

**CRAFT SPECIALIZATION AND THE EMERGENCE OF THE CHIEFLY CENTRAL
PLACE COMMUNITY OF HE-4 (EL HATILLO), CENTRAL PANAMA**

by

Adam Clayton Joseph Menzies

B. A., Carleton University, 2000

M. A., Trent University, 2003

Submitted to the Graduate Faculty of
Arts and Sciences in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

University of Pittsburgh

2009

UNIVERSITY OF PITTSBURGH
FACULTY OF ARTS AND SCIENCES

This dissertation was presented

by

Adam Clayton Joseph Menzies

It was defended on

May 4, 2009

and approved by

Dr. Olivier de Montmollin, Associate Professor, Department of Anthropology

Dr. Marc Bermann, Associate Professor, Department of Anthropology

Dr. Richard G. Cooke, Staff Scientist, Smithsonian Tropical Research Institute

Dr. Mikael J. Haller, Assistant Professor, St. Francis Xavier University

Dissertation Advisor: Dr. Robert D. Drennan, Distinguished Professor, Department of
Anthropology

Copyright © by Adam Clayton Joseph Menzies

2009

CRAFT SPECIALIZATION AND THE EMERGENCE OF THE CHIEFLY CENTRAL PLACE COMMUNITY OF HE-4 (EL HATILLO), CENTRAL PANAMA

Adam Clayton Joseph Menzies, PhD

University of Pittsburgh, 2009

The development of chiefdoms has received considerable attention from archaeologists, but there remains little consensus with respect to the underlying causal mechanisms. In particular, the importance of an economic foundation to the emergence of chiefdoms has been the focus of some debate. Some scholars have argued that the mobilization of key resources such as land, labor, agricultural surplus or craft production is critical to the development of chiefdom polities as it implies a material foundation for political power. An alternative view places more importance on status competition and the display and exchange of prestige goods among emergent elites. Because it may be used to support either strategy, craft specialization has figured prominently in discussions of these two kinds of chiefly political economy. The focus of this dissertation is the degree to which specialized craft production was a significant factor in the development of chiefdoms at the central place community of He-4 in the Río Parita valley of Central Panama. The results of this dissertation show that craft specialization was relatively unimportant to the emergence of chiefdoms in the Río Parita valley during the Cubitá phase (A.D. 550-700), suggesting a social hierarchy based more on non-economic forms of social power, perhaps including feasting activities, warfare or involvement in local trade. The data from He-4 also show that the social hierarchy seen in the burial record after A.D. 700-900 develops in tandem with differences in household status that are apparent as early as the Cubitá phase (A.D. 550-700). These differences in household status become increasingly well developed over time;

however, they are never as dramatic as the differences seen in the mortuary record for Central Panama. There is also no real connection between the emergence of the social hierarchy at He-4 and craft specialization. It is only during the Parita phase (A.D. 1100-1300) that craft specialization involving the final stages of axe manufacture and use of polished stone chisels becomes important activities in high status households at He-4.

TABLE OF CONTENTS

| | | |
|--------------|---|-----------|
| 1.0 | INTRODUCTION | 1 |
| 1.1 | CONTROL OVER ECONOMIC RESOURCES | 2 |
| 1.2 | NON-ECONOMIC MODELS | 3 |
| 1.3 | CHIEFDOMS OF CENTRAL PANAMA | 6 |
| 1.4 | CRAFT SPECIALIZATION AT HE-4 (EL HATILLO/FINCA JUAN CALDERÓN) | 11 |
| 1.5 | RESEARCH QUESTIONS | 14 |
| 1.5.1 | What kind of specialized craft production was taking place at He-4? | 14 |
| 1.5.2 | How was craft production organized at He-4? | 15 |
| 1.5.3 | Is the social hierarchy seen in the mortuary record also expressed in daily life? | 16 |
| 1.5.4 | Is there a connection between the form of social hierarchy present at He-4 and specialized craft production? | 18 |
| 1.5.5 | Diachronic Perspectives on Craft Specialization at He-4 | 20 |
| 2.0 | METHODOLOGY | 22 |
| 2.1 | FIELD METHODOLOGY | 22 |
| 2.1.1 | The Intensive Survey | 23 |
| 2.2 | SAMPLES AND CHRONOLOGY | 29 |

| | | |
|----------------|---|-----------|
| 2.3 | ARTIFACT ANALYSIS METHODOLOGY | 31 |
| 2.3.1 | Ceramics | 31 |
| 2.3.1.1 | Chronology and Mixing | 34 |
| 2.3.1.2 | Chipped stone | 36 |
| 2.3.1.3 | Polished and Ground stone | 37 |
| 2.3.1.4 | Shell | 39 |
| 2.3.1.5 | Worked shell | 40 |
| 2.3.1.6 | Faunal Remains | 41 |
| 2.3.1.7 | Human remains | 41 |
| 2.4 | SUMMARY | 42 |
| 3.0 | THE EARLIEST OCCUPATION AT HE-4 (250 B.C.-A.D. 550) | 45 |
| 3.1 | THE LA MULA PHASE (250 B.C.-A.D. 250) | 45 |
| 3.2 | THE TONOSÍ PHASE (A.D. 250-550) | 47 |
| 3.3 | SOCIAL DIFFERENTIATION | 50 |
| 3.4 | CRAFT PRODUCTION | 51 |
| 4.0 | THE GROWTH AND DEVELOPMENT OF HE-4 DURING THE CUBITÁ PHASE (A.D. 550-700) | 58 |
| 4.1 | COMMON DOMESTIC ACTIVITIES | 61 |
| 4.2 | SOCIAL DIFFERENTIATION | 64 |
| 4.3 | SUMMARY | 66 |
| 4.4 | CRAFT PRODUCTION | 68 |
| 5.0 | THE CONSOLIDATION OF SOCIAL HIERARCHY AT HE-4 DURING THE CONTE PHASE (A.D. 700-A.D. 900) | 81 |

| | | |
|-------|---|-----|
| 5.1 | COMMON DOMESTIC ACTIVITIES | 83 |
| 5.2 | SOCIAL DIFFERENTIATION | 84 |
| 5.3 | CRAFT PRODUCTION | 92 |
| 5.4 | SUMMARY | 97 |
| 6.0 | THE CHANGING NATURE OF SOCIAL HIERARCHY AT HE-4 DURING THE MACARACAS PHASE (A.D. 900-1100) | 110 |
| 6.1 | COMMON DOMESTIC ACTIVITIES | 113 |
| 6.2 | SOCIAL DIFFERENTIATION | 115 |
| 6.2.1 | Household Diet | 118 |
| 6.3 | CRAFT PRODUCTION | 120 |
| 6.3.1 | Shell Production | 121 |
| 6.4 | SUMMARY | 122 |
| 7.0 | SOCIAL HIERARCHY AT HE-4 DURING THE PARITA (A.D. 1100- 1300) AND EL HATILLO (A.D. 1300-1522) PHASES | 136 |
| 7.1 | COMMON DOMESTIC CERAMICS | 142 |
| 7.2 | SOCIAL DIFFERENTIATION | 143 |
| 7.2.1 | Household Diet | 147 |
| 7.3 | CRAFT PRODUCTION | 153 |
| 7.4 | SUMMARY | 157 |
| 8.0 | DISCUSSION AND CONCLUSIONS | 181 |
| 8.1 | RESEARCH QUESTIONS REVISITED | 181 |
| 8.1.1 | What kind of specialized production was taking place at He-4? | 181 |
| 8.1.2 | How was craft production organized at He-4? | 186 |

| | | |
|-------|--|-----|
| 8.1.3 | Is the social hierarchy seen in the mortuary record seen in daily life? .. | 187 |
| 8.1.4 | Is there a connection between the form of social hierarchy present at He-4 and specialized craft production? | 203 |
| 8.2 | FUTURE DIRECTIONS | 206 |
| | APPENDIX A | 212 |
| | APPENDIX B | 219 |
| 9.0 | BIBLIOGRAPHY | 221 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1.1 Map of Panama with sites discussed in the text. | 21 |
| Figure 2.1 Surface collection during the first phase of fieldwork at He-4. | 43 |
| Figure 2.2 Proportion of collection units (surface collection units and shovel probes) with more than 100 artifacts. | 43 |
| Figure 2.3 Linear regression analysis scatter plot with best-fit line showing a 95% confidence interval. | 44 |
| Figure 2.4 Contour map of total artifact density at He-4 with the location of test units shown in red. | 44 |
| Figure 3.1 The collection unit with the stratigraphic test unit where one La Mula sherd was recovered. | 54 |
| Figure 3.2 All collection units with Tonosí sherds. Hatched units had Tonosí sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Tonosí sherds only in stratigraphic tests; and white units had Tonosí sherds only in surface/shovel collections. | 55 |
| Figure 3.3 Contour map of surface collection and shovel probe density of Tonosí sherds. | 55 |
| Figure 3.4 A La Mula unifacial knife. Scale is 5 cm. | 56 |
| Figure 3.5 Collection Units with Tonosí phase ceramics and the distribution of La Mula Points. | 56 |

| | |
|--|----|
| Figure 3.6 A complete pear-shaped axe from He-4. Scale is 5 cm..... | 57 |
| Figure 3.7 Distribution of pear-shaped axes and collection units with Tonosí sherds. | 57 |
| Figure 4.1 All collection units with Cubitá sherds. Hatched units had Cubitá sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Cubitá sherds only in stratigraphic tests; and white units had Cubitá sherds only in surface/shovel collections. | 72 |
| Figure 4.2 Contour map of Cubitá sherd densities from surface and shovel probe collection units. | 73 |
| Figure 4.3 Contour map of proportions of plain red Cubitá sherds (Juncal and Guachapali). | 73 |
| Figure 4.4 Contour map of proportions of Cubitá red-cream sherds..... | 74 |
| Figure 4.5 Contour map of proportions of Cubitá plain (black contour lines) and red-cream (blue contour lines) sherds. | 74 |
| Figure 4.6 Contour map of proportions of Cubitá bichrome sherds. | 75 |
| Figure 4.7 Contour map of proportions of Cubitá cooking vessel sherds. | 75 |
| Figure 4.8 Contour map of proportions of Cubitá serving vessel sherds..... | 76 |
| Figure 4.9 Contour map of proportions of Cubitá cooking (black contour lines) and serving (blue contour lines) vessel sherds. | 76 |
| Figure 4.10 Contour map of proportions of Cubitá trichrome sherds..... | 77 |
| Figure 4.11 Contour map of proportions of Cubitá incised sherds..... | 77 |
| Figure 4.12 The collection unit with the single Cubitá <i>vaso</i> sherd..... | 78 |
| Figure 4.13 The two collection units with Cubitá faunal remains..... | 78 |

Figure 4.14 Contour map showing the spatial distribution of artifacts used to determine household differentiation, including trichromes (black contour lines), vasos (red contour lines) and incised vessels blue contour lines). 79

Figure 4.15 Map showing the distribution of Cubitá flakes. White collection units have one lithic artifact (a flake); hatched collection units have two lithic artifacts (one is a flake); and black collection units have two lithics, both of which are flakes. 79

Figure 4.16 Contour map of proportions of Cubitá cutting and scraping tools (scrapers, blades, utilized flakes)..... 80

Figure 4.17 Contour map of proportions of Cubitá axes (black contour lines) and axe fragments or flakes (red contour lines) and areas with both (blue contour lines)..... 80

Figure 5.1 All collection units with Conte sherds. Hatched units had Conte sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Conte sherds only in stratigraphic tests; and white units had Conte sherds only in surface/shovel collections. 99

Figure 5.2 Contour map of density of Conte sherds at He-4. 99

Figure 5.3 Contour map of proportions of Conte plain sherds (samples of less than 5 sherds are excluded). Contour lines are at 10% intervals. 100

Figure 5.4 Contour map of proportions of Conte cooking vessel sherds (samples of less than 5 sherds are excluded). Contour lines are at 10%..... 100

Figure 5.5 Contour map of proportions of Conte cooking (black contour lines) and plain (red contour lines) sherds. Contour lines are 10% and 70%-90%..... 101

Figure 5.6 Contour map of proportions of Conte serving vessels. 101

| | |
|---|-----|
| Figure 5.7 Contour map of proportions of Conte cooking vessel sherds (black contour lines) and serving vessel sherds (red contour lines). | 102 |
| Figure 5.8 Contour map of proportions of Conte sherds with beige paste (non-local) and the collection units where Conte <i>vasos</i> were found (shown as black squares)..... | 102 |
| Figure 5.9 Contour map of proportions of Conte of polychrome sherds..... | 103 |
| Figure 5.10 Contour map of proportions of Conte pedestal plates. | 103 |
| Figure 5.11 Contour map of proportions of white-tailed deer at Conte phase He-4. | 104 |
| Figure 5.12 Contour map showing the spatial distribution of artifacts used to determine household differentiation. Pedestal plates are represented by blue contour lines, non-local beige paste pottery is represented by red contour lines and polychrome vessels are represented by black contour lines. All contour lines show proportions of 40% or higher..... | 104 |
| Figure 5.13 Contour map of proportions of Conte phase axe flakes without polish (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools. | 105 |
| Figure 5.14 Contour map of proportions of Conte phase axe flakes with polish (red contour lines) and non-local beige past pottery (black contour lines) with only samples of more than five stone tools..... | 105 |
| Figure 5.15 Contour map of proportions of Conte phase axes (red contour lines) and non-local beige past pottery (black contour lines) with only samples of more than five stone tools. | 106 |
| Figure 5.16 Contour map of proportions of Conte phase cutting and scraping tools (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools. | 106 |

| | |
|--|-----|
| Figure 5.17 Contour map of proportions of Conte phase chipped stone flakes (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools..... | 107 |
| Figure 5.18 Contour map of proportions of Conte phase chipped stone cores (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools..... | 107 |
| Figure 5.19 Contour map of proportions of Conte phase polishing stones (red contour lines) and non-local beige paste pottery (black contour lines). Samples of less than five are included. | 108 |
| Figure 5.20 Bullet graphs showing the differences in proportions of tool types between higher status and lower status household groups at Conte phase He-4..... | 108 |
| Figure 5.21 Contour map of proportions of shell tools (n = 2; red contour lines) and Conte beige paste pottery (black contour lines)..... | 109 |
| Figure 5.22 Contour map of proportions of Conte worked shell (n = 11; red contour lines) and Non-local beige paste pottery (black contour lines). The contour peak directly to the south of the higher status households is the only collection unit with greater than five shell pieces..... | 109 |
| Figure 6.1 All collection units with Macaracas and Macaracas/Parita sherds. Hatched units had Macaracas sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Macaracas sherds only in stratigraphic tests; and white units had Macaracas sherds only in surface/shovel collections..... | 124 |
| Figure 6.2 Contour map showing the density of Macaracas and Macaracas/Parita sherds. | 124 |
| Figure 6.3 Contour map of proportions of Macaracas cooking vessel sherds..... | 125 |
| Figure 6.4 Contour map of proportions of Macaracas plain ware sherds..... | 125 |

| | |
|---|-----|
| Figure 6.5 Contour map of proportions of Macaracas cooking vessel (red contour lines) and plain ware (black contour lines) sherds. | 126 |
| Figure 6.6 Contour map of proportions of Macaracas serving vessel sherds. | 126 |
| Figure 6.7 Contour map of proportions of Macaracas cooking (black contour lines) and serving vessel (red contour lines) sherds. | 127 |
| Figure 6.8 Contour map of proportions of Macaracas polychrome pedestal plate sherds (black contour lines) and <i>botellas</i> (black squares)..... | 127 |
| Figure 6.9 Contour map of proportions of Macaracas plain pedestal plate sherds..... | 128 |
| Figure 6.10 Contour map of proportions of Macaracas plate and bowl sherds (regardless of decoration); <i>botellas</i> are shown as red squares..... | 128 |
| Figure 6.11 Contour map of proportions of Macaracas polychrome plate and bowl sherds..... | 129 |
| Figure 6.12 Contour map of proportions of Macaracas polychrome vessel sherds..... | 129 |
| Figure 6.13 Contour map of proportions of Macaracas polychrome vessel sherds (black contour lines), polychrome pedestal sherds (red contour lines) and <i>botellas</i> (blue contour lines)..... | 130 |
| Figure 6.14 Contour map of proportions of Macaracas incised ware sherds (including incised pedestals)..... | 130 |
| Figure 6.15 Collection units with faunal remains associated with the Macaracas phase. | 131 |
| Figure 6.16 Relative proportions of faunal remains from all Macaracas collection units (blue) and Excavation Unit 21-02 (red). | 131 |
| Figure 6.17 Collection units with shell remains associated with the Macaracas phase..... | 132 |
| Figure 6.18 Macaracas axes and axe fragments. Solid collection units have both axes and axe flakes; hatched units have axes only and empty squares have only axe flakes. Polychrome Macaracas pedestal sherds are shown as red contour lines..... | 132 |

| | |
|--|-----|
| Figure 6.19 Collection units with chipped stone cores associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines. | 133 |
| Figure 6.20 Collection units with cutting and scraping tools associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines. | 133 |
| Figure 6.21 Collection units with polishing stones associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines. | 134 |
| Figure 6.22 Collection units with manos associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines..... | 134 |
| Figure 6.23 Collection units with worked shell associated with Macaracas ceramics. | 135 |
| Figure 7.1 Parita phase mortuary features from excavation unit 26-01..... | 159 |
| Figure 7.2 Plan of partially preserved Parita phase floor and associated mortuary feature..... | 160 |
| Figure 7.3 Plan of Parita phase mortuary feature on bedrock in excavation unit 26-01..... | 161 |
| Figure 7.4 Collection units with Parita/El Hatillo sherds (n = 320). | 162 |
| Figure 7.5 Contour map of the density of Parita/El Hatillo sherds at He-4..... | 162 |
| Figure 7.6 Contour map of proportions of Parita/El Hatillo cooking vessel sherds (including all Parita and El Hatillo, but excluding MPH sherds)..... | 163 |
| Figure 7.7 Contour map of proportions of Parita/El Hatillo plain ware sherds (including all Parita and El Hatillo, but excluding MPH sherds)..... | 163 |
| Figure 7.8 Contour map of proportions of Parita/El Hatillo serving vessel sherds (including all Parita and El Hatillo, but excluding MPH sherds)..... | 164 |
| Figure 7.9 Contour map of proportions of Parita/El Hatillo pedestal plate sherds..... | 164 |
| Figure 7.10 Contour map of proportions of Parita Polychrome pedestal plate sherds with no cutoff..... | 165 |

| | |
|--|-----|
| Figure 7.11 Contour map of proportions of polychrome Parita painted pedestal plate sherds at a higher contour cutoff..... | 165 |
| Figure 7.12 Contour map of proportions of of Parita painted cups and plate sherds. | 166 |
| Figure 7.13 Contour map of proportions of painted Parita sherds..... | 166 |
| Figure 7.14 Contour map of proportions of Parita polychrome pedestal plate sherds (black contour lines) and bone beads (red contour lines). | 167 |
| Figure 7.15 Contour map showing the distribution of Parita polychrome pedestal plate sherds (black contour lines) and polished/worked bone (red contour lines)..... | 167 |
| Figure 7.16 Contour map of proportions of Parita/El Hatillo modified ware sherds (incised and appliqué). | 168 |
| Figure 7.17 Collection units with faunal remains associated with Parita/Hatillo sherds; solid squares have more than 5 faunal remains. Proportions of polychrome Parita pedestal plate sherds are shown as red contour lines. | 168 |
| Figure 7.18 Contour map of proportions of white-tailed deer remains (red contour lines) associated with Parita/El Hatillo ceramics. Proportion of polychrome Parita pedestal plate sherds are shown as black contour lines. | 169 |
| Figure 7.19 Bullet graph showing the proportions of white-tailed deer in Parita/ El Hatillo households of different status. | 169 |
| Figure 7.20 Contour map of proportions of high utility deer remains (red contour lines) and polychrome Parita pedestal plate sherds (black contour lines). | 170 |
| Figure 7.21 Contour map of proportions of Iguana remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. | 170 |

Figure 7.22 Contour map of proportions of paca/agouti (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 171

Figure 7.23 Contour map of proportions of fish remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 171

Figure 7.24 Bullet graph showing the relative proportion of fish and iguana in Parita/Hatillo households of different status. 172

Figure 7.25 Contour map of proportions of shark remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 172

Figure 7.26 Contour map of proportions of edible shell (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 173

Figure 7.27 Collection units with stone tools in association with Parita/Hatillo sherds. Solid squares are collection units with more than 5 stone tools; empty squares have less than 5 stone tools. Red contour lines indicate polychrome Parita pedestal plate sherds. 173

Figure 7.28 All axes and axe flakes at He-4. Black squares have both axes and flakes, hatched squares only have axes and white squares have only axe flakes. Proportions of polychrome Parita pedestal plate sherds are shown as black red lines. 174

Figure 7.29 Contour map showing the distribution of trapezoidal axes (of samples of >5 lithics; red contour lines) and proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 174

Figure 7.30 Contour map of proportions of chisels/adzes (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 175

Figure 7.31 Bullet graphs showing the relative proportions of axes and axe related debitage in lower status households (L) and the two clusters of higher status households in the southwest corner (SW) and the center (C) and the mound group (MG)..... 175

Figure 7.32 Contour map of proportions of axe flakes with polish (red contour lines. Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 176

Figure 7.33 Contour map of proportions of axe flakes without polish (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 176

Figure 7.34 Contour map of proportions of cutting and scraping tools (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 177

Figure 7.35 Bullet graphs showing proportions of flakes and cutting and scraping tools for households of lower status (L), in the southwestern corner (SW), the center (C) and the mound group (MG). 177

Figure 7.36 Contour map of proportions of polishing stones (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 178

Figure 7.37 Contour map showing the distribution of chipped stone cores (red contour lines) and Parita pedestals (black contour lines). 178

Figure 7.38 Contour map of the distribution of chipped stone flakes (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 179

Figure 7.39 Contour map of proportions of manos (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines..... 179

Figure 7.40 Contour map of proportions of metates. Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines. 180

PREFACE

This project was funded by a National Science Foundation Dissertation Improvement Grant (BCS 0612859) and a Social Sciences and Humanities Research Council of Canada Doctoral Fellowship (No. 752-2005-0531). The Department of Anthropology and the Center for Latin American Studies at the University of Pittsburgh also provided funds for preliminary stages of fieldwork. This project was greatly facilitated by Dr. Richard G. Cooke, both in terms of his commentary on this dissertation and for his support in Panama. My dissertation advisor, Dr. Robert D. Drennan provided guidance and support from the first stages of research design to the final stages of writing. The members of my committee, Dr. Marc Bermann and Dr. Olivier de Montmollin also contributed greatly to this dissertation. Dr. Mikael J. Haller also provided advice both in the field and during the writing of this dissertation. Dr. Tomas Mendizabal of the National Institute of Culture (INAC), Panama, was helpful in obtaining permits for fieldwork in Panama. Luis Sánchez and Claudia Díaz assisted with the ceramics and human remains from He-4. I would like to thank all of the graduate students in the Department of Anthropology, but particularly those that helped in the initial stages of fieldwork in Panama. Thanks also to Scott Palumbo and Bill Locascio for their friendship and collaboration.

Finally, I would like to thank the Menzies family and Elaina Vitale for their love and support.

1.0 INTRODUCTION

The development of chiefdoms has received considerable attention from archaeologists, but there remains little consensus with respect to the underlying causal mechanisms (Drennan 2000; Drennan and Uribe 1987; Earle 1991a, 1991b; McIntosh 1999; Price and Feinman 1995; Redmond 1994, 1998; Sanders and Webster 1978; Spencer 1993). In particular, the importance of an economic foundation to the emergence of chiefdoms has been the focus of some debate. Some scholars have argued that the mobilization of key resources such as land, labor, agricultural surplus or craft production is critical to the development of chiefdom polities as it implies a material foundation for political power (Anderson et al. 1995; Blanton et al. 1996:3; Brumfiel and Earle 1987a; Cobb 1996, 2003; D'Altroy and Earle 1985; Earle 1987, 1991a, 1991b, 2002; Gilman 1981, 1987, 1991, 2001; Kristiansen 1991; Spencer 1993; Webster 1990; Welch 1996). An alternative view places more importance on status competition and the display and exchange of prestige goods among emergent elites (Blanton et al. 1996:3; Renfrew and Cherry 1986; Friedman and Rowlands 1977; Frankenstein and Rowlands 1978), feasting and the creation of social debt (Clark and Blake 1994; Dietler and Hayden 2001; Hayden 1998, 2001; Hayden and Gargett 1990; Hill and Clark 2001; Rosenswig 2007; Sahlins 1963), exchange of exotic goods (Helms 1979; Malinowski 1961; Mauss 1990) and redistribution (Fried 1967; Service 1962; cf. Creamer and Haas 1985; Earle 1977; Peebles and Kus 1977). In such situations the role of ideology in the development of political power is assumed to be a driving force and

economic control is minimal (Drennan 1991; 1995a; Lesure and Blake 2002; Shennan 1982; Stein 1994). An important question then, is to what degree was the control over economic resources necessary to the emergence of chiefdoms?

1.1 CONTROL OVER ECONOMIC RESOURCES

McGuire (1983) has argued that the economic basis of political power is a critical issue in the study of complex societies. The control over key resources “is the most basic because all people have some interest in these resources and they provide a generalized means for a great variety of ends...The total amount of wealth an individual controls provides the basic measure of economic power” (McGuire 1983:124). Following this argument there are a number of ways that the control over economic resources could be organized, including differential access to land, labor or sponsorship of craft production. For example, control over highly productive soils or the development of “property rights” over arable land (Earle 1991b; Gilman 1991) is one way to restrict access to agricultural produce and thus to basic subsistence resources. The intensification of surplus production is also an important aspect of economic power because the control over surplus distribution reflects a decline in household economic autonomy and illustrates the greater power of elites (Earle 1987; Gilman 1987). The mobilization of labor for the construction of public works such as irrigation systems (Spencer 1993; Spencer and Redmond 1994), raised fields (Spencer et al. 1998) or monumental architecture (Trigger 1990) represents another aspect of economic control available to emergent elites. An additional dimension of economic control is over craft production for supra-household consumption (Arnold and Munns 1994; Brumfiel and Earle 1987a; Clark 1995; Clark and Parry 1990; Costin 1991; Lewis 1996; Sahlins 1972;

Schortman and Urban 2004). The organization of specialized production may be structured as a redistributive economy (Fried 1967:117-118) managed by emergent elites to counteract environmental heterogeneity and the differential distribution of resources (Service 1962). The control over craft production, however, could also be manipulated by elites to restrict access to basic commodities by alienating producers from the products of their labor (Brumfiel and Earle 1987b:3; Cobb 1996; Earle 1997). The process of intensification in output in craft goods beyond household needs (e.g. the Domestic Mode of Production; Sahlins 1972) may also represent a fundamental change in economic organization that accompanies the emergence of chiefdoms (Cobb 1996; Sahlins 1972; Stanish 2004:15).

The common element to all of these strategies is coercion. Political authority is consolidated as elites establish exclusive rights to basic resources and access becomes increasingly restricted. As a consequence, elites would be able to accumulate material wealth to further underwrite their political activities (Blanton et al. 1996; D'Altroy and Earle 1985; Spencer 1993; Welch 1996). This differentiation in wealth is often reflected at the individual household level (Hirth 1993a; Smith 1987) and represents increased inequality (McGuire 1983).

1.2 NON-ECONOMIC MODELS

The acquisition and display of prestige goods, or symbols of status, is an alternative means of establishing chiefly power and is based primarily on ideology or “social power” that is expressed through a common ritual or religious system (DeMarrais et al. 1996; Drennan and Quattrin 1995; Earle 1997:205; Yoffee 1993:70). In a political system based on social prestige the control over resources or the accumulation of wealth would not be a driving factor in the emergence of

chiefdoms. Rather the accumulation of status would be derived from the circulation of prestige items through exchange, feasting, gift giving and the creation of social debt (Clark and Blake 1994; Frankenstein and Rowlands 1978; Hayden 1998, 2001; Joyce and Henderson 2007; Rosenswig 2000, 2007; Spencer 1993, 1998; Vaughn 2004) and the development of an ideological system to legitimize status differences.

One means of enhancing social prestige could have been through obtaining non-local goods for conspicuous display. The prestige-value of rare or non-local goods attained through exchange is derived from the restricted participation in exchange networks and from the scarcity of the goods themselves. The differential access to “esoteric knowledge,” including either the technical knowledge required to manufacture prestige goods (Hayden 1998) or sacred or symbolic knowledge of foreign origin, is also a source of status (Helms 1979). The acquisition of finished goods, and especially specific symbols, is an important element of “esoteric knowledge” because it implies a restricted sphere of elite interaction, perhaps associated with a divine right to rule (Helms 1988). The sacred expression of power and ideological elements is important in this regard (Renfrew and Cherry 1986; Helms 1979:70-71). These symbols of power could easily be manipulated by “peripheral” elites in an attempt to demonstrate some connection with larger or more powerful polities in a geographic region or to demonstrate participation within a broader network of elites (Steponaitis 1991). The importance of religious symbolism or “cult” activity may serve as an integrative mechanism as elites manipulate common beliefs to justify their status (Emerson 1997). These foreign symbols may fit within a pre-existing symbolic system or “cognitive code” (Blanton et al. 1996: 3) or may be used in novel ways to increase prestige (e.g. Shennan 1982). Finally, the ritual exchange of certain items, such as the Kula exchange described by Malinowski (1961) is also important because of the competitive behavior between

trading partners. Participants in the Kula attempt to acquire the largest or most valuable objects; the value of individual artifacts is also derivative of the “life history” or “fame” of particular shell necklaces (Kopytoff 1986:66-67; Graeber 2001:164-166; Gosden and Marshall 1999).

These two kinds of political economy, one based on the coercive control over economic resources and the other based on ideology and symbolic status, represent two kinds of political strategies available to emergent elites (Cobb 1996; Earle 1987, 2002:82; Hirth 1984:286-287). The pre-Columbian sequence of the Central Region of Panama offers an excellent opportunity to investigate, in a trajectory of chiefdom development, the contrasting roles of coercive control over economic resources and political and ideological manipulation of goods of symbolic, rather than economic, value. Because it may be used to support either strategy, craft specialization has figured prominently in discussions of chiefly political economy (Arnold and Munns 1994; Claessen 1984; Brumfiel and Earle 1987b; Tosi 1984).

The focus of this dissertation is to determine to what degree specialized craft production was a significant factor in the development of chiefdoms in the Río Parita valley of Central Panama (Figure 1.1). This study, based on intensive survey and test excavations in 2006, will focus on changes in household economic organization at the chiefly central place community of He-4 to investigate the relative importance of these kinds of production. The end product will be a spatially-based, diachronic perspective on the relationship between craft specialization, wealth accumulation and political development at He-4.

