom. Unit 8 may exhibit the remains of an above ground rectangular structure c. 1 m square in size (Table 5.5). The dimensions and function of this potential structure are not known at present. There is no evidence that this structure was used as a hearth. It may be an above ground storage bin or some other small enclosed structure.

Economic Activities. Marine shell was recovered from all units in Sector 1 (Table 5.5). Marine resources might have played a very small part in Nasca subsistence practices (Chapter 9; Carmichael et al. 2014; Kellner and Schoeninger 2012:493; Kennedy and Carmichael 1991; Rodríguez de Sandweiss 1993:298; Vaughn 2000:453). Shell may have been used in other economic activities. Indeed, shells such as olivella, mussel, tegula (sea



Figure 5.50. Example of Cut Marks on Faunal Bone.

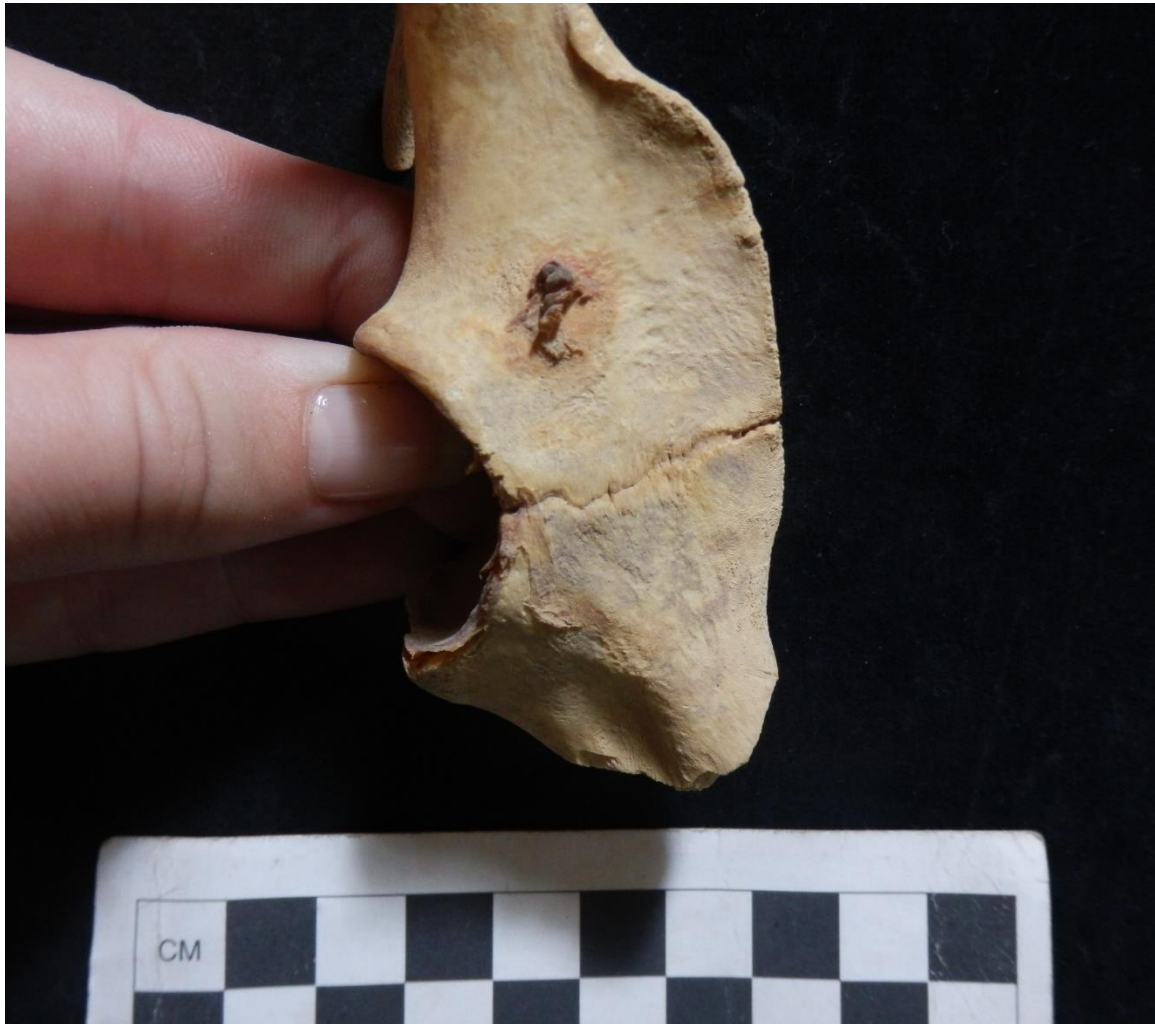


Figure 5.51. Example of Projectile Point Tip Imbedded in Faunal Bone.

snail), tube worm, and *Spondylus* (thorny oyster) were used at Zorropata to make beads and pendants (see Chapter 8).

Nasca ceramic wares were often burnished or highly polished. The surface of a burnished vessel was rubbed smooth with a small stone (polishing stone) to achieve this affect. Polishing stones, which may have been used in local ceramic manufacture, were recovered from Units 2, 5, 8, and 10 (Table 5.5).

Bone tools such as awls or needles may have been used in textile production. Examples of these were recovered from Units 2 and 10 (Table 5.5). As mentioned in Chapter 7, chalk may have played a small but important role in the spinning process. Chalk was recovered from Units 2, 3, 4, 8, 9, and 10 (Table 5.5). Few spindle whorls, a perforated disk used in drop spinning in ancient Perú, were recovered from Zorropata (Chapter 7). None were recovered from excavated contexts.

Excavations at all units at Sector 1 habitation terraces recovered evidence of lithic debitage that may be indicative of lithic reduction and tool manufacture or maintenance (Table 5.5). Local materials like chalcedony, quartzite, fine grained volcanic rock (e.g., basalt, andesite, rhyolite), as well as imported obsidian were used to manufacture flaked stone tools. Debitage produced from local stone was observed at Units 2, 3, 4, 5, 8, 9, and 10. Flaked stone contributed at notably high percentage (25.4%) of the Unit 2 artifact assemblage compared to other habitation context units (mean = 9.5%) (Table 5.3). Obsidian flakes recovered from Units 3, 4, 5, and 8 may have resulted from the local reduction of imported obsidian or sharpening of obsidian tools (Chapter 8).

Ceremonial Life

Another of the above stated goals of excavation was to test assumptions about the adobe compound in Sector 1 as a high status *barbacoa* style tomb or ceremonial structure like one observed at Huaca del Loro (Tello 2002:22). Excavations revealed architectural aspects about the structure of *Recinto A1* (Unit 1). *Huarango* beams oriented north-south were laid parallel to and abutting one another across the top of a chamber built from adobe blocks and covered in some areas with adobe plaster (Figure 4.45). The beams were covered with a mud or adobe seal and capped with a layer of gravel, all of which is like what Tello describes for Huaca del Loro (Figure 5.5; Tello 2002:22-25). No intact burials were discovered during the 2014 field season. This context has been repeatedly looted for more than 70 years.

Friable human (post cranial) bone was observed on the surface around Unit 1 but was considered too deteriorated to warrant collection. The only human bone recovered from excavations at Unit 1 to date was eight ‘trophy head’ individuals from Features 4, 5, and 8.

Finewares composed 19.4% of the artifact assemblage for Unit 1. At habitation context units finewares contributed c. 6.5% of each artifact assemblage on average. The ratio of finewares to utilitarian wares at Unit 1 was more than 9:1. As illustrated above, utilitarian wares were more common at domestic contexts. The ratio of fineware to utilitarian wares at Unit 1 is consistent with other Nasca mortuary contexts. Patrick Carmichael studied pottery from 154 grave lots collected from 20 Nasca cemetery sites; 95% of the pottery was fineware and 5% was utilitarian (Carmichael 1988:211).

Very few artifacts suggestive of subsistence or economic activities were recovered from Unit 1. Items indicative of a rich symbolic life at Zorropata were recovered including figurines, exotics (e.g., obsidian and *Spondylus* (thorny oyster)), and shell beads/pendants.

Beads and pendants made from *Spondylus* originated off the coast of Ecuador (Chapter 9). Obsidian samples recovered from Zorropata were imported to Nasca from the highlands at least 100 km away (Chapter 8). It is probable that *Recinto* A1 was a tomb. The remains of the substantial *huarango* beams above the inner chamber at this locus support that it was a high status *barbacoa* style tomb. Therefore, the current evidence supports that this context was the site of ceremonial activities and not domestic ones.

Symbolic Domestic Life. It is interesting to note that Zorropatans may have participated in symbolic activities that occurred in the context of domestic spaces. As many as 12 figurine fragments were recovered from domestic contexts at Units 2, 3, 5, 8, and 9. While the purpose of the figurines is not known research suggests that they had a ritual use (Morgan 2012:57, 1988:331). Adornments including marine shell beads and pendants were recovered from Units 8 and 10. At Unit 8, these included one example of *Spondylus*. Also at Unit 8, an urchin was intentionally placed on the floor surface, perhaps as part of a ceremony to close that living space when it was abandoned. It is difficult to do more than speculate about the nature of domestic symbolic life at Zorropata based on the present data. That said, it seems apparent that ceremonial activities extended to the domestic sphere. See Chapter 8 for a more detailed discussion of these artifact classes.

Status Difference

Evidence of socioeconomic status differences at Zorropata was scant. This finding is consistent with evidence from other Nasca domestic sites. Social stratification during the Early Intermediate Period was minimal indicating that socioeconomic status differences were

not deeply entrenched (Vaughn 2009:153; Verity Whalen, Personal Communication). At Marcaya, Vaughn (2000:506; 2009:154) identified relatively high-status dwellings as those of larger size, containing internal architectural features, and with walls or thresholds built from cut stone. As discussed above, domestic architecture at Zorropata does not follow the same patterns as those observed at Marcaya or Cocahuischo.

Vaughn identified some polychrome ceramic vessel types such as head-jars, cup bowls, modeled vessels, and collared jars are more strongly correlated with elite residences at Marcaya, suggesting that elites may have had some preferential, but not exclusive, access to these wares (Vaughn 2000:508, 2004:79, 2009:154). Fineware vessels were likewise ubiquitous at Zorropata. Units 1 (n = 11), 8 (n = 10), and 9 (n = 10) produced the greatest number of fineware types, while Unit 4 produced the fewest types (n = 5). The average number of fineware ceramic vessel types for domestic units was 7.7.

Evidence of long-distance trade was minimal at Marcaya. In the Nasca Region, trade items were limited to obsidian from the Quispisisa source, some *Spondylus* shell from Ecuador, imported ceramics, and metal objects (Eerkens et al. 2010:829; Vaughn 2000:491; 2009:128). The only non-local artifacts recovered from Zorropata were obsidian (n = 22) recovered from Units 1, 2, 3, 4, 5, 8, and surface collection; and *Spondylus* shell beads/pendants (n = 3) recovered from Units 1 and 8.

This chapter discussed in detail artifacts and archaeological samples recovered from excavation and the contexts in which they were discovered. The subsequent five chapters (Chapters 6-10) deal with the analysis of various artifacts and ecofacts. Findings from these analyses culminate in an investigation of the primary hypotheses of this dissertation in Chapter 11 (i.e., whether or not Zorropata was under Wari control). Chapter 12 concludes the

present research with a discussion of how Zorropata fits into the broader context of Nasca culture history.

¹ During fieldwork units and site features (e.g., architecture, habitation terraces, etc.) were named in reference to information available from my 2013 data. They were renamed in the lab to integrate a wealth of new, more accurate mapping data generated during the 2014 field season. Renaming of these features also facilitated their discussion in this dissertation. As mentioned above, units were renamed in order of excavation. Excavations began at the *Recinto A1* so it was designated Unit 1. Unit 2 happened to remain Unit 2. Unit 11 became Unit 3. The original ‘Unit 1’ became Unit 4. Unit 9 became Unit 5. Units 40 and 39 in Sector 3 became Units 6 and 7, respectively. The original ‘Unit 6’ became Unit 8. Unit 33 became Unit 9. Unit 23, the final unit to be opened for excavation, became Unit 10.

² I also offered one of the Ghirardelli dark chocolate squares I had brought from the US to appease the local Apus (gods).

³ A special thanks to Alicia Gorman, a friend, colleague, and fellow doctoral candidate at the University of California, Santa Barbara. Gorman paid this project a visit for a couple of days and helped with the excavation of Unit 3.

⁴ ‘Area’ with a capital ‘A’ refers to a basic unit of analysis used to organize work at Zorropata. Where ‘area’ is lowercase the word is being used in a more general sense. ‘Areas’ were only used to organize excavations at the *Recinto A1* (Unit 1).

⁵ As discussed in Chapter 9, paleoethnobotanical analysis has yet to be conducted on samples collected from Zorropata. Cucurbit seeds were observed in the wall fill among other yet unidentified plant remains in what appears to be a deposit of ancient domestic debris.

⁶ Samples for INAA were sent to the University of Missouri Research Reactor (MURR) for analysis with support from the National Science Foundation through a subsidized pricing program.

⁷ It should be noted that the Ministry of Culture now requires researchers to return all samples that will not be used for destructive analysis within one year of export. Obsidian samples were returned to Ica with the help of Alicia Gorman in the summer of 2016.

⁸ These percentages do not include Unit 10 from which only finewares were documented among the diagnostic ceramics. It is unlikely that the assemblage from Unit 10 reflects the complete ceramic assemblage for this habitation terrace.

Chapter 6

Pottery Analysis

This chapter addresses the ceramic assemblage from Zorropata's 2014 field season. The purpose of this chapter is threefold. First, it evaluates the vessel assemblage and classifies all identifiable sherds according to established morphological categories. The vessel assemblage and distribution of different vessel types is examined further to evaluate the proposition that terraces were domestic spaces. Moreover, vessels associated with domestic or ceremonial spaces at Zorropata are used to investigate the suite of household or ceremonial vessels, respectively. Second, this chapter elaborates on the chronological framework offered in Chapter 5 and adds details from phased, excavated ceramics. Third, production is investigated through a discussion of the results of paste analysis and Instrumental Neutron Activation Analysis (INAA) of a sample of Loro period sherds.

At Zorropata, diagnostic and non-diagnostic ceramics made up c. 55% of the assemblage of artifacts recovered from excavation by weight. Diagnostic wares were defined following Vaughn (2000:290) to include all ceramic sherds exhibiting decoration (including body sherds), rim sherds, necks, bases, and lugs/handles.

Diagnostic ceramics were collected from excavation units and surface collection. Only ceramics from excavated contexts (Units 1, 2, 3, 4, 5, 8, 9, and 10) were analyzed to create the following typology. As discussed in Chapter 5, Unit 1 appears to be ceremonial in nature while Units 2, 3, 4, 5, 8, 9, and 10 produced artefactual evidence consistent with an interpretation as habitation terraces. Diagnostic ceramics from surface collection are discussed in their broader cultural and chronological significance in Chapter 4. Non-

diagnostic ceramics were collected, counted, and weighed for excavation units but were merely counted in field and not collected during surface analysis. Non-diagnostic ceramics were documented to get an idea of how representative diagnostic ceramics were of the overall volume of ceramic material from Zorropata. The following classification may be biased towards finewares as decorated body sherds are diagnostic whereas plainware body sherds tend not to be. For reference, non-diagnostic ceramics, the vast majority of which were plainware body sherds, made up c. 76% by count and 50% by weight of all pottery from excavated contexts at Zorropata.

Diagnostic ceramics were the focus of analysis because they provide a wealth of comparable data and contribute to a functional classification of the Zorropata pottery assemblage in ways that non-diagnostic ceramics cannot. Diagnostic ceramics were grouped into fineware (decorated) and plainware (utilitarian, non-decorated) following Carmichael (1988:211), Silverman (1993:227), and Vaughn (2000:289) (Table 6.1). Refitting ceramic sherds were identified for this assemblage prior to analysis. The counts presented below represents all diagnostic sherds from excavated contexts that do not refit. They are considered an accurate estimate of the minimum number of vessels (MNV).

The primary identifying feature of Nasca finewares is their elaborate, decorative, polychrome slip painting (Carmichael 1988:11). The use of up to fifteen mineral based pigments has been documented for Early Intermediate Period Nasca ceramic wares (Vaughn 2009:39). In addition, Nasca finewares from the Early Intermediate Period tend to have highly burnished surfaces. It is typical for the paste of fineware vessels to contain few to no inclusions and to be relatively homogeneous. In contrast, plainwares have much coarser fabric and thicker (>6 mm), less finished (i.e., smoothed or polished) vessel walls (Vaughn

Table 6.1. Zorropata Ceramic Vessel Assemblage.

Type	Subtype	Count	% of Assemblage
Bowls			
	Straight	30	5.8%
	Flaring	57	11.1%
	Deep	4	0.8%
	Convex	4	0.8%
	Cup	3	0.6%
	Other	130	25.2%
Dish		38	7.4%
Bottles			
	Effigy	2	0.4%
	Spout and Bridge	1	0.2%
Jars			
	Face-Neck Jar	4	0.8%
	Jar/Cantaro	88	17.1%
Vase/Angled Goblet		9	1.7%
Other Fineware		41	8.0%
Category Total		411	79.8%
Olla/Jar			
	Necked olla/Collared Jar	60	11.7%
	Neckless olla	2	0.4%
	Very large jars	3	0.6%
	Other	33	6.4%
Handles		6	1.2%
Category Total		104	20.2%
Total		515	100.0%

2000:289). In the rare case where a plainware exhibits slip, it is simple and crude (e.g., paint splatter rather than a specific design) (Carmichael 1988:211; Silverman 1993:245; Vaughn 2000:289).

Methods

All diagnostic sherds were drawn and classified according to functional categories. Sherds smaller than c. 2 cm² were not drawn unless they exhibited distinct, identifiable design elements or the vessel type could be determined. All ceramics from Zorropata assemblage were fragmentary. Assessments are more straight forward on larger, more complete vessels. Therefore, analysis was biased towards more readily identifiable sherds.

Ceramic vessel form tends to denote function. For example, a serving bowl leaves its contents more accessible to guests while a closed mouth cooking *olla* channels heat well to its contents when set on a fire. Moreover, a vessel painstakingly decorated with elaborate designs meant to convey cultural ideologies will be more effective at doing so if displayed for or used to serve guests. Also, a delicate, finely-crafted vessel may not hold up well to repeated thermal stress making use as a cooking vessel impractical and unlikely. A vessel with a very restricted opening such as a bottle is more conducive to use with liquids than it would be for solids. A vessel's size also speaks to its use. Analysis of the Zorropata ceramic assemblage included measurement of the orifice diameter for sufficiently intact (c. 10% complete or more) rim sherds. Larger cooking or serving vessels can be used to cook for or serve more people than small ones (Wilson 2008: 97-127). A very large vessel may be difficult to move around but provides substantial space if used to store goods. Functional

categories in this assemblage were based on vessel shape, size, surface treatment, and paste composition. Wear was also considered; however, there was little diagnostic wear evident on sherds in the assemblage.

Functional categories are defined here following Vaughn (2000:352) to include cooking, service, storage (Sinopoli 1991:84), and other (Mills 1989) vessel categories. In general, serving vessels such as bowls, dishes, bottles, decorated jars, goblets, or vases are classified as finewares. Cooking and storage vessels were categorized as plainwares and included undecorated, utilitarian *ollas* and jars.

The identification of vessel shape categories is best done with complete vessels, but these are rarely recovered from archaeological sites. When working with fragmentary vessels, form can usually be deduced from rim sherds with little ambiguity. Body sherds can be less straight forward, but their classification can be facilitated by studying the decoration or manufacture techniques. Once vessels are classified according to their form and function, an MNV can be generated. An MNV can be used to investigate the importance of various food preparation, storage, and serving activities at a site through a study of the relative frequency of vessel classes in an assemblage.

Classification

A total of 515 diagnostic ceramic sherds from excavated contexts was analyzed and included in the following classification. The following classification was devised drawing on previous research regarding Nasca pottery types (Figure 6.1; Carmichael 1988, 1998:21; Kroeber 1956; Kroeber and Collier 1998; Proulx 1968; Rowe 1960; Silverman 1993;

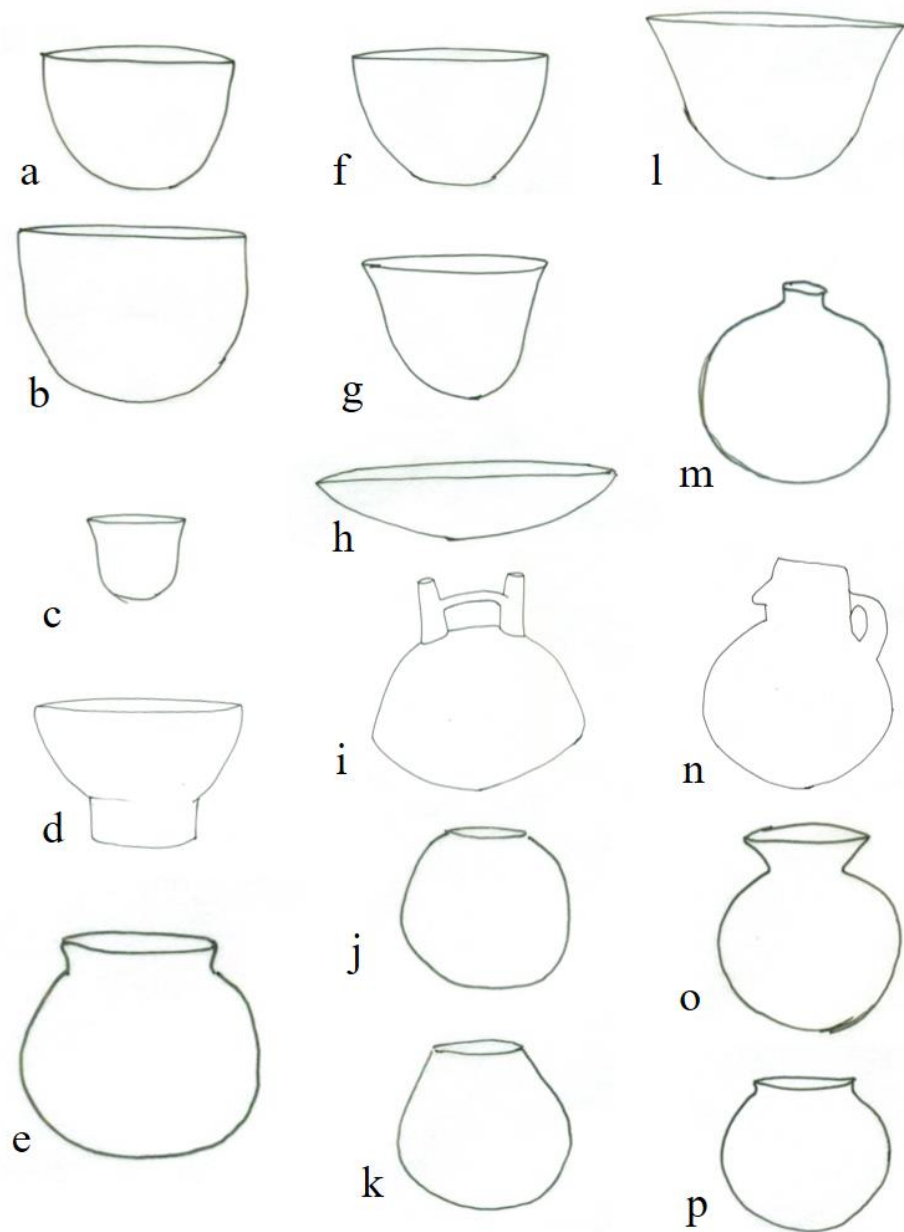


Figure 6.1. Fineware and Plainware Vessel Types from Zorropata (a. Convex Bowl; b. Straight Bowl; c. Cup Bowl; d. Angled Goblet; e. Very Large Collared Vessel; f. Type 1 Flaring Bowl; g. Type 2 Flaring Bowl; h. Dish; i. Spout and Bridge Bottle; j. Collarless Plainware Vessel; k. Collarless Plainware Vessel; l. Deep Bowl; m. Cantaro (or Jar if not painted); n. Face-Neck Jar; o. Collared Plainware Vessel; p. Collared Plainware Vessel).

Silverman and Proulx 2002; Vaughn 2000; Whalen 2014). The finewares and plainwares¹ discussed below were recovered from all excavation units in Sector 1 and the surface of excavation units from Sector 3 (Figures 6.2 and 6.3). Finewares constituted the majority (79.8%) of vessel types from excavated contexts while plainwares are in the minority (20.2%). At Marcaya, the percentage of finewares was also relatively high at 56% compared with 44% for plainwares (Vaughn 2000:356).

Fineware

Bowls

Nasca bowls are conical bottomed vessels with walls that come straight up from the base and either remain straight, curve in, or flare out at the rim (Proulx 1968:12; Vaughn 2000:291). Bowls made up c. 44% of the total pottery assemblage by count. Several subtypes of bowls were observed that are consistent with Nasca bowl forms from other assemblages (Proulx 1968:12; Vaughn 2000: 291; Whalen 2014:216). These subtypes included straight bowls (n = 30), flaring bowls (n = 57), deep bowls (n = 4), convex bowls (n = 4), and cup bowls (n = 3). In addition, several sherds (n = 130) were intact enough to determine that they were likely from bowls but too small or deteriorated to determine the bowl subtype.

Bowl subtypes differ in terms of the curvature of their walls and rim. Straight bowls have vertical walls with no curvature (Figure 6.4; Vaughn 2000:298). Flaring bowls have vertical or slightly incurving walls and flare out at the rim (Proulx 1968:12). Proulx (1968:12) distinguishes between two types of flaring bowls. Type 1 Flaring bowls have more vertical walls and flare less at the rim (Figure 6.5; Proulx 1968:12). Type 2 Flaring bowls

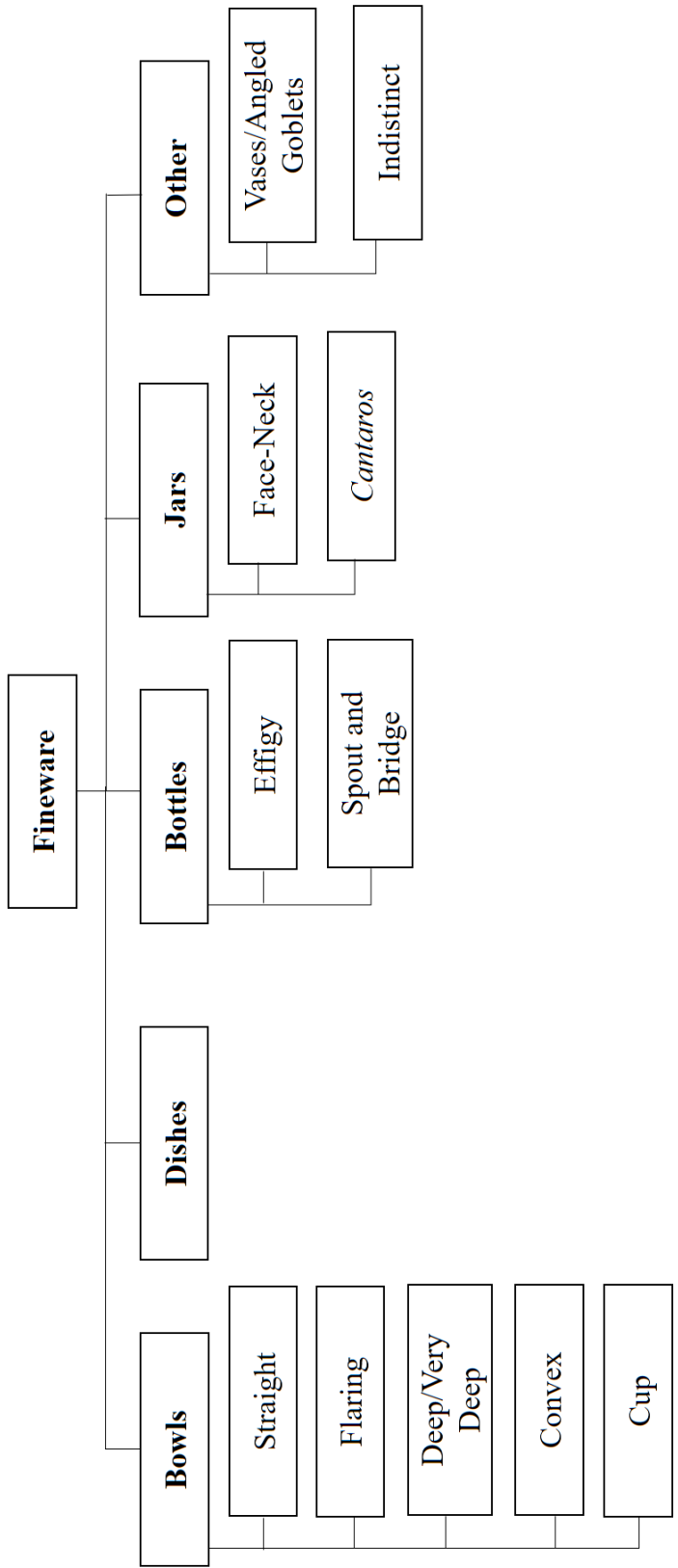


Figure 6.2. Flow Chart of Fineware Vessel Types.

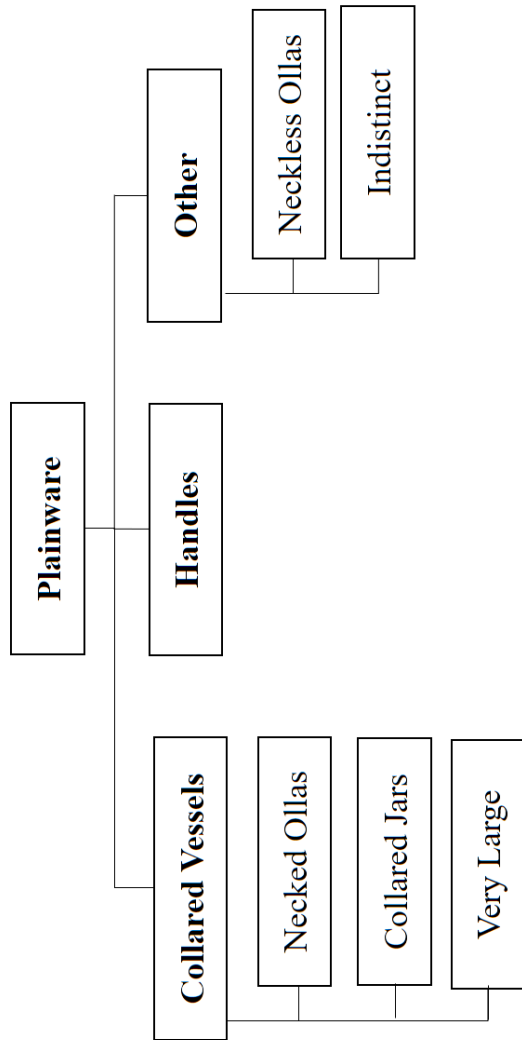


Figure 6.3. Flow Chart of Plainware Vessel Types.

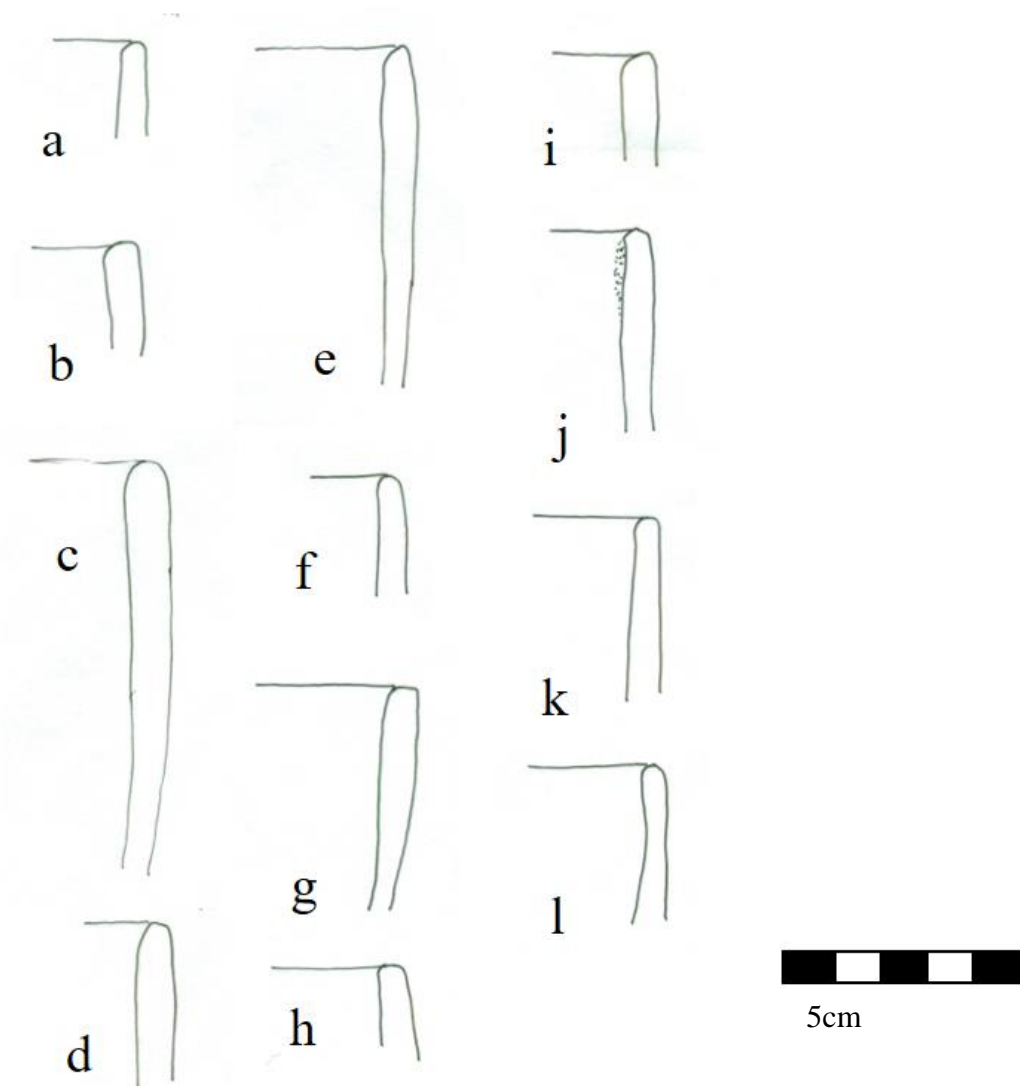


Figure 6.4. Straight Bowls from Zorropata (a. ZA111-2.4; b. ZA111-2.5; c. ZA106-15.1; d. ZA111-10.2; e. ZA106-24.1; f. ZA109-23.2; g. ZA339-1.2; h. ZA133-22.1; i. ZA109-23.3; j. ZA111-2.3; k. ZA133-5.2; l. ZA133-3.1).

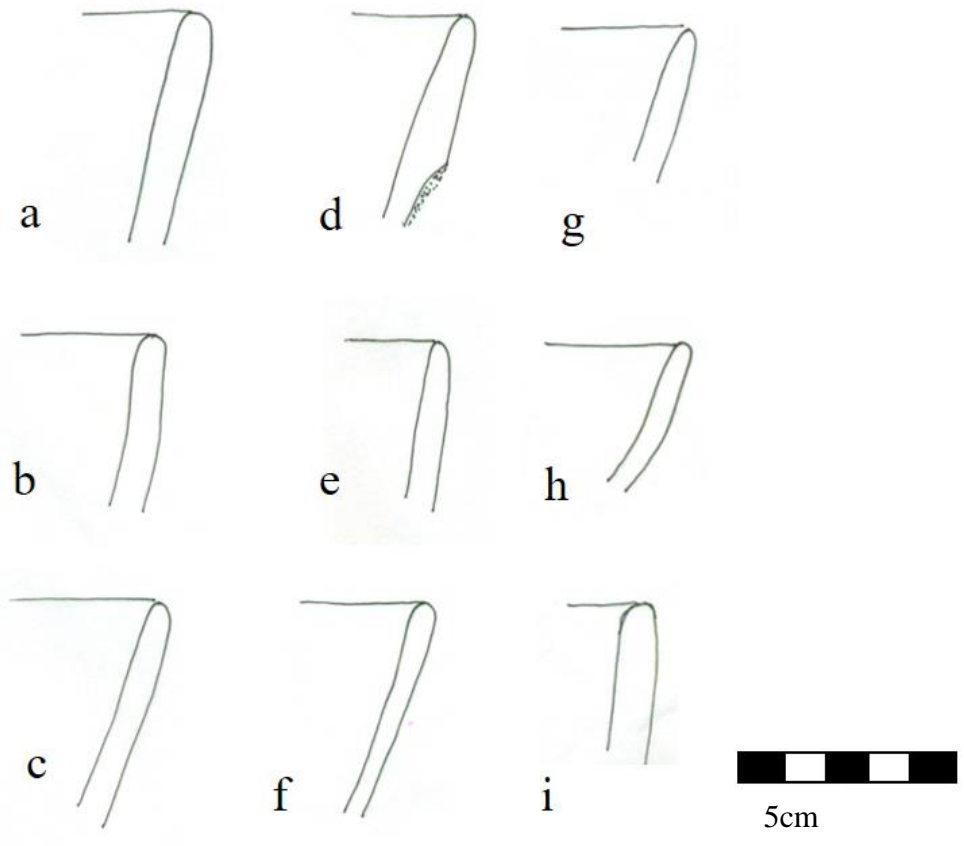


Figure 6.5. Type 1 Flaring Bowls from Zorropata (a. ZA133-8.3; b. ZA109-13.1; c. ZA101-3.1; d. ZA109-18.3; e. ZA109-28.2; f. ZA1RA1-9.1; g. ZA109-28.1; h. ZA1RA1-6.1; i. ZA109-28.14).

have concave walls and flare more notably at the rim (Figure 6.6; Proulx 1968:12). Deep bowls (Spivak 2015:78), also referred to as Very Deep Bottom bowls (Proulx 1968:13) have particularly tall vertical walls in respect to other Nasca bowls and may be slightly concave at the rim (Figure 6.7). Convex bowls have convex walls but do not flare significantly at the rim (Figure 6.8; Vaughn 2000:298). Cup bowls are small relative to other bowls, and “bell-shaped vessels with a distinctive flaring rim” (Figure 6.9; Proulx 1968:12). Due to the fragmentary nature of this assemblage more than 50% of bowls could not be identified to the subtype level.

The percentage of bowls in this assemblage is consistent with other Nasca assemblages (Carmichael 1988:221; Proulx 1968:1; Silverman 1993:233; Vaughn 2000:298). At the Early Nasca village site Marcaya, bowls comprised 32% of entire ceramic assemblage and 55% of finewares. At Zorropata, bowls are c. 44% of the pottery assemblage and c. 55% of finewares. Excavations at Marcaya targeted habitation contexts. Thus, if only the habitation contexts at Zorropata are considered, bowls make up 37% of the assemblage, which is comparable to the Marcaya assemblage. Bowls accounted for c. 29% of the pottery assemblage from habitation contexts at Cocahuischo and 90% of the finewares.

Dishes

Dishes are open vessels with round bases and very wide flaring walls and rim² (Figure 6.10). According to Proulx, they vary in depth, and exhibit decoration on the interior (Proulx 1968:12). In general, dishes fit the definition offered by Prudence Rice and have a height between 20% and 33% of their diameter (Rice 1987:216). Besides being shorter and wider than bowls, dishes also differ in the location of decoration. Bowls tend to be decorated

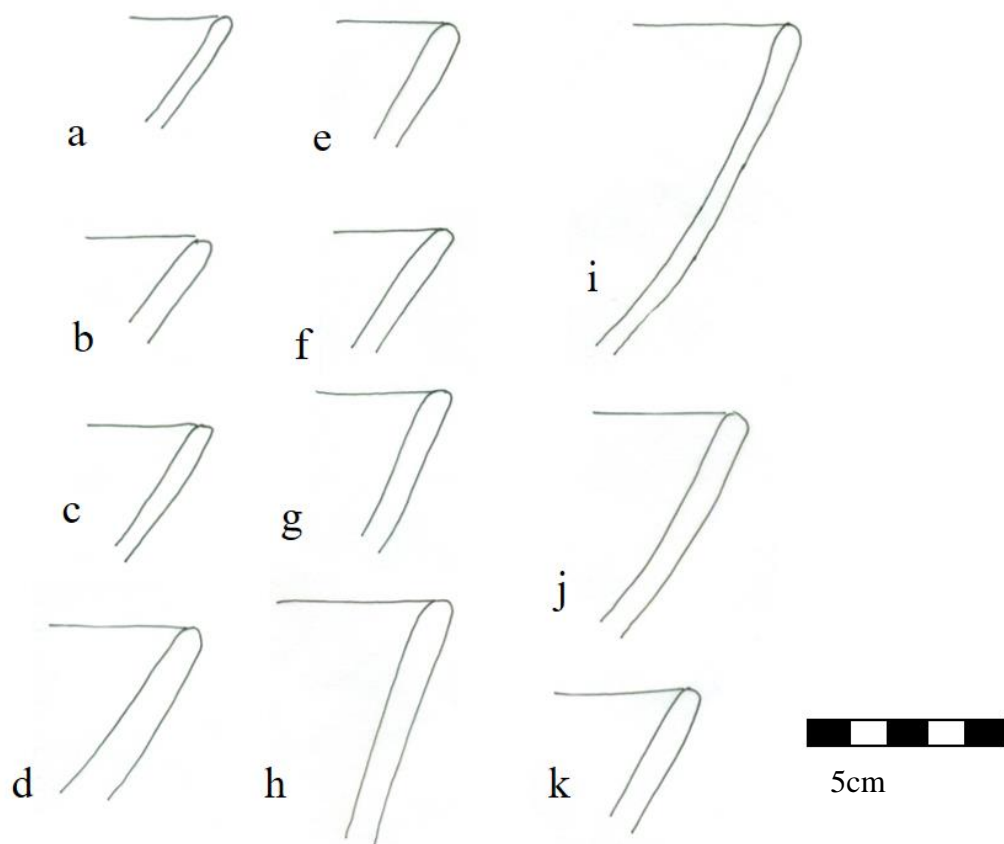


Figure 6.6. Type 2 Flaring Bowls from Zorropata (a. ZA1RA1-20.1; b. ZA123-8.1; c. ZA133-24.1; d. ZA133-2.1; e. ZA101-7.1; f. ZA101-5.1; g. ZA109-28.2; h. ZA111-9.1; i. ZA106-27.1; j. ZA109-20.1; k. ZA109-27.1).