1.3 CHIEFDOMS OF CENTRAL PANAMA

Sixteenth century Spanish accounts of indigenous populations in Panama (Espinosa 1994; Jopling 1994; Las Casas 1986; Oviedo 1944; Roosevelt 1979) provide classic descriptions of chiefdom societies characterized by clear differences in status and wealth with the possibility of distinct social “classes” (Helms 1979:12, 1994:55; Oberg 1955; Steward and Faron 1959). The highest ranking figure carried the title of *queví*s and wielded authority over a large territory as well as over inferior chiefs or *sacos* (Helms 1994:55). On the Azuero peninsula, particularly in the region of Parita Bay (Figure 1.1), shifting multi-village confederacies engaged in inter-polity conflict for territorial expansion (Drennan 1991:275, 1996a; Linares 1977:74; see also Cooke and Sánchez 2004a:50-51), for access to good hunting and fishing grounds, or for captive and slave-taking (Helms 1994:57). Conflict between groups or individual political rivals seems also to have been frequent, and positions of authority were often contested and rules of hereditary succession involved achievement as much as ascription (Cooke 2004a:281; Cooke and Ranere 1992:295-296; Linares 1977:75). The production, acquisition and display of wealth, in gold and other materials, is mentioned in many Spanish accounts (Cooke et al. 2003:114; Jopling 1994:24, 30) and these goods were clearly symbols of political authority. Spanish descriptions of indigenous funerary rites note the inclusion of gold costume elements, decorated pottery and other valuable offerings with chief París (Espinosa 1994; Oviedo 1944).

The more mundane activities of daily life are rarely described in ethnohistoric sources, although there are occasional references to chiefly stores of maize and other agricultural products (Cooke and Sánchez 1997:17, 57). The movement of goods across the region is also reported and includes commodities such as salt, cloth, dogs, gold, and possibly slaves (Oviedo 1853:140, cited in Cooke et al. 2003: 114). The production of cloth, and possibly ceramics, is described for the

village of Natá (Helms 1979:56-57; see also Breece 1997), but control over these productive activities is not usually seen as the most important element of chiefly authority (Helms 1994: 56). Although scholars have cautioned against over-emphasizing the social complexity described by these ethnohistoric sources (Cooke 2004a:272; Linares 1977:72), they remain a critical source of analogy (e.g. Lothrop 1937) because they connect the prehistoric sequence of chiefdom development with contact-period accounts of complex societies (Drennan 1995b:323).

Our ability to document archaeologically the development of the sixteenth century societies encountered by the Spanish is, of course, less than one might wish. As usual, the clearest evidence for the development of social ranking comes from mortuary contexts. The simple household burials from early agricultural villages (200 B.C.-A.D. 250) in the Parita Bay region, such as Sitio Sierra (Cooke 1984) and later) at Cerro Juan Díaz (650-1350; Cooke 2004a: 278; see also Cooke and Sánchez 1997; Cooke et al. 2000), and the El Indio and El Cafetal cemeteries in the Tonosí valley (Ichon 1980), are suggestive of a social system based on achieved status, emphasizing differences according to age and sex rather than ascription (Cooke 1984:287). The few grave goods found in the interments at Sitio Sierra consist mostly of utilitarian pottery and stone tools. The lack of special grave goods or any disproportionately wealthy graves, and the presence of male, female and child burials do not seem to demonstrate much social differentiation (Cooke 1984:279). The mortuary record for the village of La Mula-Sarigua also suggests limited differences in ranking (Cooke and Ranere 1992:283; but see Hansell 1988).

Between the period A.D. 750-950, however, there is a dramatic shift in mortuary practice in Central Panama with the appearance of wealthy burials and distinct cemeteries that clearly indicate the emergence of ranking and status differentiation (Cooke 2005:151, 2004a:273; Cooke

et al. 2000:155; Lothrop 1954). The elaborate burials at Sitio Conte (Briggs 1989, 1993; Hearne and Sharer 1992; Lothrop 1937, 1942), and later at He-4 (Bull 1965; Haller 2004, 2009; Ladd 1964) signal considerable differences in wealth and social ranking at this point as a few male individuals are interred with great quantities of goods. Some of the most elaborate graves feature a single principal individual interred with up to twelve other bodies, which have been interpreted as sacrificed warriors or retainers (Lothrop 1937:43). The presence of large quantities of gold and shell costume elements and other items of personal adornment in these burials indicate that the conspicuous display of this wealth was important (Linares 1977; Lothrop 1937). The array of weaponry found in these graves (i.e. carved atlatls, projectile points and stone axes) may suggest that success in warfare was an important element of chiefly authority (Cooke 2004a:273). Ultimately the variability seen in the Sitio Conte cemetery can be described as an “additive pattern” where higher status is reflected in a greater quantity and diversity of grave goods (Briggs 1989:139). While it has been suggested that membership in a chiefly class was ascribed at birth, chiefly succession and wealth accumulation, as reflected at Sitio Conte (Briggs 1989:143), may have been the result of prowess in warfare or competition between members of competing ranked lineages (Cooke 2004a:273; Cooke 2004b; Linares 1976a, 1976b, 1977:75). The exclusive nature of the Sitio Conte cemetery also suggests a pyramidal social structure with a limited number of positions of rank and with rigid divisions between higher and lower classes (Briggs 1989:132; Cooke et al. 2000:172; Creamer and Haas 1985:746). Contemporary burials at Cerro Juan Díaz, for example, provide a convenient foil to the affluent Sitio Conte graves; there is limited evidence for differentiation in wealth because of the age-sex profiles, presence of infant burials and heterogeneity in manner of burial (Cooke et al. 2000:166-167; Díaz 1999; DeYoung 2008).

Accompanying this shift in mortuary patterns is an increase in regional integration and centralization, particularly in the Parita Bay region (Haller 2004:94). Regional political integration is apparent with the emergence of a three tiered settlement hierarchy in the Río Parita valley during the Cubitá phase (A.D. 550-700). At this time the site of He-4 (also known as El Hatillo or Finca Juan Calderón) replaces the community of La Mula-Sarigua (Hansell 1987, 1988) as the dominant site in the Río Parita valley and becomes a political and economic central place. A number of smaller, secondary and tertiary sites are present in the Río Parita valley at this time, representing settlements peripheral to He-4 (Haller 2004:75, 90; Creamer and Haas 1985). This pattern is similar in the Río Santa María watershed, which experiences reorganization in settlement distribution and variation in settlement size (Cooke 1984; Cooke and Ranere 1984; Weiland 1984). Similar population dynamics are present in the Río La Villa valley as well (Isaza 2007:360, 540, 2009). Artistically this intra-regional integration is manifested in the coalescence of the “Gran Coclé” iconographic style, particularly as represented on gold objects and polychrome ceramics (Cooke 2004b; Cooke and Sánchez 1997; Fonseca and Cooke 1993:269-271; Hoopes 2005; Linares 1977:46; Lothrop 1942:13-15). This range of motifs fit within a broader repertoire of Macro-Chibchan themes that is suggestive of a broader isthmian identity (Hoopes 2005; Hoopes and Fonseca 2003). Although these goods are typically associated with mortuary contexts, these items were likely accumulated and displayed by elites across the Central Region as objects of wealth and status (Linares 1977:60). Finally, the Sitio Conte and El Caño necropolis, in use primarily from A.D. 750-950, represents an important regional ceremonial complex where chiefs from across Central Panama were interred (Cooke 2004a; Fitzgerald 1996; Mayo and Mayo 2009; Mayo et al. 2007; Mojica et al. 2007). Taken together, this complex is characterized by sparse residential occupation, lines of basalt columns

and burial mounds, and large non-residential structures, indicating its function as an important ritual center (Cooke 2004a:273; Lothrop 1937:202).

Intra-regional economic integration is less well understood for the process of chiefdom development. Prior to the emergence of clear political centralization in the Río Parita (e.g. before to A.D. 550-700) there is increased standardization of La Mula pottery (Cooke and Sánchez 2004b:26), part-time specialization of stone tool production (Hansell 1987, 1988:245) and access to particular resources may have been restricted along kin or corporate group lines (Cooke and Ranere 1992:292). The intensification of exchange during this period of chiefdom emergence is seen in the movement of unfinished stone axes from specialized quarry sites in the cordillera regions to the Pacific plain, possibly in exchange for cloth and ceramics manufactured in chiefly communities (Cooke and Ranere 1992:281). Intra-regional exchange across the Central Region is also indicated through the presence of manatee bone (an Atlantic species) in mortuary contexts along the Pacific coast (Cooke et al. 2003:114, 134-135; Ladd 1964:270; Linares 1977:71). During later phases there is an increase in both standardization of ceramic manufacture and a greater distribution of decorated wares across much of Central Pacific Panama (Cooke 1980; Cooke and Sánchez 2000:13-15). The production of gold objects seems to have been undertaken by specialists, for elite consumption and ritual use (Cooke 2005:154; Cooke and Bray 1985; Cooke et al. 2003; Cooke et al. 2000; Fitzgerald 1996; Hoopes 2005:23; Isaza 2007:77; Linares 1977) but direct evidence of gold production is rare (Cooke et al. 2003:Figure 5; Fitzgerald 1996:62). The identification of placer ore in river gravels (Cooke et al. 2003:96) raises the likelihood that these objects were manufactured locally rather than imported from Colombia as has been argued by Helms (1979; see also Sauer 1966). Mayo (2004; Mayo and Cooke 2004, 2005) has identified intensive shell working activities at Cerro Juan Díaz in the Río La Villa

valley, illustrating the organization and scale of local production. Despite the valuable contribution of this recent scholarship, discussions of the role of household economic organization, production and specialization in the development of ranking remain hampered by a dearth of data on the subject (Cooke and Ranere 1992:272).

Recent survey work in the Río Parita valley (Haller 2004, 2009) aimed at evaluating models of chiefdom development suggests that restricted access to prime agricultural land and local subsistence resources was not very significant to chiefly authority. If economic control was still important to the emergence of the Río Parita chiefdom it may have been over craft production (Cooke and Ranere 1992; Haller 2004:162; Linares 1977) and likely would have been centralized at the chiefly community of He-4. If craft production was essential to chiefly authority at He-4 it may have mattered for different reasons. Craft production at He-4 could have been organized to control the production of, and restrict access to, utilitarian craft goods like tools for basic household and subsistence pursuits. Alternatively it may have been socially advantageous to control the production of luxury or ritual items used for social or political purposes. By investigating these two possibilities, a study of the organization of craft production at the chiefly center of He-4 will provide much needed information to evaluate classic models for the emergence of Central Panamanian chiefdoms.

1.4 CRAFT SPECIALIZATION AT HE-4 (EL HATILLO/FINCA JUAN CALDERÓN)

The site of He-4 often cited in the literature as El Hatillo, Finca Calderón and occasionally as Parita (Stirling 1950), is referred to here by its site designation code as the fourth site recorded in

the province of Herrera. He-4 provides an excellent opportunity to investigate the role of craft production in chiefdom development because of its position as a “central place” community in the Río Parita valley. If the production of craft items was important to the political economy of this chiefdom it is very likely that these activities would have been undertaken at He-4. The high degree of nucleation and population density at He-4 also made this site ideal for a study of craft production because of the accumulation of habitation debris that is of such importance to identifying economic activities. In a regional context He-4 is situated at the apex of a settlement hierarchy and is the focal point of political centralization in the Río Parita valley (Haller 2004, 2008). It is also likely to have been an important chiefly village at the time of Spanish contact in the 16th century (Cooke 2004a:274). The political and religious importance of He-4 is also seen in the presence of public architecture [a complex of low (<3 m) burial mounds] (Bull 1965:32-34; Ladd 1964:24-25), a feature seen at few other archaeological sites in central Panama (e.g. El Caño). This attribute points to the presence of elites at the top of the social hierarchy known for central Panama.

The long occupation sequence for He-4 makes it possible to trace the trajectory of chiefdom development including its origins, establishment and subsequent development (e.g. Drennan 1991, 1996a). The site is continuously occupied from the La Mula phase (250 B.C. - A.D. 250) to the Hatillo phase (A.D. 1300-1522). It is founded as a small La Mula phase hamlet when agricultural villages appear along the major river valleys of the seasonally dry Pacific plains. During the Cubitá phase (A.D. 550-700) He-4 exhibits dramatic growth and replaces the large village of La Mula-Sarigua at the apex of the regional settlement hierarchy (Haller 2004:78). The two sites represent very different kinds of communities. The nucleated population at La Mula-Sarigua seems to have been based on the aggregation of local resources such as chert

and abundant coastal and estuarine resources (Cooke and Ranere 1992:292). In contrast, He-4 is a true “central place” community with political, religious and economic functions (Haller 2004:63). This makes the site qualitatively and quantitatively different than all other sites in the Río Parita valley after its emergence as a chiefly community. The political and religious importance of He-4 is further evidenced by its emergence as a regional necropolis during the Macaracas phase (A.D. 900-1100; Haller 2004:90-91). The decline in wealthy interments at Sitio Conte is contemporaneous with the increase in rich mound burials at He-4 (Bull 1965; Cooke 2004b; Haller 2004; Ladd 1964). Importantly, “He-4 is the only site where burials have revealed artifact and skeletal patterning similar to that recorded for Sitio Conte” (Haller 2004:92; see also Cooke 2004b:128). This corpus of mortuary data demonstrates the development of substantially more internal ranking at He-4 than is apparent for La Mula-Sarigua.

The condition of He-4 as an archaeological site makes it an ideal place to conduct investigations aimed at understanding changes in craft production because of the density of archaeological material and good surface visibility. The sizeable residential occupation at He-4 implies a large number of households and the accumulation of very high densities of domestic debris directly related to economic activities are located in areas surrounding the burial mounds. Using the household as the basic unit of archaeological analysis at He-4 enables a focus on variability in activities and wealth between households that has not been the focus of previous investigations in the area (e.g. Bull 1965, Ladd 1964).

1.5 RESEARCH QUESTIONS

1.5.1 What kind of specialized craft production was taking place at He-4?

Previous observations of assemblage patterning at He-4 suggest that the manufacture of some utilitarian craft goods, such as ceramics, cloth, and stone axes (Haller 2004:145, 158), was undertaken there. The distribution of spindle whorls at several sites in the Río Parita valley, suggests that cloth production may not be exclusive to He-4 (Haller 2004:154). There are also indications that stone axe blanks were imported and finished at He-4 (Haller 2004:149). One goal of this research is to determine what kinds of goods were manufactured by specialists at He-4. Neither model (i.e. the coercive control over economic resources vs. ideology and symbolic power) assumes that all kinds of goods will be produced by specialists or that production will come under elite control, although the possibility exists. Households are the basic unit of production in small-scale societies (Hirth 1993a:27; Wilk and Rathje 1982; Netting et al. 1984) and there are several classes of goods often produced by specialists in an agrarian society. The first is basic utilitarian implements, or technomic goods (Binford 1962:219). In the Río Parita valley these consist of cooking or storage vessels, stone axes, processing tools, cutting implements, and cloth (spindle whorls). The second category, socio-technic goods (Binford 1962), consists of objects that are related to the social realm and are not purely “functional” in an economic sense (Hayden 1998; Inomata 2001; Schortman and Urban 2004). In the Río Parita valley these include gold objects, polychrome pottery, worked bone, shell pendants (Cooke 1998:Figure 8.10; Mayo 2004:Fig. 24), and polished stone bars (Cooke et al. 2000:Figure 8.7). The final category of craft goods is ideo-technic. These items are related to the religious system and consist of objects with representations of deities or symbols of clan affiliation. These include

gold items with iconographic elements, polychrome ceramics with symbolic representations of animals and anthropomorphic figures (Helms 1995, 2000), effigy vessels (Cooke 1993; Linares 1977:Figs. 26, 32, 33), and stylized objects of shell and bone (Cooke 1998:Figure 8.10; Cooke et al. 2000:Figure 8.7). There is some overlap with socio-technic goods in that much Coclé iconography is represented on gold objects and polychrome vessels.

Most indicators of specialized production are indirect, but are identifiable from household artifact inventories. Specialization can be inferred from the location of production debris (Torrence 1986:145) degree of standardization in artifact assemblages (Costin and Hagstrum 1995; Lewis 1996:380; Sinopoli 1988:582), concentrations of manufacturing debris and ratios of finished tools to debitage, cortical flakes, unfinished or broken tools, ceramic wasters (Costin 1991:21-29), by-products from shell manufacture (Mayo 2004) and metal slag (Shennan 1998). The context of production is also important and is inferred from the homogeneity of workshop deposits (Moholy-Nagy 1990). Direct indicators of craft production include ceramic kilns and casting vessels for gold production and alloying (e.g. Cooke et al. 2003:Figure 5; Fleming 1992) although these are rare.

1.5.2 How was craft production organized at He-4?

If specialized production can be identified at He-4 the question that arises is: how was production organized? This can be conceived of in terms of the spatial distribution and intensity of production (Hirth 1993a:Figure 2). The intensity of production is best understood as a continuum of output beyond household requirements (Arnold and Munns 1994:475; Sinopoli 1988:580). Rather than focus on the distinction between “full-time” and “part-time” production, which is difficult to determine archaeologically (Clark 1995:271), the question of scale is relative

and is contingent on comparison for meaning (Lewis 1996:379). Changes in the relative proportions of artifacts, debris and unfinished goods will provide a measure of the degree to which individual households had intensified production of certain goods. There is a diachronic element to this as well; if craft production intensified it may have been incorporated by a greater number of households that had previously not been engaged in these activities (Hirth 1993a:Figure 3).

On one hand we may find that each household produced much of what it required in terms of basic subsistence tools, implying little inter-dependency for access to these goods and at most a modest intensification in production. Alternatively we might find that a few households intensified production beyond household needs to meet an unspecified demand (Brumfiel and Earle 1987b:5; Clark 1986; Lewis 1996:358). These specialized households may have been dispersed across the site. Alternatively, production may have been concentrated in some areas of He-4, perhaps the site core, suggesting the involvement of numerous specialized households and a greater degree of intensification. If specialized “precincts” exist they may have been arranged according to what kinds of crafts were being produced; alternatively, we might observe little patterning in terms of what activity was undertaken where. We may also observe similar patterns for the production of symbolic goods; that is, their production may have been equally common among all households or restricted to a few households. It is possible that these crafts were made in different households than the ones engaged in the production of utilitarian goods.

1.5.3 Is the social hierarchy seen in the mortuary record also expressed in daily life?

The mortuary record for Central Panama indicates clear social distinctions; high ranking individuals are interred with large quantities of sumptuary and utilitarian goods and placed in

important cemeteries. It remains unclear for He-4 if social ranking was strongly expressed in daily life or if it only mattered when important people died (e.g. Chapman 2000; Drennan 1995a; Parker Pearson 1984). There are at least two kinds of social hierarchy that might be recognized and these relate directly to the two models of chiefdom development being evaluated. Although these hierarchies are not mutually exclusive, they are based on different principles and can be separated analytically to assess the importance of craft production. The first kind of hierarchy is based on economic differentiation and wealth accumulation. This form of social differentiation relates to models emphasizing economic control and control over craft production of utilitarian (technomic) goods. In this instance higher ranking households have a better “quality of life” than lower ranking households because they have differential access to better foodstuffs (e.g. more meat, preferred animals); this may be visible through the types of cooking vessels found in household inventories (Smith 1987:311) or from faunal remains recovered from middens. Similarly these households may have higher proportions of better quality utilitarian goods manufactured from non-local raw materials (Smith 1987:320). Assemblage diversity is often a marker of wealthier households and can be measured from household inventories (Hirth 1993b:139).

The second kind of hierarchy is one supported by social prestige and is based on respect or authority (Lesure and Blake 2002). This system does not imply a higher standard of living or differential consumption of technomic goods. Rather, this form of hierarchy connects more to the manipulation of craft production to manufacture symbolic (ideo and socio-technic) artifacts. In this case higher rank would be expressed through the accumulation and display of jewelry, clothing, or other costume elements (Smith 1987:309; Wobst 1977). Higher ranking households may have greater proportions of serving vessels and pottery decorated with symbolically charged

iconography as these would have been used in conspicuous displays, such as feasting activities. Items manufactured from non-local raw materials or imported finished goods decorated with important symbols would also connect to hierarchy based on prestige or “esoteric knowledge” (Hayden 1998; Helms 1979). If these goods are rare, have symbolically important designs and are restricted to only a few households it is more consistent with a social hierarchy based on prestige and ideology. Alternatively if these goods are more abundant, occur with relatively meaningless motifs (in terms of Gran Coclé iconography) and are distributed widely but in varying proportions, then it is more likely that the social hierarchy was one based on economic differentiation and wealth accumulation. Higher ranking households may also have been located closer to public architecture (e.g. Stark and Hall 1993), a situation that fits with either model. At He-4 this will be testable through a comparison of artifact assemblages at varying distances from the mound complex. Finally, both kinds of hierarchy could be evident in daily life. These markers of household wealth and rank are not contradictory; they are in fact complementary. This final circumstance is most consistent with the mortuary pattern from Central Panama where social distinctions are manifested in an “additive pattern” (Briggs 1989:149).

1.5.4 Is there a connection between the form of social hierarchy present at He-4 and specialized craft production?

The creation of differences in social rank is a central element of models that emphasize elite involvement in craft production; consequently one might expect to find differences in rank between households involved in, or associated with, craft production and those that are not (Brumfiel and Earle 1987b:3-5; Santley 1993:76). Depending on what kind of productive activities were most important to chiefly emergence, we may expect to see a connection between

those craft activities and household rank (Hirth 1993a:28). This would suggest a connection between the two. The possibility also exists that some households were engaged in several complementary productive activities (e.g. Hagstrum 2001:49). These tasks might be organized seasonally and be based on the same productive technology, making it easier for households to engage in different types of production with minimal cost. Involvement in a variety of crafts might lead to further wealth accumulation because fewer households would control the allocation of key goods or participate in exchange networks to a greater extent (Brumfiel and Earle 1987b:3). It is also possible that craft production was not undertaken in higher ranking houses themselves but in nearby households. This spatial association is a common characteristic of “attached” specialization where goods are produced under the aegis of an elite household (Costin 1991:25; Sinopoli 1988:581-582). The intra-site distributions of craft working areas (see research question 2) and of higher ranking households (see research question 3) are important in this regard. For example, if craft activities were taking place some distance from higher ranking households this would suggest little connection between the two phenomena (e.g. Schortman and Urban 2004:197-198). If there is no connection between craft production and household rank then craft specialization would appear to have been of limited importance in the development of the He-4 chiefdom. If, however, there is a system of hierarchy based on social prestige, no wealth accumulation and specialization in prestige goods, then there is a connection between craft specialization and the emergence of chiefdoms. Similarly, if the social hierarchy is based on wealth accumulation, the importance of social prestige is minimal, and utilitarian goods are produced by specialists, there is a connection between specialization and the emergence of chiefdoms.

1.5.5 Diachronic Perspectives on Craft Specialization at He-4

A diachronic perspective is essential to determine if an intensification of craft production accompanied the emergence of chiefdoms in the Río Parita valley. Did changes in the organization of craft production at He-4 occur in tandem with the increase in political centralization and population growth during the Cubitá phase (A.D. 550-700)? Is there an intensification of craft production with the appearance of a regional settlement hierarchy and He-4's emergence as a central place? These questions require an examination of the organization of production during the periods preceding this transformation (i.e. the La Mula and Tonosí phases) as well as the transitional Cubitá phase. It is also possible that the intensification of production occurred after A.D. 700. If so, did the intensification of production occur with the increasing disparity in mortuary treatment during the Conte (A.D. 700-900) and Macaracas (A.D. 900-1100) phases? The first scenario would imply that craft production played some role in the emergence of chiefdoms in the Río Parita valley; the second suggests that specialization developed after political centralization and regional integration. Evaluating these two situations will advance our understanding not only of the contributing factors behind the emergence of chiefdoms, but also of the organization of craft production in Central Panama.

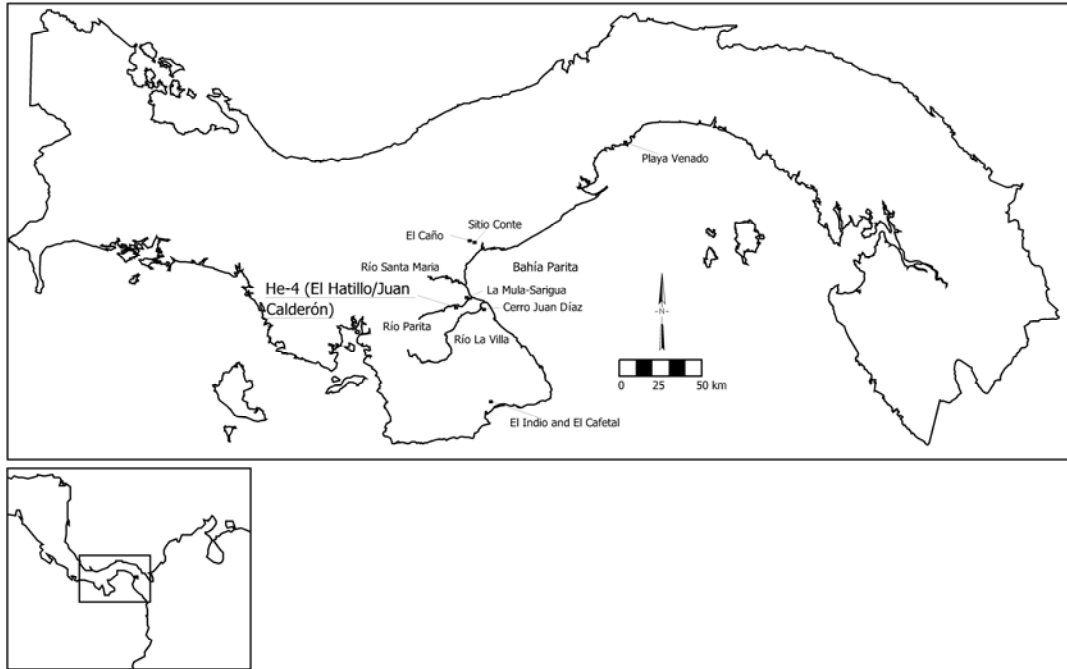


Figure 1.1 Map of Panama with sites discussed in the text.

2.0 METHODOLOGY

Chiefdoms are prime examples of early hierarchical societies that integrate many communities within a single political unit (Earle 1987). In chiefly societies differentiation between households may have been manifested through a variety of material remains such as household inventories, furniture and food (Smith 1987). In order to begin looking for evidence of differences between households, the best place to look would be at a central place community because of its large population, regional importance in social, political and economic terms (Steponaitis 1978) and, presumably, the presence of both higher and lower ranking members of society. This chapter presents the fieldwork methodology used at He-4 that makes it possible to explore household variability. This chapter also presents the artifact analysis methods and addresses certain chronological issues for the Central Region of Panama.

2.1 FIELD METHODOLOGY

The data most relevant to addressing craft specialization are household artifact inventories because they provide direct information about production and consumption (Hirth 1993a, 1993b; Smith 1987). Archaeologically this is recoverable from surface artifact concentrations and eroded midden deposits. Com

binning systematic and intensive surface collection and limited test excavations is an efficient way to acquire a large sample representative of a range of household activities (e.g. Banning 2002; Flannery 1976a, 1976b) which is a common complaint of household studies (Hirth 1993b:127). This approach to data collection takes as its focus the spatial relationships within the site in terms of the variability in household activities and the degree of differentiation in household artifact assemblages. The following sections describe in more detail the fieldwork that forms the basis of this dissertation.

2.1.1 The Intensive Survey

The first phase of fieldwork (May 9th-June 12th, 2006) was a program of intensive and systematic surface collection at He-4 (Figure 2.1) to identify patterning in artifact distribution and variability in household activities. The systematic collection of random samples of artifacts (surface artifacts are already sufficiently “randomized”) was undertaken by dividing He-4 roughly into 25 m x 25 m (625 m²) collection units.

The total area of the site was estimated by Haller (2004:Table 4.3) to be 20.4 ha, so the methodology originally called for 327 separate collection units. During this fieldwork a total of 350 collections were made, covering an area of approximately 22 ha (as drawn on the aerial photograph). The discrepancy between the number of collection units and the area covered can be explained because the collection units were not precise measured squares, but tracts of approximately 625 m², defined opportunistically in the field based on natural and anthropogenic features (hills, field fence lines, ditches) as convenient markers. Consequently, some collection units may be slightly smaller than 25 m x 25 m in area, which compounds the discrepancy between the number of collection units and the actual size of the survey.

The locations of these units were recorded using a GPS and drawn directly on aerial photographs and topographic maps (acquired from the Instituto Geografía Tommy Guardia) enlarged to a 1:5000 scale and labeled using the UTM coordinate system. Since the maximum population estimate for He-4 is 302 people during the Cubitá phase (Haller 2004:118), there would have been approximately 60 households at He-4 at its largest. The 350 systematic collections then provide a level of spatial resolution for distributional data that arrives at the sub-household level. (Each individual household is likely to be represented by several collections.).

A sample of 100 artifacts was sought from each 625 m² collection unit. This sample size would allow us to estimate artifact proportions in collection units at a 95% confidence level with attached error ranges of no more than $\pm 10\%$ (Drennan 1996b:142-144). Artifact collections were systematic, with all artifacts found in "dog-leash" circles 3 m in diameter (one in each 625m² collection unit) being collected. Previous survey at He-4 indicated that surface artifact densities ranged from as low as 0.5 per m² to as high as 101.85 per m² (Mikael Haller, personal communication). When 100 artifacts were not collected within a circle, a second circle was placed adjacent to the first, and a third when necessary, etc. In cases where poor surface visibility precluded surface collection, 40 cm x 40 cm shovel probes were placed in the center of the 625 m² collection unit. When these shovel probe did not produce 100 artifacts, additional probes were dug.

The target sample of 100 artifacts were collected most of the time, with 72.5% of collection units having at least that many (Figure 2.2); these were collected either from a single 3 m diameter circle or from numerous circles. In some cases the target sample of 100 artifacts was not reached simply because the artifact densities were so low (such as at the limits of the site) and our efforts at collecting additional circles or digging additional shovel probes became very

time consuming. In these instances collections were halted between 4-6 circles or 6-7 shovel probes. The number of circles or shovel probes was decided upon based on surface visibility. If it was fairly obvious that artifact densities were so low that it was unlikely that 100 artifacts could be collected at all, the decision was made to halt collections and move on to the next collection unit. Although this was not initially part of the methodology, it is roughly the equivalent of a “generalized” collection unit that is used in some regional settlement surveys (Drennan et al. 2003a:139; Haller 2004:28).

In retrospect this apparently arbitrary strategy may have introduced some sampling bias because the collection methodology was modified according to an impressionistic determination that artifact densities were “low,” in the entire 625 m² unit. One possible bias that this strategy may have introduced would be the inflation of artifact densities in areas where 100 artifacts were not collected, but might not have been collected even if the entire 625 m² area had been collected. In these instances artifact densities would appear lower than 0.5/ m², which approaches the lowest artifact density at He-4 (next to zero). Nonetheless, an artifact density of lower than 0.5/ m² is not likely to be considerably more meaningful in illustrating a low overall density for a particular collection unit. A second factor that contributed to smaller samples in some collection units is that in some cases objects were collected that were not actually artifacts. These include pebbles that were collected as polishing stones, some of which were discarded during the lithic analysis. Other objects collected that were discarded include stone spalls or cobbles that had no evidence of having been worked or material that was not likely to have been worked by the inhabitants of He-4.

Despite these two potential sources of bias and the failure to achieve the target sample size of 100 artifacts in some collection units, the overall effect that this has on the confidence

level is not particularly dramatic. For instance, the 2002 regional survey (Haller 2004, 2008) which identified He-4 as a central place community produced very similar artifact densities to those that are discussed in this dissertation. In the areas that Haller identified as having low artifact densities, the 2006 intensive survey also produced similar density figures.

The pace of the survey varied depending on the number of people in the field crew. On average the crew consisted of six members, constituted by some combination of students and local workers. At its largest there were a total of eight members. At the beginning of the survey with conditions of high surface visibility it was possible to completely collect an entire hectare in one day (16 collection units), although these conditions only lasted for approximately two weeks. As the field season progressed increased rainfall contributed to worsening visibility as vegetation began to cover much of the site. At this point it often became necessary to dig more shovel probes than make surface collections which slowed the pace of work. In many instances there were patches of high visibility, such as watering holes, fence lines and pathways. Despite this change in conditions, the intensive survey was completed in five weeks.

The second phase entailed artifact processing and statistical analysis at the field house in Chitré, Herrera Province (June 13th-July 19th). All artifacts collected were washed and catalogued. The ceramic analysis, based on the regional ceramic chronology (Cooke 1972, 1976; Cooke and Sánchez 1997, 2000; Cooke et al. 2000; Cooke and Ranere 1992; Griggs 2005; Hansell 1988; Isaza 1993; Lothrop 1942; Sánchez 2000), of surface collections provided a relative chronological range for each collection unit. Neither Mayo's (2007) recent synthesis of the ceramic sequence from Central Panama nor Isaza's (2007) dissertation had been published at the time of fieldwork, but both were useful for subsequent descriptions of ceramic types.

Approximately one-third of the site had to be shovel tested since seasonal rains resulted in increasingly poor surface visibility in the month of June. In order to use artifact densities from surface collections (measured in m^2) with densities of material collected from shovel probes (measured in m^3) in the same analysis it was necessary to consider the correlation between surface artifact densities and sub-surface artifact densities (Drennan 1985:137-143). There would be a perfect positive correlation, for example, if the surface collection density per square meter was always three times the shovel probe density per cubic meter, but in order to do the analysis, it would be necessary to multiply all the shovel probe densities by three to turn them into measurements of densities of material on the same measurement scale as surface collections. Even if a perfect correlation could be found, however, a conversion factor would be required to convert artifact densities into surface collection density equivalents. The densities per square meter from the surface collections are already that, of course.

The principle behind the conversion is that we want to be able to predict how what density of artifacts would likely be found in a surface collection, if we could in fact do one, based on the density of artifacts encountered in the shovel probe that was done instead. The best way to evaluate the correlation is through a linear regression equation. For the regression analysis surface collection densities were treated as the dependent variable (Y) and shovel probe densities were treated as the independent variable (X). In order to develop this equation, expressed as ($Y = bX + a$), a total of 33 shovel probes were placed in the center of 33 surface collection circles in areas of both high and low surface visibility. This experimental method allowed us to systematically explore the correlation between surface and subsurface remains. A total of five cases (collection units) were eventually excluded as outliers because they were adjacent to looter's pits and had large mounds of dirt and artifacts that numbered in the low

thousands. These large samples were ideal for the sampling program, but not for examining the relationship between surface and subsurface deposits since it introduced a bias not present in the other 28 collection units included in this analysis. Since this bias was recognized during fieldwork and recorded in field notes it justifies treating them as outliers and removing them from the comparison. Using the trimmed batch of 28 cases it was also necessary to consider how the slope of the best fit line would affect the conversion factor. If the best fit line (and the y-intercept value) was too high, it might produce higher artifact densities from the shovel probes. Since the initial scatter plot graph with the best fit line showed a slight upward tendency, it was necessary to correct for a slight asymmetry along the y axis (shovel probe densities). The square transformation (x^2) is useful for correcting a slight upwards asymmetry (Drennan 1996b:59, Figure 5.1).

As it turns out, the batch of 28 shovel probe densities needed to be transformed very little, using an exponent of only $x^{1.23}$ (Figure 2.3). This produced a best fit line with a slope that intersected the y-axis as close to zero as possible. The subsequent linear regression equation for surface collection densities and the transformed variables (the shovel probe densities) can be expressed as $Y = x(0.004) + 0.002$ ($F = 220.331$; $p = <0.0005$) with a squared multiple R of 0.894. What this means is that surface artifact densities at He-4 have a strong positive correlation with subsurface deposits and can explain as much as 89.4% of the variation seen in the cases. This is important since it means that we can be fairly confident in subsequent analyses of surface collections at He-4. This conversion factor was then applied to shovel probe artifact densities in order to make them comparable to surface collection densities. The following analyses based on density figures (e.g. population estimates) in the chapters 3-7 are based on these estimated

surface density values for units where collections could not be made and shovel probes were excavated instead.

2.2 SAMPLES AND CHRONOLOGY

Many artifacts, such as spindle whorls, lithic debitage, and beads are not very diagnostic for chronological purposes and a discussion of changing proportions over time from surface artifacts is obviously limited with surface remains. In an attempt to address this issue, the third phase of fieldwork was designed to excavate 50 1 m² test units (July 20th-Sept. 15th, 2006). In total, 48 1 m² were excavated and two contiguous 1 m² test units were expanded to 1.5 m x 1 m (together measuring 2 m x 1.5 m) in order to expose two intact features. In general test pits were located so as to sample areas with multiple periods of occupation and areas with larger samples of artifacts related to craft production (Figure 2.4). The few exceptions to this strategy are four units that were placed in areas of lower overall artifact density but that had higher densities of craft objects (e.g. axes, polishing stones, and chipped stone material) in order to investigate possible production areas. Nonetheless, using the estimate of 60 households at the site at its maximum also means that 50 test pits provided subsurface testing in 83% of the estimated household areas. These excavations provide greater chronological control and strengthen discussions of shifts in household production and consumption.

The first scientific investigations at He-4 were conducted as part of a 1948 National Geographic expedition to Panama led by Matthew Stirling and Gordon Willey (Stirling 1950; Ladd 1964:xi). Further excavations by “amateur” archaeologists and members of the Panama Archaeological Society (Bull 1965; Dade 1972) followed, but were not well reported. In

addition, there is evidence for extensive looting in all areas of the site. Prior to the 2002 regional survey work of Haller (2004, 2008), virtually nothing was known of the residential population at He-4. The subsequent 2006 fieldwork builds upon the relatively coarse-grained survey data.

The test units excavated as part of this dissertation project relied heavily on the publication of the Stirling and Willey excavations at He-4 (Ladd 1964) in order to anticipate what kind of stratigraphy to expect and to gauge the depth of bedrock. The profiles from this previous work at He-4 (Ladd 1964) indicate that the depth of cultural deposits is generally less than 150 cm. Only two off-mound test units were excavated by Stirling and Willey (Ladd 1964:33, 43) through midden fill near Mound III. Bedrock in Trench 8 was reached at 150 cm. In Trench 10 unmodified bedrock was encountered at 130-150 cm; burials cut into bedrock were excavated to 260 cm (Ladd 1964:Figure 6). The maximum depth of any test unit during the 2006 season was 223 cm although the majority was less than 150 cm deep. In some cases the soil was so shallow that bedrock was reached at 30-40 cm.

During the 2006 excavations it was often possible with six workers (three per test unit) to excavate two 1 m² units in one day, although the pace of work depended on the hardness and compactness of the soil, presence of features and density of artifacts in the matrix. Test units were excavated using 10 cm arbitrary levels, when natural layers were not visible. This pace of work was not always possible, however, and the hardness of the clay soils and variable depth of bedrock (in some cases greater than 2 m) slowed work considerably. The excavation of the test units proceeded with shovels and digging sticks when the soil was too hard or compact. Layers were excavated by hand using trowels and masonry and geologists hand-picks when large concentrations of artifacts were encountered. In total 44 of 48 units (91.7%) were excavated to bedrock. In cases where bedrock was not reached the decision to halt excavations was based on

the absence artifacts; in most cases artifact densities were very low in the 40-50 cm before clays were called “sterile.” All deposits were screened through 6 mm mesh. The fourth phase of research was the processing and analysis of artifacts recovered from the test excavations (Sept. 16th-Nov. 7th, 2006).

Taken together, the horizontal and vertical components of this fieldwork provide a diachronic perspective on the relationship between craft specialization and wealth accumulation in the emergence of chiefdoms at He-4. The spatial component of this analysis is paramount to addressing craft specialization in political development, and the data from surface collections is integrated with material from test excavations. The following chapters will present a picture of household economic organization and household differentiation for each ceramic phase at He-4. When these spatial distributions are considered alongside one another it will be possible to see the timing of any changes in craft production and household status and whether these shifts are contemporaneous with the socio-political changes known for the Río Parita valley and Central Panama more broadly.

2.3 ARTIFACT ANALYSIS METHODOLOGY

2.3.1 Ceramics

The ceramic typology followed for the He-4 assemblage is based on the available published regional chronology for the Central Region of Panama (Cooke 1972, 1976, 1984; Cooke and Sánchez 1997, 2000; Cooke et al. 2000; Cooke and Ranere 1992; Hansell 1988; Isaza 1993; Ladd 1964; Linares 1977; Lothrop 1942; Mayo 2007; Sánchez 2000) and is one of the most well

defined sequences for Central America south of the Maya area (Sheets 1992:Table 1). The Central Region typology has recently been refined through the study of stylistic change (Sánchez 1995; Sánchez and Cooke 1997). The improvement of the chronology has also been possible due to the excavations at Cerro Juan Díaz which have provided new C14 dates and greater resolution (Cooke et al. 2000; Isaza 2007; Mayo 2007). Consequently the typology used for He-4 is broadly similar to the one used at Cerro Juan Díaz as well as by John Griggs (2005) for the Atlantic watershed. The typology used for He-4 follows closely the system employed for the Río Parita valley (Haller 2004, 2008) and Haller's type collection was used, and expanded, during the ceramic analysis. The ceramic analysis for He-4 was greatly facilitated by the classification of vessel types excavated from the burial mounds in the late 1940's (Ladd 1964). The Ladd (1964) volume provides detailed descriptions of the ceramics from these mortuary contexts although subsequent revisions have refined this classification. Finally, approximately one third to one half of the ceramic assemblage was analyzed with the help of Licenciado Luis Sánchez (Cerro Juan Díaz Archaeological Project and STRI).

The regional ceramic typology for the Central Region of Panama employs the Type-variety system (Sánchez 1995) and focuses on paste, surface decoration (e.g. polychrome, bichrome, incising, and application) and vessel form (based on rim profiles). The ceramics at He-4 were separated using these three attributes and were classified according to Type. In many cases attributes diagnostic of different varieties were missing; consequently the distinction between different polychrome varieties, for example, the Macaracas type, "Pica-pica" and "Ortiga" varieties was not recorded. Instead, the system devised for He-4 sorted the assemblage into three main ceramic groups: 1) painted; 2) incised and/or plastic decoration; and 3) undecorated. The painted group consists of painted types (bichrome and polychrome) that are

diagnostic for chronological periods and have associated radiocarbon dates (e.g. Cooke et al. 2000). The distinction between painted styles is based on iconographic motifs (e.g. subject matter), individual design elements, the use of space in the design, the execution of the design and the evolution of vessel forms and particular paste types (e.g. Linares 1977; Lothrop 1942, 1950). The incised group is sorted by types that are described as being associated with a particular painted style either through similarities in paste type or vessel form or found in association with painted vessels in dated mortuary features (Cooke et al. 2000; Sánchez 1995). The incised group can also be placed into a chronological framework although this group was given less attention in some of the first studies of ceramic groups (e.g. Ladd 1964). This group can be sorted according to paste composition (e.g. red-buff, buff and “smoke” ware) as well as the method of incising or surface application and the kind of surface treatments (protrusions, zoomorphic elements, anthropomorphic elements,). The association of undecorated pottery with the painted groups is based on paste composition and rim profiles.

Each ceramic group at He-4 was further sub-divided according to vessel form (olla, jar, plate, pedestal plate, bowl, bottle, effigy, figurine, zoomorphic vessel). In some cases it was difficult to determine whether the vessel should be classified as, for example, a cup or a jar or bowl or plate, and thus was recorded as an indeterminate category (e.g. bowl/plate). In some cases the distinction between painted styles was also difficult and intermediate categories were used in this instance as well. The degree of continuity in paste composition in the latest ceramic phases, such as Macaracas, Parita and El Hatillo, at times made it difficult to distinguish between unpainted sherds or sherds with a heavily weathered design. In such instances sherds were classified as Macaracas/Parita/El Hatillo (MPH). Finally, many ceramics that lacked diagnostic paint or were too heavily eroded to identify to period had to be placed within an

“unknown/unidentified” category. These ambiguities in the ceramic typology for the Central Region are relatively minor and the ceramic typology is one of the most refined in all of Lower Central America with some of the shortest ceramic phases (Isaza 1993; Sheets 1992:Table 1). As a result, the occasional difficulties in differentiating periods is a relatively minor problem and should not be seen as a hindrance to discussing the timing of social change.

The more significant issue that arises from lumping together distinct ceramic phases relates less to the ceramic typology than to estimating changes in regional population in the Río Parita valley. For example, it is possible that the Parita/El Hatillo distinction may in fact be confusing late Parita mortuary wares with non-mortuary ceramics and treating this as two different ceramic phases (Luis Sánchez, personal communication 2006). Moving beyond basic time-space issues, this has very real implications for the study of social change in the Río Parita valley. If the El Hatillo painted ceramic types are in fact a late component of the Parita ceramic phase then it forces a reconsideration of population dynamics immediately prior to Spanish contact in the 16th Century (e.g. Haller 2004:102; Isaza 2007:418)

2.3.1.1 Chronology and Mixing

The issue of mixing is serious for surface collections and shovel probes as well as for disturbed contexts in test units. Nonetheless, it is necessary to create rough chronological divisions in order to begin to discuss change over time, particularly in terms of the intensification of craft production. One problem that arose in trying to divide the lithic, shell and faunal assemblages by phase was the mixing of artifacts collected in either surface collections or shovel probes. There are very few collection units with only a single ceramic phase represented. The chronological division of the 10 cm arbitrary levels in the test excavation units was also difficult in some instances, due in part to the homogeneity of the soils, lack of visible cultural layers, and mixing

of deposits from agricultural activities or looting. As a result there are very few clearly definable early contexts (i.e. Tonosí).

In order to deal with this mixing, it was necessary to place artifacts found in a mixed collection unit in one of the ceramic phases represented by the sherds in that unit. For example, if five chipped stone flakes were found in a unit with 30% Cubitá sherds, 20% Conte sherds, and 50% Parita/El Hatillo sherds, it was difficult to determine where those flakes should be placed for the phase-by-phase lithic analysis. It soon became apparent that the Macaracas, Parita and El Hatillo sherds and the indeterminate category of MPH was represented in much greater quantities in virtually all collection units. If collection units were divided up using the highest proportion of sherds to determine where to place stone tools or other artifacts, virtually all of them would end up in the MPH category and it would be impossible to discuss craft production for the earlier phases. In the situation described above, the five flakes would be placed in the MPH category because at 50%, it was proportionately the most represented. A much lower, but arbitrary cut-off point of 15% was established for the Cubitá and Conte because they were simply not represented to the same degree as MPH. Although this practice means that some lithics or other artifacts that did not belong to the Cubitá or Conte phases might have mistakenly been treated as such, overall the proportion of lithics was roughly proportional to how well that phase was represented in each collection unit.

An additional criterion for defining chronological divisions was diagnostic lithic artifacts. In cases where a pear-shaped axe was found in a collection unit with a high proportion of early ceramic material, it seemed reasonable to place any other lithic material as contemporaneous. Similarly, in the arbitrary 10 cm excavation levels the association of diagnostic lithics, such as trifacial points or La Mula unifacial knives with mixing non-diagnostic lithic or shell was

considered adequate justification for defining that level as Cubitá or Tonosí (or otherwise). Finally, when several sequential 10 cm levels were dated in this way, the lithic assemblages were combined. That is, if the last three levels of an excavation unit were classified as Cubitá, and each contained one flake, this was entered into the analysis as a sample of three, rather than three samples of one. Clearly this methodology is not ideal and it is possible that in some instances the chronological placement of a collection unit will be wrong.

Despite these shortcomings, it is still possible to make some statements using the rough chronological divisions in conjunction with anecdotal evidence such as evidence from secure contexts or features excavated in the test units. In order to do this a sample of unmixed contexts can be compared alongside the patterns for the longer phases. There are several excavated contexts that provide a much clearer stratigraphic sequence, derive from spatially distant households (or collection units) as well as relatively large ($n > 5$) lithic samples. Again, this is not ideal, but the coarse-grained nature of this chronological information is adequate to examine variability in lithic assemblages.

2.3.1.2 Chipped stone

The He-4 lithic assemblage was analyzed using a recording system devised by Christian Peterson for work in China (Peterson 2006: Appendix A) and later modified for use in the Alto Magdalena of southwestern Colombia and records information regarding raw material, tool type, tool completeness, manufacturing technique, reduction stage, and use (or reuse). This system was modified for use in the Central Region of Panama by removing irrelevant tool types and incorporating types noted by researchers (Cooke and Ranere 1992; Hansell 1987; Ranere and Cooke 1996; Ranere 1975, 1980) that are chronologically diagnostic or particular to the region. Formal tools were analyzed using the available published typology and descriptions. Tool

classes, such as La Mula unifacial scrapers/knives, trifacial points, serrated points, etc. were also measured. The attributes measured (mm) include: blade length, blade width, base length, base width, haft length, shoulder to base notch, width and thickness (Hansell 1988:Tables 2-5; Haller 2004:140, Table 6.1).

The analysis of lithic debitage and informal tools was organized to obtain information about production strategies (use of raw material, conservation of raw material, etc.) and focused on flake size and cortex. Flakes were classified as primary, secondary or tertiary (e.g. Andrefsky 1998) using the percentage of cortex on the dorsal surface as the main criteria. A variety of other attributes were considered when a piece was classified but these were not recorded systematically (e.g. platform preparation, overshot terminations, bipolar flaking, etc.). The rationale for this is that given the relatively expedient nature of Late Ceramic lithic assemblages (Ranere and Cooke 1996:75) it did not seem particularly important to distinguish, for example, whether a flake had been made by soft or hard hammer percussion.

2.3.1.3 Polished and Ground stone

The polished and ground stone assemblage at He-4 was classified using the same recording system as the chipped stone assemblage and focused on raw material type, tool type, completeness, manufacturing method (e.g. pecking, smoothing, grinding, and polishing) and reuse.

Polished stone axes and chisels were analyzed following the typology for the Central Region as well as for Chiriquí where the technology was broadly similar (Hansell 1987; Ranere 1975, 1980; Ranere and Cooke 1996; Ranere and Rosenthal 1980). Hansell (1988) separates axes (celts) into two broad chronological categories: pear-shaped and trapezoidal. In general the pear-shaped axes date to late first millennium B.C. and early first millennium A.D. That is, these axes

are characteristic of the Late Ceramic I ceramic phases of the La Mula (B.C. 250-250 A.D.), Tonosí (A.D. 250-550) and Cubitá (A.D. 550-700). Trapezoidal axes are more characteristic of the Late Ceramic II ceramic phases of the Conte (A.D. 700-900), Macaracas (A.D. 900-1100), Parita (A.D. 1100-1300) and El Hatillo (A.D. 1300-1522) ceramic phases. There is some overlap in the transition between pear to trapezoidal axes as Lothrop (1937:301-302) describes many pear-shaped axes found in the Sitio Conte burials, and Mayo and Cooke (2005:153, Figure 12) discuss trapezoidal axe and chisel use in a predominantly Cubitá shell workshop at Cerro Juan Díaz. For this lithic analysis pear-shaped axes were treated as belonging to the La Mula and Tonosí phases and trapezoidal axes were treated as belonging to the Cubitá to the El Hatillo phases.

Measurements of axe attributes were recorded for bit width, bit thickness, poll (the butt) width, poll thickness, overall thickness, and length (for whole artifacts). The coding system (Appendix A) employed allows for numerous manufacturing techniques that may be visible to be recorded. These are coded for their location as well (e.g. one side, one end, one face, all over, etc.). Polished axe debitage was also analyzed following Ranere's (1980:132-133; Ranere and Rosenthal 1980:476) criteria for identifying axe production and repair. The main criterion for distinguishing production vs. repair is the presence of polish on debitage flakes. For this analysis the amount of polish (as opposed to presence/absence) was also recorded and classified as: 1) none; 2) <50%; 3) >50%; and 4) 100%. The following attributes were also measured in order to compare axe size and shape with other sites in the region: length (mm), width at bit, bit thickness, poll width, poll thickness and overall thickness.

The identification of polishing stones was based on the presence of areas of polish and distinct facets that indicate used surfaces. The location of either polish or facets (or both) was

undertaken macroscopically and with low power magnification of 10X and 20X using a Bausch and Lomb geologists' hand lens. If these attributes were not visible, the piece was discarded. Occasionally the shape of the stone was a good preliminary indicator that a piece may have been used as a polisher because several elongated stones are illustrated by Ladd (1964:Plate 18, figures j-n) as "worked stone" and are very similar to several examples recovered from the 2006 investigations. John Griggs (2005:Figures 170 and 171) also illustrates two types of "whetstones" used to sharpen axe bits.

2.3.1.4 Shell

The shell artifacts recovered from surface collections and excavation at He-4 were analyzed to genus and species using the comparative collection for the Río Parita valley provided by Mikael Haller 2004. This comparative collection was created in 2002 by Mikael Haller and Diana Carvajal who is currently analyzing the shell and fish assemblages from the ceramic components at Cueva de los Vampiros, Panama. It was also noted whether or not particular species of shell were edible or not. All material recovered from He-4 that was not consistent with Haller's comparative collection was later identified by Carvajal at the STRI labs (November, 2006) in Panama City. Any remaining unidentified shell included in the database consists of fragments that were too small to identify with any confidence. Some of this material was identifiable only as bivalve, gastropod, etc. The shell assemblage was counted and the state of completeness was noted (e.g. whole or fragmentary). The presence of the umbo defined whether the piece was categorized as "whole;" if the umbo was absent it was classified as fragmentary (Claassen 1998:16-18, Figure 4). The total counts for the assemblage (NISP values) are also useful when discussing species exploitation (Grayson 1984:24-26).

2.3.1.5 Worked shell

The worked shell recovered at He-4 was categorized using the typology developed by Julia Mayo (Mayo 2004; Mayo and Cooke 2004) based on a shell workshop excavated at Cerro Juan Díaz. The identification of finished products at Cerro Juan Díaz was largely possible due to the clear association of shell debitage and shell working tools (e.g. chopping tools, flake blades). Mayo's study presents a production sequence from raw material (whole shells/"cores") to blanks, preforms and various finished products. Finished items include several classes of pendants such as geometric, zoomorphic, and asymmetrical (Mayo 2004:100-175, Figure 24) as well as functional implements such as cutting and scraping tools and perforators (Mayo 2004: 176-218).

The analysis of shell at He-4 was conducted using this typology (Mayo 2004). Some items were examined at 20X magnification in an attempt to identify cut marks. If cut marks were visible the piece was recorded as worked, however, no attempt was made to record more specific information, such as their orientation or location. Unfortunately many pieces recovered did not display any evidence of cut marks but had been fractured into pieces resembling the preforms illustrated in Mayo (2004). An additional problem with the identification of shell production at He-4 is post-depositional damage, particularly trampling and weathering. For example, the natural cleavage planes of the shell *Anadara grandis* were used by the indigenous crafts people to produce pendant blanks. These same cleavage planes also produce fresh breaks when trampled by cattle, humans or machinery and over time may be difficult to distinguish from pieces intentionally broken in antiquity. This limits the discussion of shell working as a craft activity at He-4. Furthermore, *Anadara grandis* is a soft shell that weathers easily; the production stages identified by Mayo are often easy to confuse with shell that may simply have broken and become

rounded through exposure to the elements. Consequently, the identification of worked shell was often tentative unless cut marks were obvious or the final form was distinctive.

Despite these problems, the distribution of shell at He-4 is still informative as to the use of this material, particularly activities that did not require any modification. For example, unworked shell likely indicates consumption of the meat as a source of protein for the inhabitants of He-4 and unworked shell may have been used in pottery production to smooth edges or used as cutting and scraping tools. As a result, an exploration of the spatial and temporal distribution of shell at He-4 is informative as to potential use in craft activities (either as a tool or as a product) and as food.

2.3.1.6 Faunal Remains

The faunal remains recovered during this research were identified to genus and in many cases to species by Richard Cooke and Maximo Jiménez in November 2006 using the extensive comparative collection at the Smithsonian Tropical Research Institute in Panama City, Panama. Mikael Haller also assisted in a reexamination of deer remains in the summer of 2007. At present the faunal remains have been identified and counted in order to produce a NISP estimate; MNI was not calculated and the remains were not weighed to estimate meat weights.

2.3.1.7 Human remains

All human remains recovered during this research were analyzed by Claudia Díaz from September to November, 2006. The data recorded include (when possible): age, sex, and any identifiable pathologies. No evidence of trauma was found. All of the human remains were fragmentary and poorly preserved, including cremated remains placed inside whole vessels and

interred in a burial or offering. This clearly limits the amount of information that can be drawn from this material.

2.4 SUMMARY

In sum, the combination of surface collection and limited test excavations was an effective means of testing the entire site as well as collecting artifacts from household contexts. Given the research questions outlined in Chapter 1, this field methodology was the most appropriate strategy to address household variability over time. While other strategies, such as larger horizontal excavations might have provided more precise contextual associations, this would have limited the discussion of household variability and would have introduced concerns about sample size. The weaknesses of the methodology, of course, are the advantages just listed for larger excavation programs. That is, there may be some question regarding the precise chronological placement of some artifacts. Sacrificing this for the sake of being able to discuss much broader changes at the community of He-4 is the trade-off.



Figure 2.1 Surface collection during the first phase of fieldwork at He-4.

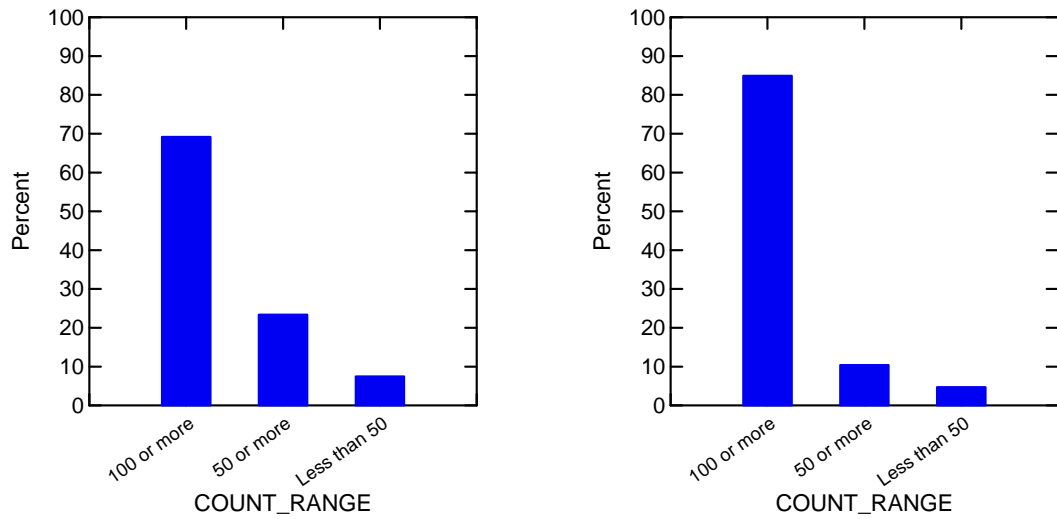


Figure 2.2 Proportion of collection units (surface collection units and shovel probes) with more than 100 artifacts.

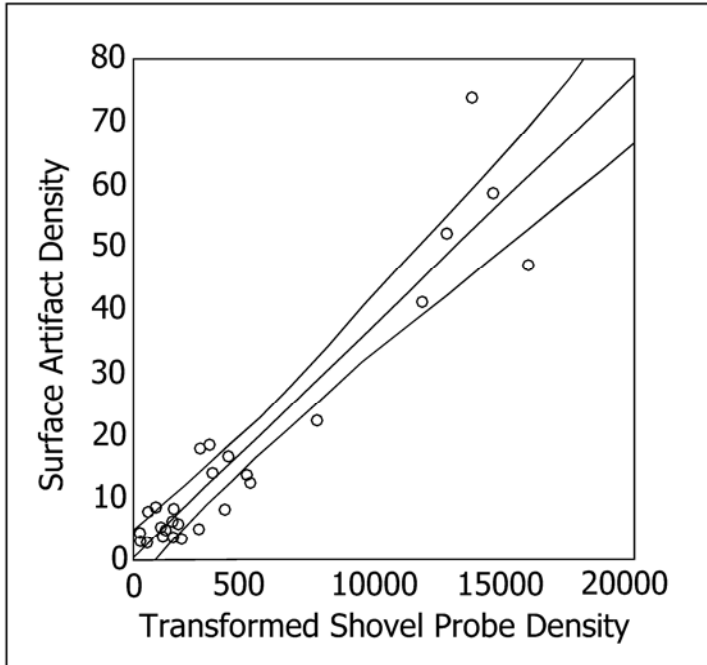


Figure 2.3 Linear regression analysis scatter plot with best-fit line showing a 95% confidence interval.

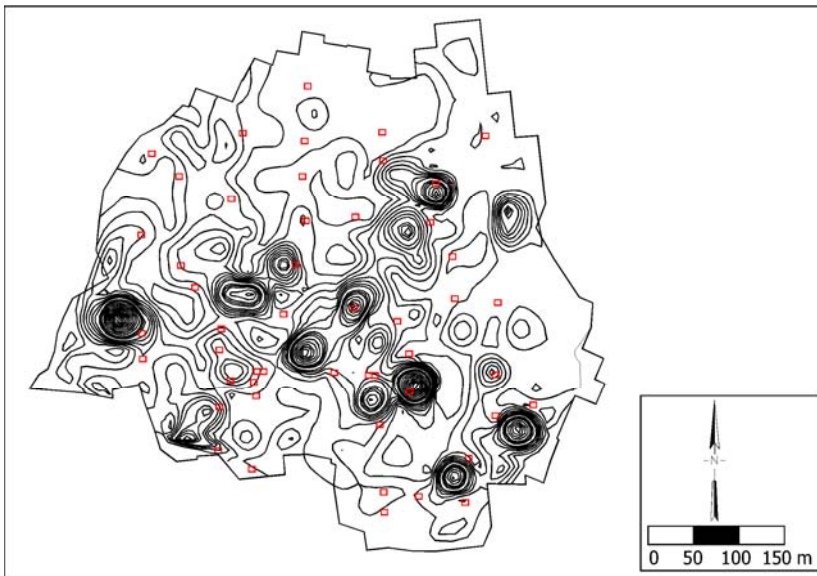


Figure 2.4 Contour map of total artifact density at He-4 with the location of test units shown in red.