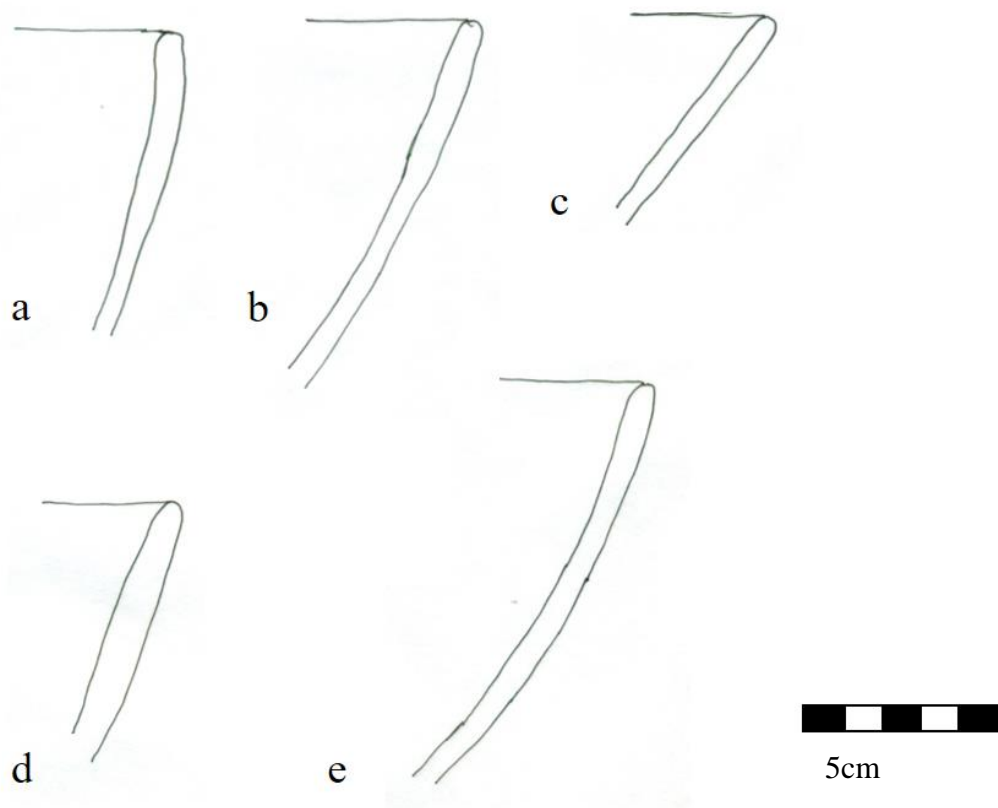


Figure 6.7. Deep Bowls from Zorropata (a. ZA1RA1-16.3; b. ZA1RA1-14.2; c. ZA1RA1-26.1; d. ZA1RA1-3.1; e. ZA1RA1-14.1).

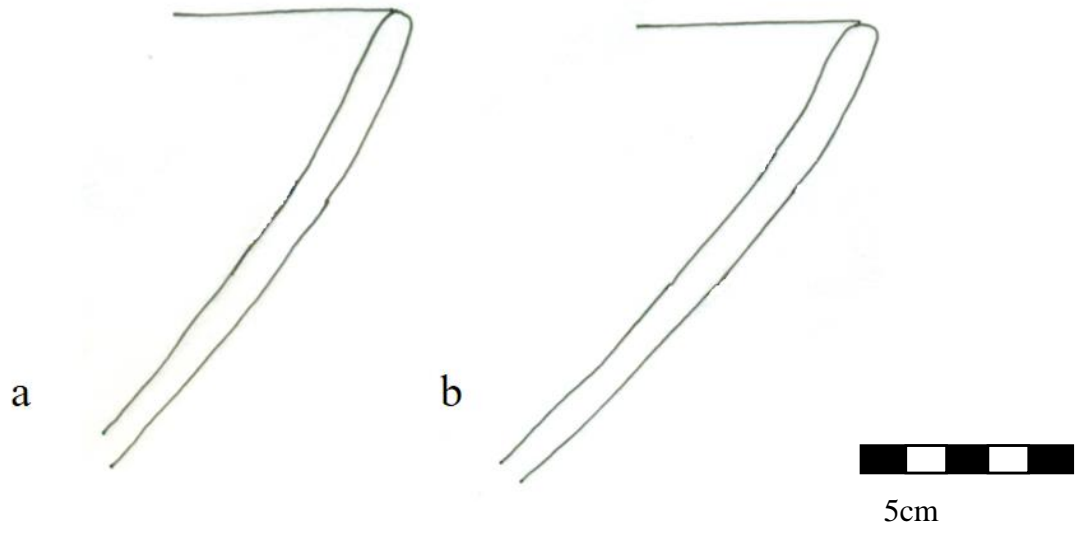


Figure 6.8. Convex Bowls from Zorropata (a. ZA1RA1-1.2; b. ZA1RA1-1.3).

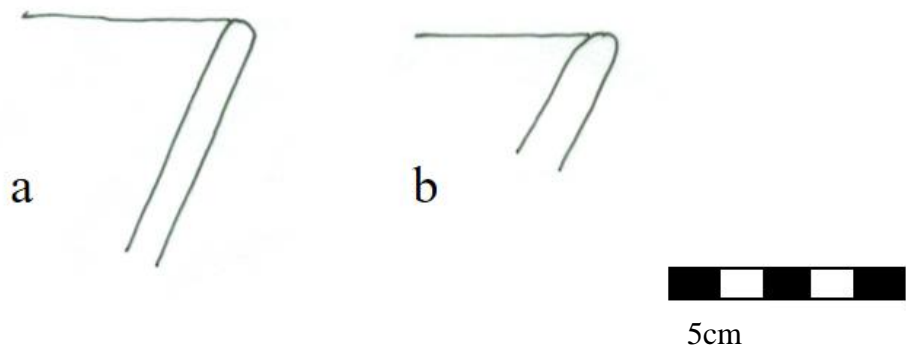


Figure 6.9. Cup Bowls from Zorropata (a. ZA1RA1-37.3; b. ZA101-4.2).

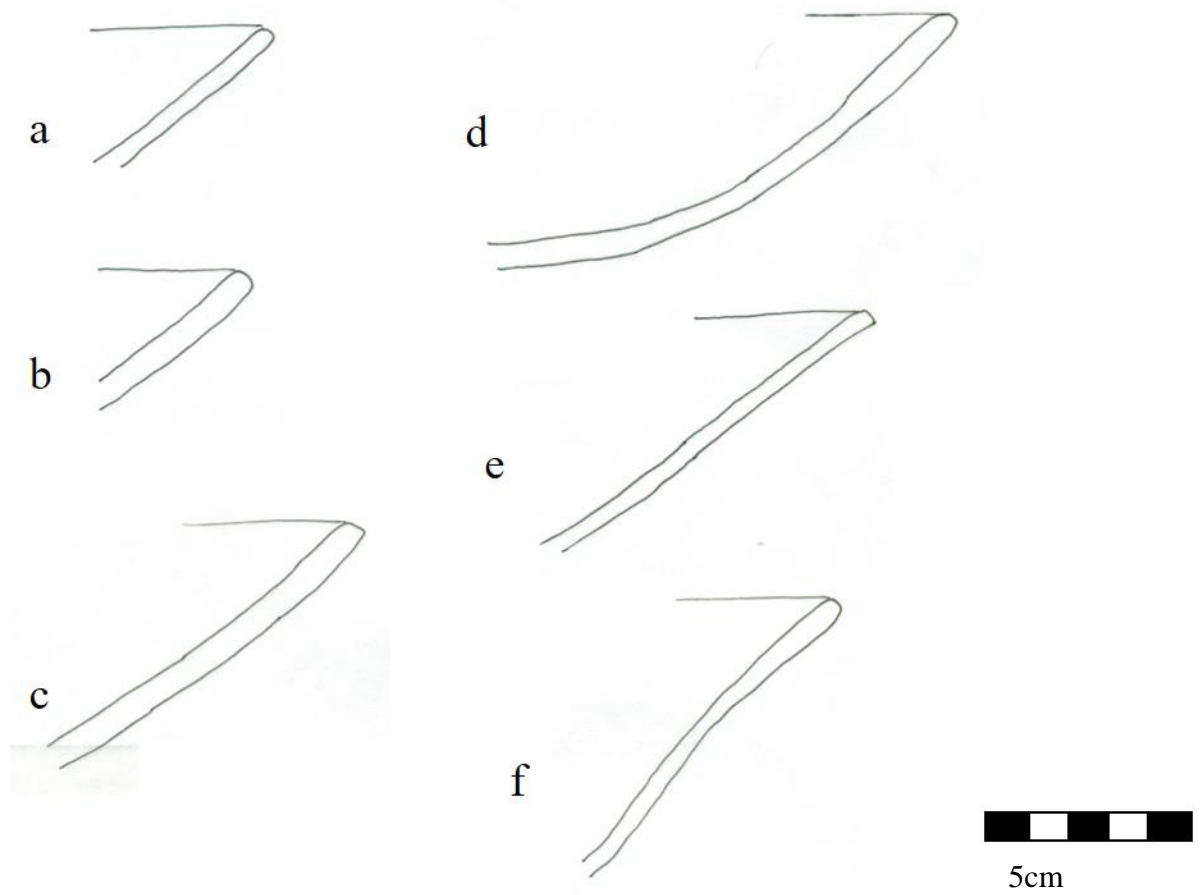


Figure 6.10. Dishes from Zorropata (a. ZA1RA1-5.2; b. ZA1RA1-3.2; c. ZA1RA1-13.1; d. ZA1RA1-31.1; e. ZA1RA1-12.1; f. ZA1RA1-19.1).

on the exterior surface; whereas, dishes are decorated on the interior surface (Carmichael 1998:21). Dishes make up 7.4% of the pottery assemblage from habitation contexts at Zorropata and c. 9% of the fineware. Dishes make up almost 5% of the pottery assemblage from Marcaya (Vaughn 2000:316). No dishes were reported for Cocahuischo.

Bottles

Bottles are closed forms and can have a single or a double spout (Proulx 1968:13). They tend to be used for the storage and presentation of liquids. Slip painting on bottle sherds from Zorropata suggests that they were fineware. Bottles make up less than 1% of the pottery assemblage at Zorropata and can be classified into two different subtypes, Effigy bottles and Spout and Bridge bottles. Two fragments of Effigy bottles were recovered, one each from Units 2 and 8 (Figure 6.11). These sherds represent to different vessels. Part of a spout from a Spout and Bridge bottle was recovered from Unit 9 (Figure 6.12). This vessel form is rare (Proulx 1968:13; Whalen 2014:231). None were recovered from Marcaya. Two bottle sherds were recovered from Cocahuischo and made up 0.2% of the pottery assemblage. This vessel form is interpreted as high-status for the Early Nasca Period (Vaughn 2004:76). The present evidence supports that bottles continued to be rare in later periods (Conlee 2000:142; Whalen 2014:231).

Jars

Jars are a relatively closed vessel form that is taller than its maximum diameter (Rice 1987:216). Both fineware and plainware jars were recovered from Zorropata. Fineware jars exhibit decoration and are, in general, made with more skill. Only fineware jars are discussed

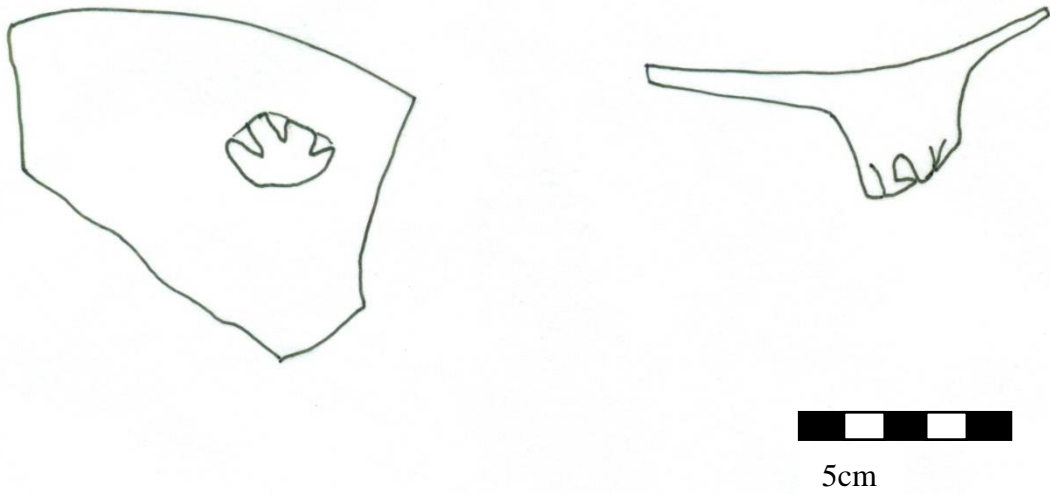


Figure 6.11. Sherd from an Effigy Vessel (ZA102-34.1) from Zorroputa.

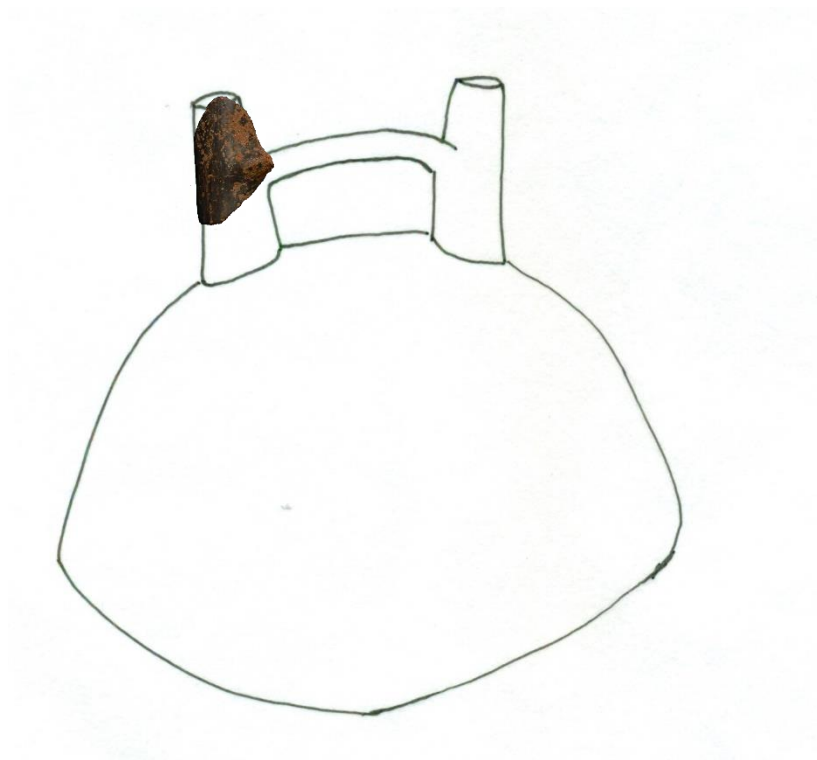


Figure 6.12. Spout and Bridge Bottle (ZA133-25.2) from Unit 9 Zorropata.

in this section. The assemblage from Zorropata included two subtypes of fineware, Face-neck jars and *Cantaros*. Fineware jars were more common at Zorropata than at Marcaya or Cocahuischo composing nearly 18% (n = 92) of the assemblage at the former site, and only c. 9.4% and 0.6% of the latter two sites, respectively (Vaughn 2000:317; Whalen 2014:226).

Face-neck jars are a distinctly Loro vessel form that developed from Late Nasca forms with influence from foreign forms (Figure 6.13; Spivak 2015:80). Face-neck jars depict a modeled face on the neck and a globular body (Spivak 2015:1; e.g., Spivak 2015: Figure 1.1). Face-neck jars composed less than 1% (n = 4) of the Zorropata assemblage from excavation units but were more common in surface collection. This jar type was not documented at Marcaya, Cocahuischo, or Pajonal Alto.

Cantaros are a crude decorated handled jar with thick walls and coarse fabric (Figure 6.14). They are polychrome painted with a “simple decoration of thick, wavy, dark red lines on a white or tan background with black outline” (Vaughn 2000:327; e.g., Silverman 1993: Figure 13.6; Strong 1957: Figure 12.B and D). Following Kevin Vaughn, *Cantaros* are classified under finewares here because, despite their rougher production quality, they are decorated (Vaughn 2000:292). Previous research assumes that these vessels were used to store liquids (Vaughn 2000:327). *Cantaros* composed 17.1% (n = 88) of the assemblage from Zorropata. This vessel form was also present at Marcaya (n = 27, 6.4%) (Vaughn 2000:327).

Other

Nine sherds, 1.7% of the pottery assemblage, were classified as possible Vases or Angled Goblets (Figure 6.15). These two possible forms are distinct from one another but may be more difficult to distinguish in fragmentary form. Vases are described in the

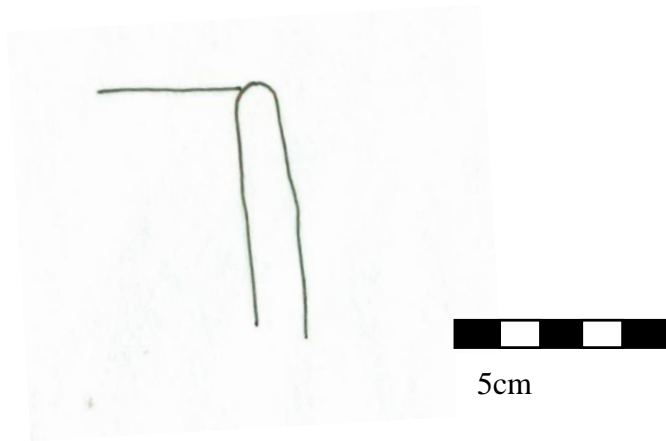


Figure 6.13. Face-Neck Jar (ZA106-11.1) in Profile.

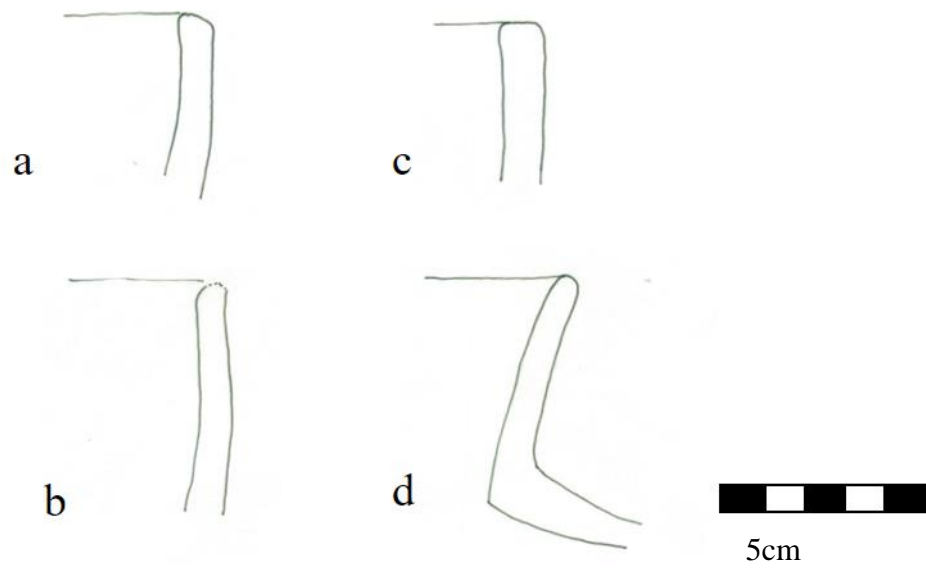


Figure 6.14. *Cantaros* from Zorropata (a. ZA133-5.3; b. ZA111-15.3; c. ZA106-36.1; d. ZA106-29.1).

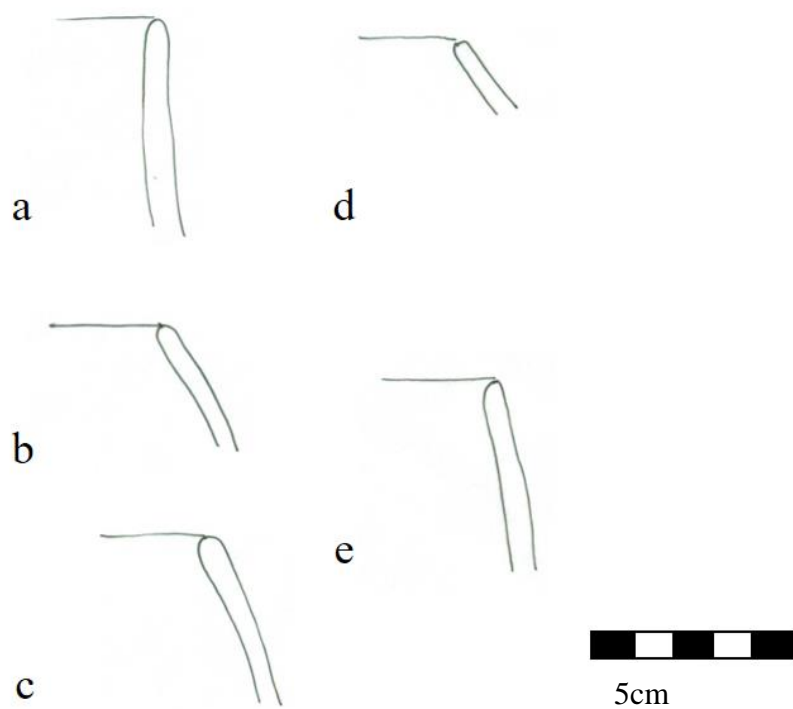


Figure 6.15. Vases/Angled Goblets from Zorropata (a. ZA133-5.1; b. ZA133-3.2; c. ZA109-28.1; d. ZA109-9.1; e. ZA109-17.1).

literature as a type of jar (Proulx 1968:13) that is twice as tall as its diameter (Carmichael 1988:222). Goblets are deeper than bowls. Angled Goblets constrict at the base and flare at the rim (e.g., Spivak 2015:246). Goblets are thought to be drinking vessels (Spivak 2015:79; Whalen 2014:224). Whalen describes goblets as shallower than vases (Whalen 2014:224). Of the Zorropata specimens, eight are body sherds and one is a rim sherd. Depth and diameter are difficult to accurately determine for the body sherds. The rim sherd is most consistent with an Angled Goblet given its diameter (c. 9 cm).

Several additional sherds (n = 41, 8%) could be classified as fineware because of their production quality and surface treatment. These sherds were too fragmentary to further classify them into any of the above types or subtypes.

Plainware

Collared Vessels

Collared plainware vessels (n = 60) compose 11.7% of the pottery assemblage from Zorropata and c. 60% of the diagnostic plainware assemblage (Figure 6.16). Thus, this is the largest category of plainware vessels. This category includes both necked *ollas* and collared jars. *Ollas*, cooking vessels, are globular vessels with or without a collar (Silverman 1993:245-247). Necked *ollas* have short, out-turning collars (Vaughn 2000:340). Plainware jars, like fineware jars, are taller than they are wide (Rice 1987:216). Nasca collared jars are globular vessels with short, straight or slightly incurving collars.

The differences between necked *ollas* and collared jars are subtle when identifications are made from rim sherds (DeLeonardis 1997:229-230; Vaughn 2000:340). Vaughn

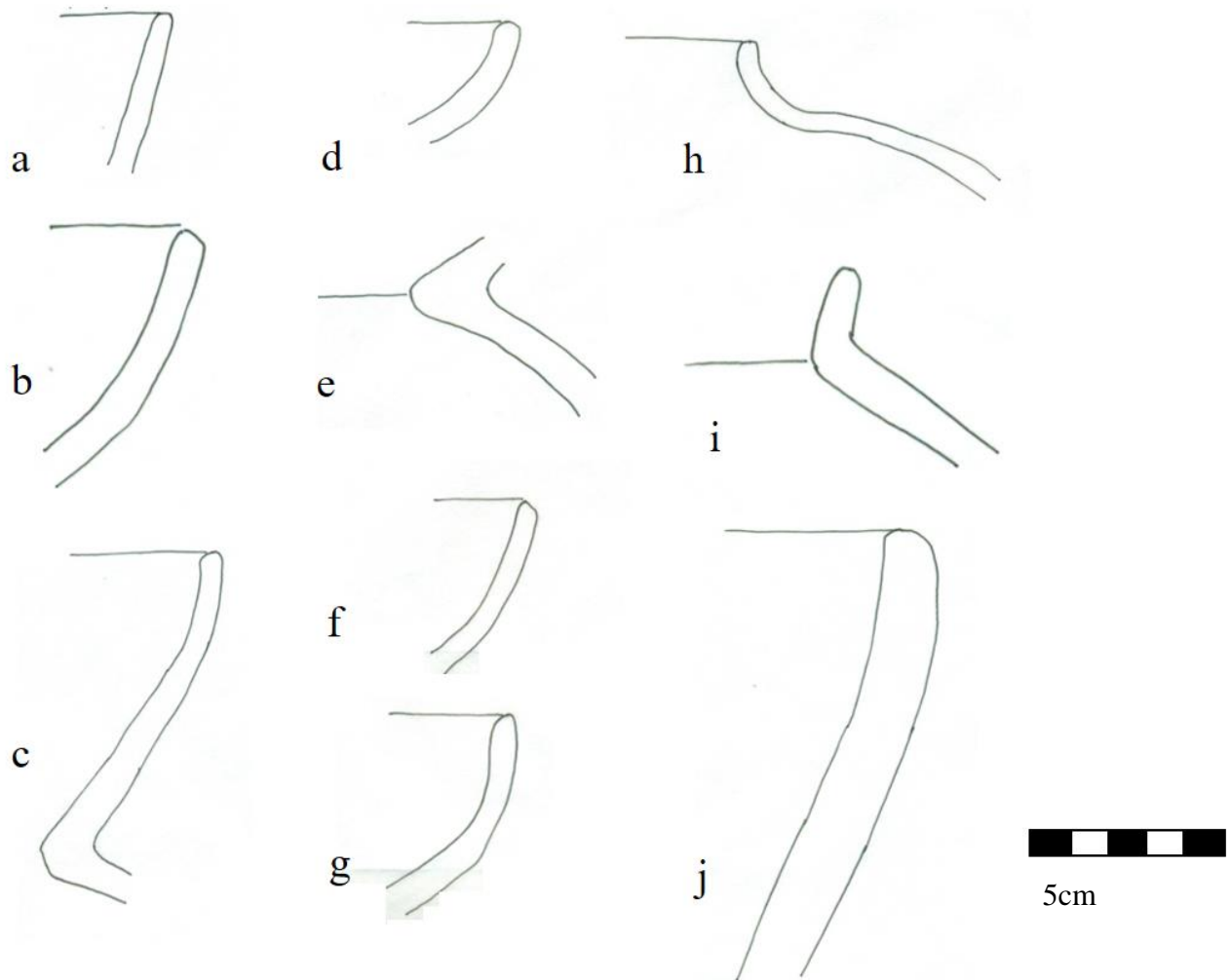


Figure 6.16. Collared Utilitarian Vessels from Zorropata (a. ZA339-1.4; b. ZA109-22.1; c. ZA1RA1-1.1; d. ZA133-17.1; e. ZA102-27.1; f. ZA109-22.1; g. ZA109-26.1; h. ZA1RA1-36.1; i. ZA109-21.1; j. ZA1RA1-28.1).

(2000:340) argues that the two vessel types are distinguishable from fragments, but recognizes that doing so can lead to inaccuracies in classification. Vessels with different uses, i.e., storage vs. cooking, are expected to have different properties in terms of tempering and wall thickness and exhibit different wear (e.g., burning or soot on *ollas* from use in cooking that is absent on jars). *Ollas* and Collared jars differ significantly in form when observed whole (Vaughn 2000:339). However, there is a notable degree of variation evident in utilitarian vessel rim sherds that suggests they may not be as reliable indicators of use as archaeologists would like. Moreover, wear diagnostic of cooking or storage related activities may be more visible on the base or body of a vessel, where it comes into contact with fire or the ground surface, than on the rim. More research on utilitarian pottery assemblages from Nasca habitation sites is needed to clarify this issue. For this reason, a single category of collared vessels is used here for plainware collared jars and necked *ollas*.³

Other Ollas

Similar to Marcaya, neckless *ollas* were uncommon at Zorropata making up c. 0.4% of the assemblage. Sherds representing at least three very large jars were recovered from Units 1, 5, and 8 (Figure 6.17). A rim sherd from Unit 1 came from a vessel with a diameter of at least 54 cm with 1.5 cm thick walls. Another rim sherd from Unit 8 came from a vessel with a diameter of at least 35 cm with walls c. 1 cm thick. The specimen from Unit 5 is represented by a body sherd that was 1.6 cm thick. It was not possible to determine vessel height from the sherds in this assemblage. A large plainware jar from Majoro Chico A measured 34 cm at the rim and 26.8 cm tall (Kroeber and Collier 1998: Figure 323). Very large jars composed only 0.6% of the assemblage from Zorropata. An additional 33 sherds,



Figure 6.17. Fragment of Necked Olla with a 54 cm Rim Diameter (ZA1RA1-28.1).

composing 6.4% of the pottery assemblage, came from *ollas* or plainware jars but are not intact enough for further classification.

Handles

Six handles or handle fragments were recovered from excavation units and represent 1.2% of the pottery assemblage (Figure 6.18). These artifacts may represent unique vessels or may have come from vessels such as an *olla* or *cantaro* that were already counted in the above typology (Proulx 1968: Figure 17; Silverman 1993:247; Vaughn 2000:339-340).

The Zorropata Vessel Assemblage

The artifact assemblage from the 2014 season at Zorropata includes two distinct types of contexts, ceremonial/mortuary contexts at Unit 1 and habitation contexts at Units 2, 3, 4, 5, 8, 9, and 10. Most sherds (91%) in the assemblage from Unit 1 were from fineware, only 9% were from *ollas*, jars, or other utilitarian vessels (Table 6.2). The Unit 1 vessel assemblage also includes the greatest variety of fineware vessel types. In contrast, ceramic assemblages from domestic contexts were between 70% and 80% fineware (Tables 6.3 and 6.4). Like domestic assemblages at other Nasca sites, finewares at Zorropata comprise most sherds (Silverman 1988:421, 1993:301; Vaughn 2000:355-356; Whalen 2014:292).

Decoration

Slip Painting. Throughout the Early Intermediate Period, Nasca pottery was slip painted before firing. Slip paints were derived from various oxides and minerals (manganese, iron,



Figure 6.18. Handle from Zorropata (ZA106-22.1).

Table 6.2. Unit 1 Ceramic Vessel Assemblage.

	Count	% of assemblage for unit	% of category
Finewares		91%	
Bowls	39	39%	42%
Flaring Bowl (Type 1)	2		5%
Flaring Bowl (Type 2)	2		5%
Deep Bowl	4		10%
Convex bowl	2		5%
Cup bowl	1		3%
Other	28		72%
Dishes	16	16%	
Bottles	5	5%	
Jar/Bottle/Vase	5		100%
Vase/Angled Goblet	3	3%	
Jar/Cantaro	20	20%	
Unknown fineware	9	9%	
Utilitarian wares		9%	
Olla or Jar	8	8%	
Necked olla or collared jar	6		75%
Very Large Olla	1		13%
Other	1		13%
Handeled jar	1	1%	
Total	101		

Table 6.3. Unit 5 Ceramic Vessel Assemblage.

	Count	% of assemblage for unit	% of category
Finewares		70%	
Bowls	44	42%	
Straight Bowl	4		9%
Flaring Bowl (Type 1)	5		11%
Flaring Bowl (Type 2)	8		18%
Other	27		61%
Dishes	4	4%	
Bottles	4	4%	
Jar/Bottle/Vase	4		100%
Vase/Angled Goblet	3	3%	
Jar/Cantaro	12	11%	
Unknown fineware	6	6%	
Utilitarian wares		30%	
Olla or Jar	30	29%	
Necked olla or collared jar	13		43%
Very Large Olla	1		3%
Other	16		53%
Handeled jar	2	2%	
Total	105		

Table 6.4. Unit 8 Ceramic Vessel Assemblage.

	Count	% of assemblage for unit	% of category
Finewares		81%	
Bowls	46	52%	
Straight Bowl	11		24%
Flaring Bowl (Type 1)	4		9%
Flaring Bowl (Type 2)	4		9%
Other	27		59%
Dishes	4	4%	
Bottles	2	2%	
effigy bottle	1		50%
Jar/Bottle/Vase	1		50%
Face-neck jar	2	2%	
Jar/Cantaro	12	13%	
Unknown fineware	6	7%	
Utilitarian wares		19%	
Olla or Jar	14	16%	
Necked olla or collared jar	8		57%
other	6		43%
Handeled jar	3	3%	
Total	89		

limonite, hematite, magnetite, etc.) to achieve a wide variety of earth tone colors including: black, white, purple, red, dark red, light red, orange, light orange, yellow, gray, brown, violet, and pink. Light Blue was added around AD 550 (Carmichael 1988:238). Middle and Late Nasca potters used at least 13 different slip colors to decorate their work. The full palate of slip paint colors was rarely used on the same vessel. Most vessels sported around seven or eight colors (Proulx 2008:572).

In contrast, the repertoire of slip colors used on Loro ceramics was vastly reduced. Common Loro slip colors included reddish brown, white (which often varied from beige to cream grey), dark red, and black, although there are a few examples where bluish gray or purplish red slips were achieved. These too were rarely all represented on a single vessel. There is one relatively common multicolor trend where reddish brown, white, and dark red fields are used together and lined and separated with black (Strong 1957:39). It is also common for bowls to have a band of red slip along the interior or exterior rim. In addition, Loro potters used an organic black pigment to coat pots or make designs on them. This black pigment is fugitive, applied after firing, and therefore far more fragile to use wear and post-depositional processes (Strong 1957:40).

No chemical analysis of Loro slips has yet been conducted to determine their composition; however, visual observations suggest that the recipes or sources of slips during this period were not the same as those during the Early Intermediate Period. Loro slips tend to be fragile or even flaky especially the organic black pigment. Slip application also tends to be more irregular. Sometimes slips are watery and applied very thinly while other times the slip is too thick causing it to flake off the vessel (Spivak 2015:83).

Design elements and motifs. Much research has been devoted to creating typologies of Nasca designs elements, motifs, and trends through time (e.g., Blasco Bosqued and Ramos Gomez 1980; Carmichael 1988:210-257; Proulx 1968, 2007; Silverman and Proulx 2002:14-39; Silverman 1993:227-259). Design motifs on Nasca pottery can be separated into three categories: 1) Mythical (supernatural); 2) Naturalistic (representational/referential); and 3) Geometric (Silverman 1993:243). Designs on Loro ceramics tend towards geometric designs and abstracted versions of earlier iconographic motifs. Loro potters also arranged designs on their vessels differently than earlier potters. Execution of slip painted designs was less careful and precise (Carmichael 1988:256; Proulx 2006:46). Designs on Loro pots are usually arranged in circumscribed fields (e.g., horizontal bands around the circumference of the vessel, medallion-like circular units, or rectangles) and rarely have decoration covering the entire surface of the vessel, as was the practice in earlier times (Carmichael 1988:256; Kroeber 1956:327; Proulx 2006:42; Strong 1957:40).

Geometric Designs. Geometric designs are the most ubiquitous decoration style in Loro period painted ceramics (Proulx 2006:42). The designs used in the Loro period do not differ notably from those of earlier periods except in their execution. They include many of the same elements such as chevron-band, dots, lines, multicolored stripes, diamonds, cruciform shapes, semi-circles along the rim, S-shapes, and step-frets (Strong 1957:40). These elements were arranged into motifs including the Stepped Band, diagonal parallel lines or steps, scalloped semi-circles, and concentric semi-circles. These elements become more recognizable as Loro designs based in their arrangement — grouped together on rectangular or circular panels — and the colors used to render them.

Stylized/Abstract Designs. During the Early Intermediate Period designs painted on ceramics were detailed, and the plants, animals, and beings represented on them were easily intelligible. Some plant and animal designs were recognizable to the point that one could identify specific types of plant or animal (Carmichael 1988:232). In contrast, painted designs on Loro pots are rarely representational. Loro potters instead used a variety of abstract designs at least some of which seem to be referential to, or abbreviated forms of, traditional supernatural motifs (Carmichael 1988:256; Knobloch 2005:119; Kroeber 1956:330; Proulx 2006:47; Strong 1957:40).

Classic Nasca designs like the Anthropomorphic Mythical Being were reduced to geometric abstractions like Kroeber's 'amoeba-like' rayed eye design (Kroeber 1956:330; Proulx 2006:47). The Mythical Monkey became the Decapitated Monkey Head during the Loro period (Knobloch 2005:118). A design known as the Girl Face motif, though recognizable, was rendered in much less detail and skill in the Loro period than the Late Nasca period. Kroeber argues that the rayed eye design represents a head and thus could be referential to either of these mythical icons or to a trophy head, another important Nasca symbol (Kroeber 1956:330). Other common abstract Loro design elements include flower-like designs, recurved rays, and other abstract geometric shapes. The exact meanings of these symbols may never be known. It is likely that some Loro designs were pure innovations and did correlate to traditional design (Proulx 2006:47). It is also possible that symbols held more than one meaning for their Loro audience.

Decoration Motifs from Zorropata. Due to the fragmentary nature of the Zorropata pottery assemblage, iconographic design elements were rarely identifiable beyond broad categories. Six general groups described below include: 1) Slip coated; 2) Line design; 3) Geometric; 4) Naturalistic/Referential; 5) Iconographic/Abstract; and 6) Unidentifiable with the present data.

At least 22% of the assemblage of decorated vessel sherds were painted with a single color of slip paint across the entirety of the interior or exterior surface. Common colors were white (10YR7/3), black (Gley 1 2.5/N), red (2.5YR4/4, 7.5R4/4), and greenish gray (2.5Y5/2, 10YR5/3). Slip coated sherds might be from vessels where this was the sole method of decoration. Another alternative is that slip coating was used as a base for more complex designs.

Decorated sherds represented by a single slip painted line represent 30% of decorated sherds. This category is a product of poor preservation and likely includes several different decoration motifs and elements. This group includes sherds with a line of black slip along the rim (Figure 6.19). Lines, usually black but sometimes white or red, on several sherds define design fields on the vessel or were part of now incomplete and unidentifiable geometric, supernatural, or naturalistic design (Figure 6.20; e.g., Strong 1957: Figure 15). Several sherds also exhibited a band of red slip on the interior of the vessel at the rim (Figure 6.21; Spivak 2015: Figure 4.64).

Geometric designs decorate 27% of sherds. Geometric designs in this assemblage include the following motifs: 1) Circle line designs (Figure 6.22); 2) Crosshatch (Figure 6.23); 3) Diamonds (Figure 6.24); 4) Empty circle motif (Figure 6.25; e.g., Kroeber and Collier 1998: Figure 333; Spivak 2015: Figure 4.60; Strong 1957: Figure 17: J); 5) Polka dots



Figure 6.19. (Top) Slip Line Design Element on Ceramic Vessel Rim (ZA111-3.1).

Figure 6.20. (Bottom) Another Example of a Slip Line on a Ceramic Body Sherd (ZA109-25.1).



Figure 6.21. Red Band Along the Rim of a Ceramic Dish (ZA339-1.1).



Figure 6.22. (Top) Circle Line Design Motif (ZA1RA1-14.1 and 2 (Refit)).
Figure 6.23. (Bottom) Crosshatch Design Element (ZA106-20.2 (Left), and ZA102-31.1 (Right)).



Figure 6.24. (Top) Diamond Design Element (ZA102-26.1).
Figure 6.25. (Bottom) Empty/White Circle Design Element (ZA1RA1-13.5).

(Figure 6.26); 6) Rectangle line designs (Figure 6.27); 7) Red and white rectangle design (Figure 6.28; Kroeber and Collier 2012: Plate 32); 8) Semicircles (Figure 6.29); 9) Stripes (Figure 6.30); 10) Step frets (Figure 6.31); and 11) Zig-zags (Figure 6.32). Rectangle and Circle line designs often serve to define spaces for other design elements (e.g., Spivak 2015: Figure 4.69). At least one vessel was painted with a band of white slip along the exterior rim then splattered with brown or black slip. This decoration motif was also observed on ceramic vessels from Cahuachi (Figure 6.33; Silverman 1993:238).

Naturalistic or representational designs appeared on 5% of vessels. Themes included plant life (Figure 6.34) and animal life (Figure 6.35). Figure 6.35 is similar to a feather or wing design on a Loro modeled bird vessel from the National Museum of the American Indian (see Spivak 2015: Figure 3.12).

Iconographic designs or abstractions of iconographic designs are found on 6% of vessel sherds. The girl face motif was found on two sherds that may be from the same vessel but do not refit (Figure 6.36). A probable partial rayed eye is exhibited on at least one sherd from Unit 8 (Figure 6.37; see Kroeber and Collier 1998: Figure 340). Sherds from one or more vessels exhibiting a series of abstract motifs were recovered (Figure 6.38). These sherds may be from the same vessel but do not refit. No published examples of similar design elements were identified during the writing of this dissertation. The remaining 11% of decorated vessels were too deteriorated to identify decorative motifs or elements.

Chronology

Zorropata was first identified during the 1990 field season of an archaeological survey conducted by teams of UCSB students and Peruvian archaeologists under the



Figure 6.26. (Top) Polka Dot Design Motif (ZA1RA1-35.1).
Figure 6.27. (Bottom) Rectangle Line Design Motif (ZA102-9.1).



Figure 6.28. Red and White Rectangle Design Motif (ZA109-14.1).