3.0 THE EARLIEST OCCUPATION AT HE-4 (250 B.C.-A.D. 550)

3.1 THE LA MULA PHASE (250 B.C.-A.D. 250)

The earliest agricultural villages in Central Panama appear during the La Mula ceramic phase (250 B.C.-A.D. 250) as coastal populations began to settle many of the coastal river valleys to establish agrarian villages (Cooke 1984; Cooke and Ranere 1984; Cooke and Sánchez 2004:26; Haller 2004; Isaza 2007; Weiland 1984). Large population aggregations persisted in some areas along the Pacific coast, however, such as at La Mula-Sarigua (Hansell 1987, 1988; Ranere and Hansell 1978).

The La Mula phase (250 B.C.-A.D. 250) occupation at He-4 is minor to the extent that it is represented in this study by a single sherd recovered from a stratigraphic test excavation unit (test unit 20-05; Figure 3.1) at a depth of 80 cm. If we take this test unit to be equivalent to one surface/shovel collection unit, it suggests a La Mula phase occupation not much larger than .0625 ha (or one collection unit of 625 m²). Five La Mula points (unifacial knives) were also recovered during fieldwork in 2006. Of these five points, two were collected as surface finds and another three were found in stratigraphic test units. It is possible that these points represent a larger La Mula phase occupation and if the two surface collection units where these points were found are included, the site size estimate would be .21 ha. It does not make much sense, however, to include the three La Mula points from excavated contexts in the estimate of site size

for the La Mula phase for the same reason that all test units are excluded from population estimates. Although these tools are considered diagnostic of the “third millennium B.P.,” (Ranere and Cooke 1996:67; Cooke and Ranere 1984:40), Hansell (1988:206) speculates that narrower La Mula points (less than 2.2 cm wide) might be somewhat later (i.e. the early Tonosí phase).

The single La Mula sherd recovered during test excavations in 2006 is the only unequivocal evidence for occupation at this time at He-4, which might have consisted of only a single nuclear family or perhaps an even more ephemeral utilization of this location. The 2002 regional settlement pattern data is consistent with this observation as Haller (2004:65, Table 4.2) recovered a single La Mula point, and no La Mula sherds (Mikael Haller personal communication, 2008) in one of his collection units, leading him to reconstruct La Mula phase He-4 as a small farmstead of approximately .60 ha (the size of the collection unit where the single point was recovered).

The regional settlement pattern data also indicates that as much as 72% of the regional population (that is, between 35 and 89 people) in La Mula times was concentrated within approximately one square kilometer around La Mula-Sarigua (Haller 2004:62-63), while the remainder of the population (between 14 and 34 people) was spread out in small farmsteads further up into the valley (Haller 2004:Table 5.3). In its regional context, the La Mula phase occupation at He-4, then, must have been much like these other small, internally undifferentiated, settlements located some distance from the next closest hamlet or farmstead (Haller 2004:62-63).

Both regional-scale survey and more intensive study at He-4 agree that La Mula phase He-4 had a very small occupation, perhaps just a single farmstead. Such a small group of people is probably too small to even describe as a community and certainly does not allow for the

appearance of social differentiation beyond the division of labor within an agrarian household unit (Yanigisako 1979). Although He-4 is the only site in the lower Río Parita survey zone to be occupied from the La Mula phase right up until Spanish contact (Haller 2004:Table 4.2), such sparse occupation there between 250 B.C.-A.D. 250 is relatively unimportant to the origins of chiefdoms.

3.2 THE TONOSÍ PHASE (A.D. 250-550)

During the subsequent Tonosí phase (A.D. 250-550), He-4's population increases to the point that it is no longer an isolated farmstead, but rather a loose amalgamation of households scattered some distance from one another. A total of 31 Tonosí sherds were found between 21 different data collection units which includes both surface/shovel collections and 1 m² stratigraphic test units (Figure 3.2). A total of 15 Tonosí sherds were collected from 11 surface/shovel collections. Three surface collection units with Tonosí sherds were also tested with stratigraphic test units and a small number of Tonosí sherds were found in some of these excavations (Figure 3.2). Finally, there were seven stratigraphic test units with Tonosí sherds, but where none were recovered from the corresponding surface/shovel collection. Most collection units (surface/shovel and test units) had between one and two Tonosí sherds although test excavation 19-01 had the highest number of Tonosí sherds (n = 4). These sherds were found at 90 cm, 110 cm, and 120 cm below the surface. The total area of all the collection units where Tonosí material was recovered either by surface/shovel collection or stratigraphic testing is 1.37 ha.

Since not all surface/shovel collection units with Tonosí material were tested with stratigraphic test units, it is more systematic to derive population estimates using only

surface/shovel collection units. Doing so means that the area of Tonosí occupation totals only .84 ha and the sample consists of 15 sherds from 14 collection units. One way to estimate the population of Tonosí phase He-4 is to take the total area of occupation, estimate the number of households based on the area of a house lot, and multiply this by the number of people per household (e.g. Linares and Sheets 1980). The distribution of collection units with Tonosí material (Figure 3.2), however, shows that most surface collection units are not contiguous, making an estimate of this type unfounded. This method would presume that the Tonosí occupation resembled a village with a greater degree of nucleation than is evident from the distribution of Tonosí sherds.

Taking into consideration the dispersed distribution of Tonosí sherds from surface collections, we can instead treat each surface collection with Tonosí sherds as a household. Contiguous collection units are counted as one household and non-contiguous collection units as individual households. Following this approach, there are 11 households situated some distance from one another (Figure 3.2). An alternative approach to estimating the number of households at He-4 is to plot the density of Tonosí sherds (sherds/m²) as a contour map (Figure 3.3). If each peak in density (areas of tightly clustered contour lines) is treated as a single household, the contour map also shows as many as 11 Tonosí phase households. The estimate of 11 households, however, assumes that each was continuously occupied for the entire 300 years of the Tonosí ceramic phase, which given the small and dispersed nature of He-4 during this phase is probably not accurate. From the contour map of the density of Tonosí sherds there are at least eight areas of high density and three of lower densities (Figure 3.3). The areas with the lowest density of Tonosí sherds are located in the northern areas of the site, and might be taken to represent households occupied only for a short time during the 300 year phase. If we treat units with the

lowest density of Tonosí sherds as households that were not occupied for the whole phase, an estimate of as few as eight households at He-4 during this time is possible.

The figure of five people per household is often used in archaeological population estimates since ethnohistoric and ethnographic accounts suggest that most agrarian households were not much larger than this (Hassan 1981; Marcus 1976; Kolb 1985). Population estimates are derived from multiplying the number of households by the figure of five people. The upper population estimate for He-4, based on 11 households, would be 55 people. The lower estimate is based on eight households because the three households represented by lower sherd densities might have been occupied only for short periods of time. The lower population estimate is 40 people. The range of population for Tonosí phase He-4 then would be between 40-55 people, or 8-11 families.

In sum, Tonosí phase He-4 was a small community of several families; maybe as few as two or three and possibly as many as 10 or 11. The remainder of the valley's population was widely dispersed throughout the valley into small farmsteads which were probably not much bigger than a single family, and a handful of hamlets that might have had two or three families (Haller 2004:70, 126; Figure 4.10). With the virtual abandonment of La Mula-Sarigua during Tonosí times, and the dispersal of the population further into the valley (and possibly along the coast as well), there is no indication of any site in the Río Parita valley effectively drawing population together. Nonetheless, there is a scatter of seven farmsteads located near He-4 (Haller 2004:70, 72, Figure 4.10) during this time that emphasizes how He-4 was beginning to become differentiated as a settlement, although internally it remained only a loose cluster of households. The small population and lack of nucleation suggests that interaction between households at He-4 was not very intensive and would imply a high degree of household self-sufficiency (Drennan

and Peterson 2006; see also Berrey 2008). Taken together, the nature of household interaction does not provide the context in which social inequalities beyond age, sex, and occupation tend to occur. Nonetheless, He-4's growth and the beginning of settlement clustering around the site foreshadow something in the way of regional centralization (see also Haller 2004:68).

3.3 SOCIAL DIFFERENTIATION

Differences in household ceramic inventories at Tonosí phase He-4 appear to be minimal. Although the Tonosí phase ceramic assemblage at He-4 is small, there are some interesting patterns. The first is that access to highly decorated pottery was not exclusive to only one or a few households, but to over half of the Tonosí phase families at He-4. The distribution of Tonosí trichrome sherds shows that six of the 8-11 households at He-4 had access to these types of vessels. Secondly, incised pottery or appliqué wares are concentrated in only two households at He-4. Although this might indicate some kind of restricted access it is difficult to evaluate this at this time given the small sample of Tonosí sherds and the real possibility that this is a result of the vagaries of sampling. The third main pattern is that bichrome and plain vessels are present in the same proportions in the assemblage (approximately 32% each) and are found in practically all of the Tonosí phase households. Finally, there do not appear to be differences in access to tools manufactured from high quality raw materials. These two lines of evidence (ceramic and lithic) suggest that there were no real differences between households during Tonosí times at He-4. This is consistent with the expectation that such a small and loosely aggregated community would not be the kind of social context for material differences between families to be very well developed, although the patterns in ceramic distributions must be treated with caution because of

the very small sample of sherds for this period and the very real possibility that all we are seeing is the effect of the vagaries of sampling.

3.4 CRAFT PRODUCTION

It is not possible to discuss craft production for the La Mula phase at He-4 given the ephemeral occupation between 250 B.C. and A.D. 250 (see above). The earliest substantial occupation at He-4, during the Tonosí phase (A.D. 250-550), provides the first opportunity to discuss household economic organization and craft production, even though the dataset consists only of 11 lithic formal tools. These tools did not come from contexts with higher proportions of tools, but rather from contexts that were unmixed. In only one case was more than one tool found in the same collection unit, making it practically impossible to compare proportions between households since each (except one) would have either 0% or 100% of something. There are five La Mula unifacial points (Figures 3.4 and 3.5) and six pear-shaped axes, or celts (Figures 3.6 and 3.7). Although these tools are generally considered diagnostic of the La Mula ceramic phase, this might not be the case at He-4. There is no real ceramic evidence of a La Mula phase occupation to speak of, but the distribution of La Mula points does generally fall within the contour lines that were used to define Tonosí phase households (Figure 3.3). Hansell (1988:110, Tables 59-70) also notes that there may be two chronologically distinct types of La Mula points, with the narrower unifacial points being later. The unifacial points from He-4 cluster with the wider points. Pear-shaped axes have also been found in association with Middle Ceramic phase (La Mula to Cubitá) occupations on the Atlantic watershed of Coclé province (Griggs 2005:49, 96,

Figure 42), suggesting that they could have been made into the Tonosí and Cubitá phases in the Río Parita valley as well.

The distinctive La Mula unifacial point (Figure 3.4) is thought to have been important for a variety of daily household tasks, such as light wood-working or more general cutting and scraping tasks (Cooke and Ranere 1992; Ranere 1975; Ranere and Cooke 1996; Hansell 1988). Low-power usewear analysis of edge damage on La Mula points also indicates their use as perforators or gravers (Hansell 1988:107). The widely scattered distribution of the five La Mula points (Figure 3.5), with no more than one in any collection suggests that these tools were used in most households at He-4.

There is no evidence for the production of La Mula points at He-4, largely because there are no cores or debitage in the Tonosí phase lithic assemblage. All of the La Mula points at He-4, however, are made from inferior cryptocrystalline silicates (Figure 3.4) that were presumably available throughout the Río Parita valley, and probably close to He-4. La Mula points, then, seem to reflect the ordinary domestic activities of most, if not all, Tonosí phase households. They at least provide no basis for suggesting economic specialization, either in terms of their production or use.

Pear-shaped axes (Figure 3.6) are generally considered to have been used for heavier wood-working tasks, (Griggs 2005:49) such as land clearance (Kozák 1972:23), house construction, and a variety of agricultural activities (Carneiro 1979). Some experimental evidence also suggests that they might have been useful as butchering tools (Einhaus 1980), although it is doubtful that this would have been their primary purpose since expedient flake tools are probably much more effective for this purpose (Binford 1979). The six pear-shaped axes are less evenly distributed between the 8 to 11 identified Tonosí phase households than the

La Mula points are (Figure 3.7). Instead, three of the six axes are found in one or two households in the center of the site. A fourth was found at the edge of what becomes the mound group after A.D. 900. The remaining two axes are divided between two households in various other parts of the site (Figure 3.7). Probably most households used these axes for a variety of tasks, although the pattern of distribution might suggest that some households were more intensively involved in subsistence activities or other tasks requiring heavier tools like axes. This pattern is certainly not strong enough to indicate restricted access to these tools, especially given the small size of the sample. There is no evidence for pear-shaped axe production at He-4 during the Tonosí phase. This is similar to other sites in the Río Parita valley, including La Mula-Sarigua where axes were presumably made by specialists at some other location (Hansell 1988:124, 233-234). Cooke and Ranere (1992:281) also note that the Proyecto Santa María “transects located a number of axe-preparation workshops in the foothill and cordillera zones, where basalt axe blanks were whittled down for subsequent transportation.” They also propose that inhabitants of the coastal Pacific plain might have made provisioning trips to the cordillera to rough out axe blanks, suggesting an organization of exchange very different than one based on trade with communities in the cordillera (Cooke and Ranere 1992:281).

Ethnoarchaeological studies suggest that such communities are probably located closer to the source of raw material (e.g. Hayden 1987). As valuable agricultural tools, pear-shaped axes were probably also curated and repaired. At least one of the six axes in the He-4 tool assemblage (from one of the households in the central area of the site) has evidence for recycling after breakage. The poll (the butt end) of this tool has been reworked to make it a flat edge for use as a hammer and there is evidence of battering on this face. This type of recycling is also noted for axes at La Mula-Sarigua (Hansell 1988:130, 135) and recycling and repair of tools is a common

measure of how difficult it is to acquire new tools (Hansell 1988:136). Since only one of the pear-shaped axes at He-4 has evidence of recycling, it is probably reasonable to argue that obtaining axes was not very difficult.

In sum, then, the lithic assemblage provides only the most tentative of evidence for household specialization at He-4 during the Tonosí phase in the form of possible concentration of pear-shaped axes in a household or two at the center of the site. The possibility that both of these tool types (especially pear-shaped axes) was produced by specialists at some other location and acquired from there by residents at He-4 cannot be ruled out.

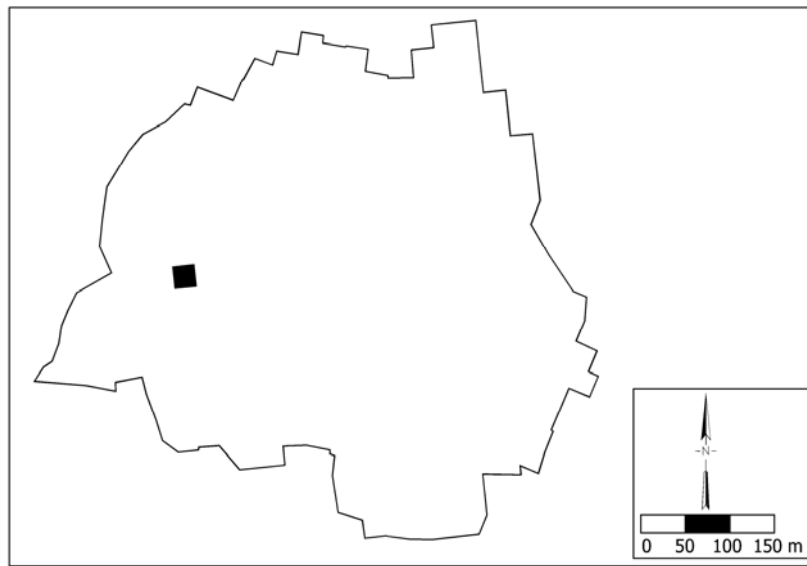


Figure 3.1 The collection unit with the stratigraphic test unit where one La Mula's herd was recovered.



Figure 3.2 All collection units with Tonosí sherds. Hatched units had Tonosí sherds in surface/shovel collections as well as in stratigraphic tests located in them ; black units had Tonosí sherds only in stratigraphic tests; and white units had Tonosí sherds only in surface/shovel collections.

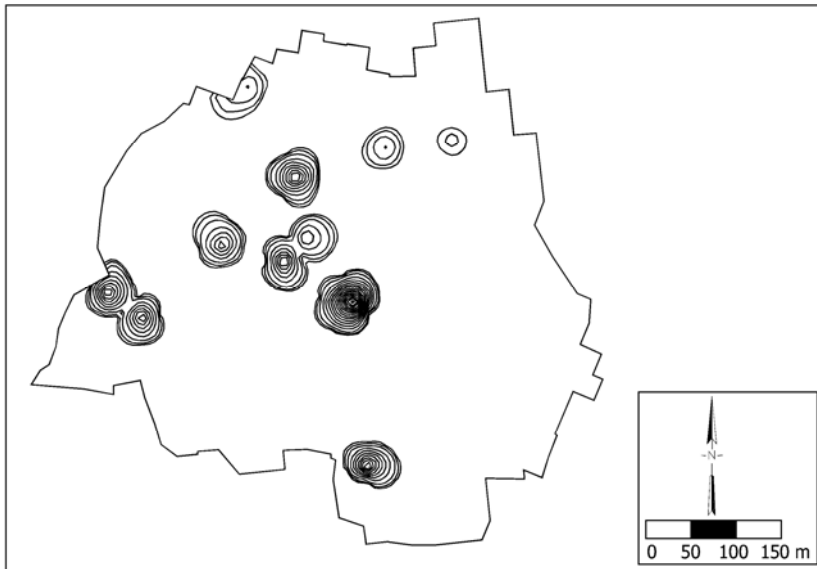


Figure 3.3 Contour map of surface collection and shovel probe density of Tonosí sherds.



Figure 3.4 A La Mula uniface knife. Scale is 5 cm.

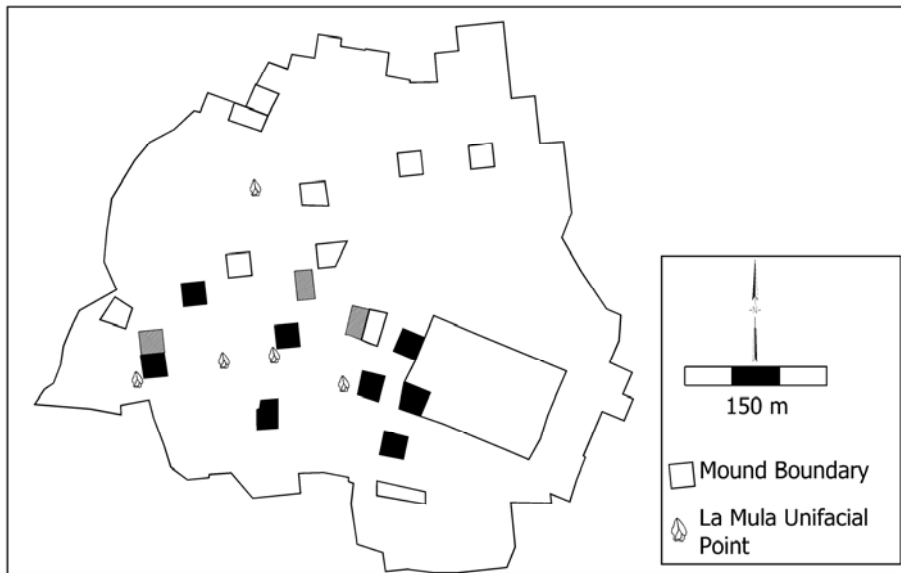


Figure 3.5 Collection Units with Tonosí phase ceramics and the distribution of La Mula Points.



Figure 3.6 A complete pear-shaped axe from He-4. Scale is 5 cm.

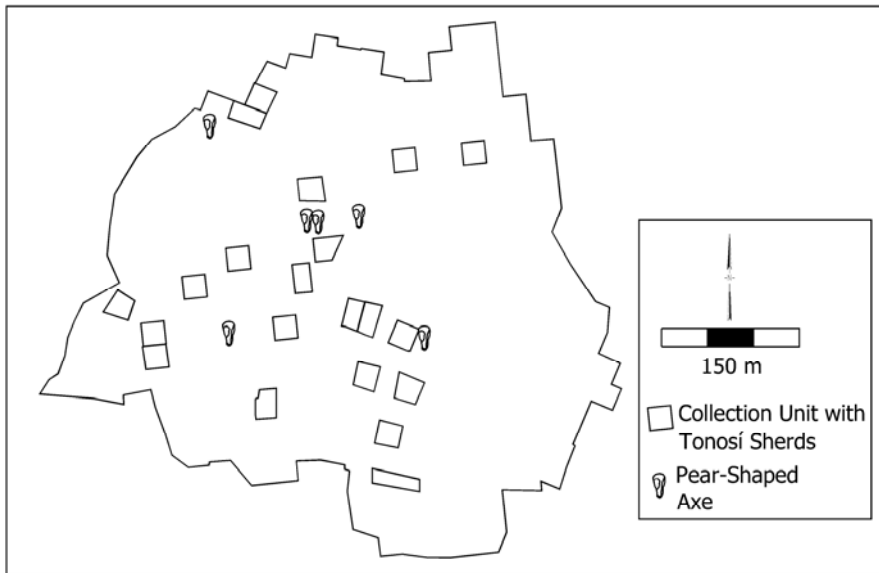


Figure 3.7 Distribution of pear-shaped axes and collection units with Tonosí sherds.

4.0 THE GROWTH AND DEVELOPMENT OF HE-4 DURING THE CUBITÁ PHASE (A.D. 550-700)

The Cubitá phase represents the last, and most recently redefined (Sánchez 1995), division of the Late Ceramic I and is represented at He-4 in the form of 800 sherds. Cubitá material was recovered from 213 data collection units; 175 surface collections or shovel probes and 38 test excavations (Figure 4.1). This material is widely distributed across the site and is found in the majority of collection units. No single collection unit or stratigraphic test unit had more than 62 identified Cubitá sherds. Based on the distribution of Cubitá material recovered from the intensive survey and the excavation of stratigraphic test pits, the Cubitá occupation at He-4 is 12.54 ha (Figure 4.1). Excluding sherds from stratigraphic test units, the distribution of Cubitá sherds in surface/shovel collection units gives an area of 11.28 ha (Figure 4.1) and is the figure that will be used in the subsequent analysis. While the Cubitá occupation does not cover the entire maximum extent of the site, it is for the first time a large continuous area despite the gaps in occupation (Figure 4.2). The growth in the total occupied area at He-4 from .84 ha during the Tonosí phase to 11.28 ha in the Cubitá phase represents a 13 fold increase.

It is not possible to estimate the number of households at He-4 for the Cubitá phase using the same methodology as for the Tonosí phase because the large areas of contiguous occupation make the identification of individual households impossible. There is enough Cubitá material, however, to make it possible to apply the same kind of density-area calculations used in the Río

Parita regional survey (Haller 2004). The advantage of using density-area calculations for estimating populations is that they serve as a measure of the accumulation of garbage in a place proportional to the number of people who lived there in a period making that garbage (Drennan et al. 2003b:156-157). For each collection unit of approximately 1 ha, Haller (2004:Table 4.2), following Drennan et al. (2003b), multiplied the surface density of sherds of a particular period (in sherds/m²) by the actual area of the collection unit (in ha) and divided the product by the number of centuries in the period. The resulting density-area value was multiplied by 13 people for a minimum population estimate and by 52 people for a maximum estimate (Haller 2004:126). These minimum and maximum values were derived by Haller (2004:118-119) by determining population densities from archaeological and ethnohistoric data for the large nucleated settlement of Natá.

The density-area value for Cubitá He-4 from the intensive survey is 1.65, yielding a population estimate of 21-86 residents, less than one-third the population of 75-302 people estimated by Haller (2004:119). It seems likely that differences in ceramic classification account for the discrepancies between the regional and intensive surveys. First, it is possible that the difference in the proportion of total identified sherds might explain the difference in population estimates. For example, the regional survey analysis might have included more Cubitá sherds simply because more sherds were identifiable to phase (8.49%) than in the intensive survey (6.75%). This could mean that sherds that might have passed unidentified in the intensive survey analysis were counted in the regional survey analysis. To adjust for the difference between analyses, the minimum and maximum population density estimates of 13 and 52 people can be rescaled by the difference in the proportion of identified sherds, which is 25.8%. Rescaling the population estimates produced here gives new figures of between 26-108 people. The effect of

the difference of the proportion of total identified sherds between analyses appears to have been relatively small because the new minimum and maximum population density figures are relatively close to the original values.

If Cubitá sherds were not being identified in the same way between analyses there could also be a noticeable effect on the proportion of Cubitá sherds in each ceramic assemblage, which would affect population estimates accordingly. That is, it is possible that some criteria used in the regional analysis to identify Cubitá sherds were not used during the intensive survey analysis. Even small differences in classification criteria would have a large impact on the proportion of Cubitá sherds, the density-area values derived from these proportions, and consequently, population estimates. The difference in the proportion of Cubitá sherds between the regional (9.69%) and intensive (6.92%) assemblages is 40%. Using this difference to rescale the population density figures produces minimum and maximum values of 36 and 151, adding the 40% increase on top of the 25.8% increase, now that the previous discrepancy is removed. It appears possible that minor classificatory differences affected the proportion of identified Cubitá sherds to a larger extent than the proportion of total identified sherds. The intensive and regional survey analyses, then, lead to somewhat different population estimates, although both suggest a substantially larger Cubitá phase community at He-4, possibly numbering into the low hundreds.

The dramatic demographic growth at He-4 transforms the community from one of a handful of small and relatively undifferentiated villages consisting of a few families, to the focus of population nucleation in the Río Parita valley. An important consequence of this impressive growth is that He-4 comes to sit at the head of a centralized regional settlement system (Haller 2004:75), of the kind thought to be created by self-aggrandizing leaders and elites (Hayden 2001). The Tonosí phase pattern of smaller communities clustering near He-4 also continues into

the Cubitá phase (Haller 2004:Figure 4.11) and shows that He-4 had not only grown substantially larger, but was also exerting a considerable pull on the populations of the other settlements in the valley. These other settlements consisted of only one to five families each, but they were strongly concentrated in the same part of the valley as He-4 (Haller 2004:126) There is very limited mortuary evidence for the Cubitá phase at He-4, but what evidence exists suggests that the area where the mound group is later constructed (sometime after A.D. 900) was beginning to be used for a small number of simple burials (Haller 2004:78). If this “special function” area was in use at this time it would suggest that He-4 had already become a focus of important ritual and religious activities in the Río Parita valley. In social terms, the regional importance of He-4, the concentration of people numbering perhaps into the low hundreds within this community, and its ritual and religious importance represent the context that might allow social hierarchies to develop. It is this kind of social context in which aspiring elites might emerge and households might become differentiated based on social status, access to goods (wealth differences), and household activities such as craft specialization. The social, political and economic importance of the community at He-4 will be explored in greater detail in the following sections on household differentiation and craft production.

4.1 COMMON DOMESTIC ACTIVITIES

The following analysis excluded all samples of less than five Cubitá sherds since these would produce misleading proportions; these were treated as “missing data” and the data points for these collection units were not included among the data points used to produce the contour maps. Conversely, collection units with more than five Cubitá sherds were included in the

subsequent analyses (n = 39). Collection units with no Cubitá sherds were included since a value of 0 in these collection units represents a true zero (i.e. no Cubitá sherds) and not simply missing data.

There are two categories of relatively plain utilitarian wares: plain red wares (*Juncal*, *Guachapali*) and red-cream (*roja-crema*). These two categories of relatively plain undecorated ceramics would have been common for daily household activities. The spatial distribution of plain red sherds is widespread with 38 (97.4%) collection units with more than five Cubitá sherds having some proportion of undecorated pottery (Figure 4.3). The distribution of red-cream sherds is not as widespread (Figure 4.4) and they are only found in 10 collection units (or 25.6%). In general, the peaks of red cream wares occur adjacent to peaks of plain red sherds (Figure 4.5), reinforcing the general pattern of the widespread distribution of both types of utilitarian wares suggesting that virtually all households at He-4 during this time had an inventory of basic ceramics. Interestingly, the spatial distribution of Cubitá bichrome vessels (e.g. *Ciruelo*; Figure 4.6) is very similar to that of both plain red and red-cream sherds (Figure 4.5). Bichrome sherds are found in 32 (82.1%) of the collection units included in this analysis. Despite being more highly decorated, the distribution of bichrome sherds seems to be what one might expect for utilitarian pottery and does not suggest that they were spatially concentrated in any particular area of the site.

The spatial distribution of cooking vessels also provides insight into basic household activities such as the daily reproduction of the household unit (Yanagisako 1979). The “cooking” category includes *ollas* and *tecomates* (neckless *ollas*). When all cooking vessels (including handles) are lumped together, it is apparent from the contour maps that these sherds are widespread at He-4 (Figure 4.7). This shows that cooking was a common household activity. The

distribution of cooking vessels also maps fairly closely to the distribution of plain red and red-cream sherds discussed above. This is not surprising since the cooking vessel categories occur mostly in the plain red and red-cream types. When the cooking pattern is broken down further into *ollas* and *tecomates* there is no real difference from the general pattern observed for all cooking vessels.

Activities such as hosting feasts or religious ceremonies might be expected to occur to different degrees in different parts of the community. The spatial distribution of food serving vessels (bowls, plates, vases; Figure 4.8) is interesting since there is very little difference from the distribution of cooking vessels. As general categories of vessels, both are widely distributed between households at He-4. The peaks representing high proportions of serving vessels are not identical to the peaks in cooking vessels, however (Figure 4.9). The peaks of both vessel types tend to occur next to one another, peaking in many cases in the adjacent collection unit (approximately 25-50 m apart). Even when the serving vessel category is broken down into individual vessel types (i.e. bowls, plates, vases), there is no clear pattern of certain vessel types concentrating in one or a few different sectors of the site. This might be most clearly illustrated with the distribution of bowls, which are the most common serving vessel type, but there is no evidence for this. The patterns of adjacent peaks of cooking and serving vessels and the lack of any clustering of any type of serving vessel suggests a high degree of redundancy in household ceramic inventories and a conspicuous lack of areas characterized by higher proportion of serving vessels. This pattern of closely spaced, but distinct, peaks of material might suggest different activity areas or disposal areas between household units. These two lines of evidence show that no household at He-4 seems to have been involved in feasting activities any more than the rest.

4.2 SOCIAL DIFFERENTIATION

In spite of the lack of conspicuous evidence for differences in household feasting, there are several lines of evidence to suggest that some households can be differentiated from others based on the spatial concentration of certain elaborate Cubitá ceramic types. The first line of evidence is the distribution of highly decorated Cubitá trichrome ceramics (e.g. *Nance*, *Caracucho*, *Cábimo*, *Guábilo*; Figure 4.10). A total of 23 (59.0%) collection units with more than five Cubitá sherds have trichrome sherds, indicating that access to highly decorated pottery was not exclusive to one or a few households. Nonetheless, the contour peaks do show that there are four main clusters of this material: in the northwest, in the southeastern corner and the largest concentration is located in the central area of the site. These central peaks are particularly interesting because they cover an area that would probably have included several households and is made up of eight collection units, which gives an area of approximately 5000 m². This material probably represents trash from several households, but the important point is that they are clustered in a relatively small, but central, location. The contour peak in the southeastern corner of the site is also interesting because it is within the area that becomes the mound complex during the Macaracas phase (A.D. 900-1100) and represents the earliest occupation in this zone.