Figure 6.29. Semicircle Design Element Along the Rim of a Ceramic Dish (ZA1RA1-29.1).



Figure 6.30. (Top) Stripe Design Motif (ZA102-31.1).

Figure 6.31. (Bottom) Step Fret Design Element (ZA109-20.1).



Figure 6.32. (Top) Zig-zags (ZA1RA1-1.2 and 3 (Refit)).
Figure 6.33. (Bottom) White Slip Field with Brown Slip Splatter (ZA1RA1-17.1).



Figure 6.34. (Top) Natural Design Motif Featuring Plant Life (ZA1RA1-30.1 (Left), and ZA1RA1-19.1 (Right)).

Figure 6.35. (Bottom) Natural Design Motif Featuring Animal Life, Possibly a Partial Feather or Bird Wing (ZA102-11.1).



Figure 6.36. (Top) The Girl Face Design Motif (ZA1RA1-3.3 (Left), and ZA1RA1-3.6 (Right)).

Figure 6.37. (Bottom) Partial Rayed-Eye Design Motif (ZA106-14.1).



Figure 6.38. Abstract Design Motif (ZA1RA1-40.1 (Top Left), ZA1RA1-42.1 (Top Right), ZA1RA1-34.4 (Bottom Left), ZA1RA1-43.1 (Bottom Center), and ZA1RA1-41.1 (Bottom Right)).

direction of Katharina Schreiber. The site, first designated as N90-48, was dated to the local early Middle Horizon, Loro Period, and possibly the Late Nasca Period based on surface ceramics (Schreiber and Isla 1996). I observed evidence of a substantial Loro occupation at the site during reconnaissance in 2013. Extensive and intensive archaeological surface collection and excavation during the 2014 field season (Chapters 4 and 5) recovered a total of 6,476 diagnostic ceramics. The vast majority of sherds that could be identified stylistically were Late Nasca and Loro suggesting that the site was occupied primarily during the late Early Intermediate Period and early Middle Horizon (Figure 5.49). Calibrated AMS dates support the chronology suggested by the ceramic data (Chapter 5).

As discussed in Chapter 5, strata at Zorropata were depleted, probably by pedoturbation and wind erosion, and indistinct. Strata containing domestic debris above floor features in Units 2, 3, 4, 5, 8, 9, and 10 were relatively shallow. Unit 1 stratigraphy was completely disturbed by looting. Living surfaces at Sector 1 habitations often had a mix of Late Nasca and Loro pottery within the same stratum. Unit 2 is a notable exception. This unit only had Late Nasca artifacts and was thought to have been abandoned before the Middle Horizon. This section discusses the occupation history of Zorropata in as much detail as is currently possible.

Initial Occupation. Current evidence suggests that Zorropata was first occupied during the Late Nasca Period. That said, a few sherds stylistically consistent with the Early and Middle Nasca Periods, respectively, were recovered. One Early Nasca sherd was recovered from Disturbed Layer 2 at Unit 1. This sherd may have been curated and intentionally deposited at Recinto A1 (Unit 1) in antiquity, or introduced during the modern era by looting activities.

Nine additional Early Nasca sherds were recovered during surface collection. Three Middle Nasca sherds were recovered from surface collection. Given the absence of Early and Middle Nasca ceramics from undisturbed excavated contexts, there is little evidence to suggest that there was an occupation at Zorropata prior to the Late Nasca Period. It is possible that there was a small, Early or Middle Nasca occupation at Zorropata; however, it should be noted that the entire assemblage of Early/Middle Nasca sherds (n = 13) came from disturbed contexts (surface collection and Unit 1) and at most represents 13 vessels. Human ‘trophy’ head individuals recovered from Unit 1 exhibited wear consistent with curation (Chapter 10). It is possible that the Early Nasca sherd from Unit 1 was also curated or came from a vessel that was curated. As discussed in Chapter 4, Early and Middle Nasca vessels from surface collection may also have been heirlooms. Another alternative is that these sherds were deposited on the surface by modern looting activities. Sector 4 was not the subject of intensive study during the 2014 season and may or may not have been in use prior to the main occupation at Zorropata. Diagnostic surface sherds from Sector 3 (Units 6 and 7) had Late Nasca ceramics.

Abandonment. Ceramic evidence and AMS dates suggest that Zorropata was not occupied after the Middle Horizon. No Late Intermediate Period or later ceramics were recovered from surface collection or excavation. The specific causes for abandonment of this site are not known and beyond the scope of this project. That said, abandonment seems to coincide with the collapse of the Wari Empire.

Ceramic Production

This section investigates ceramic production through paste analysis of pottery from Zorropata. Data from chemical analysis of a sample of Loro ceramics via Instrumental Neutron Activation Analysis (INAA) are presented and discussed. Prior research in the Southern Nasca Region (e.g., Vaughn and Neff 2004; Vaughn et al. 2005, 2006; Vaughn and Van Gijseghem 2007; Vaughn et al. 2011; Katharina Schreiber, Personal Communication) has identified the chemical signatures of major clay sources used during the Early Intermediate Period, Middle Horizon, and Late Intermediate Period. INAA research from this project adds data concerning Loro ceramics from the Las Trancas Valley to the growing body of compositional analysis research on Nasca ceramics.

Excavations at Zorropata did not produce direct artefactual evidence of ceramic production (e.g., a kiln or wasters). Previous research documents that polychrome pottery was manufactured using clay that is chemically identical to the adobes used to build Cahuachi and are probably from a nearby source (Vaughn et al. 2011). Taken together with evidence of ceramic manufacture and part-time specialization at Cahuachi (Orefici 2006; Orefici and Drucini 2003), Nasca polychrome ceramics were probably made and used by Cahuachi elites to disseminate their ideology throughout the region in a material form (Vaughn and Neff 2004; Vaughn et al. 2011). Utilitarian ceramics were produced near where they were used, probably because of household level production (Vaughn and Neff 2004).

General techniques of vessel production remained relatively stable through time in the Nasca region. Nasca potters formed vessels using coiling and drawing techniques. Vessels were made from coils of uniform thickness that were blended together, drawn out/up, and smoothed. Details such as lugs/handles or sculpted features like figurines or the faces on

face-neck jars were formed by direct shaping or molding. Vessels were further treated with secondary techniques such as paddling and scrapping (Carmichael 1986:33).

Ceramic Pastes

All diagnostic ceramic sherds from excavated contexts were subjected to paste analysis using a Dino-Lite handheld microscope and the naked eye during the laboratory analysis phase of this project. Analysis aimed to identify and describe three characteristics: 1) the color of the ceramic paste (in cross-section); 2) coarseness of the paste; and 3) size, frequency, angularity, and type of temper or other inclusions. The ceramic paste of Zorropata sherds was evaluated at fresh breaks. Calibrated measurements were taken using the DinoXcope measurement software associated with microscope. Munsell color was determined for the interior paste color at fresh or clean breaks on each sherd. This initial stage of paste analysis was followed by INAA of a sample of 53 Loro sherds from excavated contexts at Zorropata.

The initial paste analysis I performed revealed statistically significant differences between plainwares and finewares. Plainwares had larger and more numerous inclusions than finewares. This finding is consistent with Nasca pottery from Marcaya and Cocahuischo (Vaughn 2000:367-369; Whalen 2014:279-282). Moreover, the percentage and size of inclusions were positively correlated for Zorropata pottery so that vessels with more numerous inclusions also tended to have inclusions with larger grain sizes. Pottery with fewer (0 - 7%) and smaller inclusions (mean = 0.2 mm, range 0-0.6 mm) also tended to have redder paste (e.g., 10YR5/6 (red) to 2.5YR4/6 (dark red)) but could be grayish in color (e.g., 2.5Y6/1) (Figure 6.39). This paste type seems to be consistent with descriptions of Vaughn's



Figure 6.39. Paste Type 1 Shown in Cross Section.

(2000:368) 'Paste Type C' and Whalen's (2014:279) 'Paste Type A'. This paste type (Paste Type 1) was used to make a majority of the fineware and polychrome pottery at Zorropata.

A category of finewares which includes pottery identified stylistically as Loro and *Cantaros* had c. 7-15% inclusions of quartz and small amounts of mica (Figure 6.40, Paste Type 2). Inclusions ranged in size from 0.04 to 0.8 mm with a mean of 0.22 mm range. The color of this paste type ranged from gray (2.5Y5/1) to light brown (10YR6/2).

The paste used to make the vast majority of plainwares pottery ranged in color from brown (7.5YR5/3) to red (2.5YR4/3) to gray (10YR6/1) (Figure 6.41, Paste Type 3). This paste type exhibited an average of 10 - 20% inclusions. Inclusions of quartz, undifferentiated volcanic, pyrite, and mica pebbles ranged in size from 0.1 to 0.96 mm with a mean of 0.25 mm. This paste type seems similar to descriptions of Vaughn's (2000:368) 'Paste Type A' or Whalen's (2014:282) 'Paste Type C'. Utilitarian vessels are thought to have been made from local clays by households for their own use (Vaughn and Neff 2004:1583). Similarities between pastes used to make utilitarian wares at these three sites may therefore represent a culturally contrived standards or preferences and not a common clay source.

Compositional Analysis in Nasca

Compositional analysis using INAA has been employed in archaeological research in Perú since the early 1990s and has been particularly effective for determining the chemical makeup, sources, and movement of ceramic, obsidian, and metal artifacts (see Delgado et al. 2007). These data have generated valuable insights into the sources and movement of resources throughout the south coast and south-central highlands (Burger and Glascock 2000;

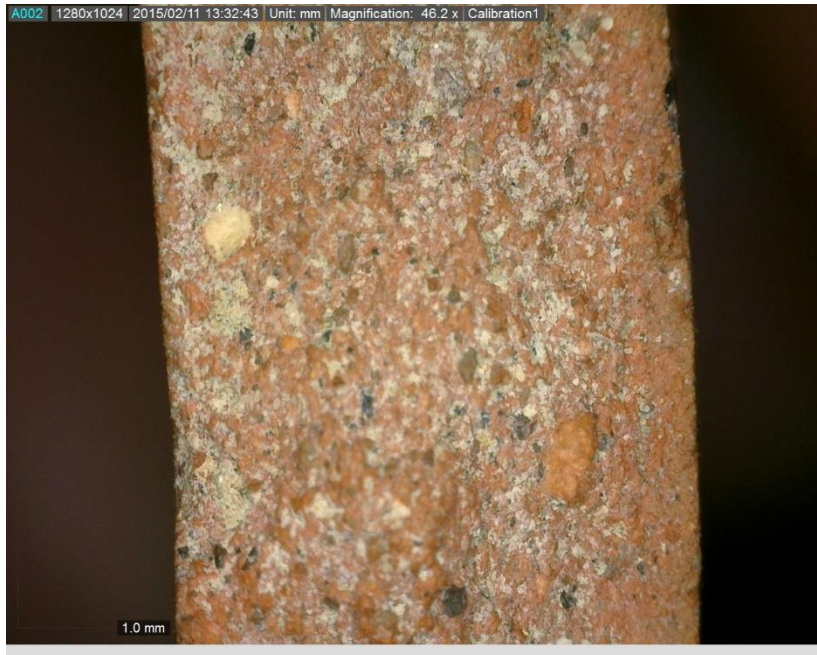


Figure 6.40. Paste Type 2 Shown in Cross Section.



Figure 6.41. Paste Type 3 Shown in Cross Section.

Burger et al. 1998; Glascock et al. 2007; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). Moreover, INAA and LA-ICP-MS data of Nasca ceramics have been instrumental in investigations of ancient Nasca political economy and social structure by providing insights into the production and distribution of ceramic finewares (Kantner and Vaughn 2012; Vaughn 2009; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011).

INAA has been performed on ceramic sherds from throughout the Southern Nasca Region and for all periods from the Early Horizon to the Late Intermediate Period (Boulanger and Glascock 2012; Vaughn et al. 2005, 2006; Vaughn and Neff 2000, 2004; Vaughn et al. 2011). These data are especially robust for the early portion of the Early Intermediate Period. Kevin Vaughn and Hector Neff (2000) conducted INAA on a samples of Early Intermediate Period ceramics from several Nasca sites. Their sample included both plainware and polychrome ceramics. This analysis defined three primary INAA groups for this sample. Most polychrome wares grouped relatively close together (Group 1), indicating remarkable homogeneity, while plainwares (Groups 2 and 3) were more various in composition (Vaughn and Neff 2000:86).

A subsequent geological survey investigated a variety of potential clay sources using INAA (Vaughn and Neff 2004). This study identified 29 local clay sources and demonstrated the Nasca region's geological variability in terms of these resources. In other words, Nasca potters, both ancient and modern, could have used a wide variety of clays but seemed to prefer a limited number, especially to produce polychrome wares (Vaughn and Neff 2004:1583). Moreover, Group 1 ceramics were chemically consistent with the adobes used to build a major local ceremonial center, Cahuachi. Vaughn and Neff (2000:87, 2004:1583)

suggest that polychrome ceramics in Group 1 were produced using the same clay source as Cahuachi and probably in its vicinity. Utilitarian wares were likely made in villages using several local clay sources or recipes throughout the Southern Nasca Region (Vaughn and Neff 2000:85, 2004:1584).

The pattern of polychrome ceramic production at or near Cahuachi extends from the earliest part of the Early Intermediate Period through at least the Middle Horizon (Boulanger and Glascock 2012:6; Vaughn and Neff 2004:1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and Van Gijsegem 2007:816). INAA conducted on a sample of proto-Nasca blackware ceramics from La Puntilla provided some of the earliest examples of ceramics that are consistent with Vaughn and Neff (2000:86)'s INAA Group 1 (Vaughn and Van Gijsegem 2007:819). In another study, Kevin Vaughn, Christina Conlee, Hector Neff, and Katharina Schreiber conducted INAA on pottery from 16 sites in the SNR dating to the Early Nasca (AD1-450) and Tiza (a.k.a., Late Intermediate Period) (AD 1000-1476) periods (Vaughn et al. 2006). The results from this analysis demonstrated that Early Nasca Polychrome ceramics were notably homogeneous throughout the Southern Nasca Region. Meanwhile, Late Intermediate Period polychromes were more heterogeneous, suggesting that they were produced in local communities (Vaughn et al. 2006:686).

Katharina Schreiber conducted INAA of Middle Horizon ceramics from four sites, Huaca del Loro, Pacheco, Pataraya, and Jincamocco. This analysis identified two main INAA groups. Group 1 encompassed Middle Horizon polychrome ceramic sherds from Huaca del Loro, Pacheco, and Pataraya, and was compositionally similar to INAA Group 1 (Boulanger and Glascock 2012:6). Several polychrome sherds from Jincamocco also belong to Group 1. The predominance of local and non-Wari sherds from Jincamocco dating to and before the

Middle Horizon (INAA Group 2) were significantly different from Group 1 or any other group identified in previous studies in this region (Boulanger and Glascock 2012:5; Katharina Schreiber, Personal Communication).

INAA at Zorropata

INAA was undertaken to determine if Loro polychrome ceramics from Zorropata were produced from the clay source associated with Cahuachi that was used to produce the vast majority of polychrome ceramics from the Early Intermediate Period and Middle Horizon identified in previous studies (Boulanger and Glascock 2012:6; Vaughn and Neff 2004:1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and Van Gijseghem 2007:816). The sample for this analysis includes all the definitively identifiable Loro polychrome ceramic sherds recovered from secure, excavated contexts at Zorropata. Loro ceramics represent a significant stylistic break from Early Intermediate Period (c. AD 0-750) Nasca ceramics. Unlike the polychrome finewares from previous periods, Loro pottery was thicker, heavier, rougher, less colorful, and less polished (Silverman 1989:25). These stylistic changes were the product of local innovation and adaptation and have implications for the nature of the relationship between Nasca and Wari peoples (Spivak 2015:103). The present analysis contributes additional polychrome Loro sherds from a new context, Zorropata, a local Middle Horizon habitation site located in the Las Trancas Valley. These data allow further investigation of the pervasive trend of polychrome ceramic production associated with Cahuachi.

Methods. Ceramic samples for INAA were exported from Perú with the permission of the Peruvian Ministry of Culture. Samples were immediately sent to the Archaeometry Lab and the University of Missouri Research Reactor (MURR). William Gilstrap prepared the samples and conducted analysis according to the standards and techniques of the MURR Archaeometry Lab (Gilstrap 2016:2-3). The output of this process (measured elements) is voluminous. Therefore, principal components analysis was used to investigate the variance present in the data. The first eleven principal components explain more than 90% of the variation in the dataset from Zorropata (Table 6.5).

Results. Like samples of Loro sherds from previous INAA studies, sherds from Zorropata were chemically consistent with Group 1 (Figure 6.42). These data also clearly suggest that Loro wares from Zorropata were associated with the ceremonial site Cahuachi and probably produced in its vicinity (Gilstrap 2016:8). These data along with typological and other archaeological data contribute significant new information to our understanding of the Loro ceramic style in its archaeological context. INAA results from this study suggest that use of the Group 1 clay for local polychrome fineware ceramic production continued during the Middle Horizon despite Wari encroachment and related disruptions to local lifeways. Results match expectations and suggest that Wari were not able or willing to prevent Zorropatans from accessing Group 1 clay source⁴.

Discussion

Both Late Nasca and Loro wares predominate in the assemblage of diagnostic pottery from Zorropata. It should be emphasized that these ceramic traditions are temporally and

Table 6.5. “Principal components analysis of the ceramic sample from SNR showing the first eleven components, describing greater than 90% of the cumulative variance in the dataset. Strong elemental loading along a particular component is indicated in bold” (Gilstrap 2016: Table 2).

Variable	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11
% Variance	30.59	14.76	10.72	8.18	6.90	5.75	3.74	3.00	2.64	2.32	1.94
% Cum. Variance	30.59	45.35	56.07	64.25	71.15	76.90	80.64	83.63	86.28	88.60	90.54
Eigenvalues:	0.031	0.015	0.011	0.008	0.007	0.006	0.004	0.003	0.003	0.002	0.002
Na	0.118	0.129	-0.110	-0.025	-0.104	0.090	-0.245	-0.165	0.245	-0.157	-0.225
K	0.117	-0.116	-0.026	-0.004	0.263	0.339	-0.129	-0.359	0.089	-0.396	-0.279
Rb	0.049	-0.112	-0.054	0.120	0.259	0.049	0.176	-0.150	-0.074	-0.005	0.035
Ba	0.043	0.182	-0.262	0.169	-0.055	0.002	-0.026	-0.189	0.052	0.578	0.056
U	0.008	0.271	-0.298	-0.119	0.470	-0.356	-0.173	0.113	0.210	0.193	-0.360
Sr	-0.040	-0.099	-0.389	0.201	-0.226	-0.041	-0.219	-0.300	-0.330	-0.037	-0.261
Ca	-0.043	-0.110	-0.353	-0.274	-0.417	-0.398	-0.257	-0.063	-0.041	-0.245	0.255
Ta	-0.053	0.050	0.022	0.121	0.089	0.141	0.032	-0.008	-0.115	-0.043	0.107
Th	-0.073	0.217	-0.269	-0.062	0.458	0.114	-0.313	0.195	-0.212	-0.208	0.460
Al	-0.073	0.004	0.080	0.030	0.080	0.070	0.006	0.024	0.079	-0.002	-0.058
Lu	-0.089	0.116	0.094	-0.090	0.120	-0.246	-0.006	-0.095	0.055	-0.110	-0.145
La	-0.097	0.054	-0.007	0.074	0.117	-0.023	0.023	-0.156	-0.046	0.005	0.226
Ce	-0.115	0.024	-0.018	0.029	0.100	-0.015	-0.008	-0.155	-0.083	0.044	0.150
Yb	-0.132	0.155	0.108	-0.125	0.081	-0.301	0.177	-0.215	-0.029	0.017	0.081
Nd	-0.148	-0.012	0.123	0.060	0.091	-0.125	0.079	-0.496	0.006	0.025	0.172
Dy	-0.153	0.032	0.204	-0.006	0.041	-0.117	-0.082	-0.159	0.112	-0.089	-0.048
Sm	-0.154	0.037	0.093	0.011	0.069	-0.162	-0.042	-0.108	0.068	-0.038	0.085
Tb	-0.157	-0.081	0.137	0.028	0.084	-0.162	-0.064	-0.239	0.103	-0.147	0.033
Hf	-0.157	0.284	-0.184	0.181	-0.077	0.244	0.066	-0.172	-0.090	-0.114	-0.086
Eu	-0.179	-0.025	0.172	0.019	-0.061	-0.126	0.031	0.009	0.138	-0.115	0.058
Cr	-0.208	0.146	0.206	0.160	-0.032	0.081	-0.207	-0.080	-0.439	0.221	-0.007
Zr	-0.231	0.501	-0.195	0.168	-0.178	-0.058	0.510	0.127	0.015	-0.295	-0.134
Sc	-0.234	0.016	0.107	0.103	-0.016	-0.084	-0.170	0.068	-0.048	0.088	-0.088
Cs	-0.240	-0.536	-0.359	0.459	0.178	-0.126	0.208	0.128	0.191	-0.033	0.072
V	-0.249	0.179	0.043	0.218	-0.182	0.247	-0.334	0.081	0.523	-0.026	0.235
Zn	-0.261	-0.124	0.134	0.162	-0.025	-0.082	-0.239	0.099	0.047	0.161	-0.278
Fe	-0.288	0.005	0.059	0.036	-0.023	0.053	-0.127	0.193	-0.070	-0.081	-0.094
Co	-0.309	-0.132	0.057	-0.138	0.071	-0.009	-0.032	0.231	-0.330	-0.170	-0.228
Mn	-0.484	-0.151	-0.234	-0.609	-0.008	0.369	0.178	-0.129	0.126	0.249	-0.032

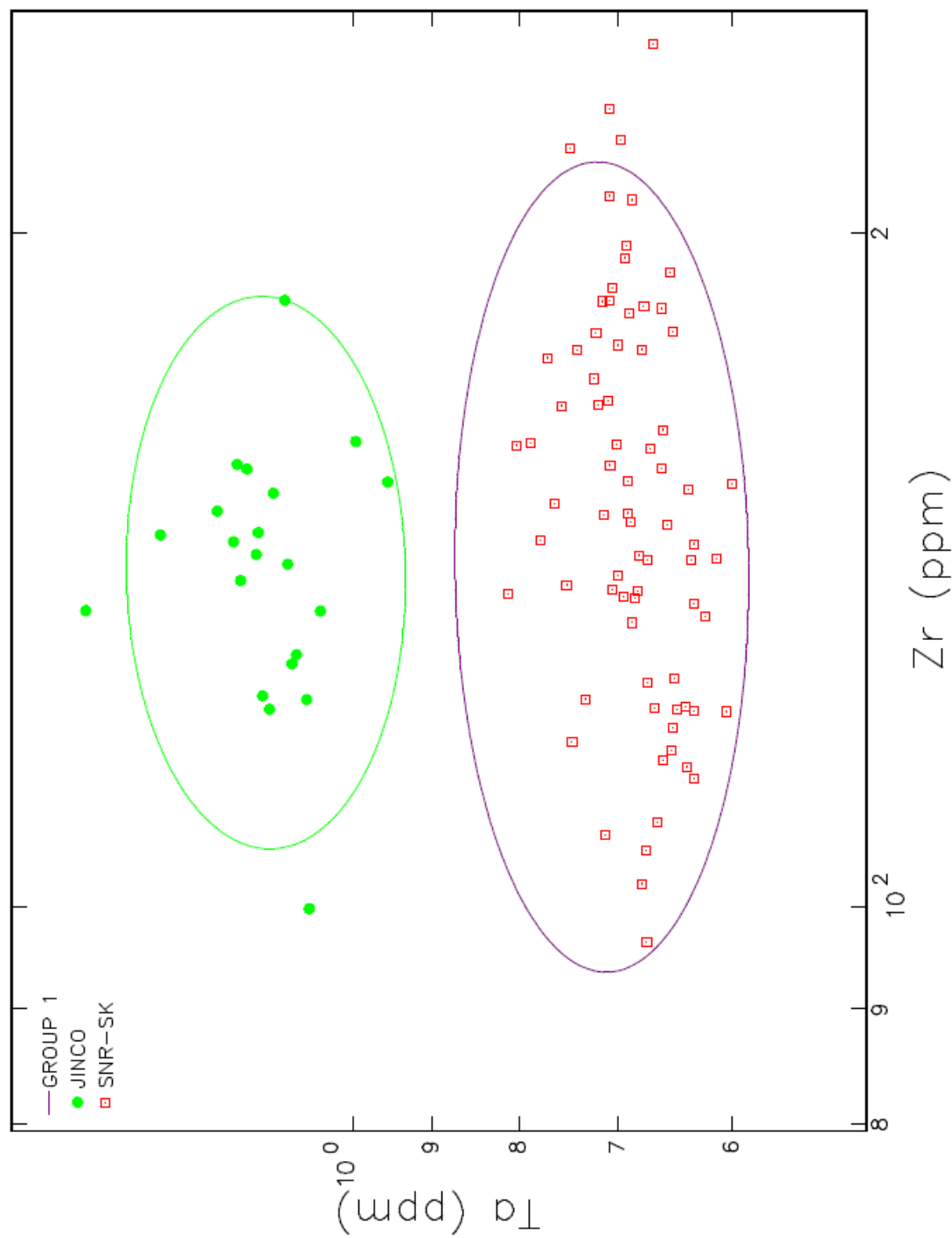


Figure 6.42. “Elemental bivariate scatterplot comparing all samples from the current SNR dataset to Vaughn et al.’s (2006) *Group 1* and pottery samples from from Jincamocco in the Sondondo Valley of Southern Ayacucho, Peru. Ellipses are draw at 90% -confidence intervals” (Gilstrap 2016: Figure 5).

stylistically distinct. Therefore, the stylistic identifications presented in this chapter serve to frame this research in a relative chronological context (i.e., Early Intermediate Period/Late Nasca, and early Middle Horizon/Loro). Associations between carbon samples from AMS dating and diagnostic pottery also contribute to the research and refinement of the Nasca chronology (Chapter 5).

Ceramic assemblages associated with excavation units at habitation terraces (Units 2, 3, 4, 5, 8, 9, and 10) each include a variety of fineware and plainware vessel types. These vessels were likely used for cooking, storing, and serving food and drink. Each habitation context unit was associated with several different vessel forms with an average of 7.7 forms. The ratio of fineware to utilitarian ware vessels is broadly consistent with other Nasca habitation sites (Silverman 1988:421, 1993:301; Vaughn 2000:355-356; Whalen 2014:292). Inter-site comparisons between ceramic assemblages from Zorropata, Marcaya, and Cocahuischo speak to the third of the three stated research goals from Chapter 1. These comparisons are investigated further in Chapter 12 towards a consideration of the production and use of Nasca ceramics through time.

The types and quality of fineware vessels recovered from habitation contexts speak to potential status differences between households (Vaughn 2000:508, 2004:68; Chapter 3). A high degree of status differentiation is not evident in the ceramic assemblage from Zorropata. Minimal differences in socioeconomic status are evident at the Nasca Early Intermediate Period sites Marcaya and Cocahuischo (Vaughn 2009:57; Whalen 2014:335-337). If some Zorropata households had differential access to imported or Wari ceramics it could also speak to status. Moreover, if Zorropatans had access to Wari or imported ceramics it could speak to the scenario that they were incorporated into the Wari Empire (see Chapter 3 and

11). Therefore, the fact that such items were not recovered from this site during the 2014 field season may pertain to the nature and extent of interactions between the Nasca living at Zorropata and Wari representatives in the Nasca Region. These trends are further explored in Chapter 11.

INAA data for Loro fineware sherds from Zorropata are consistent with other Nasca Early Intermediate Period, Middle Horizon, and Late Intermediate Period fineware assemblages that have been tested (Boulanger and Glascock 2012:6; Vaughn and Neff 2000, 2004:1583-1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and Van Gijseghem 2007:816). The correlation of this fineware clay with Cahuachi in the Nasca Valley has significant implications for the access and use of this resource in ceramic production during the Middle Horizon despite Wari encroachment (see Chapter 11).

Differences in vessel form and decoration are discussed in Chapter 2 and above. Several forms (e.g., various typed of bowls (deep, cup, cumbrous), vases, spout and bridge bottles, dishes, jars, etc.) that were common during the Early Intermediate Period remained popular during the early Middle Horizon. Also, rectangular bowls were added to the Loro repertoire, and some vessel types that were less common during the Early Intermediate Period (e.g., incurving bowls, drums, and face-neck jars) became more common (Silverman 1989:25). Loro wares are generally distinguishable from earlier wares by the style, location (on the vessel), elaboration, and skill with which they were made and decorated.

Late Nasca pottery is sometimes called 'Proliferous' because polychrome ceramic wares of this period were masterfully made and elaborately decorated (Rowe 1956:147; 1959:41; 1960:41). At least 13 colors of slip paint were used to render detailed designs that covered most of a vessel's surface (Proulx 2008:572). Design motifs and elements on Late

Nasca polychrome wares tended to portray recognizable mythological themes (e.g., the Anthropomorphic Mythical Being, or the Killer Whale), geometric designs, or naturalistic designs representative of specific plants or animals (Carmichael 1988:232; Silverman 1993:243).

In contrast, the local Middle Horizon (Loro) polychrome wares tend to be made with less skill than Late Nasca wares. The vessels themselves tend to be thicker, heavier, and more crudely decorated (Silverman 1989:25). The Loro palate of slip colors is much more limited than that of earlier wares and emphasizes only 5 or 6 colors (three of which are purplish red, dark red, and reddish brown). Slips on Loro vessels are also sometimes less durable (e.g., fugitive black, or slips of any color that are applied too thick). Loro sherds from Zorropata exhibited the characteristic limited Loro color palate. Colors observed on Loro ceramics from the site included white (2.5Y8.5/2, 5YR5/6, 5Y8/1, 10R4/4, 10YR7/3), red (2.5YR4/2, 2.5YR4/4), dark red (2.5YR3/4, 2.5YR4/2), black (5YR2.5/1, Gley 1 2.5/N, Gley 1 3/10YR) and gray (Gley 1 4/5GY, 10YR5/1). No examples of fugitive black were observed.

Design elements and motifs on Loro vessels tend to be more simple, circumscribed, and abstracted than earlier wares (Carmichael 1988:256; Knobloch 2005:119; Kroeber 1956:330; Proulx 2006:47; Strong 1957:40). Geometric designs also become more common in the later period (Proulx 2006:42).

The distinctions evident in Loro wares as compared with earlier wares may represent indigenous Nasca stylistic innovation in the wake of Wari Imperial encroachment (Spivak 2015:103). Another alternative is that Loro wares are a departure from the Nasca style following the breakdown of society during the early Middle Horizon (Silverman 1989:25, 1993:36). The Loro style at Zorropata is investigated further in Chapter 12 of this dissertation

towards addressing the second of the three stated research goals from Chapter 1 (i.e., Loro wares in stratigraphic context from Zorropata).

¹ Verity Whalen included 4 modeled effigies among her fineware in the pottery classification for Cocahuischo (Whalen 2014:215). She argued that these fragments may be from vessels and therefore should be classified as such (Whalen 2014:233). Excavations recovered fragments of 54 modeled effigies or figurines from Zorropata (see Chapter 8). The Zorropata assemblage includes a substantial amount of body fragments suggesting that figurines at Zorropata represent a separate artifact category than ceramic vessels. Ceramic and stone figurines like those recovered from Zorropata are documented for all Nasca Periods and throughout region (Conlee 2000: 423; Edwards 2010:379; Lilien 1956; Morgan 1988, 2012; Spielbauer 1972; Strong 1957:40).

² Dishes are also referred to as plates in some of the literature on Nasca vessel forms (Spivak 2015:78).

³ Classifications by DeLeonardis (1997:229-230) and Proulx (1968:15) also do not distinguish between Necked *ollas* and collared jars.

⁴ It is possible that the clay resource associated with Cahuachi is a recipe rather than a source. The idea that Group 1 ceramics were made from clay from a common source is preferred here. This clay was used for polychrome pottery for 1400 years by a Nasca peoples, who did not use a system of writing. Many aspects of Nasca vessel design including preferred vessel forms, and iconographic and decoration motifs changed repeatedly during that time but the clay used to make these vessels remained remarkably homogeneous.

Chapter 7

Woven Artifacts and Weaving Tools

Textiles, cordage, and weaving tools have the potential to speak to ancient weaving practices as well as productive and consumptive choices made by ancient peoples. This chapter discusses observations about woven and spun artifacts recovered from the 2014 field season at Zorropata and some of the tools used in their production. The assemblage of woven and spun artifacts from Zorropata includes 95 fragments of textiles, cordage, and basketry. The weaving tool assemblage includes spindle whorls and disks, one wooden spindle, and chalk that may have played a small but important role in the spinning and weaving process.

This chapter begins with a description of the woven and spun artifacts recovered during the 2014 field season at Zorropata. Typologies for woven (textiles and basketry) and spun (cordage) artifacts can be found in Appendices 7.1 and 7.2, respectively. A small number of weaving related tools were also recovered and are discussed below. The chapter concludes with a discussion that considers woven and spun artifacts and related tools from Zorropata in light of the broader regional and temporal context, and their pertinence to the research goals of this dissertation.

The purpose of analysis was two-fold. First, analysis aimed to generate the data necessary to investigate whether people living at Zorropata may have had access to Wari goods made according to the imperial canons and standards. The second aim of analysis was to generate the data needed to investigate how this aspect of craft production may have been affected by the Wari during the Middle Horizon.

Ceramics (Chapter 6) and textiles (herein) were expected to be of particular use in addressing the primary research objectives of this dissertation (Chapter 3) — investigating whether Nasca people at Zorropata in the Las Trancas Valley were under the control of the Wari Empire. Nasca and Wari textiles and pottery were known vehicles of ideology in each culture. As with polychrome fineware pottery (Chapter 6) fine textiles made by Nasca and Wari weavers, respectively, are culturally distinct. In addition, Nasca and Wari textile producers seem to have influenced each other to some extent during the Middle Horizon (Rowe 1973:5). Therefore, the cultural affiliation and archaeological contexts of Zorropata textiles (or pottery) and spinning/weaving tools were evaluated to investigate the nature of the relationship between Nasca people living at Zorropata and the Wari Empire in the Nasca Region during the Middle Horizon.

Several characteristics distinguish Nasca and Wari textiles. One notable difference between Nasca and Wari textiles is that Wari textiles made according to imperial standards often employed both camelid and cotton fibers for structural elements in the same textile (i.e., warps and wefts, see Appendix 7.3: Glossary of Textile, Cordage, and Related Terms)¹. It should be noted that the Wari had access to camelids and camelid fiber in the highlands but cotton was obtained from the coast (Edwards 2010:79). Cotton was preferred among weavers on the south coast either for cultural reasons, because cotton grows well in the arid environs of coastal Perú, or for some combination of these reasons (Frame 2010: 354; Rowe 1986:153). That said, dyed camelid fiber cordage was commonly used for embellishments on plain weave Nasca textiles such as embroidery or decorative borders made using tapestry weave or cross-knit looping (e.g., Silverman 1993:266, Figure 18.4).

Highlands textiles tended to have a much higher thread count than Nasca textiles (i.e., 32-46 wefts per cm vs. c. 10-11 wefts per cm) (Rowe 1986:153). Warps were oriented vertically during use in coastal tunics whereas highlands tunic were worn with warps oriented horizontally.

Ann Pollard Rowe (1986:153) observed that chained warp loops were common on warp selvages in the highlands while this technique was not used on the coast. On the coast, side selvages on tapestry weave textiles are most often 180-degree self-selvages. Highlands tapestry weave textiles often include one or more heavier warps to reinforce the edge of the textile. Coastal textiles do not use thicker warps in the side selvege but I have observed the use of two or more thicker warps in end selvages on Nasca textiles. As is also the case with ceramics, overt stylistic and design choices, such as design motifs and iconography, can be used to distinguish between Nasca and Wari textiles.

Evidence from the Zorropata textile assemblage does not support the presence of highlands textiles. All specimens were very fragmentary and overt stylistic and design elements were, in general, not well preserved enough to inform the cultural affiliation of textiles in this assemblage. Structural and isochrestic productive choices like those mentioned above were consistent with other assemblages of textiles from the South Coast. A nearly complete plain weave textile with a decorative tapestry weave border (ZA100-2639) was recovered from the surface of Sector 4. It is probable that this textile was a grave good from one of the looted tombs in Sector 4. The main body of the textile is composed of dyed brown (7.5YR4/4) warps, and dyed blue (Gley 2 4/10BG) and brown (7.5YR4/4) wefts that alternate (~9 blue wefts then ~6 brown wefts) to create a stripe pattern (Figure 7.1). The



Figure 7.1. Closeup of Plain Weave Body of Decorated Textile from Sector 4.

tapestry weave border around the edges of the plain weave textile was sewn on with a whip stitch using blue Type III cordage. The border is open and closed tapestry and consists of geometric designs in green (Gley 1 3/10GY), brown (7.5YR2.5/1), yellow (10YR5/6), red (7.5R3/8), light grey (Grey 1 5/5G_/2), and white (10YR8/2) camelid fiber cordage (Figure 7.2). Design elements include S's, curl/key designs, and step frets. Warps and wefts of the tapestry border are both Type III cordage but warps are composed of cotton rather than camelid fiber. The style of tapestry and design elements used in this textile support that it is Nasca.

Zorropata textiles and cordage were made from cotton, camelid fibers, or other, minimally processed, plant materials, but the vast majority were made from undyed cotton. (Figure 7.3). This trend is consistent with what was observed for the Cahuachi textile assemblage, and other textile assemblages from Nasca (Frame 2010:254; Silverman 1993:273).

Cotton grows well in the arid environment on the South Coast of Perú, and is naturally drought resistant. Indigenous cotton on the South Coast grows naturally in a variety of colors including white, light brown, dark brown, and brownish pink (Conlee 2000:274; (Stephen and Moseley 1974). Camelid fiber were used to make a small number of textiles in the Zorropata assemblage. Camelid fiber was more common in separate cordage specimens (i.e., not part of a textile) (Figure 7.4).

Distribution



Figure 7.2. Closeup of Border of Decorated Textile from Sector 4.

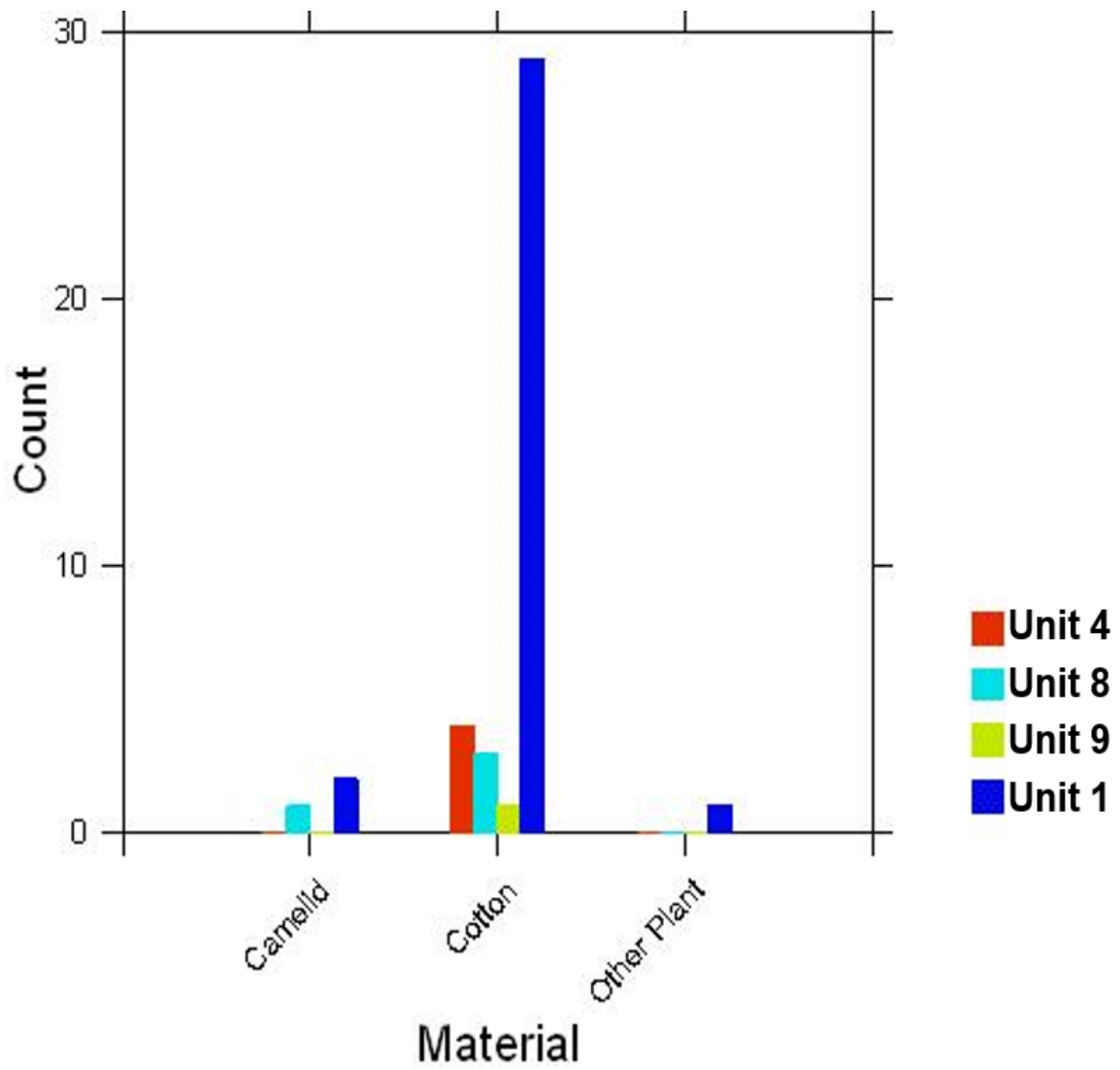


Figure 7.3. Frequency of Textiles by Raw Material and Provenience.