The distribution of incised sherds (e.g. *Macano*), present in much lower proportions in the ceramic assemblage, shows that they are relatively uncommon in households at He-4 (Figure 4.11). Their distribution corresponds closely to peaks in the proportion of trichrome vessels although incised sherds are not exclusive to one or a few households. In some cases the contour peaks representing higher proportions of incised sherds occur in the same areas that have peaks of trichrome vessels. Finally, the single Cubitá *vaso* sherd, found in a collection unit in the center of the site (Figure 4.12), corresponds with those households with the highest proportions of both

trichrome and incised sherds. Although a single *vaso* sherd might not be enough to talk about exclusive access, it is extremely rare since there are a total of 800 identifiable Cubitá sherds. Consequently, it represents approximately a tenth of a percent (or 0.125%) of the Cubitá phase ceramic assemblage.

Another way in which households might have been differentiated is through diet (Storrey 1992). There are a total of 33 animal remains (NISP) associated with the Cubitá phase occupation at He-4, and the entire sample comes from one surface collection unit (07 R1) and one shovel probe (98 D1; Figure 4.13). The chronological placement of the faunal sample was decided using the same procedure for stone tools. Since samples of less than 5 were excluded from other kinds of analyses, the following proportions are based on the 32 bones (NISP) from shovel probe 98 D1 (96.9% of the Cubitá faunal assemblage) in the southwest corner of the site. The majority of the faunal remains (n = 23; 71.3%) are classified as “large mammal,” although they are likely white-tailed deer (*Odocoileus virginianus*) since this is the largest non-human mammal in Panama (Richard Cooke, personal communication 2006). Faunal remains that could be positively identified as white-tailed deer are few in number (n = 2; 6.25%). There is a small sample of fish bone (12.5%; n = 4) two of which could be identified to Family without microscopic analyses (not performed in this analysis) and are classified as puffer fish (Tetraodontiform). A small amount (6.25%) of iguana (*Iguana iguana*) and rabbit (*Sylvilagus*; 3.13%) was also recovered. Given the limited spatial distribution of faunal remains, the Cubitá faunal assemblage does not allow for comparisons between households at He-4. At the very least the high density of faunal remains in the single shovel probe does inform us as to the degree of faunal exploitation during the Cubitá phase. All of the terrestrial fauna would have been found in the anthropogenically modified (to varying degrees) environment near He-4 and likely

throughout the Río Parita watershed as well (Cooke and Ranere 1989). There is presently no data, however, to evaluate whether or not the household represented by the single shovel probe is an “average” Cubitá phase household at He-4 or if this family tended to have access to a much more diverse range of animal products than most other households at He-4 during this time.

4.3 SUMMARY

In sum, the ceramic evidence points to the presence of a few households that had fancier and more diverse ceramic inventories, although there is no evidence to evaluate how these households might have been differentiated by diet (if at all). The differences in the spatial distribution of these fancy and rare vessel types and the diversity of the ceramic assemblage in the center of the Cubitá community at He-4 (Figure 4.14) make it possible to identify the emergence of some households that were differentiated somehow. It is interesting, however, that this same area was not differentiated based on higher proportions of serving vessels. It appears that while some households began to enjoy a higher quality of life in terms of material possessions, this differentiation did not necessarily extend to all aspects of daily life.

The emergent household differences that appear at He-4 during the Cubitá phase, do not encompass all of the possible ways that households might be differentiated (e.g. Santley 1993). Nonetheless, the emerging differences between households during this time is important in the context of the appearance of socio-political centralization in the Río Parita valley (Haller 2004) and the Central Region more broadly, because they accompany analogous differences that appear in the mortuary record. For example, there is limited differentiation in the “community” cemetery at Cerro Juan Díaz (Cooke and Sánchez 2000; Cooke et al. 2000; Cooke et al. 1998

Cooke et al. 2003; Díaz 1999), in household burials in the Tonosí valley (Briggs 1989; Ichon 1980) and at the community of Sitio Sierra (Cooke 1984) At Cerro Juan Díaz where the small number of grave goods, reuse of “oven” burial features, and presence of personal adornments such as shell and shell jewelry, and differential burial treatment based on sex (Cooke et al. 1998; DeYoung 2008; Díaz 1999) are generally interpreted as a society with relatively minor status differences. Bone isotope data for a small sample of remains from Sitio Sierra and La Mula-Sarigua suggest differences in diet by gender (Norr 1991:154) and is consistent with the pattern observed at Cerro Juan Díaz Area A (Díaz 1999). For the Phase III burials at El Indio and La Cañaza, (contemporaneous with Cubitá, Conte and Macaracas ceramic phases) Briggs observes that social differentiation is increasingly marked with several graves (3, 25 and 29) being more conspicuous than the other 35. Particularly important are the presence of costume elements, use of more formal cemetery space and an increase in unique grave goods, including gold and *tumbaga* metalwork and carved marine shell adornments. All of this is suggestive of “an increase in stratification beyond age” (Briggs 1989: 62-63). Even more conspicuous in terms of emergent differences is Feature 1 at Cerro Juan Díaz, dated through relative means to the Cubitá period. This feature contained an adult male with the following grave goods: two hammered gold plaques with raised spirals, two incense burners, jaguar and puma teeth and “400-odd tubular *Spondylus* beads” (Cooke and Sánchez 2003:20).

When the emerging household differences at He-4 are considered alongside the Cubitá phase mortuary record for Central Panama, it suggests that the antecedents to the pattern of wealth accumulation characteristic of later periods (e.g. the Conte phase) has its roots in how individuals or households were differentiated in daily life. The identification of a few distinctive households at He-4 during the Cubitá phase shows a marked change from previous periods in the

Río Parita valley in which social differences were relatively minor. Clearly the differences between households at He-4 are not nearly as dramatic when compared to the later Sitio Conte graves, but it is possible that the antecedents to the practice of burying important individuals with large amounts of wealth can be found in Cubitá phase household contexts. Unfortunately the evidence for Cubitá phase He-4 is ambiguous in terms of investigating the basis of this household differentiation in more detail, particularly whether the social system was based on economic control or ideological or religious factors. This would allow us to understand more clearly the conspicuous changes in social organization, household differentiation and mortuary practices that occurred over only 150 years. Richard Cooke and Luis Sánchez (2003:20) have suggested that the more elaborate burials at Cerro Juan Díaz are shamans, rather than wealthy individuals and this is one scenario that is consistent with the household data collected from He-4. The relatively modest differences in household assemblages do not suggest dramatic differences in wealth accumulation.

4.4 CRAFT PRODUCTION

The available evidence to discuss craft specialization at Cubitá phase He-4 comes almost exclusively from the assemblages of chipped, polished and ground stone tools. These tools would have been used for a variety of basic agricultural activities typical of agrarian communities. The following spatial analysis will explore to what degree households were differentiated based on their involvement in basic subsistence and daily household tasks (i.e. the degree of household self-sufficiency or inter-dependency). Unfortunately only three excavated contexts provided clear associations between Cubitá ceramics and stone tools. As a result, the

majority of the stone tools included in this analysis come either from mixed stratigraphic layers or surface collections. Stone tools from these mixed units were considered to be associated with Cubitá ceramics when the proportion of these ceramics was above 15%. This is obviously not an ideal methodology for dealing with mixed deposits since it introduces a considerable amount of random noise into the discussion. The alternatives, which are to discuss samples of lithics from only three sample units, or to not discuss lithics for this period at all, are not very satisfying. More importantly, the issue of chronological control was considered in the development of the research design for this project and the collection strategy was explicitly focused on comparing smaller samples of artifacts collected over a large area, rather than comparing larger datasets from fewer larger horizontal excavations. The former approach is much more amenable to discussing household activities at the community-scale (Binford et al. 1970; Flannery 1976a:51; Pollock et al. 1996).

As a result of the chronological issues, the sample of lithics for the Cubitá phase is small ($n = 78$). The results of such analysis can only be taken to provide a very tentative indication of the distribution patterns of lithic tools in the Cubitá phase. The production of the contour maps for the Cubitá lithics differs from that of ceramics because the samples of lithic artifacts from individual collection units are small. There are only three contexts with more than five lithic artifacts, and only four collection units with more than four lithic artifacts. If the collection units with less than three artifacts ($n = 21$) were excluded, the contour maps would only have seven data entry points. Consequently, all collection units with Cubitá lithics were included. Because of this the proportions of artifacts must be treated with caution because many of the peaks that represent a proportion of 100% are only reflecting a single stone tool.

The spatial distribution of chipped stone flakes and of chipped stone cores is widespread at He-4 during this time and there is no evidence that these items were produced or consumed differentially by some households (Figure 4.15). There are five main peaks of exhausted cores (n = 9 cores). Cores represent a relatively low proportion of the Cubitá lithic assemblage (11.5%). This is not surprising because the ratio of cores to flakes tends to be very low since dozens, if not hundreds, of flakes can be produced from one core (Cotterell and Kamminga 1987). Nonetheless, the spatial distribution of cores illustrates that most households were making their own flake tools. The distribution of chipped stone flakes also lends support to this argument (Figure 4.15). The contour peaks for chipped stone flakes show a widespread distribution and roughly the same proportions of these tools in most collection units. In part this pattern is a result of including seven collection units with only one lithic artifact (a flake) and so these proportions could partly be due to the vagaries of sampling. Nonetheless, it appears that flakes were made, used and discarded by individual households according to their own needs. Furthermore, there is no evidence that flakes were preferentially produced using higher quality raw material or that utilized flakes were larger than unused flakes.

The spatial pattern for utilized flakes and blades lumped under the category of "cutting and scraping tools" (Figure 4.16) shows numerous dispersed peaks, although there is one continuous cluster in the northern area of the Cubitá occupation and one several hundred meters to the southwest. It is interesting that the peaks of cutting and scraping tools, including the largest clusters, occur outside of the zones with fancy pottery identified from the spatial distribution of ceramics. This raises the possibility that higher status households were not involved in cutting and scraping activities any more intensively than other households. The wide distribution of these tools also suggests that craft specialization involving cutting and scraping

tasks was not present in the Cubitá community. The one exception to this is in a single collection unit (03 I1) in the northern area of the site in which a utilized flake was found with a piece of worked shell (*Anadara grandis*), which might be taken as very tentative evidence that some kind of shell working was taking place.

There are very few agricultural tools that could be associated with Cubitá ceramics, including two complete trapezoidal axes and four axe fragments or flakes (one with polish). It is worth comparing their distribution together since there are so few of them (Figure 4.17). The spatial distribution of these tools and fragments does not show any clear patterning, although these tools are again absent from the households with distinctive ceramic inventories. The distribution of axe fragments, however, is primarily in areas adjacent to this zone. The two complete axes were found some distance away from this zone (as much as 100 m). There is only one collection unit with both a trapezoidal axe and a repair flake (an axe flake without polish) which might be taken to indicate that axe users were also repairing their tools.

The spatial distribution of other stone tools is not very informative because there are so few of them. For example, there is only a single projectile point, two polishing stones and a hammer stone. The distribution of only four manos associated with Cubitá ceramics is also misleading since they concentrate at the northern edge of the site boundary. This might be explained in terms of factors affecting surface artifact distributions. In this case the local farmers deliberately move manos and metates to the edges of cultivable fields. This is only a problem for larger and more conspicuous artifacts like manos and metates because they have the potential to damage machinery and disrupt cultivation. This should not be taken to mean that all surface artifact distributions are likely to have been affected in the same way, because no effort is made to move sherds or small artifacts.

The evidence for stone tool production and use suggests a high degree of household self-sufficiency both in terms of the production of basic cutting tools and the use and repair of important agricultural tools (i.e. axes). Given the small sample of Cubitá stone tools for individual collection units, it is difficult to discuss patterns of spatial distribution in much more detail because of the effect of sample size, the vagaries of sampling, and the random noise introduced by chronological uncertainties. Nonetheless, the only hint that any households were any more intensively involved in certain activities is the single piece of worked shell found in the same collection unit as a utilized flake. Importantly, however, households differentiated in terms of their ceramic inventories have no evidence for craft specialization for this period.

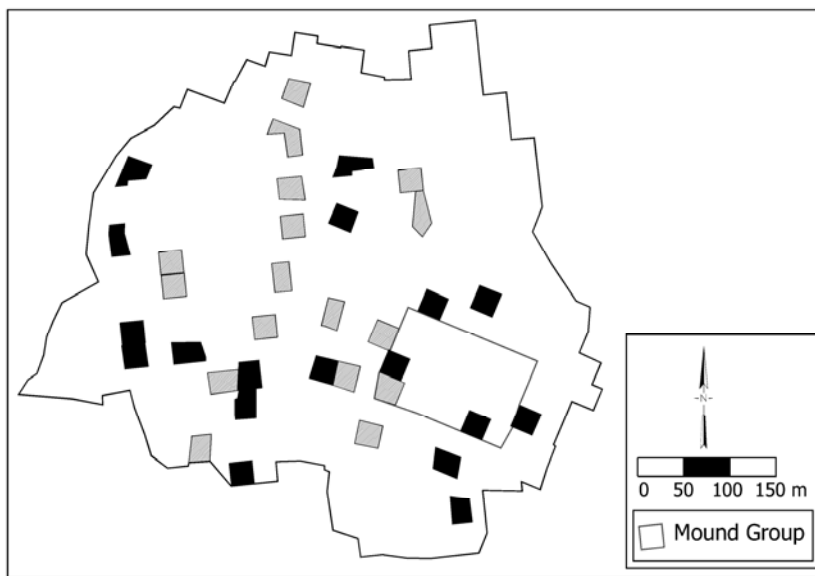


Figure 4.1 All collection units with Cubitá sherds. Hatched units had Cubitá sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Cubitá sherds only in stratigraphic tests; and white units had Cubitá sherds only in surface/shovel collections.

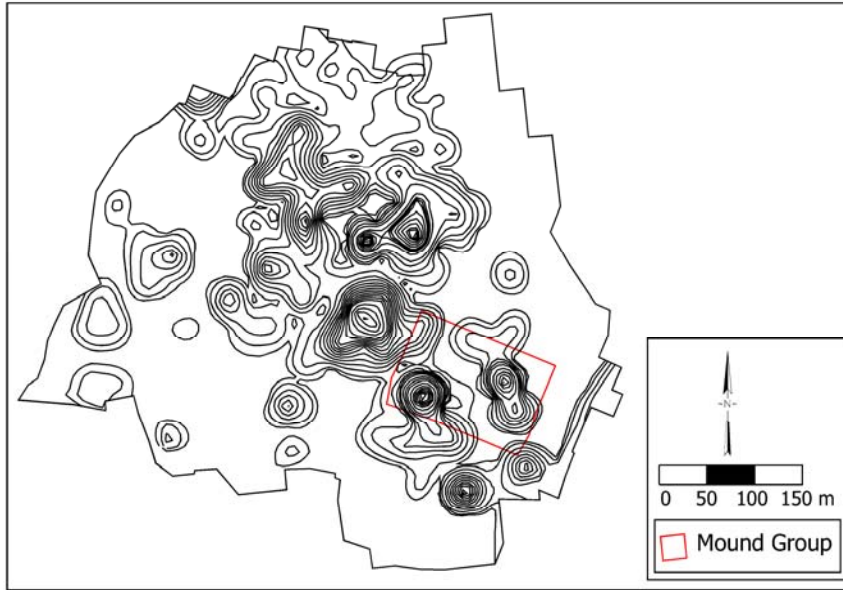


Figure 4.2 Contour map of Cubitá sherd densities from surface and shovel probe collection units.

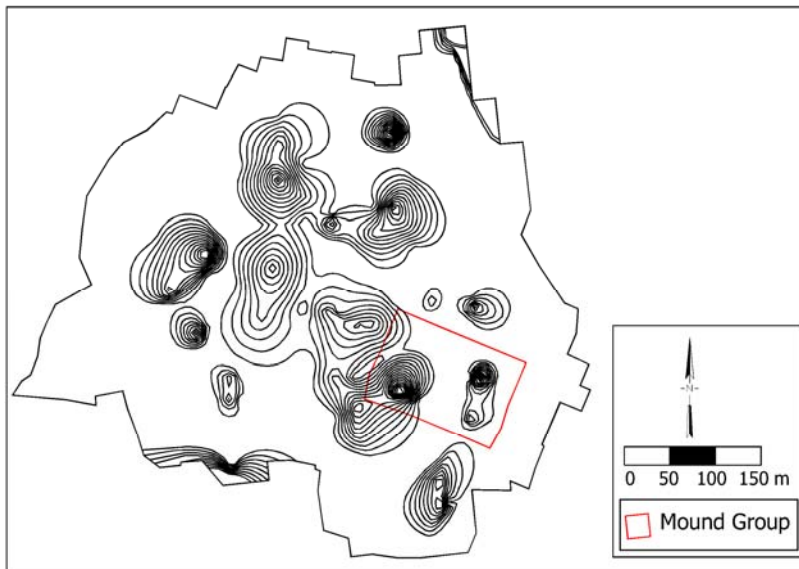


Figure 4.3 Contour map of proportions of plain red Cubitá sherds (Juncal and Guachapali).

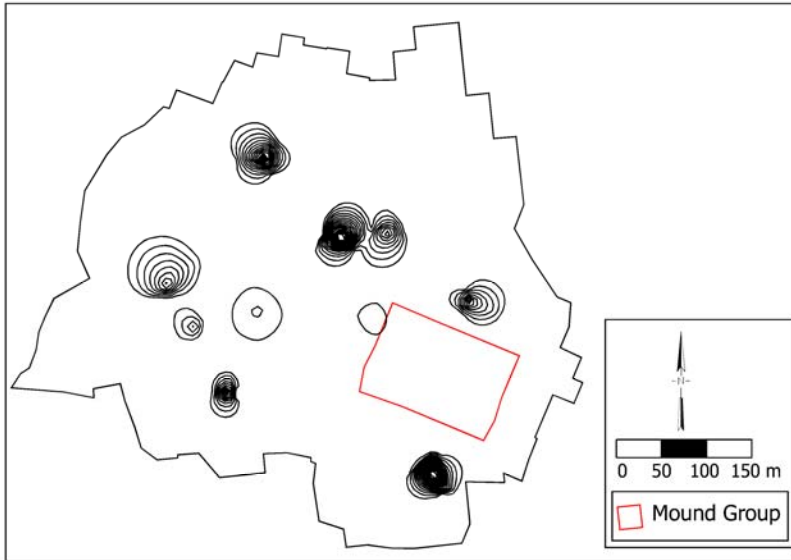


Figure 4.4 Contour map of proportions of Cubitá red-cream sherds.

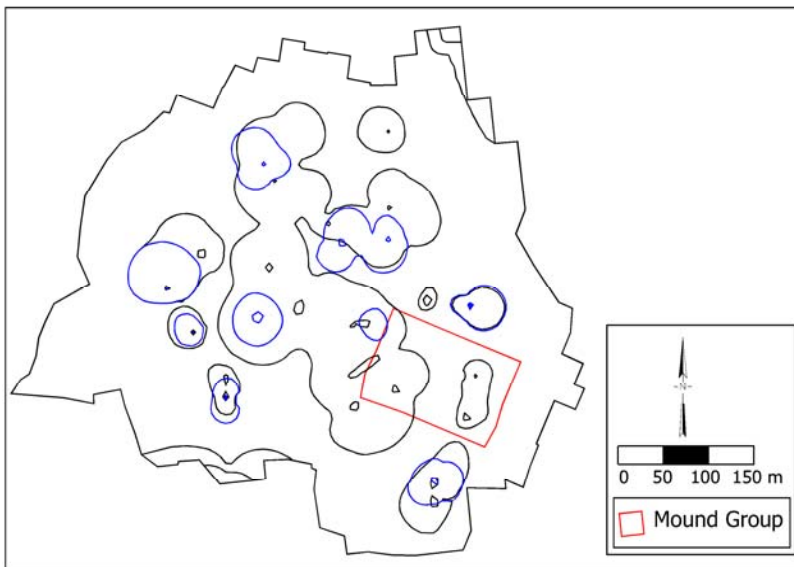


Figure 4.5 Contour map of proportions of Cubitá plain (black contour lines) and red-cream (blue contour lines) sherds.

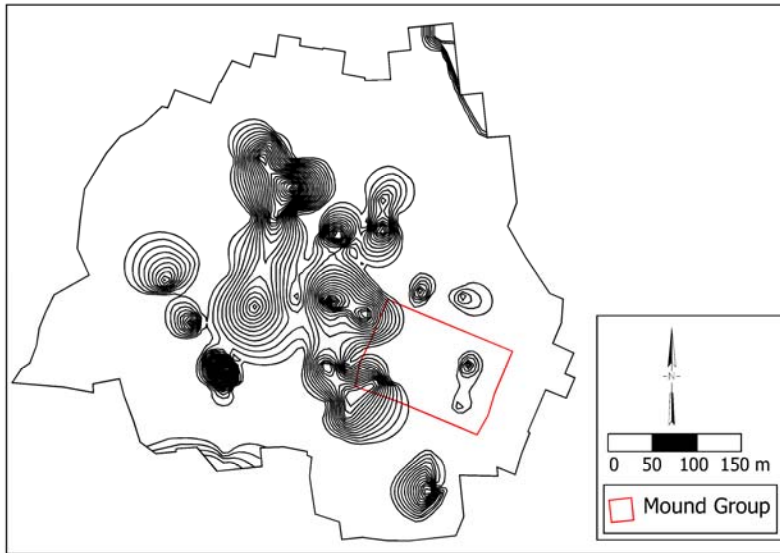


Figure 4.6 Contour map of proportions of Cubitá bichrome sherds.

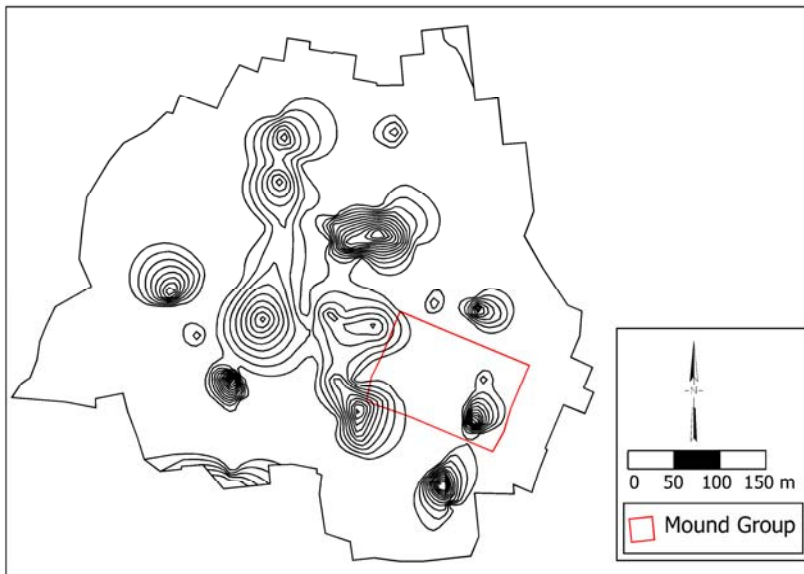


Figure 4.7 Contour map of proportions of Cubitá cooking vessel sherds.

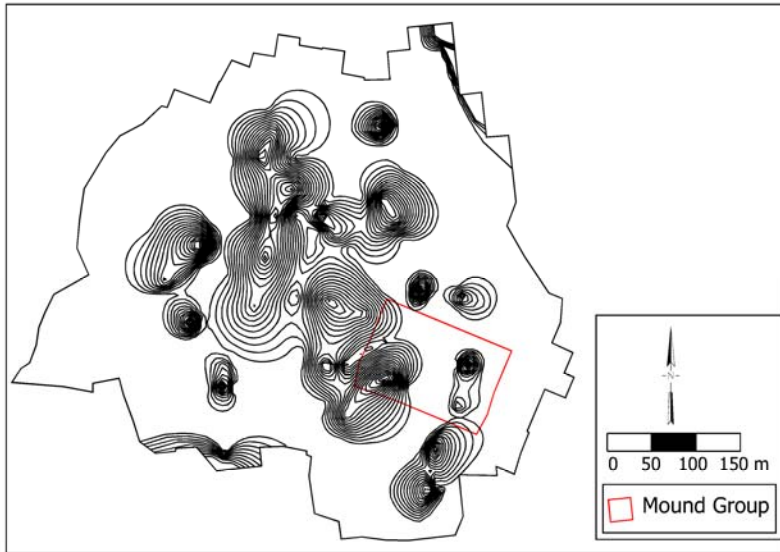


Figure 4.8 Contour map of proportions of Cubitá serving vessel sherds.

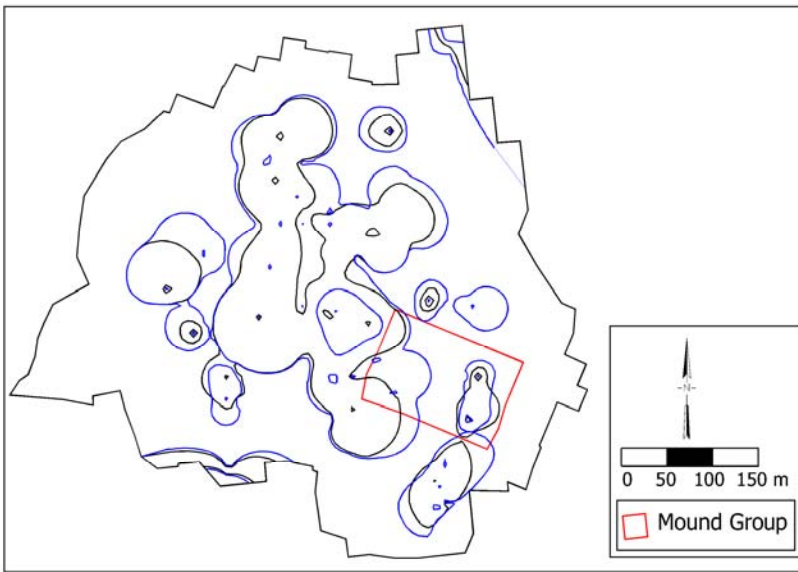


Figure 4.9 Contour map of proportions of Cu bitá cooking (black contour lines) and serving (blue contour lines) vessel sherds.

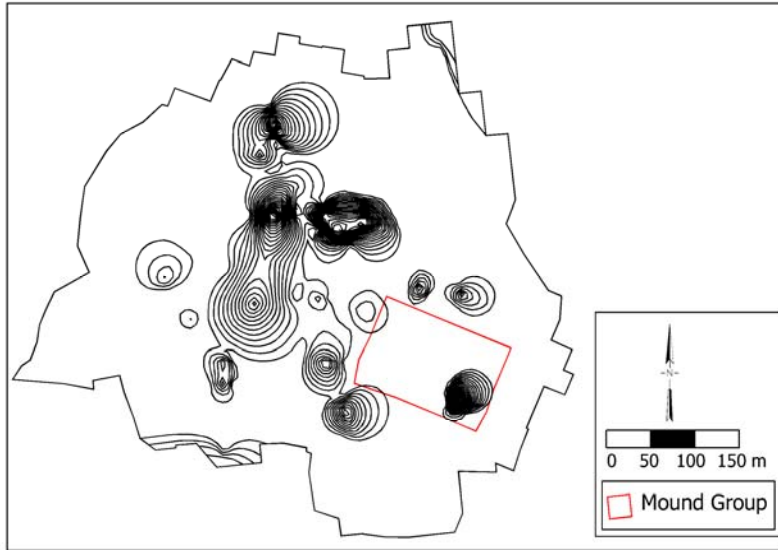


Figure 4.10 Contour map of proportions of Cubitá trichrome sherds.

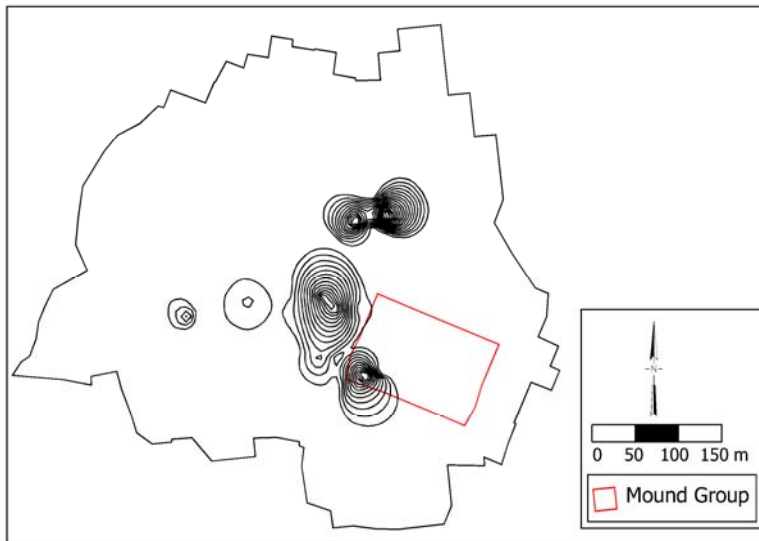


Figure 4.11 Contour map of proportions of Cubitá incised sherds.

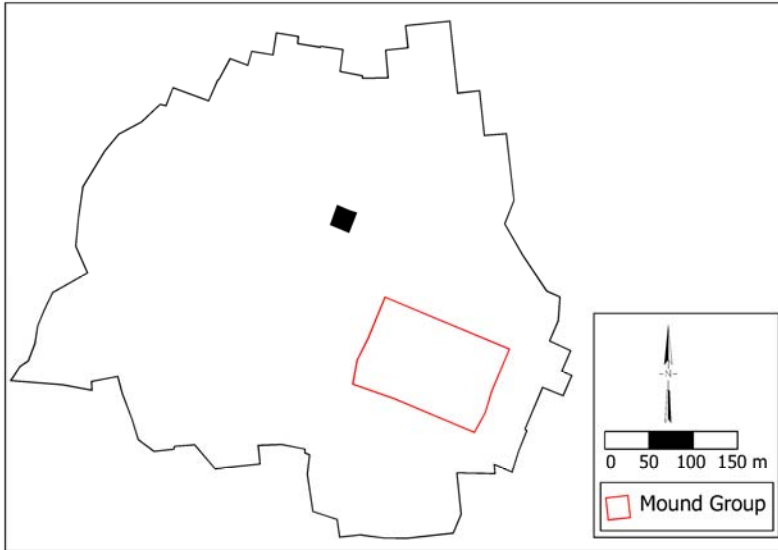


Figure 4.12 The collection unit with the single Cubitá *vaso* sherd.