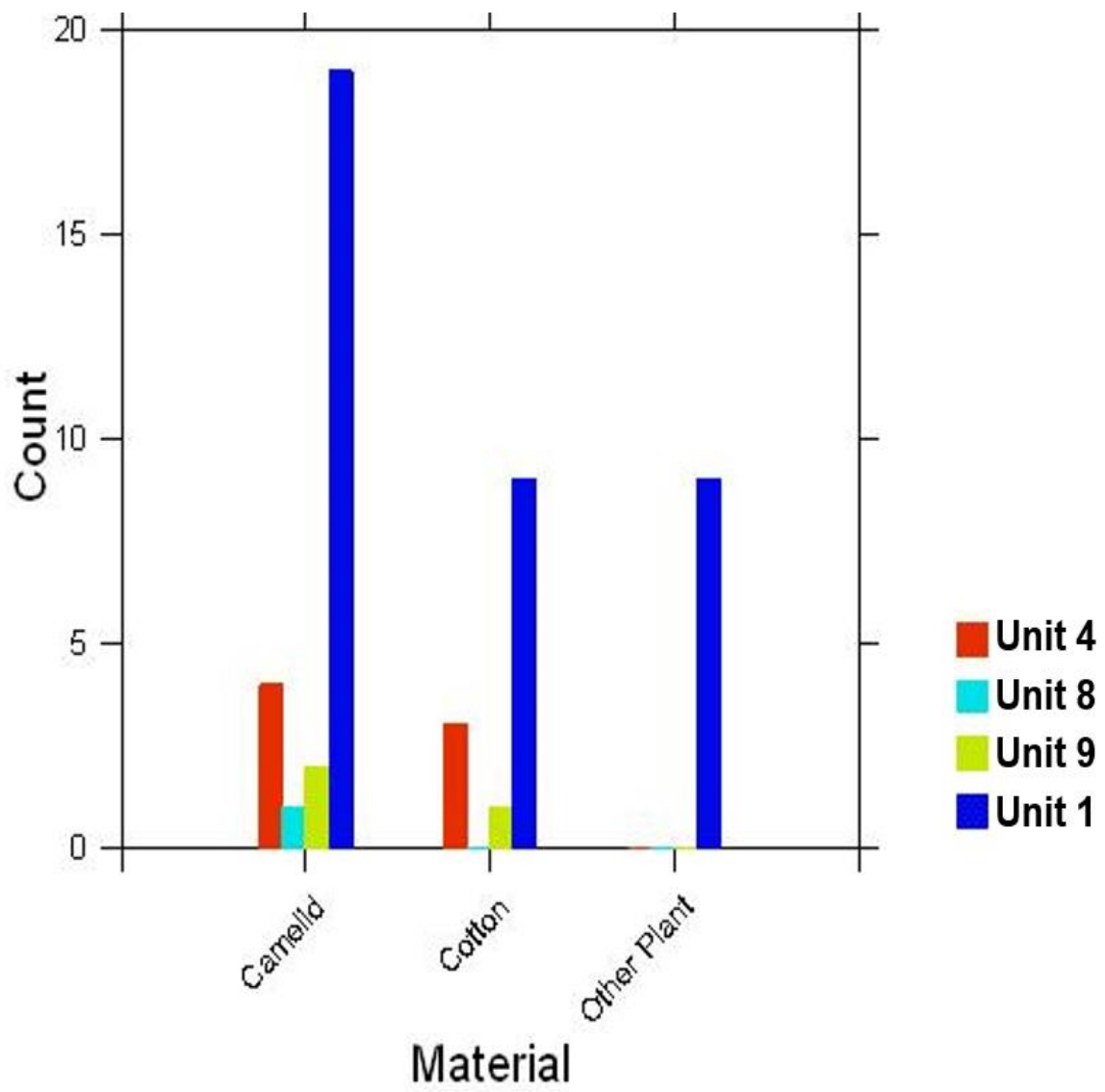


Figure 7.4. Frequency of Cordage by Raw Material and Provenience.

Textiles and cordage were recovered from surface artifact collection and excavation at Units 1, 4, 8, and 9 in Sector 1. The vast majority of woven and spun artifacts (62% of textiles and 75% of cordage by count) came from Unit 1. Besides the Unit 1 textiles and cordage, and the textile from Sector 4 (above), all the remaining textiles and cordage came from domestic contexts.

Methods

The assemblage of analyzed textiles and cordage includes 48 textile/basket fragments organized into 4 different types; and 49 cordage fragments, plus the cordage used to make textiles, organized into 10 types. All specimens of woven and spun perishable artifacts in this assemblage are fragmentary. Textiles were the size of a silver dollar or smaller (mean = c. 4.7 cm by 4.2 cm). Textiles were analyzed if the elements (warps and wefts) were intact enough to identify the general weaving structure. Most fragments were not intact enough to speak to the original form or function of a given specimen (i.e., whether a fragment came from a mantle, tunic, headdress, loincloth, or some other structure). The assemblage includes plaited, twined, and braided textiles made from cotton or camelid fibers. Cordage specimens were likewise selected for analysis if they were intact enough to identify the ply formula and other diagnostic features such as raw material, the presence and type of knots, if the fibers were dyed, or any other unique feature.

Analysis was conducted via visual observation with the unaided eye, with a digital caliper, and using a Dino-Lite hand-held microscope and associated DinoXcope

measurement software. The following five types of attributes were measured or recorded for the textile and basketry fragments from Zorropata: 1) fabric structure (e.g., plain weave, warp-faced plain weave, braid, etc.); 2) other structural choices (e.g., presence/absence of side selvages, end selvages, shifts, and splices); 3) the angle at which elements cross each other; 4) the dimension of the fragment when oriented according to warps and wefts; and 5) cordage information (e.g., ply formula, raw material, cordage diameter, strand diameter, space between elements, the angle of twist, the number of elements per half centimeter, and number of twists per half centimeter for both warp and weft elements where applicable) (see Appendix 7.3: Glossary of Textile, Cordage, and Related Terms).

Braids do not have warps or wefts. Therefore, the length and width, ply formula of the cordage, raw material, cordage diameter, strand diameter, and the angle of twist was recorded for this type of structure. For some specimens of balanced plain weave that lacked a side or end selvage the actual warps or wefts could not be identified with absolute certainty. The orientation for these specimens during analysis was arbitrary. Their orientation should not, however, affect the statistical analysis of this assemblage because the warp and weft measurements for these specimens do not appear to be significantly different. Moreover, the similarities between warp and weft elements and their spacing means that most of the plain weave textiles from Zorropata are balanced plain weave (see Appendix 7.3).

One specimen of matting or basketry was identified in this assemblage. This specimen is included in the textile typology. Textiles and basketry use many of the same techniques. The most salient trait distinguishing the two types of structures cross-culturally is that textiles tend to be made from cordage and thus to be more flexible (Adovasio 2010:1).

Baskets tend to be made from a variety of more rigid or thicker raw materials that undergo a wide variety of preparation techniques. Baskets may be made from minimally to extensively processed raw materials. Also, baskets tend to be three dimensional whereas textiles lie flat (Adovasio 2010:1).

The following measurements were collected for cordage fragments: ply formula, raw material, cordage diameter, strand diameter, and angle of twist. If knots were present on any cordage specimens they were identified, counted and described in the notes associated with each specimen. Cordage analyzed separate from that composing textiles consisted of fragments that were not associated with a woven structure, although they may have originally been a part of one. As described above, the attributes of the cordage used to make textiles was recorded with other textile attributes. Cordage types are represented below in parenthetical notation (Splitstoser 2009).

Decoration, the use of dyes, and wear were documented where they were observed. Most specimens of textiles and cordage in this assemblage were not decorated though 8% of textiles (n = 4) and 44% of cordage (n = 22) were dyed. A Munsell color chart was used to record color values for all specimens. Few specimens exhibited cordage made from multiple colors of fibers. Two specimens of note include the textile from Sector 4 described above, and a Type II: Open and Closed Plain weave textile with dyed yellow wefts (10YR7/6) and red warps (10R4/6). The most common dye colors recorded for textiles were blue (Gley 2 3/5B to Gley 2 4/1BG), brown (7.5YR2.5/1 to 7.5YR4/4), yellow (10YR5/6 to 10YR7/6), red (7.5R3/8 to 10R4/6), light grey (Grey 1 5/5G_/2), and green (Gley 1 3/10GY). Dyed cordage that was not part of a textile was spun from camelid fibers and included the colors

red (2.5 YR 4/4 to 10R4/8), dark red (5YR3/2), black (Gley 1 2.5/N to 5Y3/1), gray (2.5Y4/2 to 10YR3/1), and blue (Gley 2 3/5PB to Gley 2 4/5BG).

Raw material identifications were made with the unaided eye and verified with a Dino-Lite handheld microscope. It should be noted that the Dino-Lite provides magnification up to a little over 200x. Fibers were generally classified as camelid fiber or cotton, but some cordage and textiles could not be identified beyond the observation that they were made from plant fibers. The unidentified fiber may be cotton that is more deteriorated than the identified samples or it may source to a different plant(s). Raw material identifications presented in this chapter are reasonably secure, however a more powerful microscope (one capable of 400x magnification or greater) would provide more detailed information.

Results

Results of analysis are detailed in Appendices 7.1 and 7.2. In addition to the fragmentary woven artifacts described in the typology and discussed below, a small fragment of unspun cotton was found at Unit 1 close to the opening into the *barbacoa* style tomb chamber. Clean but unspun cotton was often used as a filler in mummy bundles throughout Perú (Carmichael 1988:486; Rowe 1986:154). Given the context, it is possible that this specimen came from a mummy bundle that was long since looted and dismantled for its valuable textiles and other grave goods. Another alternative is that the cotton boll was destined to be spun into cordage but was lost or discarded between the initial processing of the raw cotton and the spinning stage of production.

The abundance of textiles and cordage at Zorropata, and the presence of at least a few tools for their manufacture, suggests that these artifacts were made at the site. Consistent with other Nasca sites, undecorated textiles predominated in the Zorropata assemblage (Phipps 1989:226).

Textiles. Four types of woven structure were identified in the Zorropata assemblage. These are listed and described in the Textile Typology (Appendix 7.1) from most to least complex. The most common type of textile at Zorropata was Type I: Balanced Plain Weave (Figure 7.5). In general, this variety of textile was very common on the South Coast of Perú in pre-Columbian times (Rowe 1973)². Type I textiles were made from Types II, III, and IV cordage (see below) and produced from either cotton or camelid fibers.

One specimen of Type II: Open and Closed Plain Weave, was recovered (Figure 7.6). This specimen alternated between close spaced and open spaced warp rows. Warps were made from dyed red (10R4/6) camelid fibers and wefts were spun from dyed yellow (10YR7/6) camelid fibers for a bold visual effect.

One specimen of Type III: Open Simple Twined Basketry was made with Z-Twist wefts and unspun warps (Figure 7.7). It is probable that the specimen was from a mat. The single Type III mat fragment was made from minimally processed plant materials, possibly corn husks. One specimen of Type IV: Three Stranded Flat Braid was made of cotton Type III cordage (Figure 7.8).



Figure 7.5. (Top) Type I Textile.
Figure 7.6. (Bottom) Type II Textile.



Figure 7.7. Type III Textile.



Figure 7.8. Type IV Textile.

Cordage. Ten types of cordage were identified during analysis (Figure 7.9). These are listed and described in the Cordage Typology (Appendix 7.2) in order of increasing complexity. The typology includes simple, single ply cordage as well as more elaborate, compound cordage types. Types II, III, and IV cordage were used to make all Zorropata textiles and 79% of the stand-alone fragments of cordage. Type III: Two Ply Z-Spun S-Twist cordage (S(2Z)) was the most common cordage type identified at Zorropata. Type III cordage was also the most common type used in Type I, II, and IV textiles. Mary Frame identified a cordage type matching this description as ubiquitous in the Nasca region (Frame 2010:354).

The second most common cordage type was a single ply cordage variety — Type II: Single Ply Z-Twist Cordage (Z). This variety was used to make several Type I textiles. In fact, all examples of Type II cordage recovered from Zorropata were used in Type I textiles.

The third most common type of cordage was Type IV: Two Ply S-Spun Z-Twist Cordage (Z(2S)). This cordage type was used to make five Type I textiles. Nine additional examples of this cordage type that were not part of textiles were also recovered. All other cordage types recovered during the 2014 season were represented by one or two specimens each.

Summary

The assemblage of textiles and cordage from Zorropata is small and almost all specimens are very fragmentary. That said, the assemblage appears to support a trend observed in other textile assemblages in the region. Zorropata textiles and cordage appear to

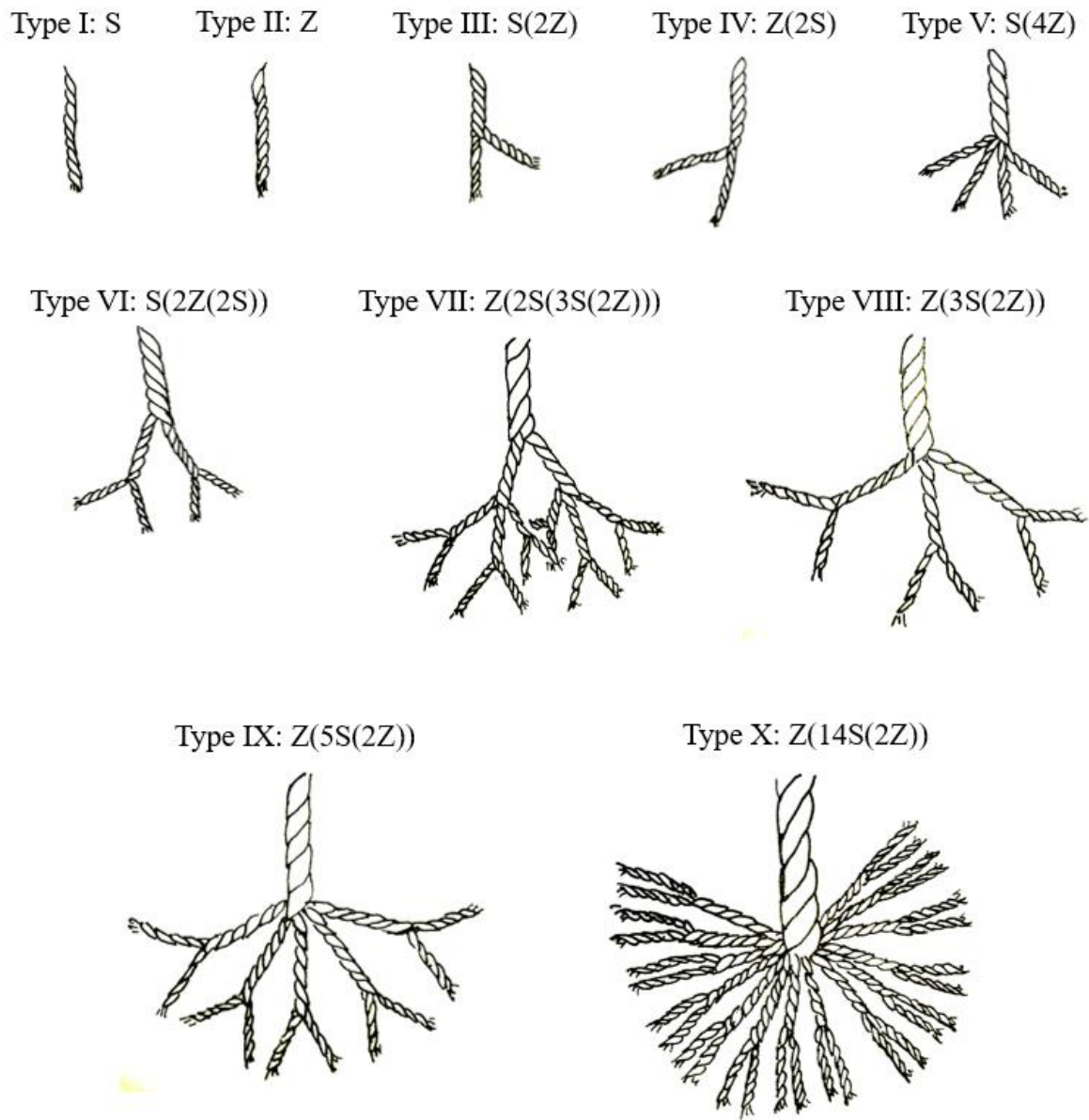


Figure 7.9. Zorropata Cordage Types.

be more diverse in ceremonial contexts relative to the domestic ones. More types of textiles and cordage are present in the assemblages for Unit 1 than in the assemblage for all excavated domestic contexts (Units 4, 8, and 9) combined. The variety of cordage and textile types and the raw materials of woven and spun artifacts from Unit 1 at Zorropata are consistent with other Nasca ceremonial and mortuary contexts (Silverman 1993:274).

It should be noted that the study of woven and spun artifacts in the Nazca Region is in large part focused on ceremonial settings and mortuary contexts (Rowe 1973:1). Intentionally buried deposits like graves and buried offerings tend to be better preserved than domestic contexts that may undergo practices that are not conducive to preservation of in situ deposits during abandonment (Joyce and Johannessen 1993). As discussed in Chapter 2, mortuary contexts have also been targeted by researchers in the Nasca Region for more than a century. Textiles and cordage from domestic contexts have received comparatively little academic attention in the region. These artifacts are more often investigated through the spinning and weaving tools (discussed below) used to make them, especially spindle whorls, which tend to preserve better than textiles in the archaeological record (e.g., Edwards et al. 2008; Vaughn 2000:420-445).

Weaving Tools

This section discusses spinning and weaving tools recovered from the 2014 field season at Zorropata. Recovered tools included: Disks/spindle whorls, a spindle, and chalk.

Spindle Whorls and Disks

A total of 11 disks was recovered from Zorropata, nine were from the surface of Sector 1 and two were from the surface of Sector 3 (Figure 7.10). No spindle whorls or disks were recovered from excavated contexts. Five of these disks were spindle whorls — a component of a drop spindle used to spin and ply cordage. Spindle whorls were distinguished from the general category of disks by the presence of a central aperture that accommodates a spindle. Spindles were usually made from a thin dowel of smoothed or polished wood c. 10-20 cm long and usually c. 0.25 to 1.0 cm in diameter. Only one spindle was recovered from Zorropata during the 2014 season (discussed below). Whorls were recovered from several locations in Sector 1 and 3 and seem to have been associated with several habitation terraces rather than centered on a particular locus of production.

Attributes recorded for disks and spindle whorls at Zorropata included the weight in grams (g), diameter of the whorl/disk, diameter of the central aperture (where present), and thickness in millimeters (mm). An estimate of the percent of completeness was ventured for fragmentary whorls/disks.

Nasca spindle whorls tend to be made from ceramic, stone, and other durable materials and therefore preserve well archaeologically. Ceramic whorls can be classified into two general categories, discoid whorls made from recycled pottery sherds, and modeled (discoid or bead-like) ceramic whorls. All five of the Zorropata whorls are discoid style. Four are made from ceramic. Three of the ceramic whorls were made from recycled sherds. One whorl appears to be stone.



Figure 7.10. Spindle Whorls and Disks from Zorropata.

Three of the whorls were complete. The other two whorls were c. 25% and 45% intact, respectively. Of the incomplete whorls, the central aperture and overall form could be deduced from the fragments but they were not intact enough to determine the diameters of the whorl or central aperture. Two of the intact whorls and the c. 25% intact whorl were made from repurposed plainware ceramic sherds or undecorated parts of otherwise decorated vessels.

The remaining complete whorl (ZA100-2581) appears to be a modeled ceramic disk-shaped whorl. Whorls or disks made from sherds tend to have characteristics of the vessel (e.g., a slight curve to the obverse and reverse sides, residual paint, surface treatment). The modeled whorl is consistent in terms of paste and temper in profile, and on both obverse and reverse surfaces suggesting it was formed into its current shape while the clay was soft, and smoothed to finish. Also, there is no curvature to either surface of the whorl. This whorl had the lightest weight (2.2 g) and smallest diameter (18.89 mm) recorded. None of these whorls was decorated nor made from repurposed polychrome pottery sherds.

The c.45% intact whorl appears to be carved from fine grained volcanic rock (e.g., basalt, andesite, or rhyolite). If complete, this whorl would likely be nearly 40 mm in diameter and weight c. 8.11 g, making it the largest and heaviest spindle whorl in the assemblage. Hendrik Van Gijseghem mentions but does not describe 5 stone spindle whorls recovered from various domestic units at the Early Horizon Nasca site of La Puntilla (Van Gijseghem 2004:262). Van Gijseghem (2004:262) suggests the alternative that these artifacts were beads. He does not provide enough of a description of the stone spindle whorls to assess how they compare to the stone whorl recovered from Zorropata.

Whorls ranged in weight from 2.2 g to 7.47 g (mean = 5.93 g). Whorl diameters ranged between 18.89 mm to 29.94 mm (mean 23.93 mm). Central aperture diameters ranged between 3.32 mm to 4.63 mm (mean = 4.09 mm). These whorls are on the smaller end of the spectrum of whorls for the Nasca Region and were probably used for spinning shorter, weaker fibers like cotton rather than longer, stronger fibers such as those from camelids. This assertion is supported by the ubiquity of cotton and relative rarity of camelid fibers in the textile and cordage assemblage from Zorropata.

The six remaining disks lacked a central perforation. These artifacts were roughly circular and made from recycled pottery. All but one of the disks (ZA100-2588) was smoothed on the outside edge. ZA100-2588 may be a ceramic sherd that broke in a coincidental, round shape, or it could be a disk pre-form that was lost or abandoned before the edges were smoothed. One disk (ZA100-2951) evidences plucking or grinding in its center on one side suggesting that it may be a whorl blank that was lost or abandoned during production, before the central aperture was finished. If this whorl blank had been completed it would have been on the larger side (weight = 13.01 g; diameter = 39.22 mm). If this artifact was indeed a spindle whorl it might have been used to spin longer, stronger fibers such as camelid fibers. The four other disks (five if ZA100-2588 is included) do not exhibit any evidence of a central aperture. One of the disks (ZA100-2590) was made from a piece of slip painted pottery but the design is very deteriorated. It is possible that these disks were whorl blanks however it is just as likely that they served some other purpose. Helaine Silverman suggests a use as plugs or bottle stoppers (Silverman 1993:260; Vaughn

2000:423). The weights of these five disks ranged from 2.47 g to 17.93 g (mean = 7.04 g). Their diameters ranged from 22.55 mm to 44.05 mm (mean = 31.27 mm).

Most Andean textiles and cordage are made from, cotton, camelid fibers, or, rarely, a combination of those fiber types (Silverman 1993:273). Cotton and camelid fibers have distinct ecological and geographic origins, as well as unique physical properties. This observation has led researchers to infer that a spindle whorl's weight or size correlates to the type of fiber (cotton or camelid) that it was used to spin (Clark 1993:397; Costin 1993; Keith 1998; Lui 1978; Loughran-Delahunt 1996; O'Neale 1949; Parson 1972, 1975; Rowe 1986; Vaughn 2000:422). Shorter more fragile bast fibers like cotton tend to require a lighter whorl, whereas heavier whorls were used to spin camelid fibers or compound cordage. Moreover, spindle whorls have been used at other sites, for example Marcaya, Pajonal Alto, and Pataraya, as proxies for spinning activities (Conlee 2000; Edwards et al. 2008; Edwards 2010; Vaughn 2000).

Spinning and weaving tools were much less common than expected at Zorropata. Spindle whorls were also uncommon at the Late Nasca site of Cocahuischo (Whalen 2014:237). Verity Whalen reports that eight spindle whorls made from repurposed ceramic sherds were recovered from domestic contexts at Cocahuischo (Whalen 2014:238). Moreover, spindle whorls were far less common at Zorropata than at the Early Nasca site of Marcaya, or the Middle Horizon sites of Pajonal Alto or Pataraya. Chalk and at least 25 spindle whorls were recovered from all households at Marcaya (Vaughn 2000:423). Excavations at Pajonal Alto and Pataraya each recovered more than 90 spindle whorls from contexts across the site (Conlee 2000:340; Edwards 2010:362). Their frequency and

distribution at these sites suggests that spinning was a common domestic activity. The five definitive whorls recovered from Zorropata came from domestic contexts across the surface of the site. From these data, it is apparent that spinning was a productive activity at the site. The fact that significantly fewer whorls were recovered from Zorropata than from Marcaya, Pajonal Alto, or Pataraya may suggest that spinning was not as common an activity at Zorropata as it was at those other sites. Another alternative is that spinning activities moved outside the realm of household productive activities. Spinning might have gone from being productive activity controlled by and occurring at individual households during the Early Nasca Period. Then, at Late Nasca and early Middle Horizon settlements, spinning may have taken place at some circumscribed location outside the home — perhaps also leaving the control of individual households. As evidenced by the ubiquity of spindle whorls at Pataraya, the Wari had a clear interest in spinning on the South Coast (Edwards et al. 2008). It is possible that the Wari affected the locus or mode of this productive activity.

Spindle

One wooden spindle (ZA1RA1-287) was recovered from Disturbed Layer 2 in Unit 1 in the fill below the level of the tomb roof (described in Chapter 5) (Figure 7.11). This was the only spindle recovered from Zorropata. Given the context, this spindle was likely part of the contents of a ceremonial deposit, a tomb, or mummy bundle associated with the adobe compound. The spindle is 148.68 mm in length, weighs 1.31 g, and has a diameter of 3.6 mm at its widest point. A spindle around this size could have been used with any of the complete



Figure 7.11. Spindle Recovered from Unit 1 at Zorropata.

whorls recovered from the site, however, it is not known what fibers this spindle may have been used to spin.

Chalk

Chalk has been documented at habitation sites in the Nasca region because of its possible use in spinning and weaving. Chalk could have been used to coat hands and thereby improve grip and dexterity when manipulating raw fibers into cordage or cordage into textiles (Vaughn 2000:238, 423; Edwards 2010:362). Chalk fragments were recovered from seven of the eight excavated contexts in Sector 1, including Units 1, 2, 3, 4, 8, 9, and 10. Textiles or cordage were recovered from Units 1, 4, 8, and 9. Perhaps the relative frequency of chalk compared with woven artifacts or other weaving tools suggests that weaving and spinning took place in habitation contexts at the site but that the products of these labors were rarely or sparsely represented at the end of the use life of a space. Textiles and cordage that were still in a useable state would likely have been taken with the inhabitants of the site when they moved on rather than left conveniently in situ. Small fragments of chalk, a common natural resource, would not have been as closely guarded. Another alternative is that chalk was used for several domestic purposes not just spinning and weaving. Whalen notes that chalk is sometimes an additive for chewing coca leaves (Whalen 2014:325). The present evidence is not sufficient to distinguish between these scenarios, and both are plausible.

Discussion

Bone awls and needles (Units 2 and 10, Chapter 8), and chalk (Units 2, 3, 4, 8, 9, and 10) recovered from habitation terraces may have been used to produce textiles, cordage, or basketry (see also Chapter 8). Spindle whorls were less common at Zorropata than at other Nasca habitation sites where they have been documented (Conlee 2000:340; Vaughn 2000:423). As a proxy for spinning activity, the frequency and distribution of spindle whorls from Zorropata suggests that spinning was associated with domestic spaces but that the scale and/or locus of production may differ from sites like Marcaya or Pajonal Alto (Conlee 2000:340; Vaughn 2000:423). Most textiles and cordage from Zorropata were produced from cotton, although specimens made from camelid fiber were recovered as well. Textiles (and cordage) were recovered from funerary/ceremonial contexts at Unit 1 and habitation contexts at Units 4, 8, and 9. The ubiquity of cotton plainweave textiles in this assemblage is consistent with other Nasca textile assemblages (Phipps 1989:226; Silverman 1993:273). The textile assemblage from funerary/ceremonial contexts (Unit 1) displays the greatest number and variety of specimens, which is broadly consistent with other assemblages (Silverman 1993:274). Data from this chapter speak to economic activities and will be considered in light of the primary research objective of this dissertation in Chapter 11. Local textile productive and consumptive choices are also briefly considered in Chapter 12.

¹ Camelid fibers are sometimes referred to in the academic literature on Andean textiles as wool because it is derived from an animal source. The term ‘camelid fiber’ is preferred here because llama or alpaca fleece has a structure that is distinct from sheep’s wool. Sheep’s wool has a rough, scaled structure under magnification. This structure allows sheep’s wool to be spun more easily than many other fibers. Camelid fibers are smoother by comparison.

² In addition to the published literature that describes balanced plain weave as a common textile type in the Nasca Region, my personal analytical experience in the region echoes this finding. I have conducted or assisted in the analysis of textiles and cordage from several regional sites including Mina Primavera, a mine site in the Ingenio Valley; Cocahuischo, in the Tierras Blancas Valley; and Pajonal Alto, in the Taruga Valley.

Chapter 8

Analysis of Stone tools and Miscellaneous Artifacts

This chapter turns attention to various other classes of artefactual material including: 1) stone tools; 2) figurines; 3) musical instruments; 4) adornments; and 5) bone artifacts recovered from Zorropata during the 2014 field season. These data contribute details about various aspects of craft production at Zorropata during the Late Nasca and early Middle Horizon.

Stone tools

Lithic materials recovered from Zorropata included flaked stone, debitage/shatter, groundstone artifacts, and sling stones. This section presents and discusses stone tools from excavated contexts. The stone tool assemblage from excavated contexts seems representative of stone tools recovered from surface collection. Results of XRF analysis of obsidian flakes from surface collection and excavation are also discussed.

Flaked stone artifacts

Flaked stone artifacts (n = 438) were recovered from all excavated habitation units (Units 2, 3, 4, 5, 8, 9, and 10) and the adobe compound (Unit 1) in Sector 1. The highest concentration of flaked stone per cubic meter excavated was recovered from Units 2 and 5. The assemblage of flaked stone tools ranged from shatter and flakes associated with lithic production, unifacial and bifacial flakes some of which may have been informal tools, cores,

and projectile points (Table 8.1). Raw materials included obsidian (n = 21), chalcedony (n = 398), quartzite (n = 9), and fine grained volcanic rock (e.g., basalt, andesite, or rhyolite) (n = 10). A range of chalcedony colors were observed including red (c. 5R6/8), pink (c. 10R5/3 to 10YR8/2), white (c. 7.5YR9.5/1 to Gley 2 3/5 PB), and yellow (c. 10YR7/6) (Table 8.2).

Formal tools from Zorropata included projectile points and projectile point fragments made from obsidian (Table 8.3, Figure 8.1). Formal tools and projectile points are rare from Nasca sites and Zorropata exemplifies this trend (Valdez 1994:677). Informal tools were far more common than formal tools. Informal tools were made of obsidian, chalcedony, quartzite, quartz, and fine grained volcanic rock. Tools primarily seem to be expedient, made from locally available resources. The few formal tools that were recovered were made from obsidian, and obsidian debitage may suggest that small amounts of obsidian were obtained and reduced into finished tools locally.

XRF of Obsidian

X-Ray Florescence (XRF) and Portable XRF (PXRF) describe a method non-destructive compositional analysis aimed at extrapolating details about the chemical make-up of a variety of silica containing materials including but not limited to: 1) stone tool raw materials (e.g., obsidian, basalt, or chert (Carter and Shackley 2007; Forster and Grave 2012; Golitko et al. 2010; Lundblad et al. 2011; Jia et al. 2010; Milne et al. 2011; Moholy-Nagy et al. 2013; Smith et al. 2007; Winterhoff et al. 2007; Wurtzburg 1991); 2) soil (Abrahams et al. 2010); 3) mineral based pigments (Huntley 2012; Jones and Photos-Jones 2005); 4) metals (Rehren et al. 2012); and 5) clay (Tedman 2012; Walker 2012). XRF emits short wave radiation (X-ray) to excite atoms in a sample. The energy given off resulting from this

Table 8.1. Technological Categories of Non-Obsidian Flaked Stone Tools from Excavated Contexts.

Technological Category	Count	Weight (g)
Core	1	19.12
Flake	32	67.85
Shatter	383	1132.87
Total	416	1219.84

Table 8.2. Raw Material Types for Flaked Stone Artifacts.

Material Description	Count	Weight (g)
Chalcedony (Pink)	352	878.7
Chalcedony (Red)	2	1.76
Chalcedony (White)	10	111.54
Chalcedony (Yellow)	34	41.94
Fine Grained Volcanic	10	46.28
Quartzite	9	140.38
Obsidian	21	35.48
Total	438	1256.08

Table 8.3. Obsidian from Zorropata by Technological Category.

Technological Category	Count
Projectile Point	9
Flake	11
Shatter	1
Total	21



Figure 8.1. All Formal, Obsidian Tools Recovered in 2014 Excavations at Zorropata.

process (fluorescent radiation) is measured by an XRF instrument to give specific information about chemical elements that are present in a sample (Shackley 2011). XRF assays are relative within a sample population. Therefore, it is necessary to use control samples of known composition to understand and interpret results correctly.

XRF analysis of samples from Zorropata was conducted by Jessica Kaplan, a PhD candidate at the University of California, Santa Barbara using a Bruker Tracer III PXRf. Kaplan also used this specific device to measure control samples of obsidian from known sources in the Nasca region (e.g., Alca, Anillo, Jampatilla, Lisahuacho, Potreropampa, Puzolana, or Quispisisa). These obsidian sources are located within 250 km of the Nasca Region. Quispisisa and Jampatilla are the closest, each located c. 100 km northeast of the modern town of Nasca in the highlands. Quispisisa was the dominant source for the SNR during the Early Intermediate Period, Middle Horizon, and Late Intermediate Period (Eerkens et al. 2010:826). Conditions and methods of analysis were consistent with other obsidian studies in the Andes and results should therefore be considered comparable (Burger et al. 2000; Eerkens et al. 2010; Kellett et al. 2013; Burger et al. 2000). The elements that are the most relevant to archaeological XRF studies of obsidian in the Andes are rubidium (Rb), strontium (Sr), and manganese (Mn), iron (Fe), zirconium (Zr), and niobium (Nb) (Craig et al. 2007; Kellett et al. 2013; Jessica Kaplan, Personal Communication).

The Sample. Excavations at Zorropata produced significantly less obsidian than the Early Nasca habitation site Marcaya and the Late Nasca site Cocahuischo per cubic meter excavated (Table 8.4). A total of 21 obsidian specimens was recovered from surface collection and excavation at Zorropata in 2014. Of these specimens, 12 came from

Table 8.4. Density of Obsidian per Meter³ from Excavated Habitation Contexts at Cocahuischo, Marcaya, and Zorropata. (Numbers for Marcaya and Cocahuischo generated from published data).

<u>Site</u>	<u>Density of Obsidian per cu. Meter</u>
Marcaya	1.12 grams
Cocahuischo	2.61 grams
Zorropata	0.72 grams

excavation at habitation contexts, and one additional specimen was recovered from excavation at the adobe compound. The remaining eight samples came from surface collection. Only eight formal tools were present, four from excavated contexts and four from surface collection. These tools included three complete projectile points and one tip of a projectile point. The remaining samples include nine small obsidian flakes from excavation and four from surface collection for a total of 13 flakes. These 13 flakes were exported to the United States for XRF compositional analysis. Kaplan and I attempted to conduct analysis in Ica and to gain access to the entire assemblage of obsidian but were neither able to get UCSB's XRF into Perú in a workable timeframe for this project nor to export the formal obsidian tools from this assemblage. With permission from the Peruvian Ministry of Culture, 13 of 21 obsidian samples were exported to US for XRF analysis at UCSB. The purpose of analysis was to investigate the possible source(s) of obsidian used at Zorropata. These data in turn contribute to an investigation of local obsidian resource preferences and/or access during the early Middle Horizon.

Expectations. XRF of Zorropata sought to test the assumption, based on previous studies, that obsidian in this assemblage likely came from the Quispisisa obsidian source. Studies by Burger and Asaro (1979:301), and Vaughn (2000:411) document variability in the physical characteristics of obsidian from the Quispisisa mine. Prior to chemical composition analysis, Vaughn (2000:411) identified 3 types of obsidian at Marcaya based on physical differences in individual specimens. Type one was described as black opaque with red spots. A second type was described as clear with parallel black streaks. The third type was described as an intermediate form between types one and two. However, compositional analysis of these

samples revealed a common source, Quispisisa (Vaughn 2000:416). Whalen conducted visual analysis of obsidian samples from Cocahuischo and believes they also come from Quispisisa.

Zorropata obsidian was sorted into 5 different types based on visual observations made during initial analysis and documentation. Most specimens (n = 10) were designated as Obsidian Type 1. Type 1 obsidian was black (Gley 1 2.5/N) in color and semi-translucent or cloudy but not entirely opaque. Four specimens were designated as Obsidian Type 2, opaque black (Gley 1 2.5/N). Four specimens were designated as Obsidian Type 3, very translucent with a slight black tint. Two specimens were designated Obsidian Type 4, opaque black (Gley 1 2.5/N) with red (10R3/3) inclusions. Finally, one specimen was Obsidian Type 5, red (10R3/3) semi-translucent with black (Gley 1 2.5/N) inclusions. Prior to XRF analysis it was hypothesized that these types could be chemically distinct. If this hypothesis was supported by the compositional analysis it could suggest that Zorropatans' access to the preferred Quispisisa source was interrupted, perhaps due to Wari activities and interests in the region.

An alternative hypothesis suggested that most or all the obsidian was from the same source, possibly Quispisisa, and the visually identified types document the variability in appearance of this source to the naked eye. In either case, access to obsidian may have been limited for the people living at Zorropata given, as stated above, obsidian was less common at this site than at the Early Intermediate Period sites, Marcaya and Cocahuischo (Table 8.4).

Results. The sample of obsidian for XRF from Zorropata included examples of all five the visual categories. Most of the tested obsidian was consistent with the Quispisisa source (Figure 8.2). Only one flake from this sample, an Obsidian Type 3 specimen recovered from

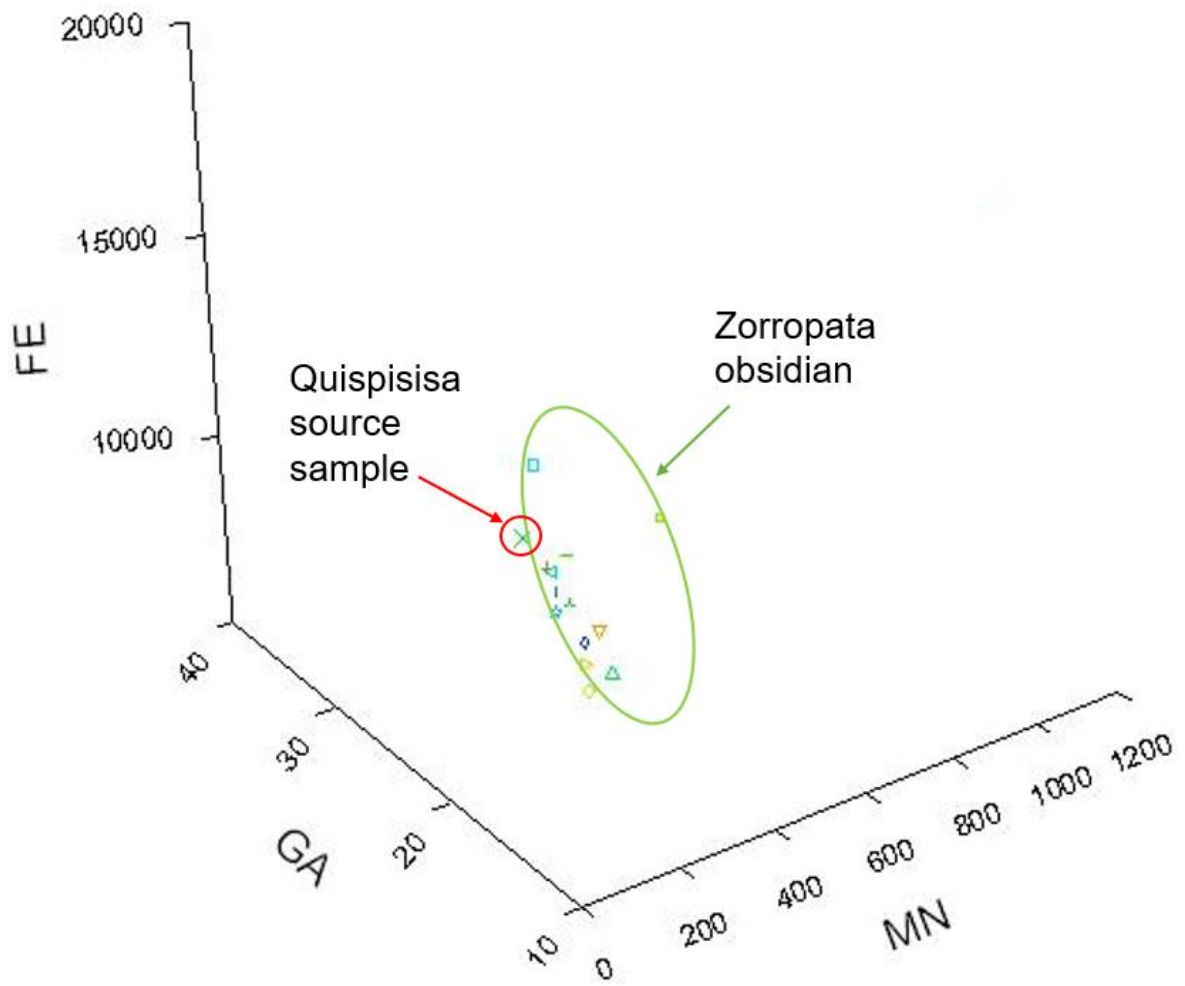


Figure 8.2. Scatterplot of Obsidian XRF Results from Zorropata.

Stratum 3 at Unit 3, was inconsistent with the Quispisisa obsidian source. The source of this obsidian flake has not yet been determined with certainty. Diagnostic ceramics from this stratum were Loro. Two other Type 3 flakes were tested and produced results consistent with Quispisisa. This result supports the caution offered by Burger and Asaro (1979:282) that accurate identifications of obsidian sources should not rely solely on visual observations of the physical attributes. All other tested obsidian from Zorropata was consistent with Quispisisa. The results of the XRF of Zorropata obsidian are not surprising. Quispisisa is the most commonly used source for Nasca obsidian for all other periods (Eerkens et al. 2010).

Groundstone Artifacts

Another major artifact class recovered from Zorropata was groundstone artifacts (n = 60) (Table 8.5)¹. Groundstone was recovered from all excavation units at habitation terraces in Sector 1 (Units 2, 3, 4, 5, 8, and 9), and from ceremonial/funerary contexts at Unit 1. Some groundstone was also recovered from the surface in Sector 3 above the sterile Unit 6. As mentioned in Chapter 5, it is probable that artifacts from the surface of Units 6 and 7 in Sector 3 came from up slope. Groundstone artifacts were made of fine grained volcanic rock (e.g., basalt, andesite, or rhyolite). The distribution of groundstone from excavation and surface collection suggests that food production and other quotidian productive behaviors were the purview of households at Zorropata.

Consistent with Vaughn's findings from Marcaya, groundstone from Zorropata can be sorted into two broad groups: subsistence related, and not subsistence related. Subsistence related groundstone included small manos, mano fragments, pestles, pestle fragments, and small mortars from excavated contexts. Surface collection documents these tool types at

Table 8.5. Technological Categories of Ground Stone Artifacts from Excavated Contexts.

Technological Category	Count	Weight (g)
Hammer Stones	1	>600
Manos	17	>7175.22
Mortars	1	>600
Pestles	3	529.01
Polishing Stones	15	185.9
Sling Stones	23	2035.5
Total	60	>10525.69

other Sector 1 habitation terraces as well as large, two-handed manos, and large slabs of igneous rock used as grinding surfaces (Figure 4.9). Small intact mortar was also recovered from surface collection (Figure 8.3). Non-subsistence related groundstone included polishing stones, hammer stones, and sling stones.

Polishing stones may have been used in ceramic production to smooth or burnish the surface of a ceramic vessel prior to firing. Hammer stones may have been used for various activities including flaked stone tool production. Sling stones were c. 3 to 4 cm diameter spherical nodules of fine grained volcanic rock (Figure 4.28). In Chapter 4 it is proposed that sling stones, in conjunction with a large stone perimeter wall at Zorropata, suggest a concern for defense. Sling stones recovered from excavated habitation contexts may also/alternatively been used to hunt wild game or to control livestock.

Figurines

A total of 53 human and one animal figurines was recovered from surface collection and excavation at Zorropata. All figurines are fragmentary. Refitting was attempted with all figurine fragments during the laboratory phase of this project. Therefore, the current number of fragments (n = 54) represents the MNI of figurines for the 2014 excavation season at Zorropata. The term figurine is used here to describe a category of artifact that includes small solid ceramic human or animal effigies, fragments from at least two unkilned clay human effigies, fragments from one or more probable large hollow ceramic human effigy or stelae, and at least two human effigies or stelae carved from a fine grained white stone, possibly gypsum (Morgan 2012:359)². Figurine fragments were recovered from excavation at Units



Figure 8.3. Small Intact Mortar Recovered During Surface Collection.

1, 2,3, 5, 8, 9, and surface collection. The majority (n = 35) were recovered from surface collection.

Ceramic Figurines

At least five styles of small, solid, ceramic figurine were identified in the assemblage at Zorropata. These were: 1) Seated Figurines; 2) Standing Armless Figurines; and 3) Standing Hooked Leg Figurines; 4) Large Figurines; and 5) Animal Figurines. In addition, some human effigies were represented by very small fragments such as a head or limb. The more intact figurines were represented by the torso and one or more extremities. None of the figurine fragments recovered were intact with both the head and torso. The majority of documented Nasca figurines are relatively small, solid, ceramic figurines that represent females (Morgan 1988:329; Conlee 2000:423).

Seated Figurines. Fragments of at least 13 Seated Figurines were recovered from the surface of Sector 1. Seated figurines have plump torsos and relatively wide rounded hips, smooth lobe-like arms extending from the sides of the torso and cylindrical legs that come out from the hips at a 90-degree angle from the bottom of the torso and taper to rounded nub-like abstracted feet (Figure 8.4). Legs accommodate either a seated position where the torso leans back slightly or a standing position where the form bows forward at the waist. More intact specimens show hints of a flesh toned slip paint covering the entire surface of the figurine. Four figurines are more intact than the others of this style and depict designs in black slip on the torso and limbs, possibly representing body paint or tattoos (Morgan 2012:57). One of these figurines has lines of small black dots running the length of a leg (Figure 8.5). Another



Figure 8.4. Seated Figurine: Obverse (Left), Profile (Center), and Reverse (Right).



Figure 8.5. (Top) Leg of Seated Figurine with Dot Line Design.
Figure 8.6. (Bottom) Leg of Seated Figurine with X Design.

figurine has small black slip X's or crosses along the legs (Figure 8.6). Two figurines depict a star design on the legs (Figure 8.7). One of the figurines with stars painted on the legs also has braids painted in black slip down its back. The significance of these designs is not known, but Alexandra Morgan suggests that their significance relates to Nasca magic-religious beliefs centered on marine fertility (Morgan 2012:57, 1988:331).

The general roundedness and plumpness of the figurines as well as the braided hair is consistent with other Nasca figurines that were described as female (Lilien 1956:131; Morgan 2012:65; e.g., Morgan 2012: Plate 16). William D. Strong (1957:40) argued that similar figurines recovered from Huaca del Loro represented pregnant women. Other studies suggest that females are more often represented in Nasca figurines than males (Lilien 1956:137; Morgan 2012:65). Moreover, males tend to be standing and clothed whereas females may be standing or seated and are often naked or tattooed (Morgan 2012:65; Spielbauer 1972:25).

Six of these figurines are represented by a torso, or partial torso and hips/buttocks. Six were represented by only a leg. One was represented by an arm. This style of figurine was distinct from the others found at Zorropata in that extremities were particularly rounded. Arms were abstracted, legs had a slight flatness on the bottom surface, possibly to allow the figurine to sit on a flat surface. The style of features such as braids, hands, and decoration motifs is consistent with Late Nasca and Loro phase figurines (Morgan 2012:365-369).

Standing Armless Figurines. There are four examples of Standing Armless Figurines, all recovered from surface collection. These figurines have broad shoulders, narrow waist, and two sculpted legs protruding below the hips/buttocks. Upper extremities are completely



Figure 8.7. Torso of Seated Figurine with Star Design.

abstracted and not represented by a modeled lobe or limb. Arms are not painted on either however, figurines exhibit significant wear and painted designs may have been worn away. The more intact specimens of this style appear to be prone or standing. The most complete specimen (ZA100-2567) has a bulge on the front of the hips consistent with Morgan's description of classically rendered male genitalia in male Nasca figurines (Morgan 2012: 42; Figure 8.8). Taken with the broad shoulders and narrow hips it is likely these figurines represent males. Three out of four figurines of this style are decorated with a red slip band outlined by thin black slip lines encircling the waist. Morgan documents a similar design for other male Nasca figurines and suggests that the designs represent loin clothes (Morgan 2012:42).

Standing Hooked Leg Figurines. Nine fragmentary figurines recovered from surface collection in Sector 1 are either prone or standing. This style of figurine has legs that hook back slightly, and upper extremities represented by lugs or lobes coming off either side of the torso (Figure 8.9). The shoulders of this style of figurine are smoothed around the edges but not as rounded as the seated figurines. Arms are represented by rectangular or rhomboidal lugs -- the widest part of the lug extends from the shoulder and tapers to the waist. The most complete specimens of this figurine type are approximately 6 cm wide from shoulder to shoulder and c. 10 cm long, however these figurines are fragmentary. One figurine of this style has black slip lines down the back that may represent braids. This detail suggests that the figurine may represent a female. In general, this figurine type is consistent with what Morgan designated as Nasca Sub-Group 1.1: Standing Female Figurines (Morgan 2012:35).



Figure 8.8. Standing Armless Figurine: Obverse (Left), Profile (Center), and Reverse (Right).



Figure 8.9. Standing Hooked Leg Figurine: Obverse (Left), Profile (Center), and Reverse (Right).

One hooked leg standing figurine (ZA100-2547) was deeply scored before it was fired (Figure 8.10). These lines do not appear to compose an incised design. The purpose of this surface treatment is unknown but does not appear to be functional and may be ritual. Other figurines of this style are smoothed and painted like the Seated Figurines. At least one (ZA100-2555) figurine of this style exhibited flesh toned slip paint.

Large Figurines. Two figurines from surface collection are represented by solid ceramic torsos with lug arms. Each figurine measures c. 10 cm wide from arm to arm. Though incomplete, the torso size suggests that they are larger than the other solid ceramic figurines. The arms of these figurines are rectangular, like the hooked leg standing figurines, but do not taper to the waist. Moreover, these figurines appear to be standing and to have legs that, at least in the upper portion, curve posteriorly like the hook legged figurines. They may be best categorized with the Hooked Leg Standing Figurines.

Both figurines of this style have black slip lines extending down the back that may represent braids. This feature suggests that the figurines represent females. One of the figurines sports incised lines in the front of the pelvic region that may represent female genitalia.

Animal Figurine. The rear half of an animal figurine was recovered from above the floor feature in Unit 9 (Figure 8.11). The portion recovered includes part of the torso, both hind legs, and part of a tail. The animal figurine appears to be standing judging from the intact hind quarters. The exterior surface of the figurine appears to be slip painted with black or dark gray slip. It is not clear what type of (real or mythical) animal the figurine represents



Figure 8.10. (Top) Standing Hooked Leg Figurine with Score Marks.
Figure 8.11. (Bottom) Animal Figurine: Plan (Left) and Profile (Right).

because it is incomplete. It bears a passing resemblance to Nasca depictions of foxes. As mentioned in previous chapters Zorropata is located on a hillside known in the local folklore for hosting foxes. Perhaps this animal figurine represents a fox.

Heads. A total of six ceramic heads was recovered from various contexts at Zorropata including two from surface collection (Figure 8.12 (top left and right)), one from Unit 1 (Figure 8.12 (top center)), two from Unit 5 (Figure 8.12 (bottom center and right)), and one from Unit 8 (Figure 8.12 (bottom left)). All specimens were fragmentary. Four heads were broken at the neck and two were partial crowns. One head broken at the neck was recovered from disturbed contexts near the eastern edge of Unit 1. One head and one partial head were recovered from Unit 5. One partial head was recovered from Unit 8. Two heads broke at the neck were recovered from surface collection. Two of the more intact heads, one from unit 1 and one from surface collection, had hints of red slip on the face that may have represented face paint.

These figurines were consistent in style with published examples of Late Nasca and Loro figurine heads (e.g., Lilien 1956: Plates IX, and X; Morgan 2012: Plates 8, and 9). Heads were relatively flat from front to back, triangular with a rounded point for the chin, and with two rounded points for the crown of the head (Figure 8.12). The nose was prominent and modeled but other facial features such as the eyes, mouth, or hair were painted on with slip paint. The top of the head was painted with black slip, probably representing hair. One of the heads was shorter and more compact than the others (Figure 8.12 (lower right)). A substance on the neck suggests that there was an attempt to repair the figurine after the head broke off the body.



Figure 8.12. Heads: Complete Heads (Top Row and Bottom Right) and Crowns (Lower Left and Lower Center).

Given the frequency of fragmentary ceramic figurines at Zorropata, it is probable that these heads came from figurines. Another alternative is that some of them broke off ceramic human effigy vessels (e.g., Lapiner 1976: Figure 487; Sawyer 1975: Figure 154).

Other Solid Ceramic Figurines. As many as twelve figurines may be represented by fragments recovered from surface collection and excavation. Seven possible figurines are represented by partial feet or legs. Two legs from surface collection curve forward. These limbs are painted with flesh toned slip and details of the foot are painted with black slip lines and white fill for the toes. Of the five remaining figurines represented only by a foot, all were modeled. Three are from surface collection and two were from excavation Units 5 and 8, respectively. The foot from Unit 5 was decorated with incised lines representing toes.

Four possible figurines were represented by partial torsos. Two partial torsos came from surface collection. One of these had a partial arm. The two remaining partial torsos came from Unit 5. And both exhibited poorly preserved designs in black slip. None of these torsos was intact enough to determine if the figurine could be categorized according to the types described above. The torso with the partial arm was slip painted flesh toned and decorated with a solid black slip triangle design. The triangle design was similar to one observed on an unfired fragmentary figurine from Unit 3. The remaining figurine represented a badly worn hip/buttocks recovered from surface collection.

Unfired clay Figurines

Fragments of unfired clay figurines were recovered from Units 2 and 3. At least some of these fragments were slip painted. These figurines were either works in progress that

broke and were discarded before they were completed or, they were ritually killed before they were fired, perhaps part of a household ritual practice. The figurine from Unit 2 appears to be a partial torso. Figurine fragments from Unit 3 were too small to determine anything conclusive about form but may represent limbs. The Unit 2 figurine was made of a slightly more yellow clay with slightly larger inclusions. Unit 3 figurine fragments are made from a very fine gray clay with few inclusions. It is difficult to say what these clays would have looked like when fired since clay undergoes chemical changes during the firing process and the specific firing conditions have a bearing on the physical characteristics of the final product.

Stelae

Two types of stelae representing human forms were recovered from Zorropata. One consisted of fragments of a Large Hollow Ceramic Stela. The other type is a solid stela carved from white stone.

Large Hollow Ceramic Stela. Fragments of at least one large hollow ceramic stela or human effigy vessel were recovered from disturbed contexts at Unit 1. This figurine type may be similar one documented by Morgan (2012: Plate 23). This specimen is represented by only a few small fragments of highly burnished, high fire, slip painted ceramic.

Stone Stelae. Two stone figurines were recovered from surface collection. One was recovered from EA 17, part of the adobe compound in Sector 1 but not from the excavated portion. This figurine was the better preserved of the two. The other was recovered from the

surface in the near vicinity of Unit 3. Both figurines were simplified human forms carved from white stone, probably gypsum (Figure 8.13). The figurine from EA 17 is broken in half but the face is preserved. The figurine from near Unit 3 may be the lower half of a stela as the face is not intact. This specimen is split lengthwise and broken. The surviving portions show evidence of smoothing and carving. This figurine may even have been a work in progress that broke before it was completed.

Similar stone stelae have been documented for other sites in the Nasca region (Morgan 2012: Plate 26; Sawyer 1975: Figure 155; Silverman and Proulx 2002:158). The gypsum stelae may have been grave-makers (Parsons 1962:147). Morgan (1988:329) communicates an observation of a Loro period tomb where a plaster figure was placed above a burial and covered by sand. A similar use has not been documented for the Hollow Ceramic stelae (Morgan 1988:329).

Musical Instruments

One fragment of a possible whistle was recovered from surface collection (Figure 8.14). The specimen exhibits what appears to be finger holes but is otherwise too fragmentary to determine form. The form is not consistent with a panpipe. Nasca panpipes were made from ceramic. Examples have been recovered from ceremonial, funerary, (Carmichael 1988:212; Conlee 2000:434; Orefici 1993:146; Silverman 1993:241; Strong 1957:31; Valdez 1994:678) and mundane contexts at several local sites (Vaughn 2000:445-446)

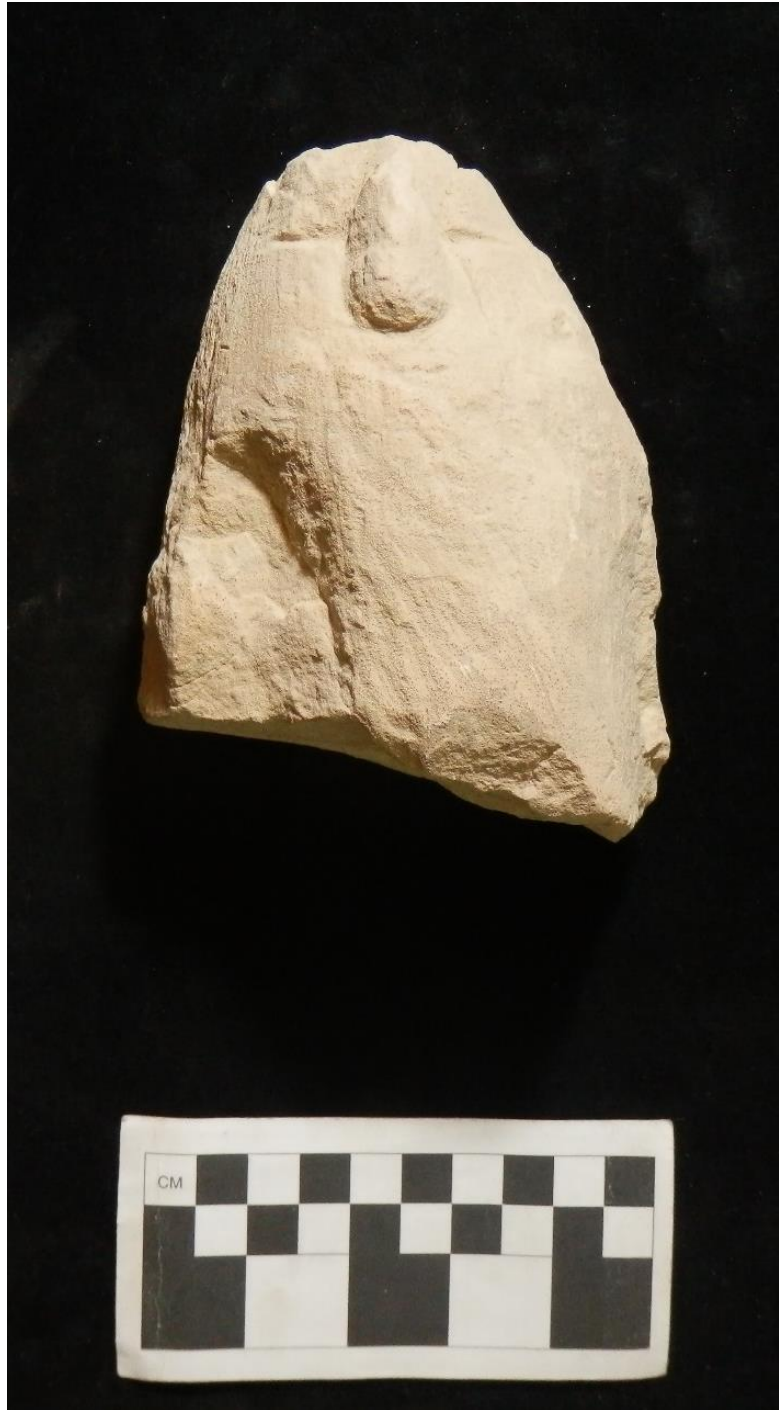


Figure 8.13. Stone Stela Carved from White Stone.



Figure 8.14. Whistle: Obverse (Left) and Reverse (Right).

Adornments

Pendants, beads, and other adornments seem to have played a minor but important role in Nasca ceremonialism and the portrayal of some aspects of Nasca identity. Small amounts of adornments have been recovered from excavations at Cahuachi and several habitation and mortuary sites in the region (Conlee 2000:255; Silverman 1993:261; Vaughn 2000:448; Whalen 2014:320).

Zorropata Shell Beads and Pendants

A total of 24 beads or pendants was recovered from excavation and surface collection at Zorropata. Eight adornments were recovered from excavated contexts at Units 1, 8, and 10, and the remaining 16 were recovered from surface collection. Adornments, made from a variety of types of shell and stone, are described below. Many of the shell beads are made from marine species that must have been obtained from the Pacific Ocean c. 50 km to the west of Zorropata. Modified or unmodified marine shell was likely brought to the site by human action.

Olivella Shell. Twelve modified and one unmodified olivella shells were recovered from Units 1, 8, 10, and surface collection (Figure 8.15). Of these, eight whole olivella shells have the entire spire broken or ground down to create barrel beads. Only the tip of the spire was ground down on another four olivella shells. One of these four shells were missing a rectangular portion of its wall. These shells could have been used as beads or possible raw materials for bead making. The small holes at the spire may have resulted from human

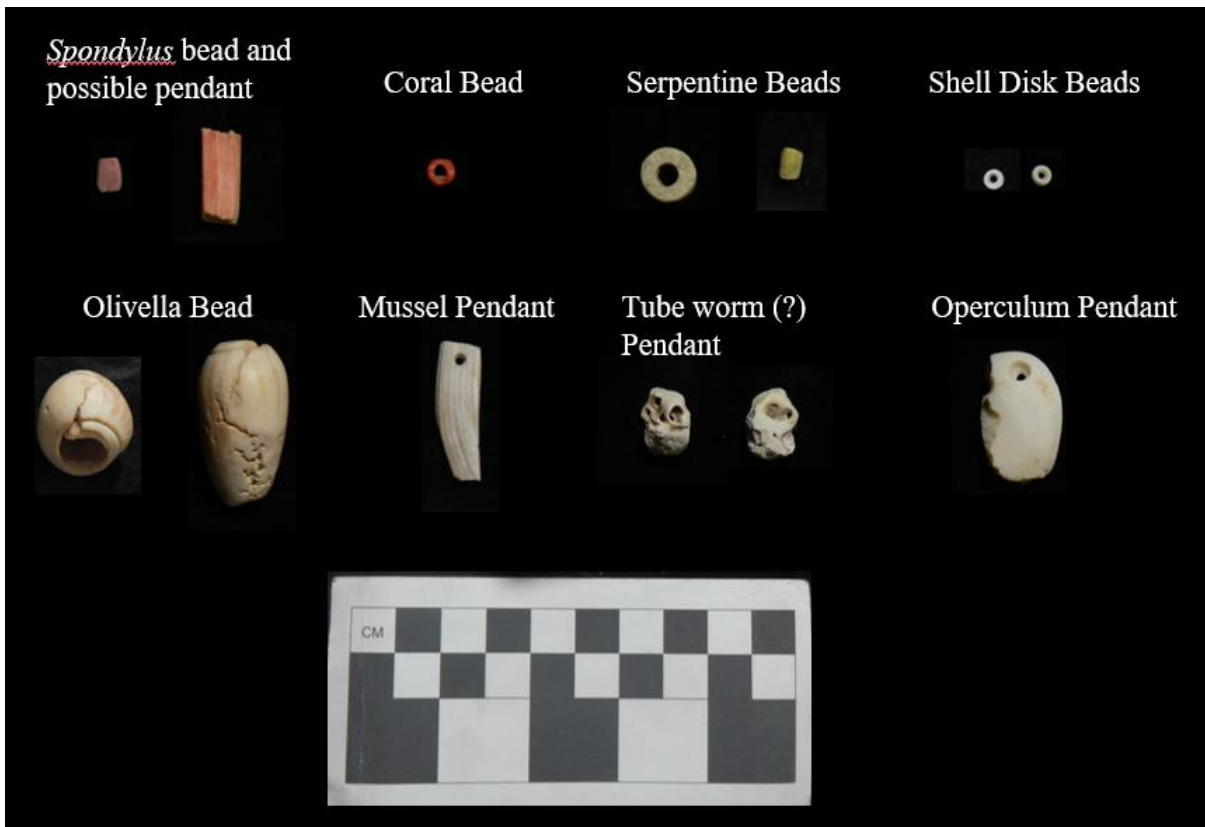


Figure 8.15. Examples of Beads and Pendants.

activity or natural wear. A small, round disk bead measuring c. 0.5 cm in diameter with a central hole appears to have been made of olivella shell but may be some other type of white shell (Figure 8.15). One unaugmented olivella shell was recovered from surface collection that may have been misplaced or discarded before it could be used to produce a bead.

Mussel Shell. Three mussel shell beads or pendants were recovered during surface collection (Figure 8.15). One small, round disk bead measuring c. 0.5 cm in diameter with a central hole was made of mussel shell. Two pendants were made from the smoothed distal edges of mussel shells and perforated at one end, presumably to be strung. These each measured c. 2 to 3 cm long and 1 cm wide.

Spondylus (Thorny Oyster). Three *Spondylus* shell artifacts were recovered from excavation at Zorropata (Figure 8.15). A flat rectangular *Spondylus* shell bead was recovered from a disturbed context Unit 1, the adobe compound. It measures c. 0.5 cm wide by 0.8 cm long. A very bright red cylindrical or short tube bead made from *Spondylus* was recovered from the same context in Unit 1. This bead measures c. 0.5 by 0.5 cm. A fragment of *Spondylus* measuring c. 2 cm by 1 cm was recovered from Stratum 4 at Unit 8. This fragment was shaped into a rectangle and smoothed along three edges but broken along the fourth edge. This item may have been a bead or pendant. *Spondylus* played an important religious and ideological role in ancient Andean society (Paulsen 1974; Pillsbury 1996; Murra 1975). *Spondylus* comes from regions closer to Ecuador and must have come to Nasca by trade. Therefore, this item undoubtedly held some ideological significance for its owner.

Other Shell. Two additional shell pendants were recovered from surface collection at Zorropata (Figure 8.15). One pendant was made from an operculum of an unidentified species of sea snail. It measured c. 2 cm wide by c. 3 cm long and was perforated at one end along the long axis. Another shell pendant was made of an unidentified type of shell, possibly tube worm. The holes in this shell appear natural rather than human made. This pendant is only recognizable as such because a small fragment of the plant fiber cordage (type unidentifiable) on which it was strung is still present.

Stone. Two stone beads, both made of what appears to be serpentine, were recovered from surface collection (Figure 8.15). One bead is c. 1 cm diameter with a central hole. It appears to be broken at one end and may have been cylindrical in shape in its original form. In its present condition, it looks more like a large, round disk bead. The other serpentine bead is a small, cylindrical tube bead measuring c. 0.3 cm in diameter and 0.5 cm.

Bone Artifacts

Four bone tools were recovered from excavated contexts in Sector 1 at Zorropata, two awls and two needles (Figure 8.16). A bone awl made from what appears to be an ulna from an artiodactyl was recovered from Unit 1 (Figure 8.16). The proximal end of the ulna was unmodified while the distal end was sharpened. The tip of a second, smaller awl was recovered from Unit 10. This awl was c. 5.5 cm long and c. 0.5 cm in diameter. The awl from Unit 10 was rounder, smoother, and more extensively worked than the one from Unit 1.



Figure 8.16. Bone Awls (Top) and Needles (Bottom).

Two bone needles were recovered from Unit 2. One was c. 3 cm long and perforated at one end. The other was c. 1 cm long and 0.5 cm in diameter. Both needles were fragmentary, missing their tips and split lengthwise.

Discussion

Evidence of stone tool manufacture, maintenance, and use was recovered from habitation contexts at Units 2, 3, 4, 5, 8, 9, and 10. The Zorropata stone tool assemblage is consistent with other stone tool assemblages from Nasca habitation sites. As was the case at Marcaya and Cocahuischo, most chipped stone tools in the Zorropata assemblage were expedient tools made from local materials (e.g., chalcedony, quartzite, and fine grained volcanic rock) (Vaughn 2000:401; Whalen 2014:306-307). As with the Early Intermediate Period sites, the few formal tools recovered from Zorropata were made from obsidian (Valdez 1994:677). Chemical composition of tested obsidian is mostly consistent with the Quispisisa source, which was a preferred obsidian source in the region throughout all periods of Pre-Columbian occupation (Eerkens et al. 2010:826). Groundstone, made from locally available fine grained volcanic rock, included forms related to subsistence (small manos, mano fragments, pestles, pestle fragments, and small mortars) and non-subsistence (polishing stones, hammer stones, and sling stones) activities. Chipped stone and groundstone tools would have been used for a variety of subsistence and economic related tasks. As such, data regarding the forms and distribution of these artifacts informs the discussion of the primary (Chapter 11) and subsidiary (Chapter 12) research goals of this dissertation. Sling stones that

may have been used to defend the site from external forces (possibly the Wari) contribute a particularly interesting line of inquiry that is examined further in Chapter 11.

Fifty-four fragmentary figurines recovered from habitation contexts (Surface collection; Units 2, 3, 5, 8, and 9) and funerary/ceremonial contexts (Unit 1) are consistent with Late Nasca and Middle Horizon Nasca effigies. These objects probably had a ritual use (Morgan 2012:57, 1988:331), and suggest that ceremonial activities extended to the domestic sphere (see Chapter 12).

The *Spondylus* and obsidian artifacts mentioned above constitute all of the imported objects identified from Zorropata during the 2014 field season. In Chapter 3, I suggest that access to imported or exotic items pertains to the nature of the Nasca-Wari relationship. These themes are discussed at length in Chapter 11. The frequency and kinds of imported goods are compared with similar materials from other Nasca sites in Chapter 12 and inform our understanding of trade items and status symbols in the Nasca Region diachronically. Limited amounts of shell and stone beads and pendants may also relate to the display of status or other identities (Chapter 12).

¹ Please note that it was not possible to get accurate weights for the very heavy groundstone artifacts due to limitations of the lab scale. Measurements in Table 8.5 represent the minimum weights for technological categories. Categories where the weight is higher than measured are indicated with a ‘greater than’ symbol.

² Whalen (2014:233) uses the term ‘modeled effigies’ to describe the ceramic figurines recovered from Cocahuischo (n = 4). She discussed modeled effigies under fineware ceramics in the ceramics chapter of her dissertation. Zorropata figurines included both sculpted and carved effigies made from ceramic/clay and stone. For this reason, it seemed more appropriate to include Zorropata figurines in this chapter rather than the ceramics chapter (Chapter 5).

Chapter 9

Analysis of Ecofacts

The focus of this chapter is the analysis and discussion of faunal bone and marine shell recovered during the 2014 field season at Zorropata. In addition, botanical samples and unmodified mineral samples are also briefly discussed. Faunal bone was collected from excavated contexts only. Bone observed during surface artifact collection (Chapter 4) was highly friable and in most cases, not sufficiently intact enough to be readily identifiable or analytically useful. Bone from excavated contexts, protected from the sun and elements, was much better preserved. Shell tended to hold up well even on the surface. More than 8 kilograms of shell were recovered from surface collection. Another 1136.67 g of shell were recovered from excavated contexts. This chapter discusses the analysis of faunal bone and shell from excavated contexts only. The following begins with a description and discussion of the faunal assemblage from Zorropata then proceeds with a similar treatment of marine shell.

Faunal Analysis

Faunal remains ($n = 702$) were recovered from Sector 1 habitation contexts including Units 2, 3, 4, 5, 8, 9, and 10. A substantial quantity of bone was also recovered from probable mortuary/ceremonial contexts at Unit 1, Recinto A1 of the adobe compound in Sector 1 (Table 9.1). Faunal bone from all contexts was mostly fragmentary. Complete bone elements tended to belong to smaller taxa. Identifications beyond the family taxonomic level were rarely possible due to taphonomic issues and limitations to the method of analysis that

Table 9.1. Faunal Bone Counts Organized by Unit.

Classification <i>Subclassification</i>	Counts								
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 8	Unit 9	Unit 10	
Small Mammal	149	5	13	3	6	4	5	4	
<i>Rodent</i>	39	4	13	3	6	3	3	4	
Medium Mammal	97	6	3	0	2	7	3	0	
<i>Lagomorph</i>	0	0	2	0	0	0	0	0	
Large Mammal	37	3	8	11	15	17	5	1	
<i>Artidactyla (unspecified)</i>	12	2	2	2	1	5	1	1	
Fish	0	15	0	0	1	0	1	1	
Unknown	113	11	3	10	3	5	4	1	
Total	396	40	27	24	27	33	18	7	

was used (below).

Methods

Due to constraints of time, personnel, and resources, analysis of the faunal assemblage (which consisted of very basic identifications) was conducted remotely using photos. Preliminary identifications were conducted by University of California, Santa Barbara (UCSB) undergraduate students Chris La Placa and Jovana Hernandez. La Placa and Hernandez were trained in faunal analysis by UCSB archaeology faculty member, Amber VanDerwarker. Neither student has previous experience working with faunal assemblages from the southern coastal Perú. Identifications were made with the aid of published sources including: *Mammalian Osteology* (Gilbert 1980) and *An Introduction to the Osteology of the Mammalia* (Flower 1885). I identified an otolith with the aid of a NOAA Technical Memorandum, *Photographic Catalog of California Marine Fish Otoliths: Prey of California Sea Lions (*Zalophus californianus*)* (Lowry 2011).

Faunal analysis was accomplished using series of photos I took during the lab work phase of the 2014-2015 excavation season. Remains were organized by provenience in field and photographed in lots (Figure 9.1). Multiple photos were taken of each lot with each bone rotated in place to give multiple views of the same element. Each element was cataloged by lot so that fauna from the same context shared a root catalog number. During analysis, bone from the same lot received an additional suffix number to further distinguish it during analysis. For example, the catalog number ZA 102-140 had two members that received the suffix numbers '.1' and '.2' (e.g., ZA102-140.1 and ZA102-140.2). These catalog numbers were recorded in a spreadsheet created by La Placa and Hernandez along with information identifying the element, side, order, family, genus, species, and age of each specimen where



Figure 9.1. Example of Small and Medium Mammal Remains from Zorropata.

it could be determined. Age determinations (e.g., juvenile, or adult) were based on skeletal indicators such as epiphyseal and vertebral fusion.

La Placa and Hernandez sorted remains by taxonomic class (e.g., Mammalia, Osteichthyes (bony fish)), and then by size group (i.e., small, medium, or large). Due to limitations of the analysis method used, the present data were not detailed enough to produce a reliable count of the minimum number of individuals (MNI). Analysis was sufficient to allow a general characterization of the faunal assemblage and to consider how it may be alike or dissimilar to other faunal collections from the Nasca Region. Most of the 702 faunal bones could be sorted into the order taxonomic level and size group. Family, genus, or species were determinable for some of the more intact, diagnostic remains (e.g., long bones with epiphyses) (Table 9.2). Some remains (n = 167) were too fragmentary to identify to either a size group or taxonomic class during the present analysis.

General definitions for size groups follow Kevin Vaughn's work at the early Nasca village site Marcaya (Vaughn 2000:449-452). Marcaya's faunal assemblage was separated into large mammals, small mammals (rodent), small mammals (unidentified), and birds. La Placa and Hernandez divided the Zorropata assemblage into small, medium, and large mammals, fish, and unknown fauna. Small mammals included small rodents (e.g., guinea pig (*Cavia sp.*), rats, mice, etc.) and fauna around the same size but not identifiable beyond the category of mammal. Medium mammals included carnivores of moderate size such as foxes or small dogs, lagomorphs, and unidentified mammals of similar size. Large mammals included Artiodactyla – likely the families *Cervidae*, *Camelidae*, or both are represented. Vaughn included some species (e.g., foxes) in his small mammals category that are included in the medium-sized mammals grouping herein (Vaughn 2000:452).

Table 9.2. Classification of Zorropata Fauna by Taxonomic or Size Group.

Classification	count	%	count	% of category
Small Mammal	189	33%		
Rodent			75	40%
Medium Mammal	118	21%		
Lagomorph			2	2%
Large Mammal	97	17%		
Artiodactyl			26	27%
Fish	18	3%		
Unknown	150	26%		
Total	572	100%		

La Placa and Hernandez did not identify any bird remains from secure contexts at Zorropata. One modern bird carcass was found in Disturbed Layer 1 at Unit 1. Bird remains at Zorropata were otherwise absent or not identifiable from the photographs. It is expected that birds comprise only a small portion (or none) of the 167 unidentified faunal bones.

Results

Small mammals constitute the vast majority of the assemblage by count ($n = 282$, ~40%) (Table 9.2). Of these, 60% ($n = 170$) were of the order Rodentia. Rodents could not be further classified by genus or species because of the level of preservation and the limitations of the analysis method. At least some of the rodent species represented may have been invasive burrowing species. In Stratum 3 of Unit 3, a rodent burrow was identified during excavation. Other rodent remains could have include guinea pig although identification of this genus was not explicit. Guinea pig was rare but present at Early Intermediate Period sites including Marcaya (MNI = 2) and Cocahuischo, and the ceremonial center, Cahuachi (MNI = 3) (Valdez 1988; Vaughn 2000:451; Whalen 2014:315-317). Circa 40% ($n = 112$) of small mammals from Zorropata were unidentifiable at this stage of analysis.

Medium-sized mammals constitute 16% ($n = 113$) of the total faunal assemblage by count. Due lack of skeletal preservation, 96% ($n = 109$) of the members of this group could not be identified with precision beyond the clade of mammal and the general size classification (Table 9.2). Lagomorphs make up a little less than 2% ($n = 2$) of the specimens in this category. At least two carnivorous mammals were recovered from Disturbed Layers 1 and 2 at Unit 1. One possibility is that these remains were foxes. The

hillside on which Zorropata is located is known locally as Huaca del Zorro, which translates roughly to “sacred place of the fox.” Another alternative, and perhaps more likely, is that the remains were from modern dog burials. These remains were relatively intact and showed no signs of scavenging. This suggests that they may have been intentionally deposited and buried subsequent to looting activities. Indeed, the homestead at the foot of the site keeps a small pack of dogs to help herd sheep, and dogs are generally ubiquitous in the region.

Large mammals compose 17% (n = 122) of the assemblage. At least 24% (n = 29) of large mammals could be identified conclusively as *Artiodactyla*. Other Nasca research suggests that domesticated camelids (e.g., llama or alpaca) and possibly wild artiodactyls (e.g., deer, vicuña, or guanaco) may have been important to the Nasca subsistence economy (Carmichael 1988:34, 1998; Kroeber and Collier 1998; Silverman 1993:202; Valdez 1988; Vaughn 2000:451-453). Domesticated camelids are thought to have been obtained in trade and kept at Cahuachi for use in pilgrimage activities at the ceremonial center (Silverman 1993:202; Valdez 1988). Wild and domesticated artiodactyls are depicted in naturalistic scenes painted on Nasca ceramics although the part these animals played in Nasca subsistence or economic practices is not well understood at present (Carmichael 1998; Kroeber and Collier 1998). The assemblage from Zorropata may contain cervids and/or wild or domesticated camelids. The present analysis was not able to distinguish among different genera or species of artiodactyls.

Fish are the least abundant taxon in the assemblage. Fish remains constitute 3% (n = 19) of the faunal remains from Zorropata. Remains include vertebrae and spines from small bony fish and one otolith (Figures 9.2 and 9.3). The otolith appears to be from a species of croaker or drum fish. The best morphological match was with the Sciaenidae family,



Figure 9.2. Fish Vertebrae from Unit 2.

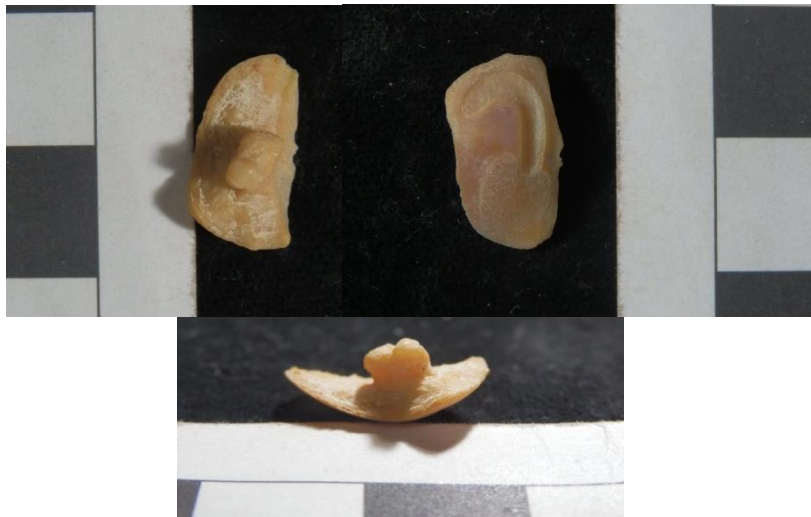


Figure 9.3. Otolith Recovered from Unit 2 at Zorropata.

possibly a queenfish (*Seriphus politus*). Otoliths from members of the Sciaenidae family have a J-shaped cauda and those of *S. politus* range in size from 4 - 12 mm in modern populations. The otolith from Zorropata is a little larger than is common for *S. politus* and thus may be a little too large to be a member of this species.

Discussion of Faunal Remains

The analysis discussed above, while general and preliminary, nonetheless contributes data about the use of animals at Zorropata and allows for basic comparisons between the faunal assemblage at Zorropata and those from other habitation sites from the Nasca region. From the present data, results are similar, at least in general terms, to other habitation sites in the region including the Early Nasca site, Marcaya (Vaughn 2000), the Middle Nasca site, Taruga (Schreiber 1994), and Late Nasca site, Cocahuischo (Whalen 2014). The faunal assemblages from habitation contexts at Cocahuischo and Zorropata are comparable in size once weights are controlled by cubic meters. Zorropata had 53.97 g of faunal bone per cubic meter and Cocahuischo had 41.12 g per cm³ (Whalen 2014). Marcaya had 7.9 g per cm³ (Vaughn 2000). Counts were collected for faunal bone from Taruga but weights per cubic meter are not known.

The faunal assemblages at Marcaya, Taruga, Cocahuischo, and Zorropata were dominated by small or large mammals. The category of large mammals at these sites included artiodactyls and at least some camelids or probable camelids (Schreiber 1994; Vaughn 2000:449-453; Whalen 2014:315-317). Marcaya and Cocahuischo included at least a small amount of guinea pig among their small mammals, and Zorropata may have as well (Vaughn 2000:449-453; Whalen 2014:315-317). Marcaya, Taruga, and Zorropata

assemblages all contained at least some fish remains (Schreiber 1994; Vaughn 2000:449-453). Marcaya, Taruga, and Cocahuischo contained bird remains however none were conclusively observed at Zorropata (Schreiber 1994; Vaughn 2000:449-453; Whalen 2014:315-317). More in-depth analysis of the Zorropata faunal assemblage is necessary to improve these comparisons.

Shell Analysis

A total of 6,714 complete and fragmentary shells (weight = 9,581.02 g) was recovered from Zorropata during the 2014 field season. Of these, 2,080 shell specimens (weight = 1,205.62 g) were recovered from excavated contexts. Due to time and personnel constraints in country only shell from secure excavated contexts was subjected to analysis. Of this sample, only 1,180.32 g of shell were sufficiently large and intact to make a conclusive identification. Shell from surface collection (count = 4,634; weight = 8,375.4 g) seemed in general to be consistent with that from excavated contexts in terms of the taxa that were represented. Marine shell was relatively common at habitation contexts. Shell was recovered from Units 2, 3, 4, 5, 8, 9, and 10 from habitation contexts, and from mortuary/ceremonial contexts at Unit 1.