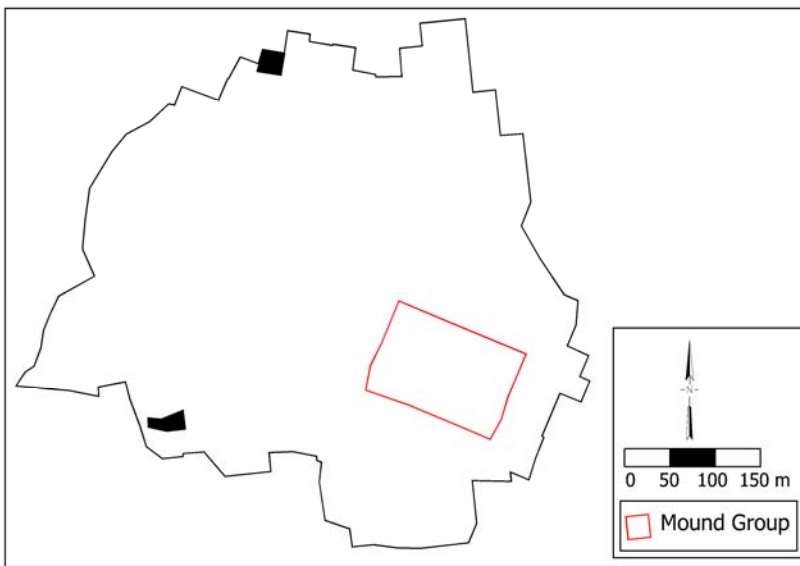


Figure 4.13 The two collection units with Cubitá faunal remains.

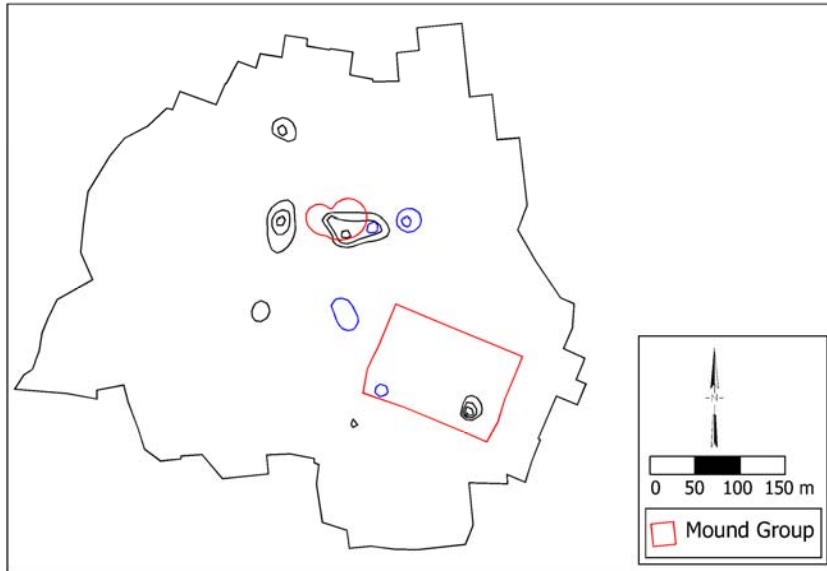


Figure 4.14 Contour map showing the spatial distribution of artifacts used to determine household differentiation, including trichromes (black contour lines), vasos (red contour lines) and incised vessels (blue contour lines).

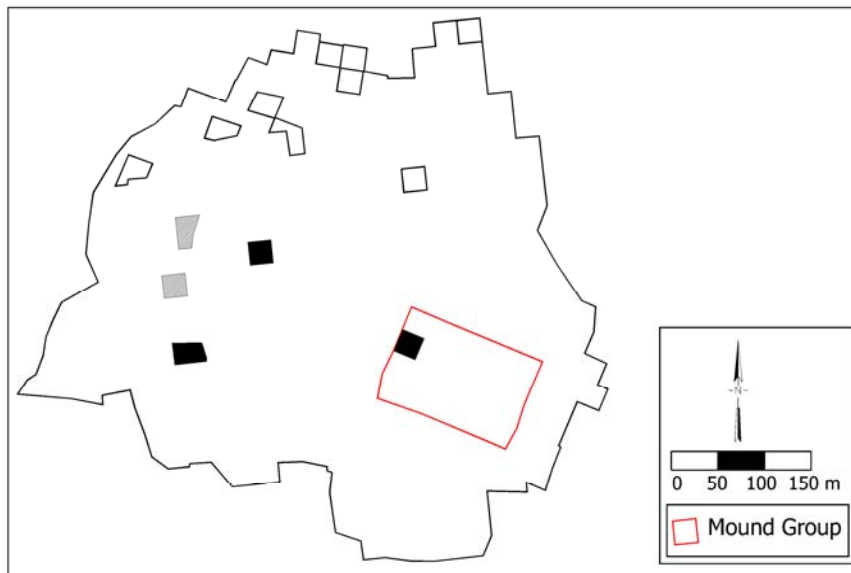


Figure 4.15 Map showing the distribution of Cubitá flakes. White collection units have one lithic artifact (a flake); hatched collection units have two lithic artifacts (one is a flake); and black collection units have two lithics, both of which are flakes.

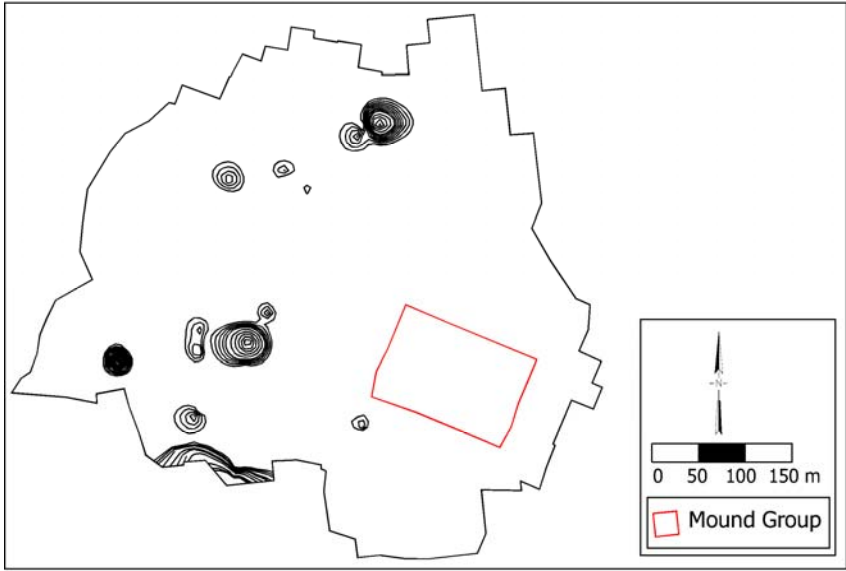


Figure 4.16 Contour map of proportions of Cubitá cutting and scraping tools (scrapers, blades, utilized flakes).

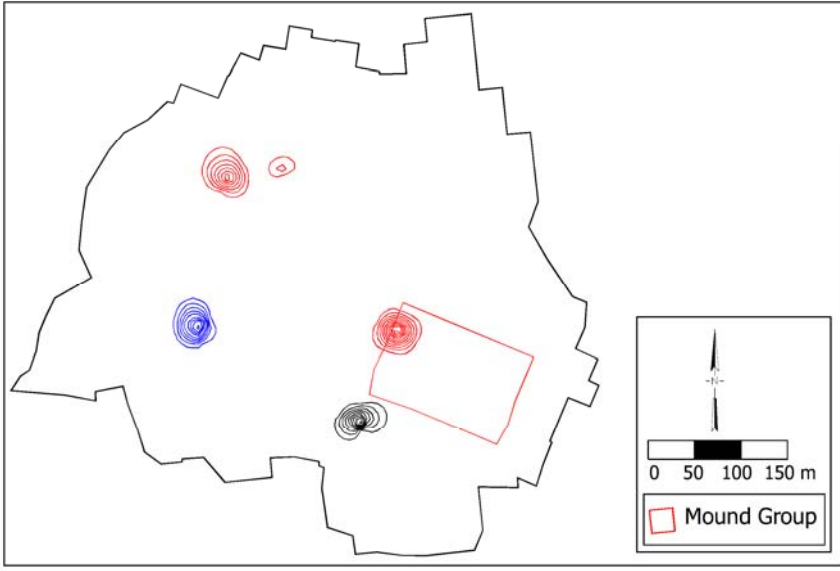


Figure 4.17 Contour map of proportions of Cubitá axes (black contour lines) and axe fragments or flakes (red contour lines) and areas with both (blue contour lines).

5.0 THE CONSOLIDATION OF SOCIAL HIERARCHY AT HE-4 DURING THE CONTE PHASE (A.D. 700-A.D. 900)

The Conte phase (A.D. 700-900) is best known for the appearance of pronounced social differences in the Central Region of Panama. The nature of this social hierarchy is often discussed based on the elaborate mortuary treatment at Sitio Conte (Briggs 1989, 1993; Hearne and Sharer 1992; Lothrop 1937, 1942) and often taken as illustrative of the social system for all of Central Panama (Linares 1977:31). The Conte phase (A.D. 700-900) also represents the first sub-division of the Late Ceramic Period II (Haller 2004:Figure 2.12) and is represented at He-4 by 1797 identifiable sherds recovered from both surface/shovel collections and test units. A total of 844 Conte sherds were recovered from 232 surface/shovel collection units and 47 1 m² test units (Figure 5.1). The distribution of Conte material in surface/shovel collections across the site is even more widespread than Cubitá material (Figure 5.1). Using only material from surface/shovel collections, the Conte phase occupation covers an area of 14.9 ha, a figure that is again slightly lower than the regional survey figure of 19.6 ha (Haller 2004:82). In spite of this difference, the intensive survey estimates show that He-4 continued to grow slightly during the Conte phase and represents an increase of 3.6 ha from the Cubitá phase. This growth is obviously not nearly as dramatic as during the 150 years of the previous Cubitá phase, but rather represents a continuation of the pattern of population nucleation established during this phase.

As with the Cubitá phase, it does not make much sense to estimate the Conte phase population based on the identification of individual households or house lots because the wide distribution of Conte material again makes this impossible (Figure 5.2). The use of density-area figures (as explained in Chapter 4) using surface/shovel collection units provides a better way to estimate population levels for the community during this time. The density-area value for the intensive survey is 2.90, and is still lower than the 5.31 for the regional survey (Haller 2004:82). Using the same methodology described in Chapter 4 for population estimates derived from density-area figures produces an estimate of 38-151 people for the Conte phase. As with the Cubitá phase, this range is lower than the regional estimate of 69-276 people for Conte phase He-4 (Haller 2004:126). In spite of the greater number of identified Conte sherds it is possible that the same kinds of analytical differences might produce this difference. Nonetheless, the range of population estimates for the intensive and regional survey suggests that population levels at He-4 were in the low hundreds, with perhaps as many as 30-55 families. The regional settlement pattern data show a slight decline in valley-wide population levels (Haller 2004:82-83, Figure 4.17), although He-4 remains by far the largest site in the Río Parita valley. There is also limited mortuary evidence that the mound complex was in use at He-4 during this time (Haller 2004:82-83; Ladd 1964) but certainly none that indicates that burials anything like those at Sitio Conte were located here. This suggests that He-4's function as a regional center was qualitatively different than the apparently specialized necropolis of the "macro-regional complex" at Sitio Conte and El Caño (Cooke 2004a; Cooke et al. 2000; Mayo and Mayo 2009; Mayo et al. 2007; Mojica 2007). Perhaps the most important difference is the evidence for a much more substantial residential population at He-4 for the entire period after A.D. 550-700, whereas the present data suggest that there was not much residential occupation at Sitio Conte or

El Caño. We could argue, then, that He-4's importance in the Río Parita valley was not based exclusively on specialized religious and ritual activities at this time, although the use of the mound complex at He-4 means that these kinds of activities were probably taking place. The scale of these activities, however, was probably very different than those associated with the ritual-ceremonial complex of Sitio Conte/El Caño further to the east (Cooke 2004a:273).

5.1 COMMON DOMESTIC ACTIVITIES

Contour maps of utilitarian ceramics were produced in the same way as for the analysis of Cubitá sherds. In this case, however, the larger sample of Conte sherds made it possible to include more collection units ($n = 100$) in the analysis than for the Cubitá phase. The larger number of collection units provides more data points and produces clearer patterning at the community level even though the low density of Conte sherds near the survey boundary means that there are still many units that had to be treated as "missing data." In spite of the large number ($n = 132$) of collection units with fewer than five sherds that were excluded, there are more almost three times as many collection units included in this analysis as there were for the Cubitá phase.

The spatial analysis of plain Conte sherds shows that they are widely distributed between households (Figure 5.3). Plain Conte sherds are found in 85 (85%) collection units and show a pattern of distribution not much different than for the preceding Cubitá phase. That is, most if not all households had an inventory of basic ceramics for daily domestic tasks. The distribution of Conte phase cooking vessels provides a similar perspective on daily activities (Figure 5.4) with most collection units ($n = 67$ or 67%) having cooking vessel sherds. As with the Cubitá phase,

the distribution of cooking vessel sherds maps fairly closely to plain Conte sherds (Figure 5.5). This is not particularly surprising since most Conte cooking vessels are not highly decorated.

The distribution of Conte serving vessels also shows a widespread distribution at He-4 (Figure 5.6), and the pattern of adjacent peaks of cooking and serving vessels seen during the Cubitá phase continues (Figure 5.7). This pattern is especially apparent in the center of the site where collection units with higher proportions of serving vessels surround a large peak of cooking vessels (Figure 5.7). The other conspicuous pattern is the large peak of serving vessels to the west of the mound boundary is one of these exceptions. It is notable because it is so large and extensive, however, from the distribution of cooking vessels (Figure 5.6) it is apparent that this peak is surrounded by households with high proportions of cooking vessels.

When Conte phase cooking and serving vessels are plotted on the same map (Figure 5.7) it becomes more apparent that the distribution of these two types of vessels in the Conte phase shows more even proportions in collection units than for the Cubitá phase. This might suggest minor changes in the use of space by Conte phase households, such as greater redundancy in household activities at He-4 during this time.

5.2 SOCIAL DIFFERENTIATION

The spatial analysis of fancy ceramics and rare vessel types for Conte phase He-4 illustrates a large degree of continuity in household differentiation from the Cubitá phase and, in some ways, these differences are even more pronounced. The most conspicuous indicator of household differentiation for the Conte phase is the distribution of distinctive beige paste sherds (non-local), a characteristic of pottery probably manufactured further to the east in what is today Coclé

province (Ladd 1964:51, 129). Although beige paste sherds are not exclusive to one or a few households at He-4, this material is overwhelmingly concentrated in collection units in the center of the site (Figure 5.8). These are the same households that were initially identified as differentiated during the Cubitá phase. The distribution of beige paste sherds also shows nine other areas with lower proportions of this material and only two of these are notable peaks. The effect of smaller sample sizes is also important to note with respect to the peaks of beige past pottery. The peak of this material in the southwest corner of the site (Figure 5.8) is produced by a sample of 6 Conte sherds from surface/shovel collection unit 97 M1, 66.7% of which ($n = 4$) have beige paste. In sum, while the distribution of non-local pottery at He-4 is not exclusive to one or a few households, it is clear that some households had much greater access to these ceramics.

The distribution of *vasos* or *vertaderos* (Figure 5.8) is somewhat difficult to characterize since there were only two sherds of such vessels. One of these sherds was found in the same areas with high concentrations of non-local pottery, again suggesting that these households were differentiated from the rest of the community based on the kind of ceramics that they possessed.

The distribution of Conte polychrome sherds also shows that the households in the center of Conte phase He-4 had high proportions of elaborately decorated pottery, but by no means exclusive access (Figure 5.9). The distribution of this material is widespread with many peaks, particularly in the center of the site, in the southwestern corner of the site and in areas adjacent to the mound group. While the distribution of Conte polychrome ceramics is not as restricted as Cubitá trichrome sherds were in the preceding phase, it is important that the Conte households identified as differentiated from the majority of households at He-4 had high proportions of this material.

Conte pedestal plates also show differential distribution, but not exclusive access by certain households (Figure 5.10). These fancy vessels, likely used for conspicuous display and serving of food (e.g. Cooke 1985), or perhaps just for the display of the elaborate designs themselves (Linares 1977:44-46), do not cluster as clearly as sherds with beige paste. Rather, these vessels are widely distributed with only a few notable peaks. The highest peaks of Conte pedestal plates occur in areas directly adjacent to the collection units with the highest proportions of beige paste pottery (Figure 5.10). There are also high proportions of pedestal plates just to the north of these peaks. While these are lower, they represent an important marker of household differentiation because they cluster very closely to beige paste pottery, suggesting that several households in this area were differentiated in terms of access to certain vessel types. The distribution of pedestal plates is also noticeably different than the overall distribution of serving vessels illustrated in Figures 5.6 and 5.7. Conte pedestal plates show a much more restricted distribution and more conspicuous peaks than the general category of serving vessels, particularly the large peak of serving vessels that is obvious in Figure 5.7. One possible explanation for this pattern is that some households might have been more intensively engaged in feasting. It is interesting that the households with high proportions of pedestal plates are the same ones with greater access to non-local pottery, access to rare vessel types (*vasos*) and high proportions of polychrome vessels, perhaps suggesting some connection between household differentiation and feasting activities.

There is a limited sample of faunal remains associated with the Conte phase (n = 42 NISP) with which to evaluate this suggestion of feasting activities within the community at He-4. The faunal remains that are associated with this period come from only eight collection units or test pits and do not show any real pattern of differential access to certain kinds of foodstuffs, in

part because of the small sample size and limited number of cases. Nonetheless, it is worth exploring this sample. As with the Cubitá phase, the most abundant animal species is white-tailed deer/large mammal (n = 28 NISP) which is found in six collection units or excavation units. The distribution of white-tailed deer (Figure 5.11) says very little about differences in household access to higher quality cuts of meat since there are so few cases to work with. The largest sample of deer/large mammal specimens (n = 20 NISP; 47.6%) comes from excavation unit 22-02 located in the mound group (Figure 5.11) as do the only iguana remains (n = 4 NISP; 9.5%) for the Conte phase (not shown). This large faunal sample from excavation unit 22-02 might be household debris, perhaps deposited as mound fill, as was the custom for later periods (Ladd 1964:27, 29). It could also point to funerary rituals, perhaps including feasting or offerings of food. Nonetheless, the small sample of Conte phase faunal remains tells us little about the nature of household diet and how this might have reflected hierarchical social relations, if at all.

Taken together, these lines of evidence show some continuity in Conte phase household differentiation, but the differences that first appeared during the Cubitá phase become more pronounced during the Conte phase (Figure 5.12). These differences can be described as an increase on a vertical axis of differentiation along which access to certain types of fancy ceramics is measured in quantitative terms (i.e. relative proportions). Differentiation along this axis shows that there are greater differences in the relative proportions of non-local beige paste pottery, *vasos*, pedestal plates, and polychrome ceramics between households during the Conte phase than during the Cubitá phase. Figure 5.12 shows the distribution of these types of artifacts (except for *vasos*) at contours above 40%. This summary map illustrates how Conte phase household differentiation can also be characterized as "accumulative" because some households are distinguished by high proportions of several types of fancy ceramics, although there is no

evidence for exclusive access to these goods. There are also more markers of household differentiation during the Conte phase than for the Cubitá phase. This also suggests that household differentiation was more conspicuous during the Conte phase. The kinds of ceramics that tend to indicate household status are also heavily oriented towards display, either for activities involving the presentation of food or simply as aesthetically powerful objects in their own right (Linares 1977:44-46, Figure 21). Finally, the same households originally identified as different during the Cubitá phase are more clearly set apart during the Conte phase, illustrating the continued importance of these families or descent groups within the community.

The patterns of household differentiation for the Conte phase have many parallels with the regional mortuary record and would seem to suggest that the increasing differences in daily life developed in tandem with those expressed in the treatment of the dead. The mortuary record for Sitio Conte (Briggs 1989) shows that status was reflected in the enormous quantity of grave goods, raw material attributes (e.g. gold, precious stone), quality of workmanship, uniqueness of craft goods, the elaborateness of the iconography and decorative elements and orientation towards conspicuous display [i.e. items of personal adornment (Linares 1977:46)]. The principles of accumulation that structure the Sitio Conte cemetery are taken as evidence for a "pyramidal" system of social organization and ascribed status with relatively rigid social distinctions (Briggs 1989). The mortuary and household evidence for this region provide two complementary perspectives on the nature of social hierarchy in the Central Region of Panama during the Conte phase. When the household data from He-4 presented in this chapter are considered within the context of the mortuary record for Central Panama it can be argued that some kind of social hierarchy is in evidence at this community during the Conte phase. By comparison, however, the degree of household differentiation is not as dramatic as the differences seen in mortuary

treatment for the Conte phase nor are they as rigid in terms of rank and status. It follows that the households set apart from the remainder of the community at He-4 by their higher proportions of several sorts of fancier ceramics can be described as higher status, although at present the exact basis of this status differentiation is not clear.

The nature of social hierarchy in Central Panama, now shown to exist not just in mortuary treatment, but in daily life as well, has been the subject of some debate. Much of this debate has focused on the Sitio Conte burials. The large number of weapons or hunting tools in these graves, for example, has been taken as evidence that the principal individuals in these graves achieved this status through success in warfare (Linares 1977:40, 58, 71). Others have argued that the nature of social differentiation should be considered in the context of rapidly changing and increasingly complex symbolic and ideological systems that was probably related to “spiritual rather than political authority” (Hoopes 2005:9). This fits more closely with models emphasizing the external origin of social or political power, which could have derived from the control over “esoteric knowledge” acquired in foreign lands and used to further political goals in the Central Region of Panama (Helms 1979, 2000; Sauer 1966). It is also possible that the important individuals in the Sitio Conte burials owed their positions of higher status to the establishment of some kind of control over local resources, differential access to regional exchange networks or through their involvement in the production or distribution of important agricultural tools or other craft goods (Cooke and Ranere 1992; Haller 2004; Linares 1977).

The critical question, then, is: what kind of system of social hierarchy do these household differences indicate? There are certainly differences between households in terms of access to fancier pottery and unusual vessels, but the differences do not appear to be as dramatic as one might expect if this was a reflection of true wealth accumulation. In such a situation we might

expect that the vertical axis of differentiation would show much sharper divisions between higher and lower status households (e.g. Earle 1987, 1991a; Santley 1993; Smith 1987). Instead, at He-4, there are only modest differences that might be related to standard of living.

The modest household differences seen at He-4 seem more consistent with the idea that the emerging social hierarchy was structured around ideology and religion because such a system does not necessarily involve very conspicuous material differentiation (Drennan 1995b; Earle 1987; Gilman 1981, 1987). This is not to suggest that this system was somehow less hierarchical than one based on wealth differences, but rather that the emerging social order was naturalized and historicized (Earle 1991; Flannery and Marcus 1976; McGuire and Saitta 1996; Gledhill 1988) such that different social statuses were understood within a broader worldview. The wide distribution of polychrome vessels, decorated with complex iconography and symbolism (Cooke 1985; Helms 1995; Sánchez 1995) as well as the high proportions of non-local beige paste pottery in a small number of households is consistent with this idea. This kind of system similar to how Helms (1979) describes how elites might derive social power through their involvement in exchange networks, access to objects from foreign lands and manipulation of symbols through ritual and display. The presence of non-local beige paste pottery as well as high proportions of polychrome vessels fits this model, although neither of these items comes from very long distances. In fact, there is limited evidence that any real long-distance exchange networks were in operation in Central Panama during this time and that non-local items were acquired from within the Central Region itself (Cooke 2004a; Cooke et al. 2003:114; Cooke and Ranere 1992:281-282; Haller 2004:138; Linares 1977:71-72). The principle that high status families could have cultivated and maintained their position through their involvement in exchange

networks within the Central Region is consistent with a system of hierarchy based on ideology rather than economic control.

It is not really possible to evaluate the importance of warfare to the development of social hierarchy at He-4 because there is no relevant evidence from the site (aside from a few projectile points which are probably hunting tools), but this does not mean that it was not important. Endemic warfare would be consistent with a system of social hierarchy based on wealth accumulation in which there was competition for resources or territory. Similarly, warfare could have been important in a system of social hierarchy based on an ideological focus on competition, display and perhaps ritualized warfare. If this was the case the modern Balseria might be one analogue to consider in more detail (Jessome 2008; Young 1976).

The group of higher-status families at He-4 whose social position may be due to supernatural connections and power (McAnany 1995), and possibly also connected to leadership in warfare, was strongly concentrated in the north central section of the site where the proportions of non-local beige paste pottery were unusually high and the ceramic inventories are unusually diverse (Figure 5.8). The additional scattered peaks of high non-local beige paste pottery proportions toward the south of the occupied area are not included among particularly high-status zones because these small isolated peaks are probably more attributable to the artificial effect a few very small sherd samples have on percentage calculations. In the following section, then, the collections defined as higher status are those that come from the area within the lowest contour shown in Fig. 5.8 for the central peak of high proportions of beige-paste ceramics.

5.3 CRAFT PRODUCTION

The same chronological ambiguities that make it difficult to analyze the Cubitá phase lithic assemblage (see Chapter 4) remain for the Conte phase and present some challenges for discussing craft production during this phase. In order to deal with these ambiguities, and to work with larger samples of artifacts relevant to a discussion of craft production it is necessary to sacrifice chronological precision in order to use material collected from surface/shovel probes. Given the overwhelming number of Late Ceramic II sherds (the Macaracas, Parita and El Hatillo ceramic phases) most collection units at He-4 generally had low proportions of Cubitá and Conte sherds (usually around 10%-35% when they are present). The Conte phase lithic assemblage then consists of those stone tools found in collection units with high proportions of Conte sherds even though there might also be a large quantity of other LC II sherds. In some cases lithics that had been classified as Cubitá were also included in the Conte phase lithic sample because the collection units where these tools were found also had moderate quantities of Conte sherds. For example, if a collection unit had 25% Cubitá sherds, 20% Conte sherds, and 65% LC II sherds, it would have originally been classified as Cubitá. Stone tools from this collection unit would also have been included in the Conte lithic assemblage because of the moderate (20%) proportion of Conte sherds. While this methodology is far from ideal, it is much more satisfying to attempt to reconstruct patterns of household production using this material than to simply exclude it altogether. This would tell us nothing about household domestic activities during periods of important social change. In the end, the Conte phase lithic assemblage consists of 170 stone tools which come from 54 collection units or test units. If all collection units with less than five stone tools are excluded, the remaining sample is made up of 86 stone tools from 11 collection units or test excavations.

The spatial distribution of trapezoidal axes and associated debitage (flakes or fragments with polish and without polish) shows that axe fragments and flakes, but not necessarily complete axes tend to cluster adjacent to the households with the highest proportions of non-local pottery. Axe related debitage includes flakes or fragments of axes ($n = 10$) that are related to tool manufacture (with polish) and re-sharpening, recycling or general maintenance (no polish) (Ranere 1980:132-133). Figure 5.13 shows that there are two peaks of axe flakes without polish, one just to the north and one just to the south of the area of higher status households. Similarly, axe flakes with polish cluster in two adjacent peaks just outside the southern edge of the area of higher status households (Figure 5.14). Lastly, the distribution of all axes (regardless of sample size) shows that axes are widely distributed across He-4 during the Conte phase (Figure 5.15), but the debitage associated with their production or maintenance is not. Given this fairly restricted distribution of axe fragments and debitage at the edge of the area of high status households, it is possible that the production or finishing of axe blanks was an activity that, while not undertaken in higher status households, took place nearby. An alternative explanation could be that the dangerous debitage associated with lithic production was deposited away from actual dwellings within this area, a pattern that has been observed in ethnoarchaeological studies of tool production in contemporary highland Maya communities (Clark 1991). In either case the evidence strongly suggests a connection of some sort between axe production or maintenance and the high status households at Conte phase He-4.

In contrast to axe production or maintenance, other daily activities such as tool production and processing activities seem to have been undertaken more intensively in lower status households. The spatial distribution of cutting and scraping tools (utilized flakes scrapers, blades) lumped together as “processing tools,” shows that utilized flakes and scrapers (cutting

and scraping tools) are widely distributed among lower status households but are not found in higher status households (Figure 5.16). This suggests some differences in daily household activities between higher and lower status households. Similarly, it appears that tool production, as reflected in the distribution of chipped stone flakes (Figure 5.17) and chipped stone cores (Figure 5.18), was an activity common to lower status households, but not to higher status households. This again suggests that there were differences in daily household productive activities between these two groups of households. Lastly, Figure 5.19 shows that polishing stones are found only in lower status households and there is no clear pattern of these tools clustering near higher status households. This is an interesting pattern since these informal tools might have been used for axe finishing, or more likely, for burnishing ceramics. If the latter is the case, it would suggest that ceramic production was something that took place in lower status households and would have been organized in a different way than axe production or finishing.

It is possible to explore these patterns in more general terms by comparing lithic assemblages from all higher status households on one hand, and all lower status households on the other. In practical terms, this can be accomplished by treating all of the stone tools found in collection units within the area of high proportions of non-local beige paste pottery in the center of the site as belonging to high status households. The remaining stone tools, from collection units outside this area, can be treated as belonging to low status households. This methodology of course only provides a very rough comparison between two broadly defined areas of the site or groups of households, but it does have the potential to show certain quantitative patterns that might otherwise be obscured by small sample sizes from individual collection units and the vagaries of sampling (Hayden and Cannon 1983). It also means that all 170 lithics in the Conte phase assemblage can be included in the comparison, rather than only those collection units with

more than five stone tools. Following this procedure, the lithic assemblage for the higher status households comes from three test pits and four surface/shovel collections and consists of 27 tools or flakes. The lithic assemblage for lower status households comes from 24 surface/shovel collections and 23 test pits and consists of 143 stone tools or flakes.

There appear to be only limited differences in access to important subsistence tools such as polished stone axes (or celts) between higher and lower status households. Axes represent 4% of the lithics in both assemblages, and the error ranges associated with these estimates (Figure 5.20) give us high confidence that differences of only a few percentage points should be detectable in these samples. The principal difference between assemblages is that the single axe from collection 15 G1 in the high status area has a different morphology than the more typical trapezoidal axes ($n = 6$) found in the lower status house group. It is much thinner and flatter with a bit angle that is more acute than most trapezoidal axes. For this reason it might have been used for less intensive activities, perhaps as a wedge or chisel and might suggest that there were differences in the kinds of activities between households of different status. It does not unequivocally indicate that higher status households were less intensively involved in agricultural pursuits, but this is a possibility.

When the proportions of axe fragments and associated debitage (axe flakes with polish and axe flakes without polish) are compared between higher and lower status households it is apparent that axe production or finishing activities were likely restricted to only a few households located near higher status households (Figure 5.20). The bullet graphs in Figure 5.20 show the error ranges are narrow enough that we can be 99% confident that axe fragments with polish are found in similar proportions (approximately 4%) in high status and low status households. The only axe fragments or flakes without polish were found in low status

households (Figure 5.20). Nonetheless, this pattern is consistent with the contour map that shows axe flakes clustering near the edges of higher status households and perhaps some kind of supervision or association between adjacent high status households.

There is also a small amount of shell associated with the Conte phase ($n = 72$) that comes from both 11 surface collections ($n = 24$) and six excavated test units ($n = 48$). The methodology for assigning this material to chronological phases is the same for the stone tools (see above) and includes some material that was included in the discussion of Cubitá shell (Chapter 4). The only two positively identified shell tools in the Conte assemblage were found adjacent to the area of higher status households (Figure 5.21). This might suggest that the same areas that seems to have been engaged more intensively in axe production or finishing activities were also involved in activities that required sharp edged tools, such as shell tools. How such activities might have differed from those performed by expedient flakes is not clear, however, and this pattern might simply reflect yet more expediency in household tool choice for basic domestic activities.