Methods

Analysis consisted of basic identifications to a family taxonomic level. More specific classifications were rarely possible due to the fragmentary state of the shell assemblage. I conducted the initial identification of shell from Zorropata during the dedicated laboratory

work phase of this project using a Dinolite hand-held digital microscope and the unaided eye. Identifications were made with reference to published sources including the Smithsonian Handbooks' *Shell: The Photographic Recognition Guide to Seashells of the World* (Dance 2002). I identified taxa or apparent taxonomic groupings and photographed the most representative and well-preserved specimens of each group for further assessment in the US. Weights and counts were recorded for each taxon. Identifications were checked using reference materials available in the UCSB Anthropology Department by Alexandra Augsburger, a UCSB anthropology undergraduate student with more than a year of experience identifying Pacific shell species from archaeological samples. Augsburger helped to refine and confirm initial identifications and determine species where possible.

Results

At least 14 different taxa of marine shell were identified in the assemblage from Zorropata (Table 9.3, Figure 9.4). The distribution of shell, similar to faunal bone, suggests that all (or most) households had access to at least small amounts of marine resources. Clam (Myacidae and Lucinidae), mussel (Mytilidae species *Chorro mytilus* and *Aulacomya ater*), oyster (Ostreidae), scallop (Pectinidae), urchin (Strongylocentrotidae), and crab (Crab) likely played a small but notable part in the local subsistence economy. Olivella shell appears to have been collected at least in part for bead making (Chapter 8) rather than for subsistence purposes. All shell described in this chapter are unmodified ecofacts. Please refer to Chapter 8 for a discussion of any modified (perforated, ground, or shaped) shell that may have been used for personal adornment.

By far the most common type of shell identified at Zorropata was clam (Myacidae).

Table 9.3. Marine Shell Species Represented in the Excavated Assemblage from Zorropata.

Common Name	Family (Species)	Genus/Species	Weight (grams)	%
Clam	Myacidae		783.25	66.36%
	Lucinidae		16.36	1.39%
Mussel	Mytilidae	<i>(Chorro mytilus)</i>	182.48	15.46%
		<i>(Aulacomya ater)</i>	1.60	0.14%
Oyster	Ostreidae		4.19	0.35%
Scallop	Pectinidae		1.53	0.13%
Urchin	Strongylocentrotidae		157.27	13.32%
Crab	Crab		6.83	0.58%
Sea Snail	Trochidae/Tegulidae		16.64	1.41%
Olivella	Olivellidae		1.78	0.15%
Keyhole Limpet	Fissurellidae		0.44	0.04%
Slipper Limpet	Crepidula		0.92	0.08%
Chiton	Amphineaura		1.03	0.09%
Barnacle	Balanus		6.00	0.51%
			1180.32	100%



Figure 9.4. Examples of Marine Shell from Zorropata: 1: Clam (Myacidae and Lucinidae); Mussel 2: *Aulacomya ater*, 3: *Chorro mytilus*; 4: Oyster (Ostreidae); 5: Scallop (Pectinidae); 6: Sea snail; 7: Olivella (Olivellidae); 8: Keyhole limpet (Fissurellidae); 9: Slipper limpet (Crepidula); 10: Chiton (Amphineaura); 11: Barnacle (Balanus); 12: Urchin (Strongylocentrotidae); and 13: Crab (Crab).

This taxon contributed well over half a kilogram (c. 66%) of the total shell assemblage. This observation is significant in comparison to Early Intermediate Period Nasca habitation sites and Cahuachi. Vaughn states that the mussel species *Aulacomya ater* makes up c. 89% of the shell assemblage from Marcaya (Vaughn 2000:464). Whalen (2014:317) does not provide specific species or percentages but likewise lists mussel as the most abundant shell type at Cocahuischo. The mussel species *Chorro mytilus* makes up nearly 50% by weight of the shell assemblage from the regional ceremonial center, Cahuachi (Silverman 1993:295).

Several species of clam shell were recovered from Cahuachi (Rodríguez de Sandweiss 1993:296). Clam was rare at the site of Taruga located in the Taruga Valley, and mussel was quite common (Katharina Schreiber, Personal Communication). No clamshell was reported at either Marcaya or Cocahuischo. It is not clear from the present data why clam is more ubiquitous than mussel at Zorropata. The differences in shell assemblages at these sites could reflect inter-site or inter-valley difference in shellfish preferences. Another alternative is that preferences changed through time with a local preference for mussel during the Early Intermediate Period but a preference for clam during the Middle Horizon. More shell identification data from other Early Intermediate Period and Middle Horizon sites is necessary to determine the extent and attempt interpretation of this pattern.

Discussion

Aside from the relative abundance of mussel versus clam discussed above the shell assemblage from Zorropata is generally similar to that other Nasca sites. The types of taxa represented are consistent with Early Intermediate Period habitation sites and Cahuachi. Zorropata's shell assemblage seems to be the most diverse in that it includes a greater variety of taxa than Marcaya, Cocahuischo, Taruga, or Cahuachi (Rodríguez de Sandweiss

1993:295; Schreiber 1994; Vaughn 2000:464-465; Whalen 2014:317). However, species represented in the shell assemblages from these other sites are also represented in Zorropata's shell assemblage. Zorropata yielded two species of mussel (*Choro mytilus* and *Aulacomya ater*) also represented at Marcaya, Cocahuischo, and Cahuachi. The Early Intermediate period sites had one or two additional species of mussel that were not represented at Zorropata (Rodríguez de Sandweiss 1993:295; Vaughn 2000:467; Whalen 2014:317). Like Marcaya and Taruga, Zorropata's assemblage included sea urchin (Strongylocentrotidae) (Schreiber 1994; Vaughn 2000:467). Marcaya, Cocahuischo, Cahuachi, and Zorropata assemblages each included limpet (Acmaeidae) (Rodríguez de Sandweiss 1993:295; Vaughn 2000:464-465; Whalen 2014:317). Marcaya, Cocahuischo, and Zorropata assemblages also included scallop (Pectinidae) (Vaughn 2000:464-465; Whalen 2014:317). Crab (Crab) was present at Cocahuischo, Taruga, and Zorropata (Schreiber 1994; Whalen 2014:317). Cocahuischo, Taruga, Cahuachi, and Zorropata assemblages all included various types of sea snail (Tehulidae and Trochidae) (Schreiber 1994; Rodríguez de Sandweiss 1993:295; Whalen 2014:317). Chiton (Amphineaura) and Clam (Myacidae) were covered from Taruga, Cahuachi, and Zorropata (Schreiber 1994; Rodríguez de Sandweiss 1993:295). Barnacle (Balanus) was present at both Taruga and Zorropata (Schreiber 1994).

The shell assemblage from Taruga also included jewel box clam (Chamidae), which was documented at other Southern Nasca Region sites where shell has been studied (Schreiber 1994). Marcaya's assemblage included cowry (Cypraeidae) and conch (Melongenidae), which was not documented at the other sites (Vaughn 2000:467).

Academic research concerning the extent and nature of the use of marine resources

in Nasca during the Early Intermediate Period suggests that these resources played a minor role in Nasca subsistence practices (Carmichael et al. 2014; Kellner and Schoeninger 2012:493; Kennedy and Carmichael 1991; Rodríguez de Sandweiss 1993:298; Vaughn 2000:453). Evidence supporting this interpretation includes studies of ceramic iconography, settlement patterns, marine subsistence technology, fish and shell remains, and stable isotope analysis (Carmichael et al. 2014; Kellner and Schoeninger 2012:493; Kennedy and Carmichael 1991; Rodríguez de Sandweiss 1993:298; Vaughn 2000:453). The present evidence from Zorropata is consistent with these earlier data in that marine resources were available but do not appear to have played a large part in subsistence practices.

It is worth noting that significantly more shell was recovered from Zorropata than from the Early Intermediate Period habitation sites, Marcaya and Cocahuischo (Table 9.4). Despite the relative abundance of marine shell at Zorropata compared to earlier habitation sites the overall amount of shell recovered was still just over a kilogram (see Table 9.4). Marine resources may have been more available to people living in the middle and lower valley regions than in the upper valleys. Zorropata is in the middle valley region of the Las Trancas Valley at c. 650 masl. Marcaya and Cocahuischo are in the upper valley region of the Tierras Blancas Valley at c. 1,000 and 1,250 masl, respectively (Vaughn 2000:13; Whalen 2014:6). Zorropata's location nearer to the coast may explain why there is a slight but significant increase in the amount of shell compared with Marcaya and Cocahuischo.

Other Ecofacts

Botanical Samples

Table 9.4. Marine Shell and Faunal Bone Counts and Weights Comparison Between Zorropata, Marcaya, and Cocahuischo (Raw Counts/Weights and Adjusted by Meter³ Excavated).

	Shell		Faunal Bone	
	Count	Weight (g)	Count	Weight (g)
Zorropata	1969	1045.91	1525	935.34
per m ³	114	60.35	88	53.97
Marcaya	n/a	466	n/a	739.5
per m ³	n/a	4.98	n/a	7.9
Cocahuischo	886	1079	4961	2963
per m ³	12	14.97	69	41.12

Paleoethnobotany is an important aspect of archaeological analysis. Ancient plant remains from archaeological sites, carbonized as a result of human activity or desiccated by natural or cultural processes, can provide information on agriculture, cooking, divisions of labor, politics, economy and cultural practices in the past. More than 100 soil samples were collected from excavation units at Zorropata with the goal to identify and quantify micro- and macro-botanical remains. Soil samples were 3 liters in volume wherever possible. In addition, macrobotanical samples were collected wherever they were encountered. It was hoped that botanical data could be included in this dissertation; however, due to a series of complications analysis could not be accommodated in a time frame that was conducive to completion of the present project. All botanical samples are housed at the Ica Regional Museum, awaiting analysis.

Preservation of organic materials such as textiles or botanicals tends to be good at Nasca sites in the mid to lower valley region due the consistent and arid climate (Conlee 2000:5, Cook and Parrish 2005:139, Silverman 1993:298, Van Gijsegem 2004:294). At Zorropata, this is evident in the sizable if fragmentary assemblage of textiles and cordage (Ch 7) and macrobotanical samples recovered from the site. The pending paleoethnobotanical analysis of the Zorropata samples is expected to produce relatively robust results. Observed macrobotanicals from Zorropata included but were not limited to maize (*Zea mays*), mate (*Lagenaria siceraria*), coca (*Erythroxylum sp.*), cotton (*Gossypium barbadense*), and huarango (*Prosopis pallida*).

The ancient Nasca subsistence economy was based on agriculture. Plants were used for a variety of industrial, medicinal, and ritual applications as well as for food. Plant foods included maize, squash, chili peppers (ají), tubers (e.g., cassava, jicama, and sweet potatoes),

fruits (e.g., lucuma, guayaba, avocado), legumes (e.g., common beans, jack bean, lima beans, peanuts), and seed pods from trees (e.g., *algarroba*, *huarango*, *pacay*) (Conlee 2000:279-284; Silverman 1993:289-290; Towle 1961). Coca, *Schinus molle*, maize, ají, and *huarango* may have had medicinal or ritual uses (Conlee 2000:284-289).

Plants for industrial use included cotton, which is naturally drought resistant and therefore well suited to the arid Nasca Region (Rowe 1986:153). Maize stalks, reeds, grasses, sedges (e.g., totora), and shrubs (e.g., palo verde) were used to make mats (MacBride 1943). Calabash, or bottle gourd, was used to make containers (Conlee 2000:275; Towle 1966; Whalen 2014:319). *Huarango* is a drought resistant slow growth tree species that was used for a variety of industrial applications in ancient Nasca society.

At Zorropata, thick *huarango* beams were used to support the roof of the *barbacoa* style tomb encountered at Unit 1. *Quincha*, a traditional construction method used on the south coast both in antiquity and in modern times, uses wood, cornstalks, or reed/cane (e.g., caña brava, carrizo) coated in mud or plaster to make house walls and other enclosures (Conlee 2000:276; my personal observation; see also Chapter 5). Based on the few botanical remains that could be identified during fieldwork at Zorropata, it is probable that the paleobotanical assemblage from this site includes many of the same species identified at other sites in the region.

Unmodified Minerals

Eight small samples of minerals were recovered during surface collection and excavation. Seven of these samples were small unmodified pieces of chrysocolla. The largest piece weighed about 1 gram. Four pieces were recovered from the surface of Sector

1. One sample each was recovered from the surface at Units 2 and 9, and Stratum 4 at Unit 5. In addition, one fragment of unmodified mineral, possibly hematite, was recovered from Unit 5. These minerals were likely locally obtained and may have been naturally occurring.

Chapter 10

Analysis of Human Crania

This chapter discusses the remains of 8 human individuals recovered during the excavation of Unit 1, located in the largest cell of the adobe compound in Sector 1 at Zorropata (Figures 5.12, 13, and 14). At least 7 but probably all 8 individuals were modified in a way that is consistent with Nasca ‘trophy heads’ (Kellner 2006).

Corina Kellner conducted basic, macroscopic bioarchaeological analysis on the remains per the current standards of that subdiscipline. Basic analysis generated sex, age, and health data. In addition, analysis documented how the remains were modified into ‘trophy heads,’ the presence/absence and type of cranial modification, diagenetic processes, and anything else of note. The full report resulting from the basic bioarchaeological analysis can be found in Appendix 10.1 of this dissertation. Corina Kellner and I also collected samples for isotopic and cortisol analysis conducted in the United States. Archaeometric data that have been collected thus far will be discussed below after a synthesis of the results of the macroscopic analysis. We are still awaiting results of some of the nitrogen and carbon isotope assays.

Context and Distribution

As discussed in previous chapters, the adobe compound at Zorropata has been identified as similar to one observed by Julio C. Tello at Huaca del Loro in the 1920s (Tello 2002:22-25). At Huaca del Loro, the intact cells of the adobe compound were barbacoa style tombs – a tomb style correlated with higher status graves (Carmichael 1988:293). The

adobe compound at Zorropata was subdivided into several cells, the largest of these (Recinto A1) was sampled during the 2014 excavation season (Figures 10.1). Recinto A1 consists of a chamber with adobe walls. The chamber was capped with large *huarango* beams oriented north-south that were juxtaposed to one another and covered with a clay or adobe seal and capped with a layer of gravel, all of which is like what Tello describes for Huaca del Loro (Figure 10.2).

While the context was highly disturbed, pottery (Chapter 6) and calibrated AMS dates (Chapter 5) from a secure context suggest that the structure was built or under construction by the Late Nasca period but may have been used well into the Middle Horizon. Due to the disturbed nature of this context more precise dating of the ‘trophy head’ individuals is difficult.

All crania were prepared as ‘trophy heads’ in the ‘mask’ style (Kellner 2006, 2016:2). ‘Mask’ style ‘trophy heads’ are common in the Las Trancas Valley but less common in other parts of the Nasca drainage (Kellner 2006, 2016:5; Knudson et al. 2009). They are prepared by cutting and removing the posterior half of the cranium from around the zygomatic bones or external auditory meatus back (the occipital, some of the parietal).

Nasca ‘trophy heads’ would have been carried by a cord that passed through the forehead (Kellner 2016:1). Wari ‘trophy heads’ exhibit a cord hole positioned on the top of the head (Kellner 2016:5; Tung and Knudson 2008:916, 2011:300). Individuals from Zorropata had holes for carrying cords through the frontal bone, slightly off center from the midline of the forehead, consistent with other examples from the Nasca region (Kellner 2016:2-4). The internal frontal crest, a slight thickening of the frontal bone around the midline, makes the dead-center of the frontal bone harder to bore through than the bone just

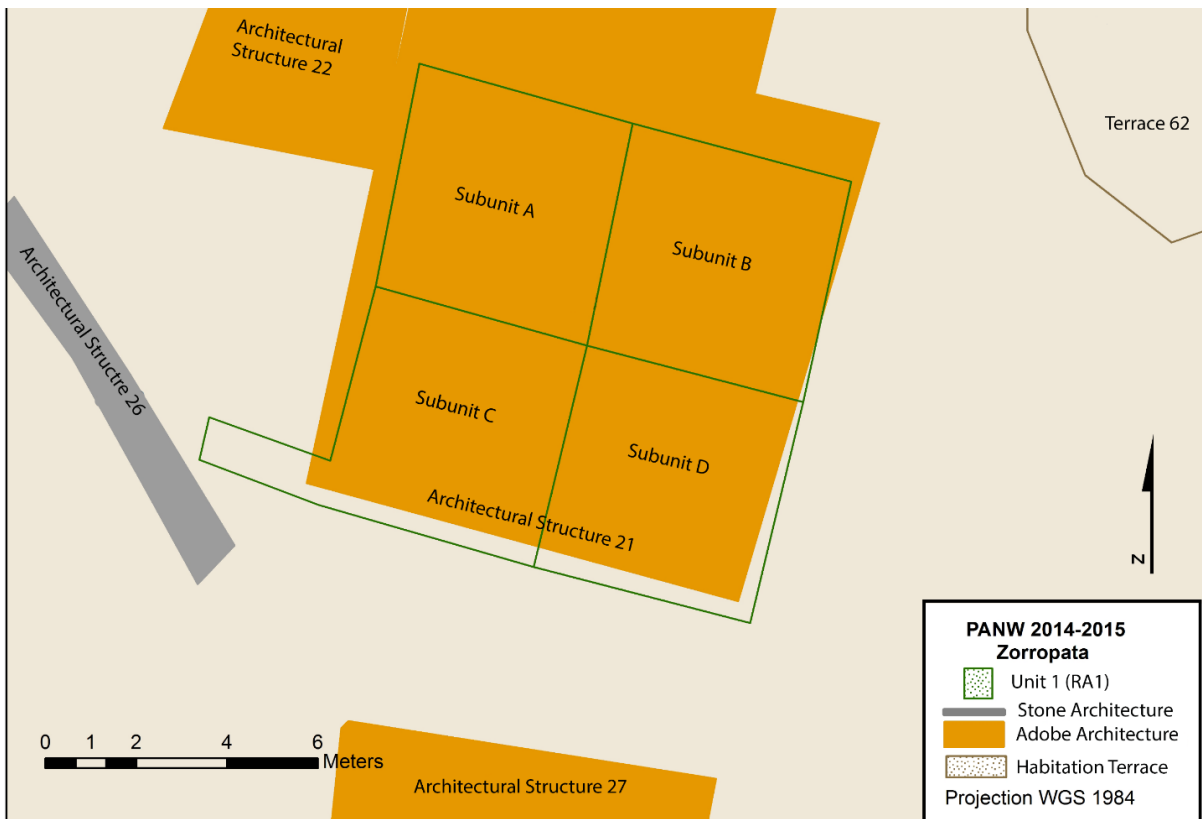


Figure 10.1. Unit 1 at Architectural Structure 21 (a.k.a., Recinto A1).



Figure 10.2. *Barbacoa* Style Tomb at Recinto A1 in Profile Facing East.

to the left or right of that point (Kellner 2016). The crania exhibited cut marks along the posterior edges of the parietal bones, around the cord hole in the frontal bone, and on the face especially around the zygomatic bones and eyes (Kellner 2016:1).

Remains are discussed below in the general order in which they were discovered during excavation.

Individual 1. This skull (cranium and mandible) was encountered just below the surface in the northwest corner of Recinto A1 (Figure 5.13). These remains were referred to as *Craneo 6* in Kellner's report based on the order of analysis. Hair associated with this individual was partially visible from the surface and the cranium and mandible were completely exposed at a depth of about 24 cm below the surface in Disturbed Layer 1. The preservation for this individual was marked. Therefore, it is expected that this 'trophy head' was moved only minimally or not disturbed at all during the looting of Recinto A1. This individual was a young adult of approximately 20 years in age based on dental development and wear. However, dental wear was relatively substantial for an individual of this age (Kellner 2016:4).

This individual was the best preserved of all human remains recovered from Zorropata. Remains of a textile head wrapping were held onto the cranium with a thin cotton cord. Another length of cordage appears to have once tied the mandible to the cranium at the zygomatic bone (Figure 10.3). These remains were also found with mummified facial tissue (Figure 10.4). Eyelashes, eyebrows, nose, and mouth are recognizable. As is customary in Nasca 'trophy head' Individual 1's lips are pierced shut by a *huarango* spine. The carrying cord for this 'trophy head' was still present and in situ. It was composed of Type III: Two



Figure 10.3. Individual 1 (*Craneo 6*).



Figure 10.4. Mummified Face of Individual 1.

Ply Z-Spun S-Twist Rope tied in an overhand knot (Figure 10.5).

Group of Six Individuals (Individuals 2-7). Individuals 2 through 7 were found in a cluster in the northeast corner of Unit 1 (Figure 5.12). Some hair and bone were partially exposed on the surface prior to excavation. Remains were completely exposed at about 10 cm depth below the surface. Five of these individuals were represented by a cranium, two of which had a mandible associated with them (*Craneos* 1-5 in Kellner 2016). One individual, *Craneo* 8 in Kellner's report, was represented by only a mandible (Kellner 2016:2-3).

In general, these individuals were less well preserved than Individual 1. Individual 4 still had its carrying cord made of Type III: Two Ply Z-Spun S-Twist Rope tied in an overhand knot. Individual 5 had a small amount of scalp and hair associated with it. This cache of 'trophy heads' was likely exposed to elements during a looting episode. It is also possible that these individuals were encountered in looting elsewhere in the compound and piled together by looters to move them out of the way. Human remains are of less interest to *huaqueros* who mine archaeological sites for intact highly decorated polychrome ceramics, decorated textiles, and other items with a monetary value on the black market. They disassemble mummy bundles to take the valuables and leave the human remains strewn about the surrounding surface, exposed to the elements.

Individual 2. This individual (*Craneo* 1) was represented by a cranium without a mandible (Figure 10.6). The remains are likely those of a young adult male between the ages of 20 and 35 years (Kellner 2016:2).

Individual 3. This individual (*Craneo* 2) was represented by a cranium without a mandible



Figure 10.5. 'Trophy' Head Individual from Zorropata with Carrying Cord and Hole Through Forehead.



Figure 10.6. Individual 2 (*Craneo 1*).

(Figure 10.7). The remains exhibited gracile facial features but brow ridges consistent with a young adult male. This individual was likely similar in age or “slightly younger than *Craneo* 1 (Individual 2)” (Kellner 2016:2).

Individual 4. This individual (*Craneo* 3) was represented by a cranium and mandible (Figure 10.8). The remains were those of an adult male between the late 20s and early 30s in age.

Individual 5. This individual (*Craneo* 4) was represented by a cranium and mandible (Figure 10.9). The remains were those of a sub-adult between 2 and 3 years of age.

Individual 6. This individual (*Craneo* 5) was represented by a cranium without a mandible (Figure 10.10). The remains were those of a sub-adult around age 9 or 10 years of age.

Individual 7. This individual (“*Craneo*” 8) is represented by only a mandible. During excavation, it was thought that this mandible was associated with Individual 6, however, upon closer examination in the lab it was determined that the mandible belonged to someone between the ages of 17 and 21 years of age — significantly older than Individual 6’s dentition suggests. These remains were identified as a ‘trophy head’ individual based on “deep chop marks on the mandibular ramus and some shallow long slices on the mandibular body” (Kellner 2016:4). These marks are consistent with those observed on the other mandibles in this cache and other examples of ‘trophy head’ individuals from the Nasca region (Kellner 2006). Given the robustness of this mandible this individual was likely a male.



Figure 10.7. Individual 3 (*Craneo 2*).



Figure 10.8. Individual 4 (*Craneo 3*).



Figure 10.9. Individual 5 (*Craneo 4*).



Figure 10.10. Individual 6 (*Craneo 5*).

Individual 8. This individual (*Craneo 7*) is represented by a cranium without a mandible (Figure 10.11). These remains were the least well preserved of those recovered during the 2014 field season. These remains were recovered from 3.53 m below the Unit 1 datum in Disturbed Layer 2. This context was close to the maximum depth reached during excavation of this unit. The cranium was recovered in several fragments. The orientation of these fragments with one another suggests that the cranium was likely smashed in the location from which it was recovered. This individual was a young adult with relatively gracile facial features consistent with a female in her mid to late 20s (Kellner 2016:4).

Isotope Analysis

This section discusses isotopic analysis of samples taken from the 8 ‘trophy head’ individuals recovered from Zorropata. A total of 16 samples of bone and teeth was taken from the individuals in this cache (Table 10.1). In 2015 I obtained the necessary permission to export the samples to the US. Once in country, the samples for strontium analysis were sent to Frank Ramos (Geological Sciences Department, New Mexico State University) and samples for other isotope analyses were sent to Corina Kellner (Northern Arizona University). The purpose of analysis was to investigate ancient diet, migration, and stress in this population of ‘trophy head’ individuals. Using isotopic analysis bone, hair, and teeth, the values of elements such as carbon, nitrogen, oxygen, and strontium are useful in assessing the plants, animals, and water consumed, and locale of residence during different points in an individual's life.



Figure 10.11. Individual 8 (*Craneo 7*).

Table 10.1. Isotope Samples.

Catalog No.	Sector	Unit	Subunit	Area	Feature	Elevation (cm)	Cranium	Individual	sample type
ZAIRAI-383	1	1	B	Area 8	9	92 cmbd	1	2	upper right M2
ZAIRAI-389	1	1	B	Area 8	9	92 cmbd	1	2	upper right M3
ZAIRAI-382	1	1	B	Area 8	9	92 cmbd	2	3	upper right I2
ZAIRAI-387	1	1	B	Area 8	9	92 cmbd	2	3	upper right M3
ZAIRAI-386	1	1	B	Area 8	9	92 cmbd	3	4	upper left P4
ZAIRAI-396	1	1	B	Area 8	9	92 cmbd	3	4	upper left M2
ZAIRAI-384	1	1	B	Area 8	9	92 cmbd	4	5	upper right I2
ZAIRAI-390	1	1	B	Area 8	9	92 cmbd	4	5	occipital
ZAIRAI-394	1	1	B	Area 8	9	92 cmbd	4	5	upper right C
ZAIRAI-385	1	1	B	Area 8	9	92 cmbd	8	7	lower right P3
ZAIRAI-388	1	1	B	Area 8	9	92 cmbd	5	6	sphenoid
ZAIRAI-395	1	1	B	Area 8	9	92 cmbd	5	6	left zygomatic
ZAIRAI-381	1	1	A	Area 9	8	108 cmbd	6	1	lower left M3
ZAIRAI-391	1	1	C	tomb test unit	14	353 cmbd	7	8	upper right P3
ZAIRAI-392	1	1	C	tomb test unit	14	353 cmbd	7	8	frontal
ZAIRAI-393	1	1	C	tomb test unit	14	353 cmbd	7	8	upper right P4

Strontium isotope data is used as a geolocator because the body takes up strontium from the geology of the region through food and drink (Bentley 2006:135). Strontium data from Zorropata were obtained from tooth enamel. Bone remodels during a lifetime, while tooth enamel is formed only during an individual's development. Therefore, strontium values recorded in tooth enamel are consistent with the location an individual lived in during enamel formation. Strontium present in other bone can give a record of where an individual has lived closer to the time of their death.

Similar to strontium, carbon and nitrogen isotope values differ for individuals based on their diet. Higher carbon isotope values indicate consumption of more C₄ foods (e.g., maize) while lower values indicated consumption of more C₃ foods (e.g., potatoes). High nitrogen isotope values indicate a diet high in marine resources but can also indicate prolonged illness or infection. A diet rich in terrestrial vertebrates rather than marine resources produces lower nitrogen isotope values.

Carbon and nitrogen isotope values were obtained from hair samples associated with Individuals 1 and 4. Hair samples can provide a view of the diet consumed based on the length of hair (i.e., 1 cm from the scalp is equal to c. 1 month before death) (O'Connell and Hedges 1999). Kellner and I are also investigating carbon and nitrogen assays using bone samples from the Zorropata individuals. These samples are still undergoing analysis. Therefore, this section reports preliminary strontium, carbon, and nitrogen isotope data from the above described teeth and hair samples.

Results

In Figure 10.12, the strontium data indicate that the majority of the 'trophy head'

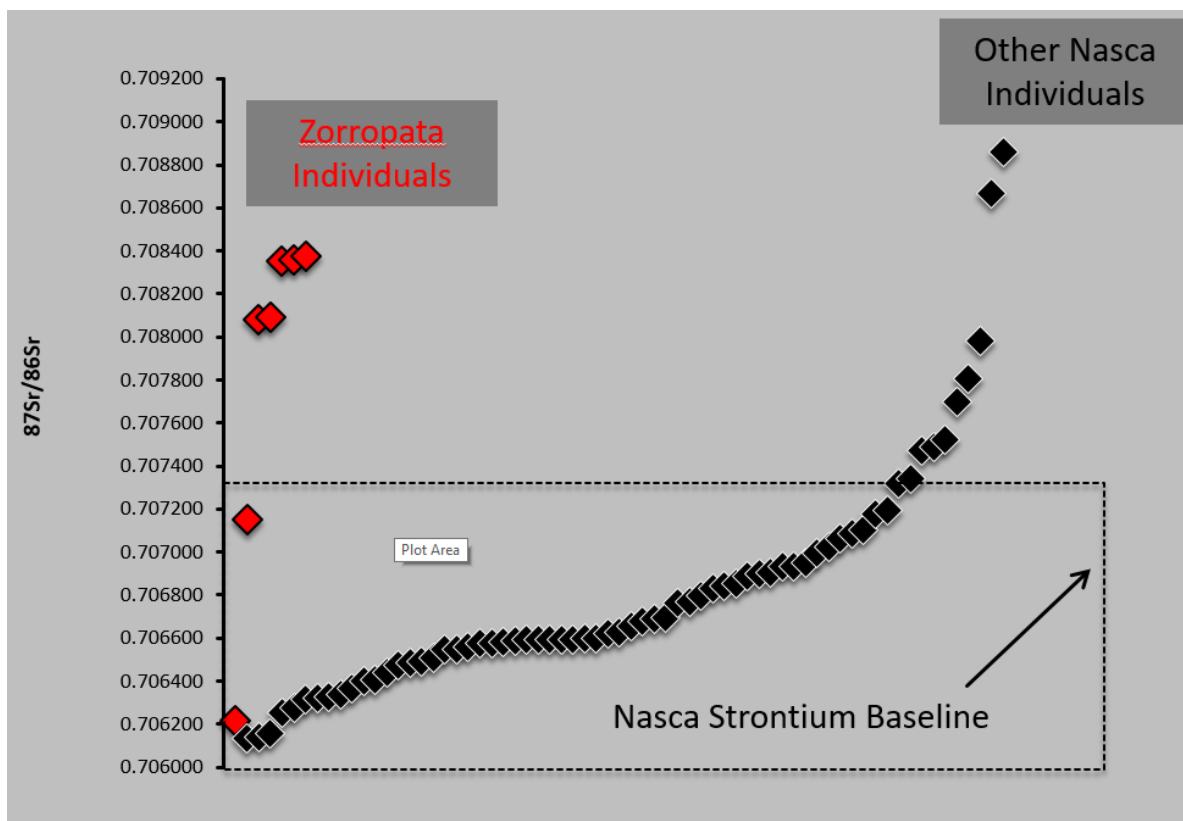


Figure 10.12. Strontium Data of the Zorropata ‘Trophy’ Head Individuals (Kerchusky and Kellner 2017).

individuals from Zorropata are inconsistent with local strontium isotope values. These data suggest that most of these individuals grew up outside of the Nasca Region. Individuals 1 and 8 were raised in Nasca and fall below the Nasca baseline (Conlee et al. 2009:2760-2761). Research suggests that Nasca ‘trophy head’ individuals were most often taken from the local population (Knudson et al. 2009:253).

Carbon and nitrogen isotope data from hair of Individuals 1 and 4 from Zorropata show that the diets of these individuals may have been similar to other Nasca individuals (Webb et al. 2013) (Figure 10.13). Individual 1’s carbon isotope values dip slightly towards more C₃ foods and less meat during the last 1-2 months of life and may signal a real change in the diet before death.

Cortisol

Two samples of human hair with scalp were recovered during excavation. One is positively associated with Individual 1 and the other is associated with Individual 4 (Table 10.2). These samples were exported to the United States for some of the isotopic analyses discussed above and cortisol analysis. Although this sample size (n = 2) is not statistically significant it none the less offers interesting insights into stress levels of two of the Zorropata ‘trophy head’ individuals in the months leading up to their deaths. Samples for cortisol analysis were sent to Loren Buck at Northern Arizona University.

Cortisol is a stress hormone found in hair that can determine the level of biological or psychosocial stress during the few weeks to months before death (Sauve et al. 2007:183). The stress hormone cortisol is slowly incorporated into the growing hair shaft. Analyzing

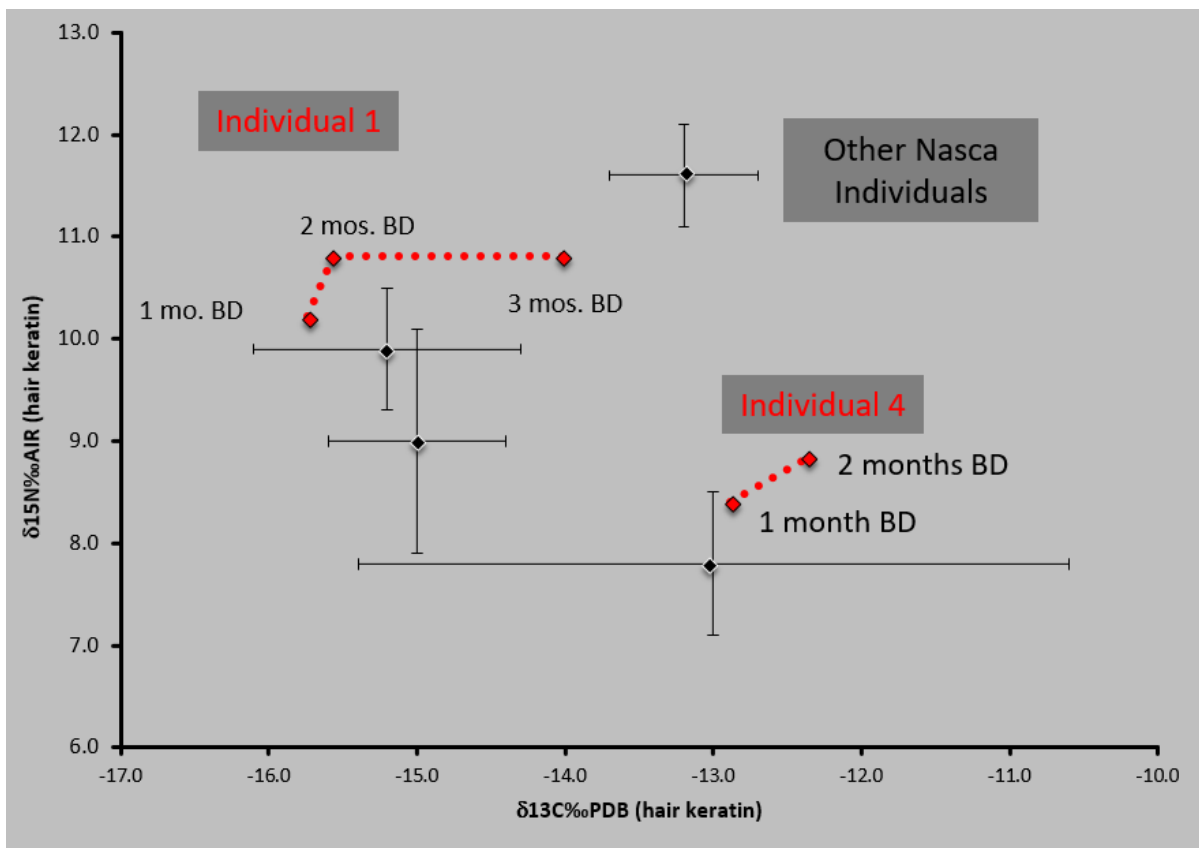


Figure 10.13. Carbon and Nitrogen Isotope Data of Two Zorropata ‘Trophy’ Head Individuals (BD = Before Death) (Kerchusky and Kellner 2017).

Table 10.2. Cortisol Samples.

Catalog No.	Sector	Unit	Subunit	Area	Feature	Elevacion (cm)	Cranium	Individual	sample type
ZAIRAI-397	1	1	B	Area 3	9	92 cmbd	3	4	scalp and hair
ZAIRAI-398	1	1	A	Area 9	8	108 cmbd	6	1	scalp and hair

this hormone over the length of a hair shaft can potentially serve as a biomarker of stress experienced over several weeks or months before death. The sample from individual 1 was 3 cm in length from the scalp and provided a timeline of about 3 months prior to death.

Individual 4 provided about a two-month timeline before death.

Individuals 1 and 4 from Zorropata both experienced a marked increase in cortisol levels in the months before death (Figure 10.14) (Kerchusky and Kellner 2017). The specific causes of stress that lead to these spikes in cortisol levels could have been physiological (e.g., illness or trauma), or psychosocial (i.e., emotional stress), or some combination of factors. As discussed below, Individuals 1 and 4 exhibited evidence of serious dental pathologies that could have contributed to stress levels. However, nitrogen isotope values remain steady during this time. Nitrogen isotope values tend to rise in periods of prolonged biological stress (e.g., illness, trauma). The ‘Other Nasca woman’ that the Zorropata individuals are compared to had dental pathologies severe enough to have contributed to her death (Kerchusky and Kellner 2017). The present evidence suggests that the Zorropata individuals endured psychosocial stress just before death. Perhaps they knew the fate that awaited them.

Discussion

‘Trophy head’ individuals from Zorropata are similar in demography and style to other known collections from the Nasca Region (Browne et al. 1993; Kellner 2006, 2016; Knudson et al. 2009; Williams et al. 2001; Verano 1995). Five Individuals (Individuals 1-4 and 7) were young adult males, consistent with other Late Nasca and Middle Horizon

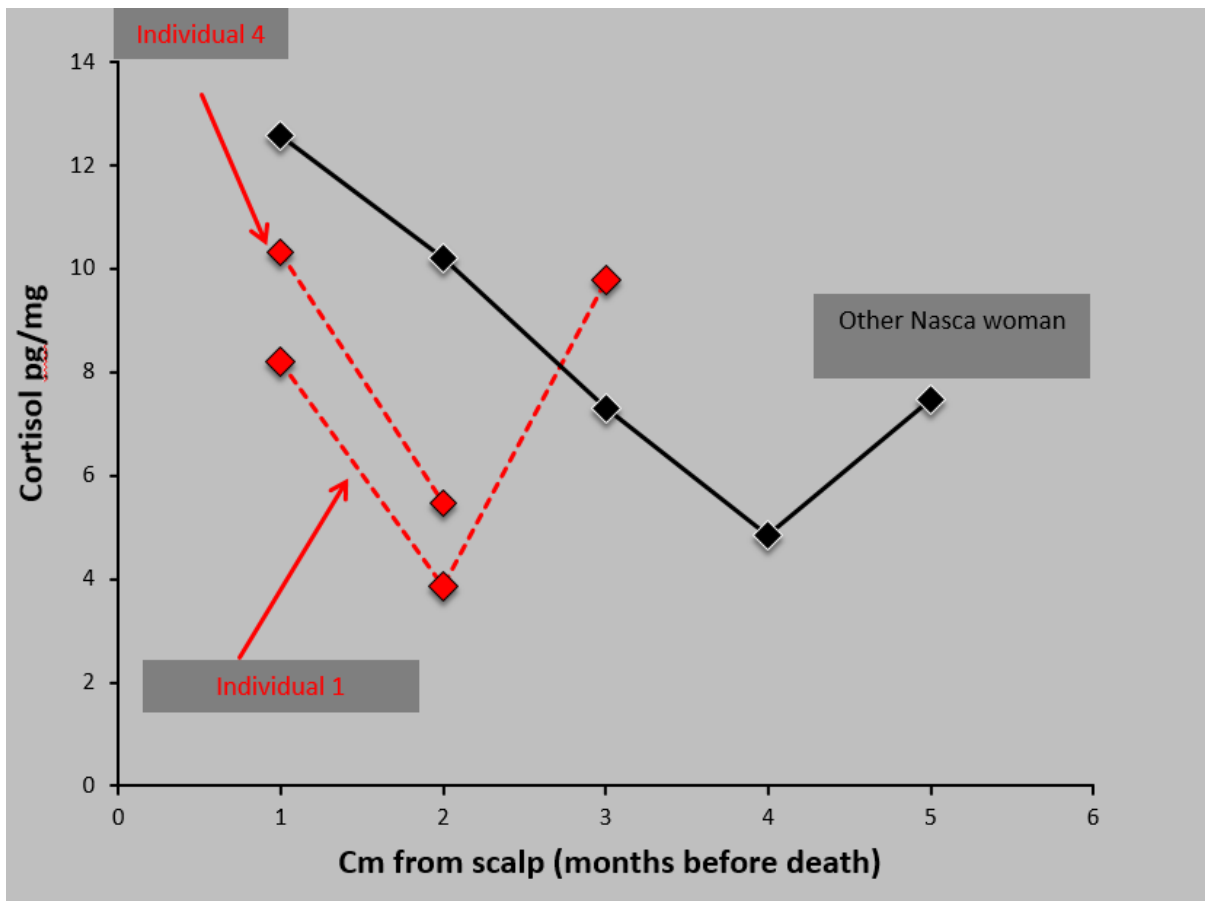


Figure 10.14. Cortisol Data of Two Zorropata ‘Trophy’ Head Individuals (Kerchusky and Kellner 2017).

caches. Of the other three Individuals (Individuals 5, 6, and 8), one is a possible adult female and the remaining two are sub-adults — a pattern more consistent with the Early or Middle Nasca periods (Browne et al. 1993:287; Kellner 2002:90, 2006; Verano 1995). The pattern represented by this cache suggests that it may date to the Early or Middle Nasca period (Kellner 2016:5). Another alternative is that some of these ‘trophy head’ individuals may have been curated. Chipping on the tooth enamel is consistent with other curated ‘trophy heads’ from Nasca (Kellner 2016:5; Verano 1995).

Individuals in this cache exhibited little trauma and relatively good health (Kellner 2016:5) — not uncommon in other Nasca ‘trophy head’ collections (Kellner 2002:92-94). Individuals 2 and 8 were the only two in this cache to exhibit cranial trauma. In both cases trauma was healed long before death indicating that it was non-fatal.

Several individuals in this cache exhibited moderate to substantial dental pathology (Figure 10.15). Individuals 1, 4, 6, and 7 all had carious lesions, the most common type of dental pathology in this assemblage (Kellner 2016:2-4). In the case of Individuals 1, 4, and 6 pathology was severe enough to have also resulted in pre-mortem tooth loss (Individuals 1, 4, and 6) and abscesses (Individual 4 only). Kellner suggests that dental pathologies among these individuals suggest a maize-based diet common in Nasca in antiquity (Kellner 2016:5; Kellner and Schoeninger 2012). As discussed above, cortisol levels of Individuals 1 and 4 showed a marked increase in the months leading up to death. Serious dental pathologies such as the above could have contributed to a rise in physiological stress indicators. However, this interpretation is not supported by nitrogen isotope values from hair samples for these individuals.

Individuals 1 and 7 exhibited linear enamel hypoplasia, which is caused by a

temporary cessation of growth during development usually due to a severe or prolonged infection or period of malnutrition/famine (Figure 10.16). Given how enamel hypoplasia seems to have affected development of Individual 7's other dentition he appears to have experienced a disruption around 3 years of age that he survived until young adulthood (Kellner 2016). Individual 2 also exhibited evidence of healed and active anemia or possibly parasitic infection in the form of cribra orbitalia (Kellner 2016:5; Walker et al. 2009) (Figure 10.17).

Two individual (Individuals 5 and 6) exhibit the tabular form of cranial vault modification (Kellner 2016:3) (Figure 10.18). Kellner describes this modification as an elevation of bregma, the suture where the frontal and parietal bones meet (Kellner 2016). This form of modification would have been achieved by applying pressure “near the coronal suture” on the frontal bone during early childhood development resulting in “asymmetrical shaping of the skull, bregmatic elevation, and a post-coronal depression” (Kellner 2016:3). This form of cranial modification was common in the Nasca Region (Kellner 2016). That said, Kellner adds (Kellner 2016:5):

That most do not exhibit cranial vault modification is similar to other Las Trancas collections (Kellner 2002, 2006), but is dissimilar to the Kroeber Nasca Valley collection and the Cerro Carapo cache (Brown et al. 1993; Williams et al. 2001), which may have meaning in terms of identity in the Las Trancas Valley – ‘trophy head’ individuals.

This ‘trophy head’ cache is characteristic of Nasca. Individuals may have been curated for a time during the Early Intermediate Period then later buried. Due to the looted context and the ubiquity of both Early Intermediate Period and Loro/Middle Horizon ceramics it is difficult to be certain of details about the use life and burial of these individuals.

Biochemical and isotopic data contribute additional information about the lives of



Figure 10.15. (Top) Dental Pathology, Individual 1.
Figure 10.16. (Bottom) Enamel Hypoplasia, Individual 1.



Figure 10.17. Cribra Orbitalia in Right Orbital of Individual 2.



Figure 10.18. Tubular Cranial Vault Modification, Individual 5.

these individuals and helps us understand Nasca culture. Most members of this cache of 'trophy head' individuals were non-local but ate a diet similar to studied pre-Hispanic Nasca populations. At least two individuals were stressed before their deaths. These fine grained individual analyses sheds light on the ways that these cultural practices were performed. More analyses of the bone and teeth are forthcoming.

Chapter 11

Zorropata: A Local Nasca Village Occupied During Wari Imperial

The previous seven chapters presented and discussed data from fieldwork at Zorropata. This chapter returns to the primary research question of this dissertation: whether or not the people who lived at Zorropata in the Las Trancas Valley, Nasca, Perú, were subsumed into the Wari Empire. I consider two alternate scenarios, that Zorropata was incorporated into the Wari Empire, or that it remained outside of Wari control. In Chapter 3, I argue that the relationship between empire and periphery is complex and reflexive, but also often asymmetrical. Imperial agendas impact the sociopolitical and economic lives of local/peripheral communities in a variety of ways whether or not a local community is incorporated into the empire. In the following pages, I discuss both hypotheses, provide archaeologically testable expectations consistent with each scenario, and investigate how data from surface analysis, excavation, and artifact analysis at Zorropata during the 2014 field season fit those expectations.

Testing the Hypotheses

Hypothesis 1: Zorropata was Incorporated into the Empire

In Chapter 3 it is argued that if Zorropata was incorporated into the Wari Empire, imperial control was likely indirect. The lack of Wari imperial infrastructural investment (e.g., administrative centers, outposts, storage facilities, or other architectural features built in the imperial style) in the Las Trancas Valley is consistent with this assumption. Nevertheless,

incorporation could have had a substantial impact on local sociopolitical and economic practices. For example, the Wari could have altered production: 1) by co-opting labor or raw materials; 2) introducing new techniques and technologies; and 3) forcing or enticing local craft producers to make goods according to imperial styles/canons (Stein 2002:13). The scale, locus, or organization of production could be impacted to meet imperial tribute demands. Local trade networks carrying exotics and imperial goods may be co-opted or new networks introduced. Furthermore, rare imports or imperial goods may serve to materialize sociopolitical power (Goldstein 2000:335-336; Schortman and Urban 2004:189). These changes may in turn lead to disruptions in local cultural practices, renegotiation of social and political relationships, and innovation in the performance of local socioeconomic status identities.

If Zorropata was incorporated into the Wari Empire the following may be evident: 1) the intensification of at least some productive activities to meet tribute demands or other Wari agendas; 2) Wari goods or goods made according to imperial canons, especially pottery or textiles; 3) enhanced access to imported or exotic goods compared with Early Intermediate Period patterns; and 4) increased disparity in socioeconomic status within the Zorropata community.

In areas that they conquered, the Wari intensified agricultural production (Green and Goldstein 2010:25; Jennings 2010:7). Evidence from the Wari outpost, Pataraya, suggests that the Wari were interested in cotton, which grows well on the south coast of Perú (Edwards 2010:53-54; Edwards et al. 2008). Cotton was used in textiles and cordage since at least the Early Horizon throughout the Andes and it is ubiquitous on the south coast of Perú (Frame 2010: 354; Rowe 1986:153). Moreover, the high frequency of spindle whorls at

Pataraya suggest that spinning was a common activity at the Wari outpost (Edwards et al. 2008). Therefore, if Zorropata was incorporated it is possible that agricultural production, cotton production and processing, and spinning activities were intensified.

Intensification of agricultural production, in general, could be indicated by osteoarthritis on human post-cranial remains resulting from intense or repetitive motion (Kellner 2002:71). As mentioned in Chapter 3, an increased instance of osteoarthritis among Loro individuals is evident in at least some Las Trancas burial populations (Kellner 2002:75). However, agricultural production could have been intensified to meet the needs of a growing local population and not in service to the empire (discussed below). If the Wari intensified local production it may have been for cotton. If cotton production at Zorropata was amplified because of Wari interests it could be evidenced by an increased frequency of cotton bolls, bracts (the leafy part of a cotton plant that connects the flower or boll to the rest of the plant), or seeds left behind by the processing of raw cotton compared with Early Intermediate Period habitation sites (Shimada 1994:206-210, 2001:184-187; Vreeland 1986:367). Skeins of cotton cordage would be simpler to transport than raw or minimally processed cotton. Thus, evidence that spinning activities were intensified could be indicated in an increased frequency of spindle whorls in comparison to preceding the Early Intermediate Period.

As argued in Chapter 3, Wari style fineware pottery and tapestry-weave textiles were likely powerful symbols of Wari imperial ideologies (Owen 2010:57). It is probable that production and distribution of these symbols was tightly controlled. Therefore, Zorropatans are expected to have had access to these goods only if they were incorporated into the empire.

Likewise, Wari control of local trade networks means that access to imported items would likely have been controlled (Isbell 2010:234; Jennings 2010:7). In large measure, the scope of long-distance trade during the Early Intermediate Period was limited to obsidian from the Quispisisa source, some *Spondylus* shell from Ecuador, imported ceramics, and metal objects (Eerkens et al. 2010:826; Vaughn 2000:491). Imported artifacts recovered from the Early Nasca village site, Marcaya, included 179 flaked stone obsidian tools and debitage from the Quispisisa source (Vaughn 2000:409). Trade items from the Late Nasca site, Cocahuischo, included obsidian (n = 37), *Spondylus* (n = 2), and copper tupu (pins) (n = 3) for fastening textile garments (Whalen 2014:306, 317, 330). Because trade networks were Wari-controlled, access to exotics and trade items is expected to be severely limited at Zorropata unless the settlement was incorporated into the empire in some way.

Wari influence may have resulted in significant changes to local sociopolitical organization and, in particular, more pronounced social differentiation than was evident during the Early Intermediate Period. If the Wari orchestrated their rule at Zorropata through local leaders those individuals or groups would likely have had privileged access to various resources including Wari fineware pottery, Wari tapestry-weave textiles, and imported goods. Goods made according to imperial canons and rare imports could have become sources of sociopolitical power (Goldstein 2000:335-336; Schortman and Urban 2004:189). Privileged access to Wari symbols of power and material wealth could have enabled local leaders to build and maintain power on an unprecedented scale and resulted in more substantive manifestations of local status differences. Status differences could be evident in a greater number, variety, or quality of prestige items associated with elite contexts (elite households, elite burials, and public spaces) than lower-status contexts. Local elites who

organized labor for the Wari may have been excused from manual agricultural labor. As a result, elite households would be expected to be associated with fewer tools related to agricultural production.

Testing Hypothesis 1. At present, the data from Zorropata do not support a model for incorporation into the Wari Empire. Surface analysis and excavation at Zorropata during the 2014 field season did not recover evidence consistent with any of the expected patterns described above.

Data from Zorropata do not support that agricultural or craft production were intensified to meet tribute demands or other Wari agendas. Households at the Early Intermediate Period habitation sites Marcaya and Cocahuischo were characterized by self-sufficiency. Evidence for food, lithic, and textile production was recovered from several houses at each site (Vaughn 2000:26; Whalen 2014:338). Polishing stones, scrapers, small mortars, and other artifacts that could have been used in ceramic production were recovered from several houses at Cocahuischo (Whalen 2014:338). In the case of both Marcaya and Cocahuischo no evidence was recovered of a kiln or other locus for ceramic firing. Ceramic manufacture and firing is thought to have been accomplished off-site, perhaps in the valley bottom (Vaughn 2000:26; Whalen 2014:331).

Artifacts related to food, lithic, ceramic, and textile production were recovered from habitation contexts at Zorropata in broadly similar frequencies to those at Marcaya and Cocahuischo. In general, flaked and groundstone tools were produced from locally available materials. Flaked stone tools were informal and expedient except for some formal tools made from imported obsidian. Evidence of local ceramic firing (e.g., the remains of a kiln, wasters,

etc.) was absent from Zorropata. Polishing stones that may have been used to burnish or polish the exterior surface of ceramics prior to firing (n = 16) were recovered from Units 1, 2, 5, 8, and 10.

The frequency of spindle whorls is broadly consistent between the Early Intermediate Period sites and Zorropata suggesting that spinning was conducted at a similar scale of production. Eleven disks, five spindle whorls and six possible whorl blanks, were recovered from surface collection. This frequency is comparable or slightly less than the frequency of disks recovered from Marcaya (n = 45) and Cocahuischo (n = 28) when quantities are normalized by cubic meters excavated (Vaughn 2000:422; Whalen 2014:237). Disks identified as spindle whorls from Zorropata were fashioned from repurposed ceramic sherds, similar to the style of whorls recovered from Early Intermediate Period sites (Vaughn 2000:423; Whalen 2014:238). Spindle whorls and chalk, potentially used in the spinning process, were recovered from all excavated households at Marcaya (Vaughn 2000:423). While no spindle whorls were recovered from excavated contexts at Zorropata, they were recovered from the surfaces of habitation terraces. Moreover, chalk was recovered during excavation at Units 2, 3, 4, 8, 9, and 10 (see Chapter 7). These data suggest that spinning occurred at Zorropata and may have been a household activity.

Above it is argued that an abundance of cotton bolls/bracts/seeds could indicate that a substantial amount of cotton was being processed into bundles of fiber. Further, if the frequency of bolls/bracts/seeds was significantly greater than their frequency at Early Intermediate Period sites where botanical materials were preserved (e.g., Cahuachi) it could support that a major change in cotton production occurred during the Middle Horizon, perhaps directed by the Wari. At present, no evidence of cotton processing is documented for

Zorropata. As mentioned in Chapter 9, plant remains and soil samples that may contain paleoethnobotanical remains from Zorropata have not yet been analyzed. An abundance of cotton bolls/bracts/seeds was not observed during surface collection nor excavation at any unit, habitation or otherwise.

Data from Zorropata do not support that the site's inhabitants had privileged access to Wari goods or imported exotics. Surface artifact collections and excavations at Zorropata did not recover any Wari goods or goods made according to imperial canons, including but not limited to, imperial Wari pottery and tapestry-weave textiles. Exotics and trade items were rare at Zorropata. Trade items (e.g., imported ceramics, imported metal objects, obsidian, and *Spondylus* shell) were not common at Marcaya or Cocahuischo. For example, no *Spondylus* was observed at Marcaya (Vaughn 2009:128) and only two specimens were recorded for Cocahuischo (Whalen 2014:133, 152). Three fragments of *Spondylus* were recovered from Zorropata. Two of those fragments were recovered from Unit 1, the adobe compound. The compound was used during the Late Nasca and Loro periods. Strata at this context were highly disturbed due to looting. Therefore, it is not possible to determine if the *Spondylus* from this context dates to the Early Intermediate Period occupation of the site or the Middle Horizon.

The frequency of obsidian at Zorropata (0.72 g per cm³ excavated) was slightly less than its frequency at Marcaya (1.12 g per cm³) or Cocahuischo (2.61 g per cm³) (Table 8.5). At all three sites obsidian came from the Quispisisa source, consistent with other Nasca sites for all other periods (Eerkens et al. 2010:826). Obsidian flakes or tools were recovered from surface artifact collection and Units 1, 2, 3, 4, 5, 6, and 8. This evidence supports that people

living at Zorropata during the Middle Horizon may have had limited access to obsidian from the Quispisisa (or any other) source, similar to the Early Intermediate Period Ancestors.

Data from Zorropata do not support that differences in socioeconomic status were pronounced during the Middle Horizon. As discussed in Chapter 5, dwellings identified as higher status at Marcaya were larger and had more elaborate architecture (e.g., internal architectural features, and built from cut stone rather than fieldstone) (Vaughn 2000:506; 2009:154). These contexts were slightly more correlated with evidence of long-distance trade and a greater variety of polychrome fineware vessel forms, suggesting preferential access to these items (Vaughn 2009:154). Socioeconomic differences at Early Intermediate Period sites were neither pronounced nor engrained (Vaughn 2009:57; Whalen 2014:335-337). Likewise, data from Zorropata do not support that status differences were marked. Data pertaining to house architecture are not available for reasons discussed at length in Chapters 4 and 5. Of units at habitation terraces, Units 8 and 9 were associated with a greater than average ($n = 10$; habitation terrace unit average $n = 7.7$) number of fineware ceramic types while Unit 4 was associated with fewer than average types ($n = 5$). Non-local artifacts (obsidian and *Spondylus*) were recovered from habitation terrace Units 2, 3, 4, 5, 8, and surface collection (Table 5.5). Groundstone and flaked stone artifacts associated with agricultural or craft production were common at all habitation context units (Table 5.2). Their distribution does not support the hypothesis that any locals at Zorropata were collaborating with the Wari or, therefore, excused from manual labor.

Hypothesis 2: Zorropata was Not Incorporated into the Empire

If the people living at Zorropata were not incorporated into the Wari empire I would expect local Early Intermediate Period trends for production, consumption, community organization, and the performance of socioeconomic status differences to persist into the Middle Horizon. As stated above, evidence suggests that agricultural production in the Nasca Region was intensified during the Middle Horizon (Kellner 2002:75). If production was intensified at Zorropata to meet local needs I would expect local dietary patterns to be largely consistent with those from Early Intermediate Period sites. Diet could be indicated by dental wear patterns in human osteological remains. Stable carbon and nitrogen isotope analysis can also speak to ancient diets (see Chapter 10). Paleoethnobotanical data could also speak to diet, however, these data are not available for Zorropata at present.

In general, evidence of craft production should resemble that from Early Intermediate Period sites. The scale and organization of production is expected to be comparable to earlier habitation sites of similar size, such as Cocahuischo. Features (e.g., hearths, storage features) and artifacts (e.g., ceramics, stone tools) related to food production, preparation, and serving are expected to be present at Zorropata in frequencies that are analogous to those from Marcaya and Cocahuischo. At Marcaya and Cocahuischo, evidence suggests that households were largely self-sufficient (Vaughn 2000:26; Whalen 2014:209). If Zorropata was not incorporated, I would expect households to remain largely self-sufficient. Artifacts related to local traditions for food, agriculture, and craft production would be present in household assemblages regardless of socioeconomic status.

If Zorropatans were not compliant with Wari agendas, they may have suffered ‘refusal costs’ (Haas 1982:158). To reiterate from Chapter 3, refusal costs may include: 1) limited or no access to imported and imperial goods; 2) limited or no access to local

resources that have been co-opted by the empire; 3) sanctions against or the destruction of local elites (Schreiber 1992:27); and 4) physical violence. As stated in Chapter 3 and reiterated above imperial goods are likely to be tightly controlled. The Wari also would have established control over local trade networks. Limited or no access to imperial and imported goods would also limit the generation and enactment of socioeconomic status differences to locally produced goods such as Loro-style polychrome finewares. Therefore, evidence of social stratification is expected to be limited and associated with only local prestige items.

It should be noted that if Early Intermediate Period patterns of minimal status differentiation continue into the Middle Horizon, archaeological evidence of elite identities may be ephemeral. If sanctions were levied against local elites, such actions may be difficult to document archaeologically.

The Wari may have co-opted locally preferred resources and restricted/prohibited access to them for unincorporated local communities. Pacheco, the Wari administrative center, was located near Cahuachi in the Nasca Valley. This vantage point may have allowed the Wari to control local access to the ceremonial center — near which exists the Group 1 clay source used to make polychrome finewares during the Early Intermediate Period (Vaughn and Neff 2000:86). Moreover, if the Wari controlled access to the Southern Nasca Region from the Andes they may have controlled preferred obsidian sources located in the highlands such as Quispisisa and Jampatilla. Compositional analyses of these materials (e.g., Instrumental Neutron Activation Analysis (INAA) of a sample of Loro sherds from Zorropata; and X-ray Florescence (XRF) of obsidian) provide the data necessary to determine whether people living at Zorropata retained access to these resources during the Middle Horizon.

If the inhabitants of Zorropata did not cooperate with the Wari Empire they may have been subjected to physical violence or the threat of violence. Direct archaeological evidence of physical violence may include depressed cranial fractures, nasal fractures, projectile injuries, or parry fractures (a defensive wound resulting from trauma to the forearms) on human osteological remains (Alvrus 1999:423-425; Jurmain 2001:19; Kellner 2002:76-78; Walker 1989, 1997). Evidence of fortifications (e.g., perimeter/defense wall, forts, ramparts, etc.) or weapons (e.g., knives, maces, projectile points, sling stones, spears, etc.) could speak to a concern or response to physical violence or the threat of violence.

Testing Hypothesis 2. At present, the data are consistent with the scenario wherein Zorropata remained unincorporated in the Wari Empire. The data from surface analysis and excavation at Zorropata during the 2014 field season seem to support continuity of many cultural practices from the Early Intermediate Period to the Middle Horizon. Furthermore, evidence may support that refusal costs were imposed on this community.

As discussed above, the present research suggests that households at Zorropata were relatively self-sufficient. Food, lithic, textile, and ceramic production at Zorropata were, in general, consistent in terms of the scale, locus, and organization of production with evidence of these activities from Early Intermediate Period habitation sites. Also discussed above, evidence of socioeconomic status differences at Zorropata was comparable in scale and kind to earlier sites.

If agriculture was intensified, it may have been to meet the local demands of a growing population rather than Wari imperial agendas. As discussed above, evidence from Zorropata does not support that major shifts in local craft production took place. For

example, at present there is no evidence that Zorropatans were producing cotton or spinning for the Wari. Data support that diets at Zorropata were likely consistent with the Early Intermediate Period Nasca diet. The faunal assemblage from Zorropata is, in general, consistent with Early Intermediate Period sites including Marcaya, Taruga, and Cocahuischo. Paleobotanical data are still awaiting analysis.

Data from the eight ‘trophy’ head individuals recovered from Zorropata do not speak conclusive to local diet. As mentioned in Chapter 10, dental pathologies among the ‘trophy’ head individuals from Zorropata are consistent with a traditional Nasca maize-based diet (Kellner 2016:5; Kellner and Schoeninger 2012). Moreover, Nitrogen and Carbon stable isotope analyses of two hair samples (Individuals 1 and 4) also indicate that the diets of these two individuals were similar to the reported values for other Nasca individuals (Webb et al. 2013). Nitrogen and Carbon isotope analyses are pending for bone samples from all eight individuals but were not available for this dissertation.

Strontium isotope assays for Individuals 2, 3, 4, 5, 6, and 7 are inconsistent with local strontium isotope values, suggesting that these individuals were not from the Nasca Region originally. Individuals 1 and 8 have Strontium values consistent with the Nasca baseline and are likely local individuals (Conlee et al. 2009:2760-2761). Strontium samples were taken from tooth enamel, which forms during development (usually before the age of 12). Thus, the present data do not preclude that Individuals 2, 3, 4, and 7, who were all adults at their times of death, lived a substantial portion of their lives between childhood and death in the Nasca Region. Perhaps these individuals migrated into the Nasca Region and adopted the local diet. Another alternative is that diets in their place(s) of origin were like that of Nasca. Only

Individual 1 had isotope assays consistent with both being from the Nasca Region and having a traditional Nasca diet.

Evidence from Zorropata may support that the site's inhabitants did not participate in Wari-controlled inter-regional trade. As discussed above, evidence of imported exotic goods at Zorropata is minimal. Furthermore, no artifacts recovered from surface collection nor excavation were Wari or constructed according to Wari styles and standards. The absence of Wari goods and rarity of imports suggests that the people living at Zorropata during the Middle Horizon had little to no access to these types of items, perhaps a refusal cost.

Evidence that the Wari were interested or able to prevent the people who lived at Zorropata from accessing important local resources is mixed. Two resources are discussed above: 1) the local clay used to make fineware polychrome pottery; and 2) the Quispisisa obsidian source. As discussed in Chapter 5, INAA of a sample of Loro-style polychrome finewares documented that these wares were made from the paste identified in other Nasca compositional research as Group 1 (see Vaughn and Neff 2000, 2004; Vaughn and Van Gijsegem 2007). Group 1 clay was used to produce the vast majority of Early Intermediate Period polychrome fineware ceramics (Vaughn and Neff 2000:86). This source is suspected to be in the near vicinity of Cahuachi (Vaughn and Neff 2000:87, 2004:1583). These data suggest that people living at Zorropata during the Middle Horizon retained access to this clay source despite the Wari presence in the Nasca Region.

X-Ray Florescence of a sample of the obsidian from Zorropata demonstrates consistency in terms of chemical composition with the Quispisisa source (Chapter 8), the preferred obsidian source during the Early Intermediate Period in Nasca. As mentioned above, the frequency of obsidian at Zorropata was notably less compared with Early

Intermediate Period habitation sites. This evidence supports that people living at Zorropata during the Middle Horizon likely had access to obsidian from the Quispisisa source but that access may have been more limited than that of Early Intermediate Period settlements.

Surface analysis data support that the people living at Zorropata were concerned with the instance or threat of physical violence, however human remains from the site can neither confirm nor refute the observation. As discussed in Chapter 4, surface architectural analysis documented several sections of fieldstone wall made from two courses of stone with gravel fill. Sections of wall extended along the north, (Structure 51), west (Structure 34) and south (Structures 46) of Sector 1. Another section of wall of the same construction (Structure 64) extended through Sector 3 to the east of the main habitation area. These wall segments average c. 1 to 2 m thick and more than 1 meter tall from the base. Fieldstone walls made from a single course of stone (Structures 35, 36, 47, 48, 49, and 50) extended along the perimeter of Sector 1 between the larger walls (Figure 4.2).

The walls surrounded most of the main habitation area of the site. Areas that were left exposed tended to have steeper, more treacherous terrain. The presence of a perimeter wall at Zorropata is a departure from Early Intermediate Period Nasca habitation sites, which tend to be situated in defensible locations but lacking defensive architectural features (Bautista and Rojas Pelayo 2013; Schreiber 2005:246; Vaughn 2000:107; Van Gijsegem 2006:426; Whalen 2014:6). This perimeter wall may have served as a line of defense for Zorropata. Though not impregnable it would have provided a physical barrier to intruders and thus a tactical advantage for the site's inhabitants over would-be-invaders. AMS dates from Unit 4, which abuts Structure 34, date to the Late Nasca period but ceramics from that terrace were Transitional and Loro in style. More explicit archaeological investigation of the

wall segments could further refine our understanding of the function and use life of this feature.

Surface artifact collection and excavation recovered a total of 229 sling stones from Sector 1 (Chapters 4 and 8). Sling stones averaged c. 3 to 4 cm in diameter and were composed of locally available fine-grained volcanic rock (Figure 4.30). These stones could have served as ammunition for slings in defense of Zorropata. Taken together with the perimeter wall, evidence suggests that Zorropatans were concerned with defense from either the Wari, other local factions, or both.

The assemblage of human remains at Zorropata includes eight ‘trophy head’ individuals but no post-crania. Evidence of physical trauma on these crania is minimal and not, apparently, fatal. Post-cranial trauma consistent with interpersonal violence cannot be evaluated for this population. Moreover, these individuals were recovered from a disturbed context that was in use during the Late Nasca period and Middle Horizon. As such this population cannot speak to the frequency nor severity of interpersonal violence during the Middle Horizon with certainty.

Discussion

Data from the 2014 field season are more consistent with the hypothesis that the people living at Zorropata during the Middle Horizon were not incorporated into the Wari Empire than with the hypothesis that they were incorporated. Additional analysis of collected data could contribute new insights, strengthen the current interpretation, or offer nuanced but important contradictions to the present interpretation. Chapter 12 discusses how data from

Zorropata inform the two ancillary research goals mentioned in Chapter 1: 1) Loro pottery in stratigraphic context; and 2) Zorropata as a Middle Horizon Nasca community in the trajectory of Nasca society. Chapter 12 concludes this dissertation by discussing some possible future directions of research.

Chapter 12

Conclusions: External Correlations and Future Directions of Research

This chapter concludes this dissertation by addressing the two ancillary research goals mentioned in Chapter 1. It is organized into three parts. Part I of this chapter summarizes data concerning Loro polychrome pottery from Zorropata. Previous chapters discussed the contexts from which Loro pottery was recovered (Chapters 4 and 5), as well as the style itself (Chapter 6). This chapter reiterates and expands on observations made in Chapters 4, 5 and 6 with the goal of further investigating Loro wares at Zorropata. Part II aims to discuss Zorropata as a local settlement occupied during the Late Nasca and Middle Horizon within the trajectory of Nasca society. Data from previous chapters are implemented and interpreted to give a view of a Middle Horizon Las Trancas settlement. The primary themes discussed in Part II are: 1) the Middle Horizon Nasca settlement; 2) archaeological households at Zorropata; 3) subsistence and economic activities at Zorropata; and 4) symbolic life at Zorropata. Part III of this chapter closes the dissertation and discusses some potential directions for future research.

Part I: Loro Pottery at Zorropata

Loro wares have been referred to in research of the past several decades as degenerate (Gayton and Kroeber 1927:26; Kroeber 1956; Strong 1957:40), disjunctive (Proulx 1968:1, Proulx 2006:29; Silverman 1993:31), and resultant of the breakdown of Nasca society (Silverman 1989:25, 1993:36). The Loro ceramic style was initially classified as an aberrant

local style with foreign influences and grouped together in classifications with foreign wares (Gayton and Kroeber 1927:26). While the Wari seem to have influenced Loro potters to some extent Strong did not identify explicitly Wari elements on the ceramics from Huaca del Loro (Strong 1957:40). Whatever the influences, the Loro ceramic style was a departure from earlier ceramic traditions. Loro wares were thicker, heavier, rougher, less colorful, and less polished than the corresponding Early Intermediate Period wares (Silverman 1989:25). These differences may have resulted from overt stylistic choices aimed at the creation of a new ceramic tradition (Spivak 2015:85). Another alternative is that they result from complex sociopolitical processes and imperial encroachment that occurred in the region during the Middle Horizon (Proulx 2006:29).

Loro Pottery in Context at Zorropata

Loro ceramics were ubiquitous at Zorropata. Due to the nature of domestic architecture and space at Zorropata, as determined by the present data, it is difficult to speak in detail about the use of Loro pottery in specific contexts at habitation terraces (e.g., spaces that might be associated with cooking, serving, or other specific activity areas). Therefore, ceramic data in stratigraphic contexts at Zorropata largely serve to establish the relative chronology of the site.

Loro sherds ($n = 290$) were recovered via surface collection in Sector 1 in roughly equal proportions to Late Nasca ceramic sherds ($n = 289$). This observation was used in Chapter 4 to argue that Zorropata had both significant Late Nasca and Middle Horizon components. Surface artifact collection in Sector 1 was systematic, extensive, and intensive — collecting all diagnostic ceramics and other artifacts over the entire c. 3-hectare area.

Surface collection in other sectors was accomplished using a judgmental sampling strategy. No ceramics were collected from the surface of Sectors 2 or 4. Surface sherds were collected from Sector 3 only in proximity to Units 6 and 7 (see Chapters 4 and 5). In Sectors 5 and 6, Late Nasca sherds predominated but a few Loro sherds (4 sherds from Sector 5 and 1 from Sector 6) were recovered. It may be the case that Sectors 5 and 6 were largely occupied during the Late Nasca period and not during the Middle Horizon. Without more systematic surface analysis and/or excavation in these sectors it is difficult to say how representative these sherds are of subsurface deposits.

Excavation recovered Loro sherds from Units 1, 3, 4, 5, 8, 9, and 10. Sector 3 units (Units 6 and 7) were culturally sterile below the surface and no Loro sherds were recovered from the surface near these units. Unit 2 was only associated with Late Nasca pottery. As discussed in Chapter 5, other artifacts and AMS dates from Unit 2 suggest that it was only in use during the Early Intermediate Period. Strata were indistinct at Unit 1 due to extensive looting. Loro (and Late Nasca) sherds were recovered from Disturbed Layers 1 and 2. Little can be said about the association of Loro ceramics with specific locations at Unit 1 given the present data. The current data support that Unit 1 (*Recinto A1*) was likely in continuous use during both the Early Intermediate Period and Middle Horizon.

Late Nasca ceramics were associated with the domestic debris layer beneath the floor at Unit 3, but a Loro sherd was found in direct association with the floor surface. Late Nasca and Loro ceramics were associated with the debris layer and floor feature at Unit 8. Late Nasca and Loro ceramics were associated with the floor layer at Unit 10. These habitation terraces were likely established during the Early Intermediate Period but used and maintained during the Middle Horizon. Loro and Transitional ceramics were recovered in association

with the floor features at Units 4 and 9. The floors documented at these units may have been established at the end of the Early Intermediate Period or early Middle Horizon. As stated in Chapter 5, strata at habitation terraces at Zorropata were relatively depleted at several units. As a result, the more surficial strata (Strata 3 and 4) tended to contain both Late Nasca and Loro pottery. This observation was true for Units 3, 8, and 10. Loro and Transitional pottery sherds were recovered from Strata 3 and 4 at Units 4, 5, and 9.

The Loro Style at Zorropata

Chapter 6 discusses trends in form and style of Nasca pottery, in general, and the pottery of Zorropata, in specific. The nature of Loro pottery from Zorropata is considered in the following paragraphs towards presenting a more explicit description of the style at this site. Loro vessels are described below in terms of form and decoration towards identifying trends. These trends are then considered in light of Loro pottery from Zorropata.

Research in the Nasca Region documents at least 14 different forms of Loro ceramic vessels (Spivak 2015:78-81; see also Chapter 2). Several vessel forms used in Nasca during the Early Intermediate Period were still produced during the early Middle Horizon including: 1) short necked jars; 2) deep bowls; 3) cup bowls; 4) cumbrous bowls; 5) spout and bridge bottles; 6) angled goblets; 7) vases (although Nasca 7 vases were cylindrical while Loro vases were generally flaring); 8) effigy pots; 9) Face-neck jars; and 10) dishes (Blasco Bosqued and Ramos Gómez 1980; Kroeber 1956; Kroeber and Collier 1998; Proulx 2006; Roark 1965; Strong 1957). Bowls were part of both Early Intermediate Period and Loro ceramic assemblages; however, Loro bowls came in several new shapes including oblong or rectangular bowls, and incurve bowls. Face-neck jars were also present during the Early

Intermediate Period, however, their frequency seems to increase during Loro times (Proulx 2006:45). Based on form alone, the most distinguishable and diagnostic types of Loro pottery are vases, deep bowls, plates, oblong or rectangular bowls, incurved bowls, and wide mouth jars.

Fifty-three Loro sherds recovered from excavated contexts at Zorropata were complete enough for form to be determined with reasonable accuracy. Loro ceramics from the surface of the site may represent additional forms but these sherds were not analyzed beyond determining the cultural (e.g., Nasca, Wari, other non-local) and stylistic (e.g., Late Nasca, Loro) associations. Of the sherds subjected to attribute analysis, 26 were bowls including straight bowls (n = 3), deep bowls (n = 3), flaring bowls (Type 1, n = 3; Type 2, n = 9), and other, indistinct bowls (n = 8). Ten Loro sherds were from dishes. Twelve sherds were from decorated jars or *cantaros*, and 5 were from some type of collared vessel such as a jar or vase.

An average of 4.14 different Loro vessel types is represented in the assemblages from units that produced Loro sherds (i.e., Units 1, 3, 4, 5, 8, 9, and 10). Unit 5 had the greatest variety of Loro forms (n = 6), while Unit 10 had the least (n = 2). Unit 1 had the greatest number of Loro vessels (n = 15) and Unit 10 had the fewest (n = 2). The mean sample size of Loro sherds organized by excavation unit is 7.5, and not statistically viable. Any patterns noted above could be strengthened (or challenged) if new excavations recover additional Loro ceramics.

General techniques of vessel production remained relatively stable through time in the Nasca Region. Nasca potters primarily used a mixture of coiling and drawing to make vessels with some use of direct shaping or molding techniques. Paddling and scraping were

common secondary techniques (Carmichael 1990). Finishing techniques and the type, color, and usage of slips tend to be notably different between Loro vessels and Early Intermediate Period Nasca vessels. Early Intermediate Period fineware ceramics exhibit a high degree of polish. Loro wares, while burnished, tend to be less smoothed and not as extensively polished as earlier wares (Spivak 2015:89). The entire surface of Late Nasca polychrome ceramics was often decorated with elaborate and colorful designs in slip paint. Loro wares were sometimes coated in white or red slip then painted with a design. More often sections of Loro pots were painted with designs while the rest of the vessel was left bare (Strong 1957:40).

As mentioned in Chapter 6, at least 13 colors of mineral-based slip paints were used to decorate Early Intermediate Period Nasca pottery (Carmichael 1988:238; Proulx 2008:572). The color palate used to decorate Loro ceramics was less extensive and included: reddish brown, white, dark red, black, and sometimes a bluish gray or purplish red (Spivak 2015:81). In many cases Loro slips were applied irregularly or thickly and tended to be flaky or fragile (Spivak 2015:83). Designs on Loro sherds from Zorropata were done in white, red, dark red, gray, and black (but not fugitive black).

Designs on Loro wares at Zorropata were rendered in either one, two, or three colors of slip on a given vessel. A single slip color (black, white, or red) was used to decorate c. 32% of Loro sherds. Black was the most common slip color to be used alone. White and red were each used alone to decorate a small number of vessels. Two colors, either red and black, white and black, or red and gray, were used to decorate c. 36% of Loro sherds. Of these, the combination of red and black was the most common (c. 21%) followed by white and black (c. 13%). Three colors, black, white, and red, were used together to decorate c. 32% of Loro sherds from Zorropata.

Most design themes used to decorate Loro pottery from Zorropata were geometric (c. 44%). Donald Proulx (2006:42) notes that geometric design motifs are very common in Loro pottery throughout the Nasca Region. Designs consisting of a single horizontal line running parallel to the rim on the interior, exterior, or both surfaces composed c. 13% of the assemblage. Abstract designs (c. 9%) were relatively common. Some vessels (c. 9%) were simply coated on the interior or exterior surface with slip paint. One sherd was splattered with slip paint. Naturalistic designs were also very rare (c. 4%). Some sherds (c. 19%) were painted with slip paint but the designs were too fragmentary to identify.

Summary

The assemblage of Loro sherds from secure contexts at Zorropata is small but provides interesting new data regarding the style. In the Zorropata ceramic assemblage, there are fewer Loro vessel types ($n = 8$) than Late Nasca vessel types ($n = 13$). It should be noted that the assemblage of Late Nasca ceramics that could be stylistically identified and came from secure excavated locations includes 50 sherds. Thus, the difference in number of forms from the Late Nasca to the Loro period may be real even if it is not statistically robust. The predominance of geometric designs and the preference for black, white, and red are consistent with what has been observed for Loro pottery from other studies (Proulx 2006:42; Spivak 2015:82; Strong 1957:40).

Compositional analysis of Loro sherds from Zorropata supports previous observation about the chemical composition of Loro wares, and were made from the 'Group 1' clay source originating near Cahuachi (Boulangier and Glascock 2012:6; Vaughn and Neff 2000, 2004:1583-1584; Vaughn et al. 2005:148, 2006:685; Vaughn et al. 2011:3565; Vaughn and

Van Gijseghem 2007:816; see Chapter 6). As discussed in the previous chapter the Wari do not appear to have been interested (or able?) in limiting local access to the Group 1 clay.

Part II: Zorropata: A Middle Horizon Nasca Settlement

The 2014 field season documented at least 126 habitation terraces across 6 sectors at Zorropata. The UCSB archaeological survey led by Schreiber as well as my subsequent work at the site documented notable features such as the adobe compound in Sector 1 and the perimeter walls surrounding the main habitation area of the site (see Chapters 4 and 5). From these data, Zorropata appears to have been a relatively large village with a ceremonial function. Rank-size analysis based on settlement pattern data from Las Trancas support that this site was a probable secondary center after the local hub, Huaca del Loro (Schreiber 2005:248). As discussed in Chapters 4 and 11, a one-two 1 to 2 m thick perimeter wall and more than 200 sling stones identified at Zorropata support that this site was relatively well defended.

Space at Zorropata was organized to include one and possibly two adobe compounds and space for communal activities. The adobe compound at Zorropata paralleled similar structures identified at Huaca del Loro (Tello 2002:20). Very few artifacts suggestive of subsistence or economic activities were recovered from Unit 1. This structure type appears to have served as high-status tombs at both sites (Carmichael 1988:293).

Early Intermediate Period Nasca people practiced regionally-scaled ceremonial activities centered at Cahuachi in the Nasca Valley. Late Intermediate Period ceremonial life shifted away from regional centers towards localized, settlement-based practices (Conlee

2003:53). At Zorropata a large plaza (and possibly a second, smaller plaza) was identified in Sector 1. Public spaces such as plazas may have served in local ceremonial and feasting activities. They were not a common feature at Early Intermediate Period Nasca habitation sites (Whalen 2014:344). Both the compound(s) and plaza(s) may represent the formation or elaboration of local traditions towards a community (as opposed to regionally) centered ceremonial life.

Smaller terraces were less than 10 m long by 5 m wide, and the largest terrace was around 65 m long and 10 m wide. Larger terraces could each have hosted several houses. If all habitation terraces were occupied simultaneously and larger terraces hosted multiple households there could have been more than 160 households living at Zorropata during the Late Nasca period and/or Middle Horizon. The present data support an interpretation of terraces as domestic spaces (see Table 5.5).

Data from surface collection and excavation do not support that domestic architecture at Zorropata was made from stone or adobe. Several architectural features made from paniform adobe blocks and locally available fieldstone were identified during fieldwork at the site but these materials were not used to construct houses. This pattern is a departure from Marcaya and Cocahuischo where houses and associated work areas (patios) are composed, at least in part, of locally available fieldstone or cut stone (Vaughn 2000:129, 2009; Whalen 2014:88). Instead, domestic architecture may have consisted of *quincha* (Figure 5.52). *Quincha* architecture has been identified archaeologically at other Nasca sites including Pajonal Alto, in the Taruga Valley, and La Marcha, in the Las Trancas Valley, (Conlee 2000:98; Kellner, Whalen, and Flores 2017). Due to preservation or other factors direct evidence of *quincha* walls (e.g., fragments of *quincha* or post holes) has not yet been

documented at Zorropata. Little is known at present about the exact size, organization, traffic flow, partitioning, or privacy of houses at Zorropata.

Mud floor living surfaces, or fragments thereof, were identified at all units at Sector 1 habitation terraces (Table 5.5). In most instances, a three to four centimeters thick layer of domestic debris containing charcoal, plant remains, faunal bone, and artifacts was spread across a surface of archaeologically sterile or nearly sterile compact fine gravelly sand. The mud floor was laid on top of the debris layer and allowed to dry in place.

Surface analysis and excavation on habitation terraces at Zorropata documented and/or recovered numerous artifacts associated with quotidian domestic activities (e.g., subsistence activities, craft production, and other economic activities). Evidence of daily activities includes but is not limited to utilitarian and fineware ceramics, numerous mortars, pestles, manos, grinding surfaces, flaked stone tools, faunal bone, plant remains, and other domestic debris.