There is more evidence that households at He-4 were engaged in shell working during the Conte phase (Figure 5.22). There are a total of 11 pieces of worked shell, all of which is probably marine shell such as *Anadara grandis* or *Strombus geleatus*. Worked shell was recovered from a total of five collection units, although the contour map is somewhat misleading in terms of the relative proportion of this material in household contexts at He-4. The only collection unit with worked shell and more than five pieces of shell is the one directly to the south of the area of higher status households (Figure 5.22) and is the same excavation unit with the remains of axe production or finishing debitage (Figure 5.13). This spatial pattern is similar to axe manufacturing and finishing, and suggests some kind of relationship between higher status households and shell production in nearby households. This relationship is strengthened by the

presence of worked shell within the area of high status households and might be taken as evidence that these households were involved in jewelry production, although it is not possible to say much about the scale or intensity of such production (e.g. Costin 1991).

5.4 SUMMARY

In sum, the Conte phase stone tool assemblage for He-4 shows that there are differences in the organization of higher and lower status household economies. These differences show that lower status households were largely self-sufficient in terms of the production of tools used in basic household activities, including flakes, blades and scrapers. There is evidence for some involvement of higher status households in craft production in the form of axe production/finishing and maintenance debitage in areas directly adjacent to the higher status households. There is also evidence that tentatively suggests these same higher status households had a similar relationship with nearby households that were engaged in shell working. The organization of shell working at He-4 during this time, however, was clearly not on the scale of similar activities at Cerro Juan Díaz in the Río La Villa during the preceding Cubitá phase where large quantities of shell working debris have been excavated (Mayo 2004; Mayo and Cooke 2004, 2005). The shell working contexts at Cerro Juan Díaz have been interpreted as workshops specializing in marine shell jewelry, although in contrast to He-4 there is little available evidence to suggest that these activities were taking place in higher status households.

The limited evidence for craft specialization from Conte phase He-4 is consistent with the idea that emergent higher status families based their social position in some small part on the economics of axe and shell production. The very modest evidence of such connections is entirely

consistent with our understanding of social differentiation at He-4 being based largely on non-economic factors. The association between higher status households and axe production may arise from a more active engagement of these households in exchange networks (to obtain blanks or raw material). The nature of these exchange networks is not well understood for the Central Region at this time since it is possible that there are local sources of material. Isaza (2007:448) suggests that is a source of raw material in the upper Río La Villa valley and raw material quarry and production sites in the cordillera (Griggs 2005:245-246; Mayo et al. 2007). The production of items of personal adornment from marine shell at He-4 is also consistent with a social system based on non-economic factors, such as ideology or religion. In such a system symbolically charged goods would have been important as status reinforcing goods that materialized ideology (DeMarrais et al. 1996; Shennan 1982), although the raw material for these goods would have been much more easily acquired from the coast. This does not require very long distance exchange, but is consistent with models emphasizing intra-regional exchange (e.g. Cooke and Sánchez 1997; Haller 2004).

At this point our understanding of the economic organization of the Conte phase community at He-4 is one in which most households maintained a large degree of autonomy in terms of basic activities such as subsistence and provisioning. There are hints, however, of connections between higher status households and some kinds of craft production. This craft production included both practical goods (axes) and items of display for use in rituals or displays that would reinforce social differences. The household evidence, then, paints a picture of the community at He-4 as one in which the social hierarchy whose beginnings can be traced to the Cubitá phase has become much clearer. This more consolidated hierarchy at He-4 during the

Conte phase incorporated some weak economic elements, but was probably based more on ideological and religious factors, perhaps including success in warfare.

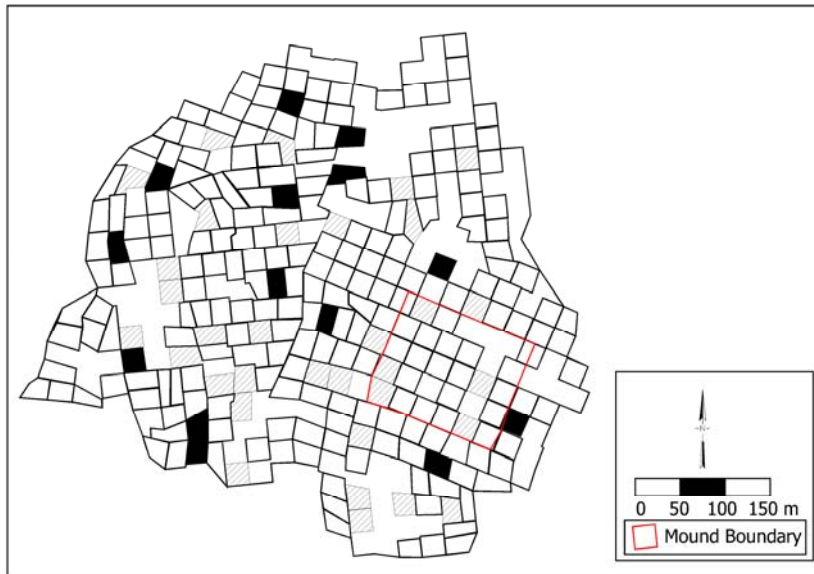


Figure 5.1 All collection units with Conte sherds. Hatched units had Conte sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Conte sherds only in stratigraphic tests; and white units had Conte sherds only in surface/shovel collections.

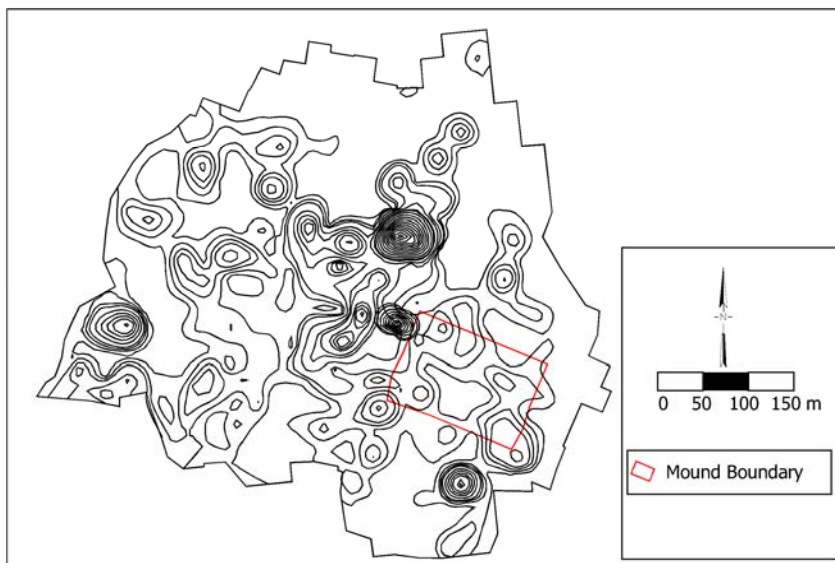


Figure 5.2 Contour map of density of Conte sherds at He-4.

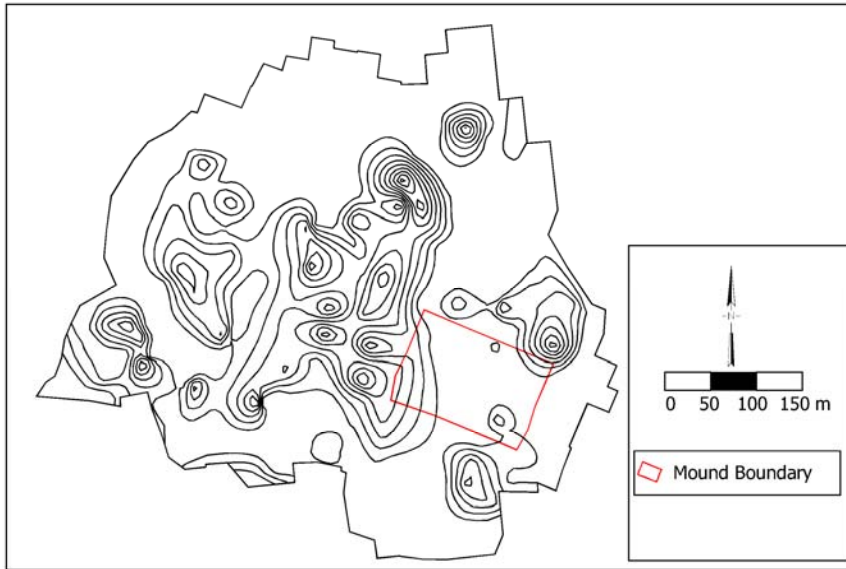


Figure 5.3 Contour map of proportions of Conte plain sherds (samples of less than 5 sherds are excluded). Contour lines are at 10% intervals.



Figure 5.4 Contour map of proportions of Conte cooking vessel sherds (samples of less than 5 sherds are excluded). Contour lines are at 10%.

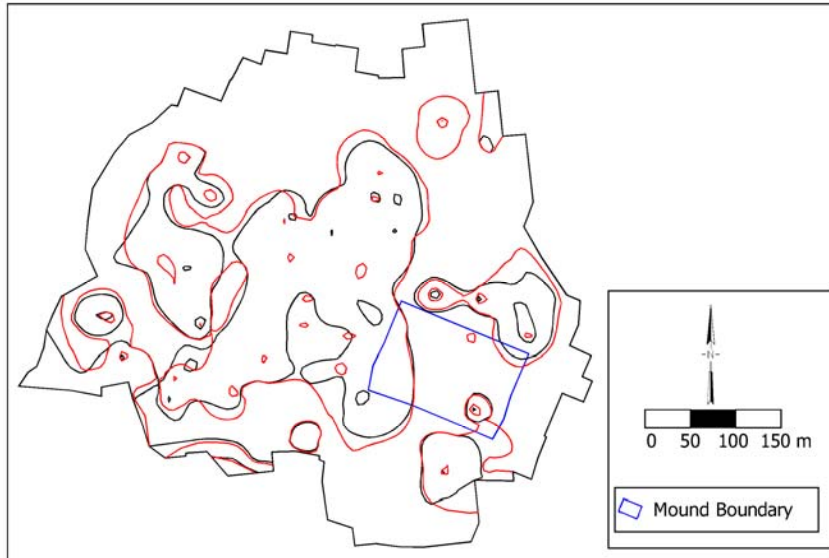


Figure 5.5 Contour map of proportions of Conte cooking (black contour lines) and plain (red contour lines) sherds. Contour lines are 10% and 70%-90%.



Figure 5.6 Contour map of proportions of Conte serving vessels.

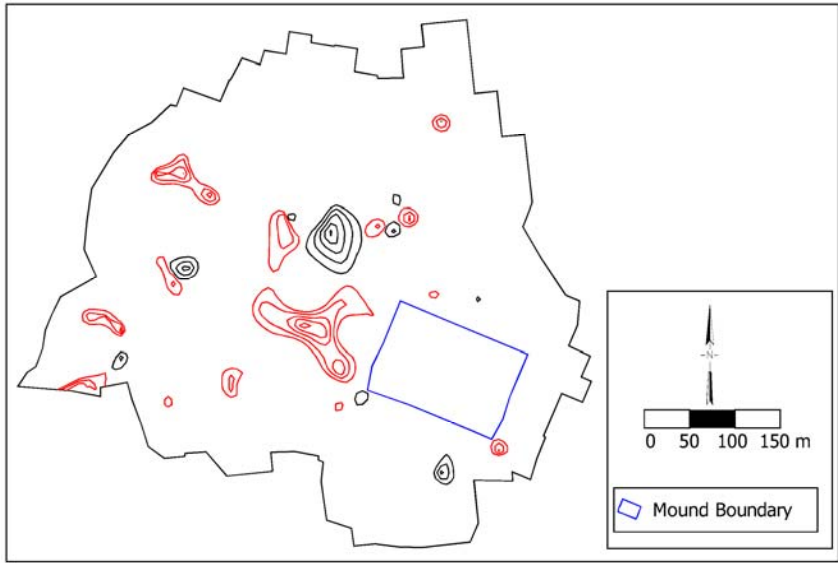


Figure 5.7 Contour map of proportions of Conte cooking vessel sherds (black contour lines) and serving vessel sherds (red contour lines).

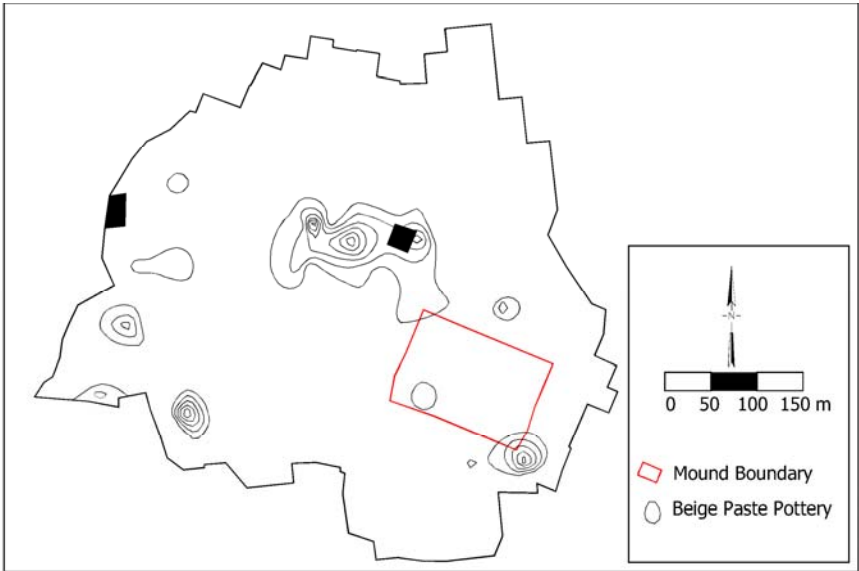


Figure 5.8 Contour map of proportions of Conte sherds with beige paste (non-local) and the collection units where Conte vasos were found (shown as black squares).

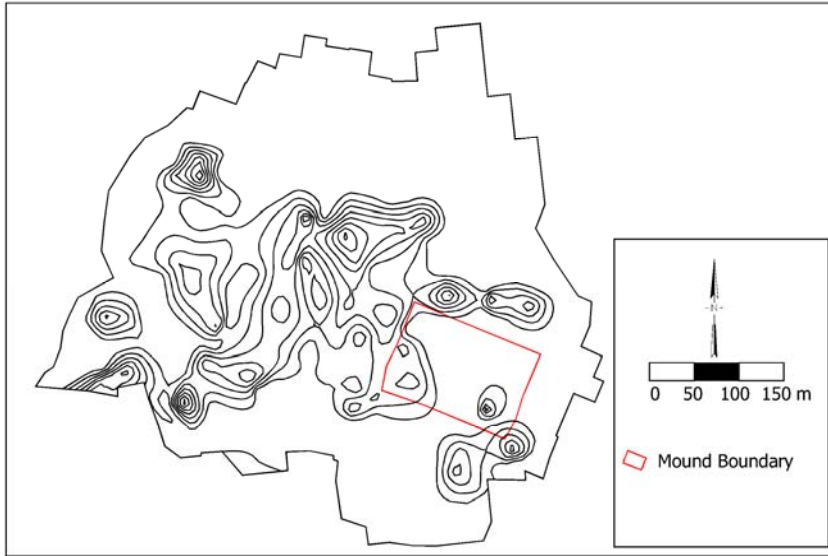


Figure 5.9 Contour map of proportions of Conte of polychrome sherds.

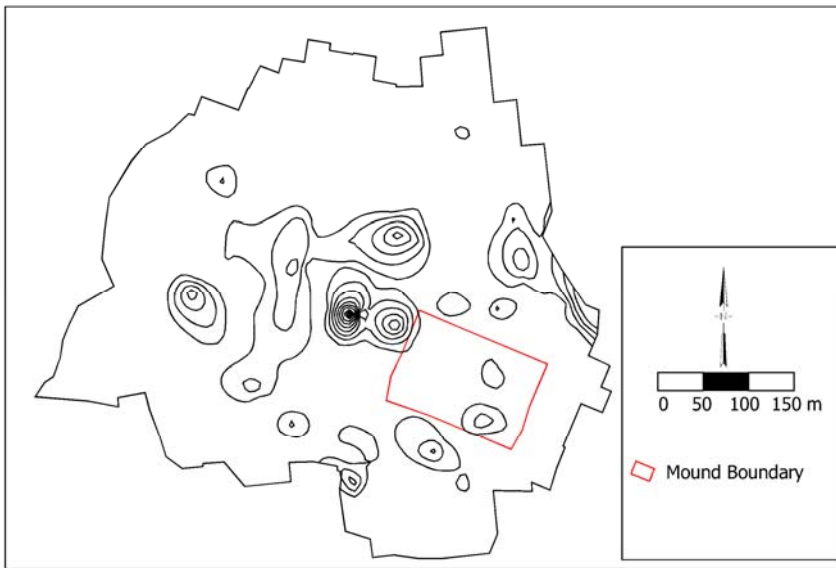


Figure 5.10 Contour map of proportions of Conte pedestal plates.

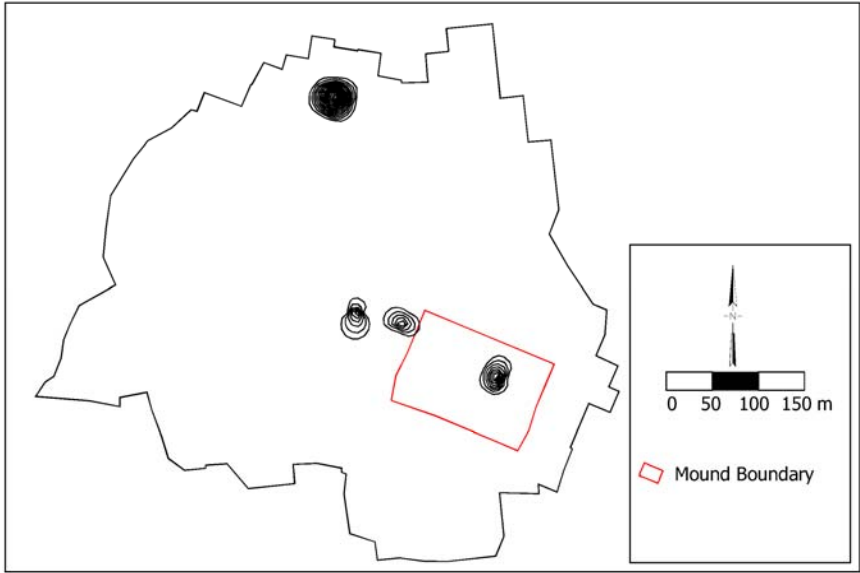


Figure 5.11 Contour map of proportions of white-tailed deer at Conte phase He-4.

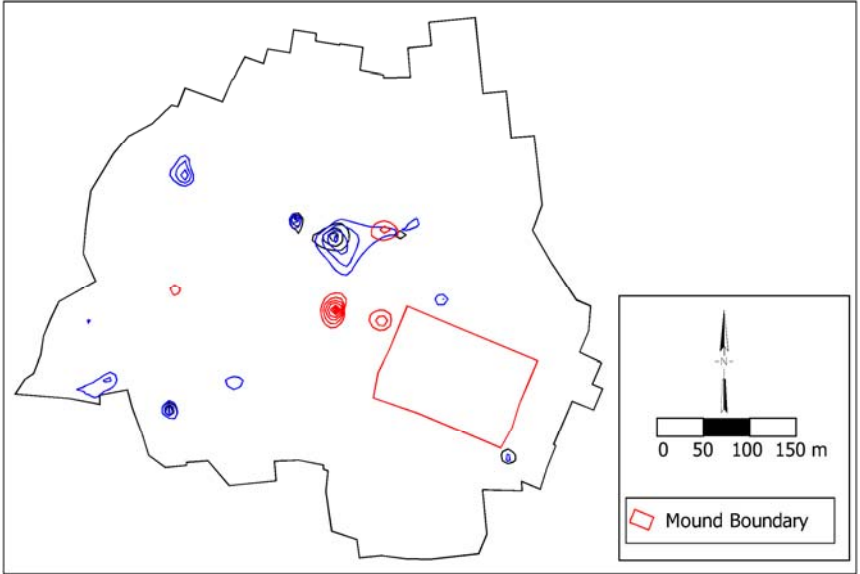


Figure 5.12 Contour map showing the spatial distribution of artifacts used to determine household differentiation. Pedestal plates are represented by blue contour lines, non-local beige paste pottery is represented by red contour lines and polychrome vessels are represented by black contour lines. All contour lines show proportions of 40% or higher.

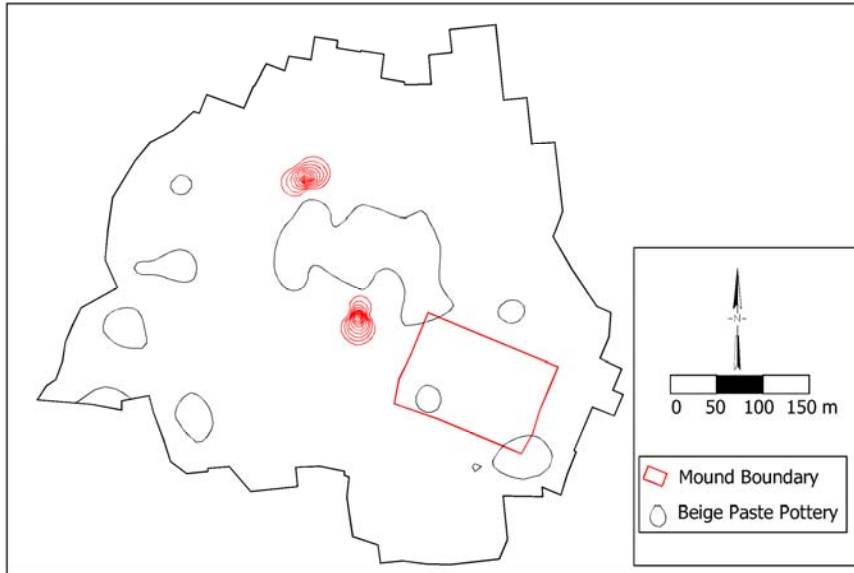


Figure 5.13 Contour map of proportions of Conte phase axe flakes without polish (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools.

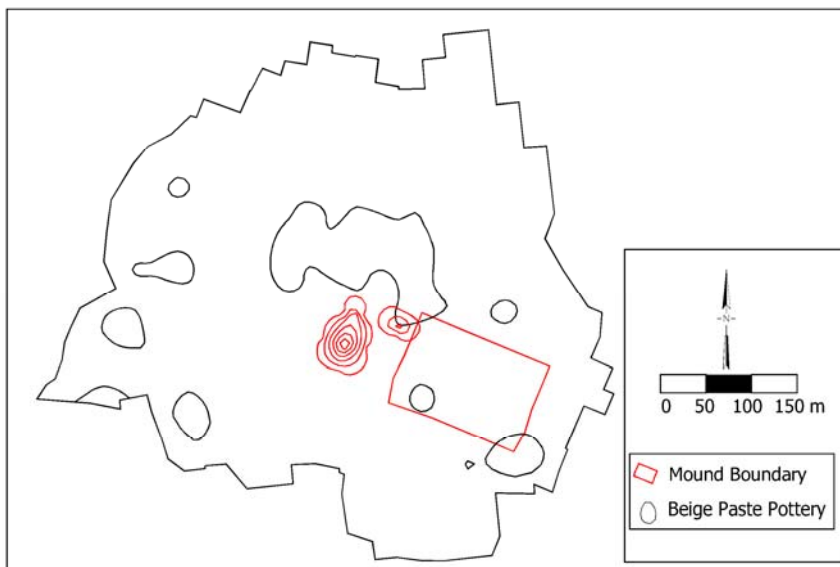


Figure 5.14 Contour map of proportions of Conte phase axe flakes with polish (red contour lines) and non-local beige past pottery (black contour lines) with only samples of more than five stone tools.

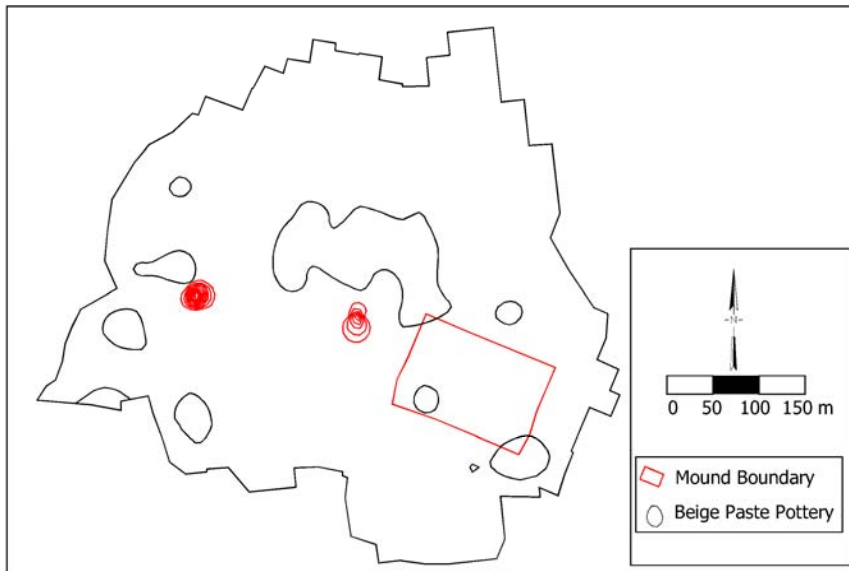


Figure 5.15 Contour map of proportions of Conte phase axes (red contour lines) and non-local beige past pottery (black contour lines) with only samples of more than five stone tools.

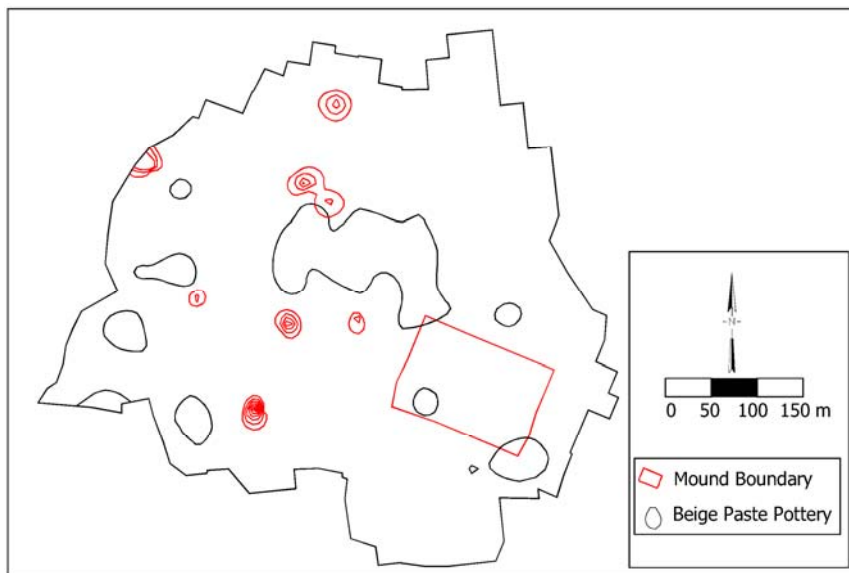


Figure 5.16 Contour map of proportions of Conte phase cutting and scraping tools (red contour lines) and non-local beige past pottery (black contour lines) with only samples of more than five stone tools.

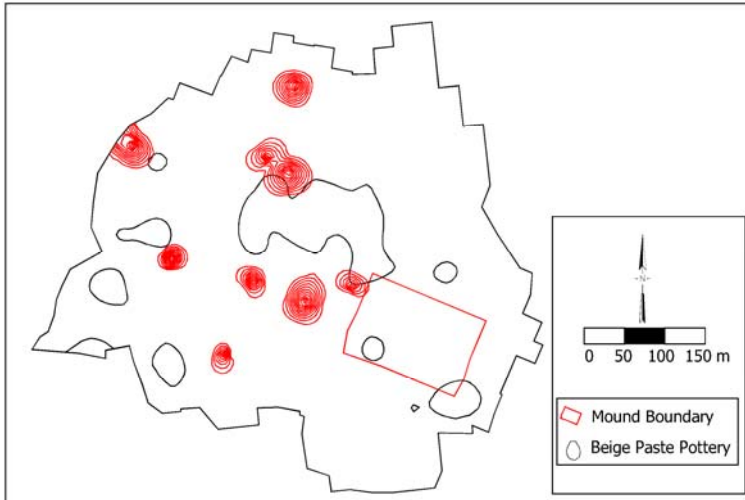


Figure 5.17 Contour map of proportions of Conte phase chipped stone flakes (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools.

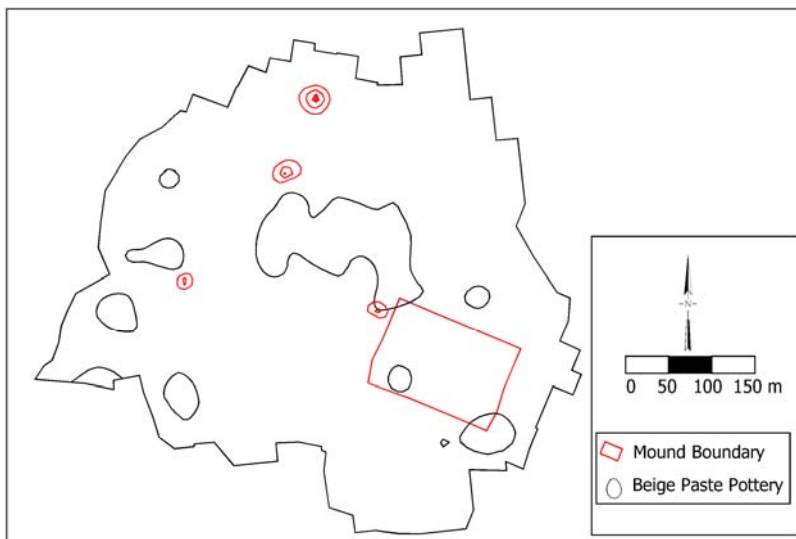


Figure 5.18 Contour map of proportions of Conte phase chipped stone cores (red contour lines) and non-local beige paste pottery (black contour lines) with only samples of more than five stone tools.

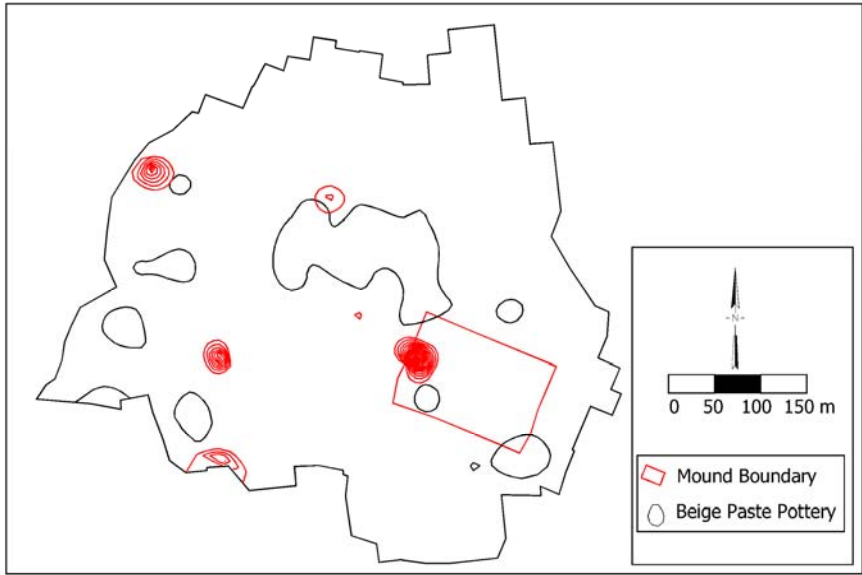


Figure 5.19 Contour map of proportions of Conte phase polishing stones (red contour lines) and non-local beige paste pottery (black contour lines). Samples of less than five are included.