Evidence of subsistence activities includes a variety of cooking, serving, and storage vessels recovered from Sector 1 habitation terraces (Table 5.5). The ratio of finewares to utilitarian wares at Zorropata was c. 7:3, which is broadly consistent with other Nasca assemblages (Vaughn 2000:356). Very large *ollas* recovered from Units 5 and 8 may have been used for storage or cooking of communal meals. In addition, small manos, mano fragments, pestles, pestle fragments, and small mortars, and large grinding surfaces may have been used in food production.

Discoloration of the floor at Unit 8 beneath an ash lens may be a hearth. Faunal bones exhibiting part of an imbedded projectile point, cut marks, and burning may indicate killing, preparing, and cooking of animals for food at Unit 4. Pit features, probable storage pits, were

documented at Units 2, 3, and 8 (Table 5.5) and these features are consistent with storage pits at other Nasca habitation sites (Silverman 1993:340 Vaughn 2000:260).

Stable nitrogen and carbon isotope assays from Zorropata samples (see Chapter 10) were within the range for similar samples from Early Intermediate Period Nasca contexts (Webb et al. 2013). Research from the region supports that the local diet remained relatively consistent between the late Early Intermediate Period and the early Middle Horizon (Kellner and Schoeninger 2008:237). Results are still pending for additional isotope analysis (see Chapter 10), but the present isotopic data support that these individuals ate a maize-based diet. This supposition is consistent with dental pathology data (see Chapter 10). However, as stated in Chapters 10 and 11 most of the Zorropata ‘trophy’ head individuals (Individuals 2, 3, 4, 5, 6, and 7) had Strontium values inconsistent with local Nasca values. Individuals 2, 3, 4, and 7 may have lived for some time in the Nasca Region and adopted a local diet. It is not clear from the present data what place any of these individuals held in the Zorropata community while they were alive, how they died, or the purpose or significance of their being transformed into ‘trophy’ heads¹.

The Zorropata faunal bone assemblage is similar to Early Intermediate Period sites (Marcaya, Taruga, and Cocahuischo) although more intensive analysis is warranted (see Chapter 9). Marine shell was recovered from all excavation units in Sector 1 and observed across the surface of the site (Table 5.5). A relative abundance of marine shell at Zorropata supports that marine resources may have contributed at least some calories to the local diet but evidence from this site and elsewhere in the Nasca Region does not support that they were a significant portion of the Nasca diet (Carmichael et al. 2014; Kellner and Schoeninger 2012:493; Kennedy and Carmichael 1991; Rodríguez de Sandweiss 1993:298; Vaughn

2000:453). Whatever else its uses at Zorropata, marine shell including olivella, mussel, tegula (sea snail), tube worm, and *Spondylus* was used in craft-production to make beads and pendants (see Chapter 8).

Ceramic manufacture or finishing is potentially indicated by polishing stones from Units 2, 5, 8, and 10 (Table 5.5). No evidence of kilns or firing areas were observed at Zorropata. Some ceramic manufacture or finishing likely took place at or near domestic spaces but there is no evidence at present that the firing process took place on-site. These patterns are consistent with what has been observed at Early Intermediate Period Nasca habitation sites (Vaughn 2000:25; Whalen 2014:298).

Concerning the ceramic assemblage itself, those from habitation contexts included a variety of utilitarian and fineware forms with an average of 7.7 different forms per unit. The ratio of fineware to utilitarian wares associated with domestic contexts was broadly consistent with Early Intermediate Period Nasca sites (see above and Chapter 6; Silverman 1988:421, 1993:301; Vaughn 2000:355-356; Whalen 2014:292). Fineware forms were more common in the ceramic assemblage (c. 91%) (and artifact assemblage (c. 19.4%) for the adobe compound in Sector 1 (a.k.a., Unit 1) than they were for assemblages from domestic contexts (c. 75% of ceramic assemblages and c. 6.5% of total artifact assemblages on average; see Chapter 6). Fineware forms from Zorropata included polychrome painted bowls (straight, flaring type 1, flaring type 2, deep, convex, and cup), dishes, bottles (effigy, and spout and bridge), jars (face-neck, and cantaros), and other forms (vases, and indistinct). Utilitarian forms included collared vessels, handles, and indistinct forms.

Bone awls and needles from Units 2 and 10 may have been used in weaving and textile production. Chalk recovered from Units 2, 3, 4, 8, 9, and 10 may have played a small

but important role in the spinning process (Table 5.5). Few spindle whorls were recovered from Zorropata and none from excavated contexts. These data suggest that textiles were produced at Zorropata but do not support that spinning was a major activity for most households.

The textiles and cordage themselves were recovered from Unit 1 and domestic contexts at Units 4, 8, and 9. The greatest number and variety of textiles came from the adobe compound, consistent with other assemblages (Silverman 1993:274). As at other Nasca sites, undecorated cotton plainweave textiles predominated at Zorropata (Phipps 1989:226; Silverman 1993:273). Most textiles and cordage in the assemblage from this site were cotton although camelid fiber artifacts were also recovered from both domestic units and the adobe compound.

Evidence of lithic reduction from Units 2, 3, 4, 5, 8, 9, and 10 may indicate manufacture or maintenance of flaked stone tools (Table 5.5). Most such objects were informal/expedient unifacially or bifacially flaked tools, or cores, made from local raw materials (e.g., chalcedony, quartzite, and fine grained volcanic rock). Formal tools (e.g., projectile points) from Zorropata were produced from obsidian. Most tested obsidian was compositionally consistent with the Quispisisa source and likely originated there. These trends (i.e., expedient tools made from local stone, formal tools made from obsidian, marked preference for the Quispisisa obsidian source) are consistent with Early Intermediate Period sites (Valdez 1994:677; Vaughn 2000:401; Whalen 2014:306-307).

The present evidence supports that socioeconomic status differences at Zorropata were performed on a similar scale to what has been observed at Early Intermediate Period sites (Vaughn 2009:153; Verity Whalen, Personal Communication). Exotics (e.g., obsidian

and *Spondylus*), or adornments (stone and shell beads/pendants) were recovered from Units 1, 2, 3, 4, 5, 8 and 10 in limited quantities. Although locals had some access to these artifacts, they were relatively rare.

Fifty-four fragmentary figurines, including fifty-three human and one animal forms, were recovered from domestic contexts at Units 2, 3, 5, 8, and 9 as well as from surface collection. Alexandra Morgan's research on Nasca figurines suggests that these objects had a ritual use (Morgan 2012:57, 1988:331). The present data seem to support that ceremonial activities extended to the domestic sphere, though the specific nature of these activities is not known at present.

Summary

Regional data led Nasca researchers to hypothesize that some groups within Middle Horizon Nasca society may have resisted the Wari Empire (Conlee 2010:98; Schreiber 2005:248). Data from Zorropata are consistent with a scenario wherein Nasca peoples living at this site either rejected or were rejected by the Wari Empire to a large extent. Meanwhile, Early Intermediate Period productive and consumptive traditions or preferences were maintained by local peoples living in the Las Trancas Valley during the Middle Horizon.

As discussed in detail throughout the data chapters of this dissertation (Chapters 4 through 10) and reiterated above, there is marked continuity between Zorropata and Early Intermediate Period habitation sites, as presently known. Evidence for food and craft production resembles that from Early Intermediate Period sites. The distribution of artifacts and features associated with habitation terraces support the claim that Middle Horizon households at Zorropata were relatively self-sufficient (see Chapter 5). At least Individual 1

among the trophy heads was a local individual who ate a traditional Nasca diet. However, most of the osteological data from Zorropata do not speak local diet. It is probable that Zorropatans produced goods similar in scale and kind to what has been observed for earlier sites.

Socioeconomic status was likely limited as was access to imported or exotic goods. Zorropatans seem to have retained access to the Group 1 clay used to make polychrome ceramics. However, access appears to have been much more limited to other resources, for example Quispisisa obsidian, which is much rarer at Zorropata than it is at Early Intermediate Period habitation sites like Marcaya and Cocahuischo.

The presence of a probable plaza may indicate that people at Zorropata practiced feasting or ritual activities couched in the local community rather than a regional center. Figurines recovered from domestic contexts, the adobe compound, and surface collection may also be indicative of a rich symbolic life at Zorropata.

Part III: Future Directions

Previous chapters and sections have addressed the primary (Chapter 11) and ancillary (above) research goals of this project. While data from this research speak to the stated research questions (Chapters 1 and 3), new questions arise. As stated in previous chapters some data have already been collected for which analysis is pending or in progress. Macro- and microbotanical samples were collected from Zorropata and are currently housed at the Regional Museum in Ica, Perú. Analysis of these data was part of the original research design for this project, however, it was not possible to complete it for inclusion in this dissertation.

Paleobotanical data from Zorropata, once analyzed, may speak to the types of plant species used, seasonality, foodways, and the general use of plant remains at the site.

Likewise, analysis of the faunal assemblage provided basic data and took advantage of limited time and resources in field. More in-depth analysis of these remains may allow for more detailed identifications of species and more nuanced interpretations.

Stable carbon and nitrogen isotope analysis of human bone is in progress. These data will no doubt contribute to regional and site-specific studies of the Nasca diet. Strontium results from this project indicate that some ‘trophy head’ individuals recovered from Zorropata began their lives outside of the region. Perhaps further investigation could help to narrow down possible source populations for these individuals.

At present, the organization of domestic space at Zorropata is not fully understood. It is theorized herein that houses at Zorropata were made from *quincha* but such architecture was not documented for habitation terraces. A broad exposure of a sample of habitation terraces could expose postholes or other remnants of *quincha* walls. These data could allow for deeper investigation into the use and organization of domestic space at Zorropata. For example, it may be possible to investigate if houses had internal divisions, if habitation terraces were divided into house and patio/work areas like the patio groups documented at Marcaya and Cocahuischo, or how foot traffic flowed through houses and across habitation terraces. It may also be possible to identify more specific work/activity areas.

Further sampling of the perimeter walls in Sectors 1 and 3, and of Structure 3, which may be associated, is warranted to better document and understand the construction, nature, and use of these features. In addition, Structures 10 and 11 in Sector 3 and the cache of sling stones documented nearby during surface analysis may be associated with the defense

of the site. Excavations of these structures may allow investigation about the nature of Zorropata's defenses and give a better indication of activities (habitation or otherwise) conducted in Sector 3.

Additional data would undoubtedly allow for new lines of inquiry. Moreover, these data may strengthen (or challenge) the interpretations made from the present data and discussed throughout this dissertation. Zorropata offers a view into the experience of at least some local Nasca peoples during the period of Wari encroachment. Additional archaeological fieldwork at this, and other, local Nasca Middle Horizon site(s) could further elucidate the breadth of ancient human experience in the region.

¹ Although the term ‘trophy head’ is used by scholars in the Nasca Region, it is somewhat problematic. Disembodied heads are common in Nasca iconography on textiles and polychrome ceramic vessels, and they have associations with mythical themes, plant life, and fertility (Carmichael 1994:81; DeLeonardis 2000:376; Proulx 1989:82, 2001; Roark 1965:45; Sawyer 1966; Verano 1995). While it is likely that heads used as ‘trophy heads’ were taken in raiding or warfare it is possible that their use related to other ritual behaviors (e.g., ancestor worship, honoring the dead) (Conlee 2007:439; Proulx 1989:78).

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Appendix 7.1.

Typology of Textiles and Basketry¹

Type I: Balanced plain weave

Number of Specimens: 45

Description: This textile type is a variety of plain weave (See Appendix 7.3: Glossary) in which warp and weft elements are equal or nearly equal in diameter and spacing with the effect that they are balanced on the visual field of the surface of the textile (Figure 7.7).

Type I textiles were composed of two different raw material types (cotton and camelid fibers) and three different cordage types (Types II, III, and IV; See Appendix 7.2: Cordage Typology). Balanced plain weave textiles included 18 specimens where warps and wefts were made from single ply Z-twist cordage (cordage Type II). All of these specimens were made from cotton that varied in color from white (2.5Y6/4) to brown (10YR4/4) but were, in all cases, un-dyed. Type III, S(2Z), cordage was used for warps and wefts of a total of 21 specimens. Of this cordage type, 19 specimens were made from cotton and 2 were made from camelid fibers. Neither the cotton nor camelid fiber balanced plain weave made with Type III cordage were dyed though they varied in color from white (2.5Y6/4) to dark brown (10YR3/2). The remaining five specimens of Type I textiles had warps and wefts made from Type IV cordage, Z(2S). All of Type IV cordage balanced plain weave was made from undyed, white (2.5Y6/3) cotton.

Six specimens exhibited selvages, or finished edges. One specimen (ZA106-203) had only an end selvage. Three specimens (ZA1RA1-304.2, 322.6, and 323.2) exhibited only side selvages. Two specimens (ZA1RA1-321 and 303.2) exhibited both an end and a side selvage.

Specimen ZA1RA1-301.1 was a relatively intact rectangular fragment of cloth with selvages on three edges. The end and side selvages were 180 degree self-selvages. In this type of selvege an element, the weft in the case of side selvages and the warp in the case of end selvages, reached the edge of the textile and was folded back at 180 degrees and reintroduced into the structure to create a new weft or warp element respectively. In most instances end selvages in this assemblage had distinctive cordage for the final one or two weft elements before the selvege. One exception was ZA1RA1-301.1, which was composed entirely of Type III cordage. Specimen ZA106-203 was made of Type IV cordage but the last weft before the end selvege that was composed of Z(6S(2Z)) compound cordage. Specimen ZA1RA1-321 was made of Type III cordage but the two wefts before the end selvege were Z(2S) cordage. Specimen ZA1RA1-303.2 was made of Type II cordage with two wefts before the end selvege that were Z(2S) cordage.

No Type I textile specimens exhibit shifts or splices. Specimen ZA1RA1-301.2 was sewn with S(2Z) cordage in an overhand stitch. Two specimens exhibited decoration. Specimen ZA1RA1-316.5 had some dyed (Blue, Gley 2 3/5B) and some white or undyed (10YR5/3) warps that were alternated to create a striped pattern along the warp axis. Blue dyed and undyed white cordage was Type II cordage for warps and wefts.

Specimen ZA100-2639 (described on pages 3-4 of Chapter 7) was collected during the archaeological surface analysis and artifact collection phase of the project. It was collected from Sector 4 near the southeast edge with Sector 1. It was the most ornate textile observed at Zorropata during the 2014 field season. It undoubtedly comes from a looted burial context in Sector 4. Warps in the body of ZA100-2639 were dyed brown (7.5YR4/4) and blue (Gley 2 4/10BG) cotton woven to create a stripe pattern along the warp axis and

wefts were blue dyed cotton (Figure 7.1). A decorative tapestry weave border was sewn onto the edge of the textile. The tapestry border is open and closed tapestry and decorated with geometric designs in green (Gley 1 3/10GY), brown (7.5YR2.5/1), yellow (10YR5/6), red (7.5R3/8), light grey (Grey 1 5/5G_/2), and white (10YR8/2) Type III camelid fiber cordage (Figure 7.2). Geometric motifs include curl/key designs and step frets. The tapestry weave border was made with undyed cotton warps made from Type III cordage. The brightly colored wefts were made from Type III cordage spun from camelid fibers.

In both ZA1RA1-316.5 and ZA100-2639 elements used as warps appear to have been dyed prior to their use in these textiles. This technique is not uncommon in the Nasca Region however, a technique where pigment were painted onto a finished, usually cotton plain weave textile was also used (Frame 2005:23-32). Dyed warp and weft elements from Zorropata were saturated with the pigment, suggesting that they were submerged in a dye bath. Painted Nasca textiles exhibit pigment only on the surface.

Type II: Open and Closed Plain weave

Number of Specimens: 1

Description: This specimen (ZA1RA1-317.3) is a type of plain weave where wefts alternate between being closely spaced and open spaced to expose the warps (Figure 7.8). Warps and wefts are made from Type III cordage spun from camelid fibers. Wefts are dyed yellow (10YR7/6) while warps are dyed red (10R4/6) for a bold visual effect. Wefts are composed of a single element for each weft row. Warps are bundled. Due to the fragile fragmentary nature of this specimen the number of cords used in the warps was indeterminate. Warps had

unraveled and would not be counted without manipulating the textile in a way that could have been destructive.

Type III: Open Simple Twining, Z-Twist Wefts

Number of Specimens: 1

Description: This specimen (ZA1RA1-303.3) is the only example of basketry recovered from the 2014 season at Zorropata. This basket is open simple twining. In twining active wefts engage the passive warps and cross or twisted between warps (Figure 7.9). Wefts can be twisted to the left (Z-twist) or to the right (S-twist). In this specimen, wefts are crossed to the left around a single warp at a time (i.e., simple twining, Z-twist wefts). The weft rows are spaced widely so that the warps are clearly visible (i.e., open) (Adovasio 2010). This specimen is fragmentary (Warp axis = 23 cm, Weft axis = 39 cm) and appears to have been part of a mat. It was made of semi-rigid minimally processed plant fibers, probably a type of grass or perhaps corn husks. Raw fibers were split into strips lengthwise, but not spun before use as warps and wefts in this specimen. No decoration, knots, splices, or diagnostic wear patterns were observed for this specimen.

Type IV: Three-Strand Braid

Number of Specimens: 1

Description: This textile type is a flat braid composed of three cords/strands (Figure 7.10, ZA101-216.2). Each of the three strands in this braid is made of three S(2Z) cotton cords (Type III in the cordage typology) that were grouped together and used as a single element in the overall structure. The braid is fragmentary (length = c. 5.5 cm, width = 0.45 cm). The

diameters of individual S(2Z) cords making up the braid are within the range of variation for other cotton cordage at the site. Cordage was not dyed or decorated in any way. No knots, splices, or diagnostic wear patterns were observed for this specimen.

¹ The typology for Zorropata textiles has been changed somewhat since the preliminary typology presented as a poster at the 57th annual meeting of the Institute of Andean Studies. The current typology was constructed using the most up to date data and interpretations.

Appendix 7.2

Cordage Typology (Figure 7.9)

Type I: Single Ply S-Twist Cordage

Notation: S

Number of Specimens: 2

Description: Fibers were spun to the right to create a cord with a final S-Twist composed of a single ply. Both examples of this cordage type from Zorropata were made of camelid fibers. One specimen was recovered from Unit 1 and the other was recovered from Unit 4. The specimen from Unit 1 was dyed red (10R4/8). The specimen from Unit 4 was not dyed. These cords may have been used as single ply cordage or they may have been plied to make two ply or compound cordage.

Type II: Single Ply Z-Twist Cordage

Notation: Z

Number of Specimens: 18

Description: Fibers were spun to the left to create a cord with a final Z-Twist composed of a single ply. All examples of this cordage type were made of cotton and all of them were used for warp and weft elements of Type I textiles (see Appendix 7.1: Typology of Textiles and Basketry). There are no examples from of dyed Type II cordage in the assemblage of textiles and cordage from Zorropata. For details about the textiles made from this cordage type please see Appendix 7.1.

Type III: Two Ply Z-Spun S-Twist Cordage

Notation: S(2Z)

Number of Specimens: 53

Description: Cotton or wool fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist single ply cordage were plied together to create a cord with a final S-Twist composed of two plies. This cordage type was used for structural elements (e.g., warps, wefts, or other elements) in 21 Type I textiles, and all Type II (n = 1) and Type IV (n = 1) textiles. For details about the textiles made from this cordage type please see Appendix 7.1. In addition, there are 30 examples of this cordage type that were not part of a textile.

Seventeen of the Type I textiles, the single example of Type IV textile, and nine of the standalone specimens of this cordage type were made from cotton. One Type I textile made from Type III cordage (ZA106-205) had warps made from cotton and possibly human hair. Wefts were mostly obscured by the warps but were brown (10YR5/3) in color. Two other standalone specimens of this cordage were made of fibers derived from a plant source that may or may not be cotton. The Type II textile was made from Type III cordage spun from camelid fibers and dyed red (10R4/6) and yellow (10YR7/6). Three Type I textiles were made from Type III cordage that was spun from camelid fibers. These cords were dyed dark brown (10YR3/2), brown (7.5YR5/1), and gray (5YR3/1) respectively. Nineteen standalone specimens of Type III cordage were made from camelid fibers. Four of the Type III camelid cords were undyed, eight were dyed red (10R4/8), five were dyed black (5Y3/1), one was dyed gray (2.5Y4/2) and one was dyed blue (Gley 2 3/5PB).

Of the above discussed specimens of Type III standalone cordage, one made from camelid fibers was recovered from surface collection. Eighteen Type III cordage specimens

made from camelid fiber, two made from unidentified plant fibers, and seven from cotton were recovered from Unit 1. One Type III cordage made from camelid fiber and two made from cotton were recovered from Unit 4. For details about the distribution of Type III cordage used in textiles see Appendix 7.1.

Type IV: Two Ply Z-Spun Z-Twist Cordage

Notation: Z(2S)

Number of Specimens: 14

Description: Fibers were spun to the left to create single ply S-twist cordage. Two strands of S-twist cordage were plied together to create a cord with a final Z-Twist composed of two plies. This cordage type was used for warp and weft elements in five Type I cotton textiles. One of the textiles was recovered during surface collection, three were from Unit 1, and one was from Unit 8. See Appendix 7.1 for details about the textiles. Nine additional Type IV standalone cordage specimens were also recovered. Of these, two were spun from camelid fiber. One Type IV camelid fiber cord was undyed and the other was dyed gray (2.5Y3/2). The undyed cord was from Unit 9 and the dyed one was from Unit 8. The remaining seven examples of Type IV cordage were spun from plant fibers. One was made from cotton. One was made from minimally processed plant fibers, probably corn husks. The remaining five were made from an unidentified plant fiber, possibly cotton. None of the plant fiber Type IV cordage specimens were dyed and all were recovered from Unit 1.

Type V: Four Ply Z-Spun S-Twist Cordage

Notation: S(4Z) cotton

Number of Specimens: 2

Description: Cotton fibers were spun to the left to create single ply Z-twist cordage. Four strands of Z-twist cordage were plied together to create a cord with a final S-Twist composed of four plies. Both examples of the cordage type were spun from undyed white (2.5Y6/4) cotton. One specimen was recovered from Unit 1 and the other from Unit 4.

Type VI: Compound Two Ply Z-Spun S-Twist Cordage

Notation: S(2Z(2S))

Number of Specimens: 2

Description: Fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist cordage were plied together to create a cord with an S-Twist composed of two plies. Two of these Z(2S) cords were then plied together to create a cord with a final S-twist. Both specimens of this cordage type were recovered from Unit 1. One was made from camelid fibers and the other was made from an unidentified plant fiber. The camelid fiber cord was dyed black (Gley 2 2.5/5B).

Type VII: Compound Two Ply S-Spun Z-Twist Cordage

Notation: Z(2S(3S(2Z)))

Number of Specimens: 1

Description: Cotton fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist cordage were plied together to create a cord with an S-Twist composed of two plies. Three of these S(2Z) cords were then plied together to create a cord with a final S-twist. Two S(3S(2Z)) are Z twisted together. This specimen was recovered from Unit 9.

Type VIII: Compound Three Ply S-Spun Z-Twist Cordage

Notation: Z(3S(2Z))

Number of Specimens: 1

Description: Camelid fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist cordage were plied together to create a cord with an S-Twist composed of two plies. Three of these S(2Z) cords were then plied together to create a cord with a final Z-twist. This specimen was recovered from Unit 4.

Type IX: Compound Five Ply S-Spun Z-Twist Cordage

Notation: Z(5S(2Z))

Number of Specimens: 1

Description: Camelid fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist cordage were plied together to create a cord with an S-Twist composed of two plies. Five of these S(2Z) cords were then plied together to create a cord with a final Z-twist. This specimen was dyed red (2.5YR4/4). It was recovered from Unit 9.

Type X: Compound Fourteen Ply S-Spun Z-Twist Cordage

Notation: Z(14S(2Z))

Number of Specimens: 1

Description: Camelid fibers were spun to the left to create single ply Z-twist cordage. Two strands of Z-twist cordage were plied together to create a cord with an S-Twist composed of

two plies. Fourteen of these S(2Z) cords were then plied together to create a cord with a final Z-twist. This specimen was recovered from Unit 4.

There is also a fragment of Z(3S(3Z)) cordage recovered from disturbed contexts at Unit 1.

This cordage fragment was not included in the typology because it was composed of polyester and therefore modern and intrusive. It was likely left behind during the looting of the unit.

Appendix 7.3.

Glossary of Textile, Cordage, and Related Terms.

Angle of Crossing– The angle at which a weft element crosses a warp element, usually 90 degrees.

Angle of twist– “The angle that the slant of the twist makes with the vertical axis of the yarn” (Emery 1966:11)

Balanced Plain Weave– Warps and wefts have metric and non-metric values for attributes that do not differ significantly

Braid– Also referred to as oblique interlacing. Each element “passes over or under elements that cross its path...without linking, looping, wrapping, or knotting” (Emery 1994:62).

Chained Warp Loops– Interlooping of consecutive warp ends at the side selvage.

Compound Cordage– Cordage wherein more than two simple cords are plied together.

Cordage– Synonymous with terms yarn, string, thread, cord, etc.

Cordage diameter– The metric measurement of the diameter of a cord.

Cross-knit Looping– Type of looping where the “loop is taken round the crossing of a loop in the previous row” (Emery 1994:32).

Element– A foundational element, or core cord is the primary strand that acts as a foundation for the construction of a more complex cord.

End Selvage- The finished edge of a textile, parallel to the wefts. See also Selvage.

Fibers– “The smallest untwisted component of a strand or bead”; “...raw material that has been prepared for spinning” (Hurley 1979:6).

Plain Weave– A variety of weaving in textiles or basketry where “elements pass over each

other in single intervals” (Adovasio 1977:99), also called simple plaiting.

Ply– A unit of yarn; alternatively, to ply is to combine two or more units of yarn by twisting them together. See also Ply Formula.

Ply formula– A nomenclature for describing the initial spin and subsequent final twist of a cord symbolically. See also Ply.

Selvage– A finished edge of a woven construction. See also Side or End Selvage.

Shift– “(An) accidental or intentional alteration of interval” of plaiting (Adovasio 1977:105).

Side Selvage– The finished edge of a textile parallel to the warps. See also Selvage.

Spin– The twist of fibers either to the left or to the right. See also Twist.

Splice– The insertion of new materials (such as fibers, a strand, or an entire cord) to replace exhausted ones as the run out.

Strand– A “unit composing a cord and consisting of one or more sets of fibers twisted individually or together” (Hurley 1979:6).

Strand diameter– The metric measurement of the diameter of a strand in a cord.

S-twist (also S-Ply)– Fibers or cords twisted to the right to create cordage or compound cordage.

Twining– A type of basket weave made by passing two (or more) weft elements around a warp. Weft elements are twisted to the left (Z-twist) or to the right (S-twist) between warp elements.

Twist– Synonymous with spin.

Warp– The passive element during the weaving process and/or the vertical element in a basket or textile. The warps and wefts are both active in the process of weaving on a

backstrap loom.

Warp-faced Plain Weave– A variety of plain weave (see above) where warps are more tightly packed than wefts and thus dominate the visual field of the surface of the textile.

Weft– The active element during the weaving process and/or horizontal element in a basket or textile.

Z-twist (also Z-Ply)– Fibers or cords twisted to the left to create cordage or compound cordage.

All definitions in this glossary are from Adovasio's *Basketry Technology: A Guide to Identification and Analysis* (2010), Emery's *The Primary Structure of Fabric* (1994[1966]), and Hurley's *Prehistoric Cordage: Identification of Impressions on Pottery* (1979).

Appendix 10.1.

Report: Cache of “Trophy Head” Individuals Found at the Zorropata Site in Las Trancas Valley, Nasca, Peru

by

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June 10, 2016

Introduction

Human headtaking is a cultural practice of the ancient Nasca culture during the EIP and into the MH (1-900 A.D.). Iconography of these heads is common on Nasca ceramics as is actual human remains; Nasca is among a few Andean cultures that merged iconography with the skeletal and soft tissue evidence of taking human heads. These individuals are isolated heads found in tombs, ceremonial sites, and caches and known as “trophy heads” in the literature. Whether or not these were indeed “trophies” is up for debate, but recent research shows that these individual were from the local area and no foreigners who consumed a similar diet as other Nasca (Knudson et al. 2009; Kellner and Schoeninger 2008, 2012). The Nasca may have used these heads as a “metaphor for regeneration and rebirth” in an arid region that valued water for agriculture (Proulx 2001: 135). The vast majority of recovered “trophy heads” are young males, which may mean they were taken in some kind of conflict (Verano 1995; Kellner 2006; Knudson et al. 2009).

These isolated heads have certain characteristics that make them unmistakably Nasca. Only the cranium and mandible are included within the definition of “trophy heads.” These heads display

cutmarks on the cranial vault, face, and mandible of varying depth and length, based on the thickness of the muscles in each area, which was partly the result of the detailed work the Nasca performed to carefully deflesh the skull for the purpose of re-creating the face. The posterior portion of the skull was chopped away to remove the brain material. A small hole was cut into the forehead above the nasal bones in order to thread through a “carrying cord” made of braided rope. The Nasca carefully cut away facial muscles and soft tissue while keeping the facial skin intact, sometimes filling in the cheek and eye areas with cotton or textiles, tied the mandible tied to the skull with some type of braided rope, replaced the facial and vault skin, and pinned the lips together with *huarango* spines (Verano 1995; Williams et al. 2001). Sometimes the tongue is attached to the carrying cord.

All individuals were macroscopically analyzed using disciplinary standards. Most information was collected using Buikstra and Ubelaker (1994). The sex of each individual was based on the robusticity of cranial features and any pathological conditions were noted. Age was determined by dental development, wear, and tooth loss (Hillson 1996; Scott 1979). Linear enamel hypoplasia result from disruptions in enamel secretion that occur during development due to environmental stressors, such as trauma and/or disease (Goodman and Rose 1990; Hillson 1996; Ogden et al. 2007). Trauma of the cranium and mandible were determined using Lovell (1997). Stylistic information on breakage and cutmark patterns used in creating the “trophy head” was collected using Kellner (2006) and Williams et al. (2001). Cranial vault modification was determined using Torres-Rouff (2003).

Demography of the Cache

This cache of Nasca individuals modified as “trophy heads” consists of 8 individuals, including six young adults (17-35 years of age, 62.5% of the cache) and two non-adults (2-10 years of age) (Table 1). All individuals are represented by at least a cranium except for one possible male aged 17-21 years old, who is represented by a complete mandible. Non-adults (children and adolescents) cannot be reliably sexed and are marked as unknown sex in this report. No crania with that could be sexed definitively female could be identified in this cache, but one adult may be female due to gracility of facial features.

Craneo 1: This individual (cranium, no mandible) is a young adult male 20-35 years of age, with robust facial features. The third molar occluded during life, indicating that this individual was an adult at the time of death. Some dental wear (enamel worn flat, dentine exposed) indicated that he was in his mid to late 20s – much of the surviving dentition has a good amount of enamel – only portions of the first permanent molars are worn to the soft dentine – and most have heavy buccal calculus deposits. The left M3 displays a large occlusal carious lesion. No teeth were lost pre-mortem. He had healed and active anemia (cribra orbitalia) in both eye sockets, but no evidence of porotic hyperostosis. A small oblong healed depressed fracture is located on the right superior parietal just above the temporal line. This individual displays no other fracture or evidence of trauma. This individual does not show signs of cranial vault modification, as the frontal and parietal bones do not display any evidence of pressure or plastic deformation. The cranium is cut in the “mask” style (Kellner 2006), meaning that the entire posterior section (the occipital, most of the parietal, and half the temporal) is missing – the coronal cut is made anterior to the mastoid process. The frontal hole is at midline, about 40 mm superior to nasion. Shallow,

long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals and the parietals.

Craneo 2: This young adult (cranium, no mandible) is a possible male as some facial features are gracile, but the browridges are wide. This individual's third molars were in occlusion during life, but they exhibited dental wear that flattened the cusps on the molars, indicating an age of mid 20s, likely slightly younger than craneo 1. He displays shovel shaped incisors, which are common in South American populations. Slight calculus deposits were found on one third molar. Some post-mortem tooth loss is visible, but no pre-mortem tooth loss and he displays no other dental or cranial pathology or trauma. This individual does not show signs of cranial vault modification, as the frontal and parietal bones do not display any evidence of pressure or plastic deformation. The cranium is cut in the "mask" style (Kellner 2006), meaning that the entire posterior section (the occipital, most of the parietal, and half the temporal) is missing – the coronal cut is made anterior to the mastoid process. The frontal hole is slightly off center of midline to the left, avoiding the internal frontal crest, about 20 mm superior to nasion. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals and the parietals. Many of the deep chop marks on the parietals and on the frontal hole have adhering bone pieces, suggesting these were made when the bone was still fresh.

Craneo 3: This individual is a young to mid-aged adult male (cranium with mandible) in his late 20s to early 30s. He has robust facial features and a muscular chin. His third molars were occluding during life but were lost post-mortem, as was one premolar. The wear on his teeth was significant, especially on the first molars, and the anterior teeth, indicating an age older than craneo 1. He lost four maxillary teeth before death, and displays two carious lesions, two abscesses, and significant calculus deposits on the buccal side of all mandibular teeth. He does not show any evidence of trauma on the vault, face, or mandible. Plain textile and hair are adhering to the left superior parietal and a carrying cord is threaded through the frontal hole. This individual does not show signs of cranial vault modification, as the frontal and parietal bones do not display any evidence of pressure or plastic deformation. The cranium is cut in the “mask” style (Kellner 2006), meaning that the entire posterior section (the occipital, most of the parietal, and half the temporal) is missing – the coronal cut is made anterior to the mastoid process. This individual is slightly asymmetrically cut, with more of the left parietal surviving. The frontal hole is slightly off center of midline to the left, avoiding the internal frontal crest, about 25 mm superior to nasion. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals, the parietals, and the mandibular ramus.

Craneo 4: This individual is a 2-3 year old child (cranium and mandible) with only deciduous teeth in occlusion during life. This child has shovel shaped maxillary deciduous incisors. The permanent first molar can be seen in a crypt with most of the crown complete. Some facial skin is adhering to the face and exhibits some slash marks. The child exhibits no dental pathology or trauma. This child has the tabular form of cranial vault modification, which is common among

the Nasca. Pressure points were located high near the coronal suture on the frontals, with asymmetrical shaping of the skull, bregmatic elevation, and a post-coronal depression. The cranium is cut in the “mask” style (Kellner 2006), meaning that the entire posterior section (the occipital, some of the parietal) is missing – the coronal cut is made slightly posterior to the external auditory meatus. This child’s parietals were the most preserved of any individual in this cache and the mask cut includes the entire temporal bone, with the exception of the mastoid processes. The frontal hole is slightly off center of midline to the left, but does not avoid the internal frontal crest, about 40 mm superior to nasion, and below pressure points of the cranial vault modification. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals, the parietals, and the mandibular ramus.

Craneo 5: This individual is an adolescent aged about 9-10 years old (cranium, no mandible) based on dental development. This adolescent displays a mixed dentition, with the deciduous canines, and molars in occlusion along with the permanent first molars and the incisors. The second permanent molars are still in crypts. The deciduous molars have considerable dental wear, with little occlusal enamel surviving. One of these molars exhibits a small carious lesion, but this individual does not exhibit any other pathology or trauma. Of note are large rodent gnaw marks near bregma; these are likely too large to be from mice and may be from chinchilla or viscacha possibly done during recent modern looting (Chrissina Burke, personal communication). Pieces of textile are adhering above and lateral to the right eye orbit. This adolescent has the tabular form of cranial vault modification, which is common among the Nasca. Pressure points were located high near the coronal suture on the frontals, with bregmatic

elevation and a slight post-coronal depression. The cranium is cut in the “mask” style, meaning that the entire posterior section (the occipital, some of the parietal) is missing – the coronal cut is made slightly anterior to the external auditory meatus and is slightly asymmetrical, with more of the right parietal surviving. The frontal hole is slightly off center of midline to the left, about 35 mm superior to nasion. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals and the parietals.

Craneo 6: This individual is a young adult (cranium with mandible), aged early 20s based on dental development. This cranium is covered in a rough textile tied in the back; underneath this textile was the braided carrying cord and the desiccated skin of the face and upper head with hair. The eyelashes and nose are clearly visible and a *huarango* spine still pins the lips shut. All other permanent dentition was occluding during life except for the M3s, which are either not occluding or are congenitally absent. The incisors exhibit shoveling. This individual has extensive dental pathology for such a young age: extreme dental wear of the lingual portion of the first molars, down to the dentine, substantial calculus deposits on the maxillary teeth, linear enamel hypoplasia on the upper central incisors and all canines, and large carious lesions that practically destroyed three lower molars. This individual does not show signs of cranial vault modification, as the frontal and parietal bones do not display any evidence of pressure or plastic deformation, however, the sagittal suture is prematurely closed, a condition called synostosis. The cranium is cut in the “mask” style, meaning that the entire posterior section (the occipital, some of the parietal) is missing – the coronal cut is made slightly anterior to the external auditory meatus. The frontal hole is slightly off center of midline to the left, avoiding the internal frontal

crest and about 40 mm superior to nasion. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals and the parietals.

Craneo 7: This individual is a young adult (cranium, no mandible), ambiguous sex to possibly female with gracile features, aged approximately in the mid to late 20s due to tooth wear. Slight calculus deposits are exhibited on the buccal portions of many maxillary teeth. Two small (5 X 5 mm) shallow oval healed depressions are visible on the left and right parietals, near the posterior cut mark. This individual does not exhibit any cranial or dental pathology. This individual exhibits the tabular form of cranial vault modification, which is common among the Nasca. Pressure points were located low near the frontal bosses, with bregmatic elevation but no post-coronal depression. The cranium is cut in the “mask” style, meaning that the entire posterior section (the occipital, some of the parietal) is missing – the coronal cut is made slightly anterior to the external auditory meatus. The frontal hole is slightly off center of midline to the right, avoiding the internal frontal crest, and about 55 mm superior to nasion. Shallow, long cutmarks are visible on the cranial vault near the frontal hole, and on the face, especially on the zygomatics and around the eyes. Short, deep chop marks are visible along the posterior edge of the temporals and the parietals.

“Craneo” 8: This individual is represented by a lone mandible. It was associated at first with *Craneo 5*, but dental development for this mandible puts it between 17 and 21 years of age. This is from a “trophy head” individual as there are deep chop marks on the mandibular ramus and some shallow long slices on the mandibular body. The 3rd molars are not in occlusion, but all

other permanent dentition is in occlusion. The mandible is relatively robust, suggesting that this is a male. Molars are worn flat, but much enamel survives. Three teeth, a first molar, second molar, and a premolar, exhibit occlusal carious lesions. This adolescent/young adult suffered from cuspal enamel hypoplasia of the second molars, the second premolars. The occlusal edges of the first premolars were likely disrupted as well since they have an odd cusp shape that looks similar to canines. Since these teeth form enamel in a similar time range (~2-8 years of age), these hypoplasia may indicate a disruption in the life of this individual around 3 years of age.

Discussion

This “trophy head” cache is similar in demography and style to extant Nasca trophy head collections (Browne et al. 1993; Kellner 2006; Knudson et al. 2009; Williams et al. 2001; Verano 1995). Fully half of this cache consists of young adult males, what we would expect from Late Nasca or Middle Horizon caches. The other half, however, include a possible female and two non-adults, which suggest that this cache may have been from earlier in the EIP. Trophy head caches including women and children are more common in the early EIP than in the later EIP (Browne et al. 1993; Kellner 2002, 2006; Verano 1995), suggesting that this particular cache may be from the Early or Middle Nasca period, or it could be a case of head curation until eventual burial. Other collections show some patina and enamel chipping due to curation (Verano 1990), and this cache shows a bit of this with enamel chipping. In another Las Trancas collection from three cemeteries, the demographic profile of the “trophy head” individuals shifted from a mix of sexes and ages in earlier periods to one with a majority of young adult males in later periods (Kellner 2002).

The individuals in this cache did not have a multitude of cranial trauma and were relatively healthy, similar to other collections, likely due to the young age of these individuals (Kellner 2002). Only two had healed cranial trauma, and the most common dental pathology was carious lesions, likely caused by the Nasca maize-centric diet (Kellner and Schoeninger 2012). One individual may have experienced some trauma or disease around the age of 3, but survived to the age of 21. Another individual had anemia, possibly from a parasitic infection from drinking contaminated water (Walker et al. 2009).

These individuals are definitely Nasca “trophy head” individuals. The “mask” style is ubiquitous in this cache, which makes them very similar to other Las Trancas Valley trophy head collections (Kellner 2006). The mask style is seen in other valleys in the Nasca region, but not at the frequency found in the Las Trancas Valley (Knudson et al. 2009). That most do not exhibit cranial vault modification is similar to other Las Trancas collections (Kellner 2002, 2006), but is dissimilar to the Kroeber Nasca Valley collection and the Cerro Carapo cache (Brown et al. 1993; Williams et al. 2001), which may have meaning in terms of identity in the Las Trancas Valley – “trophy head” individuals. This find evokes the Cerro Carapo “trophy head” cache from the early 1990s (Brown et al. 1993). Both were rather large caches found due to looting activity – this looting may have led to a jumbling of ceramic pieces that make dating this cache difficult. Finally, Nasca “trophy head” individuals are not similar to Wari “trophy heads.” Nasca placed the carrying cord hole on the forehead while the Wari punched a hole near the top of the cranium near bregma or on the occipital (Tung and Knudson 2008, 2011). Most Wari “trophy head” individuals have healed or perimortem trauma, are adult males, and are only buried in a ritual space and not in caches or burials (Tung and Knudson 2008).

The demographic and stylistic characteristics of this Zorropata cache in comparison to other Nasca collections may point to intervalley stylistic difference as well as standardization in “trophy head” production in the Las Trancas Valley. Nasca Las Trancas Valley individuals made this cache likely for the same population, of the same population, curated for a time, and buried during a tumultuous period. Further testing with isotopic and biochemical data to understand dietary, migration, and stress patterns are now in progress.