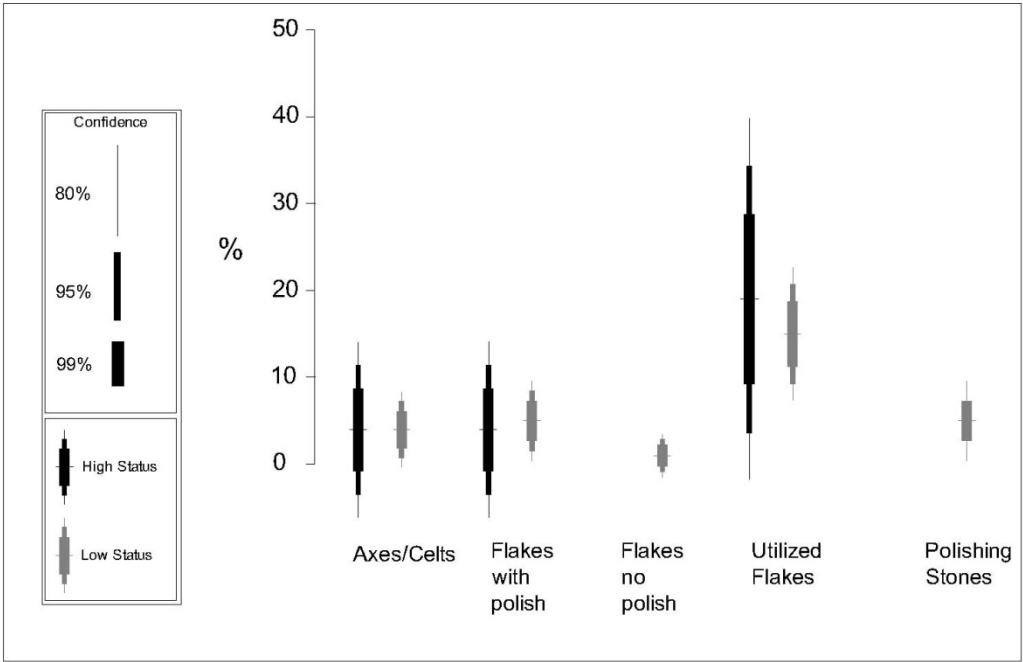


Figure 5.20 Bullet graphs showing the differences in proportions of tool types between higher status and lower status household groups at Conte phase He-4.

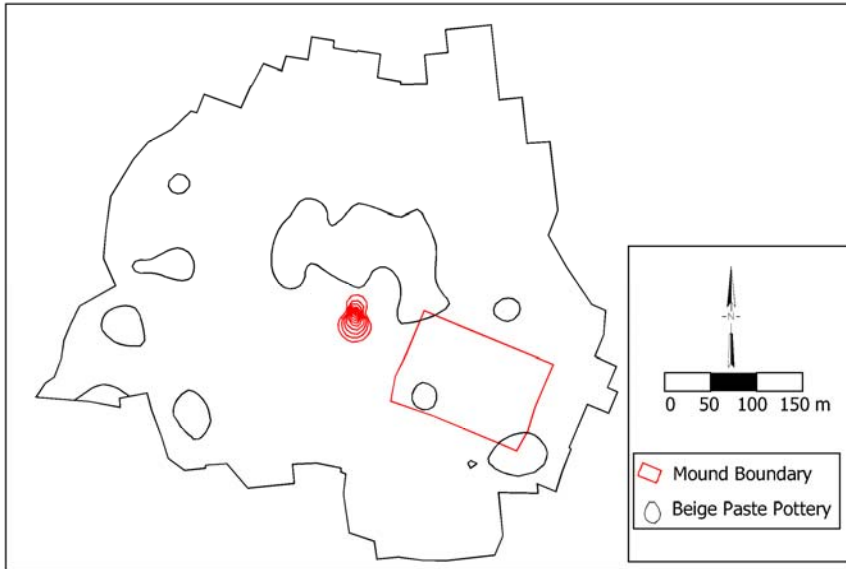


Figure 5.21 Contour map of proportions of shell tools (n = 2; red contour lines) and Conte beige paste pottery (black contour lines).

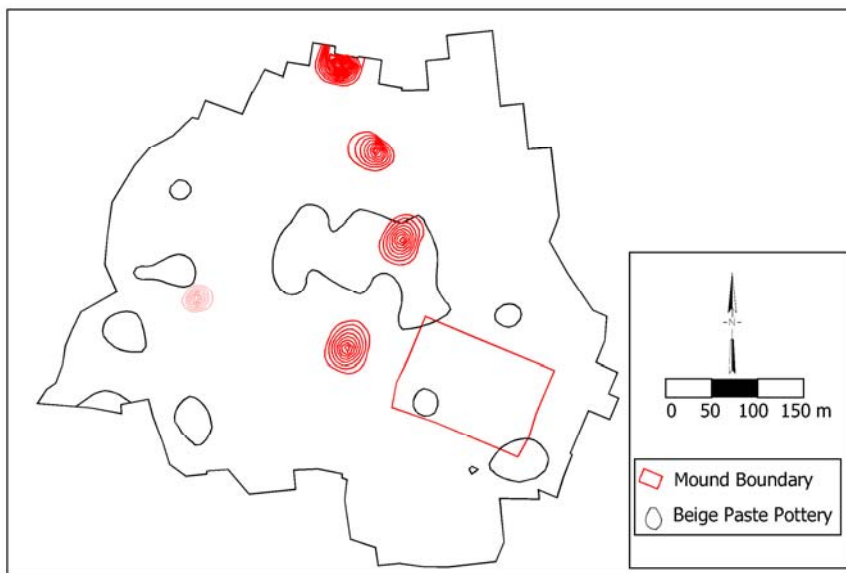


Figure 5.22 Contour map of proportions of Conte worked shell (n = 11; red contour lines) and Non-local beige paste pottery (black contour lines). The contour peak directly to the south of the higher status households is the only collection unit with greater than five shell pieces.

6.0 THE CHANGING NATURE OF SOCIAL HIERARCHY AT HE-4 DURING THE MACARACAS PHASE (A.D. 900-1100)

The Macaracas phase (A.D. 900-1100) is a period of increasing socio-political and socio-economic centralization in the Río Parita valley (Haller 2004:94). At a macro-regional scale there is a shift in the locus of pan-regional ceremonial activities away from Sitio Conte and El Caño to He-4 (Cooke 2004a; Haller 2004:91), illustrating the changing nature of the socio-political landscape of Central Panama at this time (Cooke 2004a, 2004b; Haller 2004:91, 94; Isaza 2007; Mayo 2007). The Macaracas phase is represented at He-4 in the form of 2656 sherds identifiable to the Macaracas category or the Macaracas/Parita category (sherds that could not be confidently identified to either phase), 1196 of which were recovered from surface/shovel collection units. Macaracas sherds were recovered from 182 surface/shovel collection units and 34 test units (Figures 6.1 and 6.2) and the distribution of Macaracas sherds is much the same as for Conte phase sherds. Based on the distribution of Macaracas and Macaracas/Parita sherds in surface/shovel collections, the community again grows slightly during the Macaracas phase to 15.8 ha, an increase of approximately 0.9 ha from the Conte phase (see Chapter 5). The figure of 15.8 ha however, is approximately 4 ha larger than the regional survey estimate of 11.1 ha for He-4 during the Macaracas phase (Haller 2004:88). The Macaracas phase density-area value for the intensive survey is 4.6, higher than the 3.0 for the regional survey (Haller 2004:88, Table 4.3). Population estimates for the intensive survey for the Macaracas phase, again based on

density-area values, produce a range of 59-237 people, a range somewhat higher than the regional survey maximum estimate of 157 people (Haller 2004:126).

The regional demographic context for the Macaracas phase is very similar to both the Cubitá and Conte phases. He-4 remains the largest site in the Río Parita valley, is the focus of population nucleation and is situated at the head of the settlement hierarchy (Haller 2004:85-86). The area surrounding He-4 was also densely settled during this time (Haller 2004:Figure 4.22) and there is an increase in the number of secondary sites in the valley. Two of these, He-2 (Leopoldo Arosemena; Ladd 1964:211-219) and Site 194 (Haller 2004:Figure 4.18) were located near He-4 and were approximately 3 ha each.

During the Macaracas phase the community of He-4 also undergoes an important change in social and ceremonial terms as the mound complex is used much more intensively for the interment of high status individuals. This development represents an important new dynamic to our understanding of social hierarchy in the valley and a qualitative change in He-4's function as a central place. Unfortunately the majority of our knowledge of the mound complex and the burials comes from looters and amateur archaeologists (Bull 1965; Dade 1972; Mitchell and Acker 1961). In spite of this, Haller's recent synthesis (2004:90-94) of the available literature describes the mortuary and architectural evidence for the mound group and provides the best available reconstruction. The mound area at He-4 is between 1.5 ha and 2 ha (Haller 2004:90) and the looting and amateur archaeological activity of the last 50 years has made it practically impossible to identify any of the mounds labeled on Ladd's (1964:Figure 1) or Bull's (1965:Figure 1) maps (Haller 2004:90; personal observation 2006). Based on previous reports (Bull 1965; Ladd 1964), the mounds at He-4 appear to have been arranged around a central open

area; the number of mounds varies from 11 to 14 and they are described as ranging from 1 m to 3 m tall (Haller 2004:90, Figure 4.23; Ladd 1964:Figure 1, Plate 24).

It is difficult to reconstruct the timing of the construction sequences for the mounds at He-4 except in broad terms. Over 98% of the ceramics collected in this area during the intensive survey date to the Macaracas, Parita and El Hatillo phases. Based on the ceramic frequencies and stratigraphic profiles published in Ladd (1964:Figures 2, 4, 5) and on Haller's synthesis (2004:92-93), three of the mounds (I, VI and VII) contained five burials with nine individuals that can be confidently associated with Macaracas ceramics. Although the Macaracas graves at He-4 do not show the same degree of elaboration or extravagance as the earlier Conte phase graves at Sitio Conte, they do represent one of only two examples of high status burials associated with architecture in the Central Region (Haller 2004:92), the other being El Caño (Cooke 2004a, 2004b; Mojica et al. 2007; Verrill 1927). The grave goods associated with the burials at He-4 include large quantities of worked shell, a small number of gold or *tumbaga* objects, a variety of plain Macaracas jars and fancy pedestal plates (Ladd 1964:Plate 7), and utilitarian chipped and polished stone tools. The stratigraphic profiles published by Ladd (1964) show several ash layers and possible floors in Mound 1; he interprets this as indicating several construction episodes involving mortuary rituals and burning (Ladd 1964:25-26). Finally, the age and sex patterns for the mound burials at He-4 are similar to Sitio Conte. When all of the 44 interments (representing 96 individuals) from He-4 are considered irrespective of chronological placement (Haller 2004:90, 92) it is clear that the burials are mostly adult males. This pattern is like the evidence from Sitio Conte, but differs substantially from earlier cemetery sites such as Cerro Juan Díaz (Cooke et al. 1998; DeYoung 1998; Díaz 1999) in which there are large numbers of females and children. The only off-mound burials reported by Ladd are those

excavated on the North Ridge (Ladd 1964:Figure 1) and which have Macaracas ceramics (Ladd 1964: 33-34, 254-255). These burials were cut into bedrock or were discovered below midden debris (Ladd 1964:34) and were likely lower status individuals.

6.1 COMMON DOMESTIC ACTIVITIES

The following discussion of common domestic activities for the Macaracas phase is based on the distribution of only those sherds that were positively identified as Macaracas ($n = 1507$). A total of 2674 sherds were excluded, including 669 sherds classified as Macaracas/Parita (MP) and 2005 sherds classified as Macaracas/Parita/El Hatillo (MPH). These two intermediate categories were necessary during the ceramic analysis to classify sherds that were clearly later than Conte, but that were difficult to identify more specifically to any of the last three ceramic phases of the Late Ceramic II. This is a common practice in Central Panama (e.g. Haller 2004; Isaza 2007; Ladd 1964) and Haller (2004) used a larger Late Ceramic II category for the regional survey sherds that were too badly eroded to assign to more specific phases. The advantage of including M/P sherds is that it provides a larger sample size to work with and more data collection units for the contour maps. This means that there is less extrapolation required to produce these contours. The disadvantage of including these sherds, however, is that it introduces some random noise into the analysis because later sherds are included. After trying both methods it became apparent that the overall patterns are very similar but are ultimately much clearer when just Macaracas sherds were used. The following analysis is based on 53 collection units with more than five Macaracas sherds, which means that the remaining 163 collection units (for a total of 216) were excluded.

As with both the preceding Cubitá and Conte phases, there are no noticeable differences in the distribution of utilitarian cooking vessels between households (Figure 6.3). Although it appears that these sherds are very dispersed, this is a function of the small number of collection units. The peaks in proportions of cooking vessels in fact show that most households have cooking vessels. When MP and MPH sherds are included (not shown), the distribution of cooking and plain sherds is even wider and shows that practically all Macaracas phase households were engaged in cooking activities and had a basic inventory of plain utilitarian wares (Figures 6.4 and 6.5). Cooking and plain sherds are also more common in household contexts than in the mound complex (Figures 6.3, 6.4 and 6.5). This is probably not surprising since it is unlikely that this was a habitation location, although they were probably deposited fill taken from nearby household middens (Ladd 1964:26-27).

The distribution of Macaracas phase serving vessels is very widespread at He-4, but the contour map does show several noticeable differences from previous periods. For example, there are two areas of the site that have peaks of these vessel types in areas with few or no cooking vessels. The most conspicuous peaks are the households in the north-central zone of the site (Figure 6.6 and 6.7) which is the same location as the Conte phase higher status households. The peaks of serving vessels clustering adjacent to the peak of cooking vessels might suggest more clearly defined activity areas, and perhaps that the serving of food in these households was much more conspicuous than in the rest of the community. The second area with conspicuous peaks of serving vessels is in the mound group (Figure 6.6). Although these peaks are not especially high compared to many households at He-4, it is the relative paucity of cooking vessels in this zone that is important. It suggests that important kinds of social display, such as feasting or mortuary

rituals were taking place within the mound complex, but that daily activities such as food preparation were not very common at all in this space.

6.2 SOCIAL DIFFERENTIATION

The differences in household ceramic inventories that were so apparent during the Conte phase are equally obvious during the Macaracas phase at He-4, particularly the emphasis on ostentatious display, food service and possibly household feasting. The highest concentrations of Macaracas vessel types used in such activities occur in the same areas as the location of high status households during the Conte phase and suggest continuity into the Macaracas phase. For example, when the serving vessel category is broken down into specific vessel types the largest and most conspicuous peak of Macaracas polychrome pedestal plates occurs in the area that had been Cubitá and Conte phase high status households with two more moderate peaks just to the northeast (Figure 6.8). There is also a small peak of polychrome pedestal plates in the southwest corner of the site. This peak is notable because it occurs some distance from the area of higher status households for other phases. Plain pedestal plates are also found in high proportions within the high status area as well as in the southeast corner of the mound group (Figure 6.9). One of only two Macaracas phase *botellas* (Ladd 1964:Figure 35) found at He-4 during the intensive survey was recovered in this same area of peaks of pedestal plates, suggesting again that higher status households had access to rare vessel types (Figure 6.8). The distribution of Macaracas *botellas* is again very similar to both the Cubitá and Conte phases. The distinctive and highly decorated *botellas* co-occur with the highest proportions of polychrome pedestal plates and one of the peaks of plain pedestal plates. These patterns suggest a continuation and strengthening of

earlier patterns of household status differentiation into the Macaracas phase with an emphasis on highly decorated and unusual vessel forms.

There also appear to be differences between the kinds of serving vessels found in higher status households and those in the mound complex. Although Ladd (1964:205, Plate 7) does illustrate a Macaracas polychrome pedestal plate excavated from Mound VII (Item 368-1, Mound VII, Trench 7), pedestal plates of any kind (polychrome, plain or incised) are not actually very common in the mound group collection units (Figures 6.8 and 6.9). Plates (without pedestals) and bowls are the only serving vessels found in very high proportions in the mound group, but the overall distribution of these vessels shows that they are also very widespread throughout the rest of the community as well (Figure 6.10). The two largest contiguous peaks of plates/bowls are in the southeast corner of the mound group and just to the south of the peak of polychrome pedestal plates. These two peaks illustrate the importance of conspicuous display in both mortuary and household contexts. This pattern is still apparent when polychrome plates and bowls are considered alone (Figure 6.11), although more discrete peaks appear. There are more moderate peaks in the mound area, but given the limited number of Macaracas graves in this area it is perhaps understandable they are lower. One of the largest peaks of polychrome plates/bowls is again in the area of high status households. There are also two notable, but more moderate, peaks of polychrome plates/bowls: one in the southwest corner of the site that had a small peak of polychrome pedestal plates, and a second midway between this peak and the mound boundary.

As with previous phases of occupation at He-4, the distribution of Macaracas polychrome sherds is widespread (Figures 6.12); they are not exclusive to one or even a few households. There are three conspicuous peaks of polychrome ceramics, however. The largest and most continuous includes the households identified as higher status on the basis of pedestal plates and

rare vessel types. The co-occurrence of polychrome ceramics with these vessel types shows continuity in the kind of household assemblages in this area from previous phases. A second peak of polychrome ceramics is located in the mound group, which is perhaps not surprising since the available mortuary record for He-4 indicates that polychrome ceramics were common grave goods. A third peak of polychrome ceramics is located in the southwest corner of the site in the area that had a small peak of polychrome pedestal plates and polychrome plates/bowls but that did not have *botellas* or plain pedestals.

In sum, household status for the Macaracas phase is structured in ways similar to the Conte phase (Figure 6.13). That is, the spatial clustering of highly decorated polychrome pedestal plates, plain pedestal plates, high proportions of serving vessels, high proportions of polychrome vessels and the presence of rare vessel types (*botellas*) indicate perhaps two clusters of households differentiated from the rest of the community: one in the center of the site and one in the southwest corner. In social terms the two most important and most conspicuously different areas of the site remain the cluster of households in the center of the community and the mound group. The small cluster of households in the southwest corner of the site is of interest during this phase as well because it appears to have been differentiated somehow, but not to the same extent as the more established high status households in the center of the site.

The distribution of all types of Macaracas incised and modified wares do not correlate spatially with these higher status households at He-4 (Figure 6.14). In fact, incised wares do not seem to have been an important indicator of household differentiation at He-4 in at least 400 years (i.e. since the Cubitá phase). It is interesting that one of the peaks of incised wares is in the southwest corner of the site, which lends further support to the assertion that, while they might

have had many of the markers of status, these households did not have them to the same degree as the long-standing cluster of high status households.

In sum, the patterns of social differentiation that developed during preceding phases at He-4 continue during the Macaracas phase with several lines of evidence suggesting that they had become more pronounced within the community and that they were based on similar principles as previous phases. The high status households identified in the Macaracas community at He-4 continue to be set apart from the community in terms of high proportions of fancier vessel types, particularly access to highly decorated pedestal plates. Although the functional differences between pedestal plates and plates are presumably minimal, it seems that the more ostentatious pedestal plates were more important in social terms for household display rather than as mortuary offerings. This pattern reinforces the idea that the households with quantities of polychrome pedestal plates were especially engaged in food serving or feasting and may indicate that this had become an important part of the chiefly political economy at He-4 by the Macaracas phase. The contrast with the ceramics found in the mound group is particularly interesting since it might suggest that funerary rituals were different from household rituals.

6.2.1 Household Diet

There are very few collection units or excavation units ($n = 11$) with high proportions of Macaracas sherds and associated faunal remains (Figure 6.15), which limits any discussion of household diet and status. The sample of Macaracas phase faunal remains is only 43 (NISP) and is overwhelmingly made up of white-tailed deer ($n = 11$; 25.6%) and large mammal ($n = 24$; 55.8%) with much smaller quantities of fish ($n = 1$; 2.3%), iguana ($n = 2$; 4.6%), shark ($n = 3$; 6.9%), and turtle $n = 1$; 2.3%). It is not possible to explore social status (in terms of higher and

lower status household zones) using faunal remains because the sample of faunal remains from high status households is a single large mammal bone. Using the single collection unit with large amounts ($n = 21$ or 48.9% of the Macaracas assemblage) of faunal remains (Unit 21-02), it is possible to compare this against the entire Macaracas faunal assemblage. Although the remains from 21-02 represent a very large proportion of the overall assemblage, Figure 6.14 does show that the proportion of deer or large mammal remains in the 21-02 faunal sample (85.7%) is very close to that of the Macaracas sample as a whole (81.4%). Unit 21-02 does not have any iguana or turtle, but does have small amounts of fish (4.8%) and shark (4.8%), which occur in similar proportions in the assemblage as a whole. These patterns of faunal exploitation, while limited in scope, seem to show that 21-02 does not stand out as very different from the Macaracas faunal assemblage as a whole (Figure 6.16) and that there is no hint that some households might have enjoyed a higher quality of life in terms of daily diet.

There is also a small sample of shell ($n = 213$) associated with the Macaracas phase that comes from 20 collection units (only nine of which had more than five shells; Figure 6.17). Given the small number of units with more than five shells it is useful to compare the distribution of shells rather than proportions between collection units. The pattern of distribution of shell shows that it was widespread among Macaracas phase households. With the exception of a single collection unit (07 F1), the proportion of edible shellfish remains in all collection units is extremely high and generally approaches 100%. The small number of collection units with shell remains means that it is not possible to explore whether or not some households might have relied more heavily on shellfish for protein and perhaps had less access to terrestrial fauna (such as deer).

In sum, these patterns of faunal exploitation and consumption at Macaracas phase He-4 seem to suggest continuity with earlier periods in terms of the reliance on white-tailed deer, small mammals and some marine species. It is also clearer for the Macaracas phase that shellfish likely constituted an important part of the diet.

6.3 CRAFT PRODUCTION

The evidence for craft specialization during the Macaracas phase is largely anecdotal because there are very few secure Macaracas contexts with associated stone tools or craft goods. Using the same methodology of using collection units with at least 15% Macaracas sherds to assign tools to chronological periods gives 40 collection units and a total of 104 stone tools. Unfortunately, of these 40 collection units there are only two (excavation units 21-02 and 02-01) with more than five stone tools for this phase. This means that the lithic analysis for the Macaracas phase cannot be done using proportions of tools for each collection unit like for previous periods. Instead the small sample of tools can be examined in terms of their presence or absence from individual collection units. The lithic assemblages from the collection units with large samples are also important sources of information.

The distribution of trapezoidal axes ($n = 5$), adzes/chisels ($n = 2$) and axe manufacturing or finishing debris (axe flakes; $n = 10$) does not show any pattern of restricted access since both the tools themselves and associated debitage are found in many areas within the Macaracas phase community (Figure 6.18). The number of collection units with axes and axe related materials in areas adjacent to the high status households ($n = 4$) and the mound group ($n = 5$) might suggest some connection between axe manufacture or repair and these households as was the case during

the Conte phase. Given the small sample size and the vagaries of sampling it is not possible to explore this relationship in more detail or assign any more confidence to this statement. Nonetheless, the apparent pattern observed for the Macaracas phase would suggest some continuity in axe production and use from the Conte phase.

Other kinds of daily activities, such as stone tool production and processing activities, appear to have been common in most Macaracas phase households. The distribution of chipped stone cores (Figure 6.19) shows a pattern similar to earlier periods in which tool production was a common domestic activity with no evidence of control over production. Similarly, the distribution of cutting and scraping tools (indicating processing activities) is also widespread and likely indicates a continuation from earlier periods in which there was little evidence for any control over, or spatial concentration of, these activities (Figure 6.20). In fact, there are virtually no processing tools found in high status households ($n = 1$), which is similar to the Conte phase. The distribution of the small number of polishing stones ($n = 4$) does not really show any kind of patterning within the community (Figure 6.21). Lastly, the distribution of *manos* ($n = 8$) shows that food processing was probably widespread among Macaracas phase households (Figure 6.22).

6.3.1 Shell Production

There is a small sample of worked shell for the Macaracas phase ($n = 8$), found in only three collection units (Figure 6.23). Two of these collection units have more than 5 shell artifacts and the third (collection unit 15 G1) has only a single piece of shell. Nonetheless, this does show that both high status and lower status households had worked shell. Although there is little evidence with which to discuss patterns of production, collection unit 07 F1 (Figure 6.23), located almost

at the northern survey limit, has the highest proportion of worked shell for the Macaracas phase. Almost 32% of the shell found in this collection unit was worked, and all of them (n = 6) were worked shell cores as illustrated in Mayo (2004: 124-125), that appear to have been “colmillo” blanks (Mayo 2004:137). All six shell cores are *Anadara grandis*. This limited evidence for shell production comes from a lower status area of the site and is spatially quite removed from the higher status zone. This pattern is consistent with other observations in the Central Region that shell production was not associated with high status households, although the scale and intensity of shell production at He-4 does not approach that of the shell workshops at Cerro Juan Díaz. These workshops appear to have produced quantities of (primarily) marine shell jewelry (Mayo and Cooke 2004). The shell working evidence from He-4 shows much less intensive production and a focus on more easily obtainable shell raw materials.

6.4 SUMMARY

During the Macaracas phase the community of He-4 experiences some important social changes that point to an increasingly conspicuous social hierarchy. This is seen in both household status differences and in the construction of burial mounds apart from household areas. While most Macaracas phase households had a basic inventory of plain wares and cooking vessels and had smaller proportions of fancier wares, including serving vessels, there is clear evidence that a small group of households located in the center of the community were of higher status. In this area the distribution of cooking and serving vessels suggests more clearly defined activity areas for food preparation and food service.

The household ceramic evidence for the Macaracas phase also indicates a continuation and strengthening of earlier patterns of status differentiation, with strong continuity both in the location of higher status households and in the ways in which they were differentiated from the remainder from the community. As in both the Cubitá and Conte phases, the ceramic inventories from higher status Macaracas households are very diverse and have higher proportions of elaborately decorated and finely crafted ceramics. An important change is the increasingly restricted distribution of elaborately decorated Macaracas pedestal plates. This might suggest that conspicuous display was restricted to a few high status households. At the same time the first substantial mound construction and the burial of high status individuals begins at He-4. The differences in ceramic assemblages for the high status households and the mound group suggest differences in household and mortuary rituals, with the former more focused on conspicuous display or feasting than the latter. The available evidence for household diet, however, suggests that these higher status households did not enjoy greater access to certain kinds of food resources, suggesting that they did not enjoy a better “quality of life” in terms of overall diet. There also is no real evidence to suggest that the social differences during the Macaracas phase were tied to involvement in, or control over, craft production of any kind. Although the samples of lithics and worked shell are extremely small, there are no patterns that would suggest that higher status households were the ones producing any kinds of craft goods that were not already being produced by other households in the community. This suggests, anecdotally at least, that there is some continuity with earlier periods in terms of household economic organization. In sum, the social changes seen at He-4 during the Macaracas phase seem to continue along the trajectory of earlier periods with little to no economic foundation behind the social hierarchy. As with the Cubitá and Conte phases, it appears as though the nature of social status and social

power during the Macaracas phase is tied to non-economic factors such as religion and ideology; factors which can be equally powerful in their own right, but that are structured very differently from economic ones.

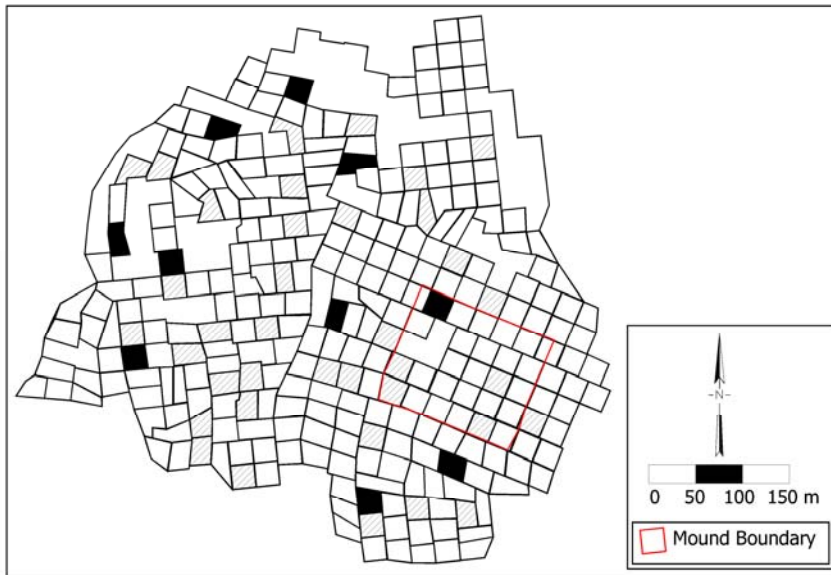


Figure 6.1 All collection units with Macaracas and Macaracas/Parita sherds. Hatched units had Macaracas sherds in surface/shovel collections as well as in stratigraphic tests located in them; black units had Macaracas sherds only in stratigraphic tests; and white units had Macaracas sherds only in surface/shovel collections.

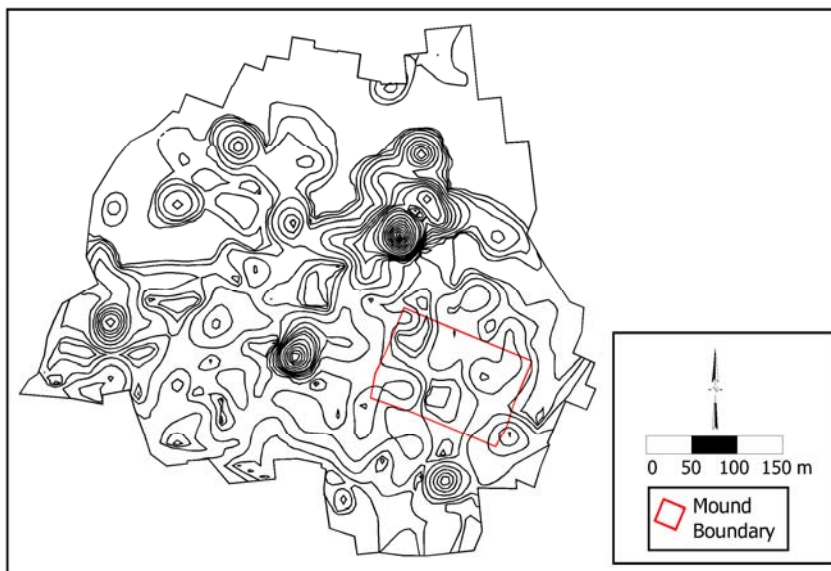


Figure 6.2 Contour map showing the density of Macaracas and Macaracas/Parita sherds.

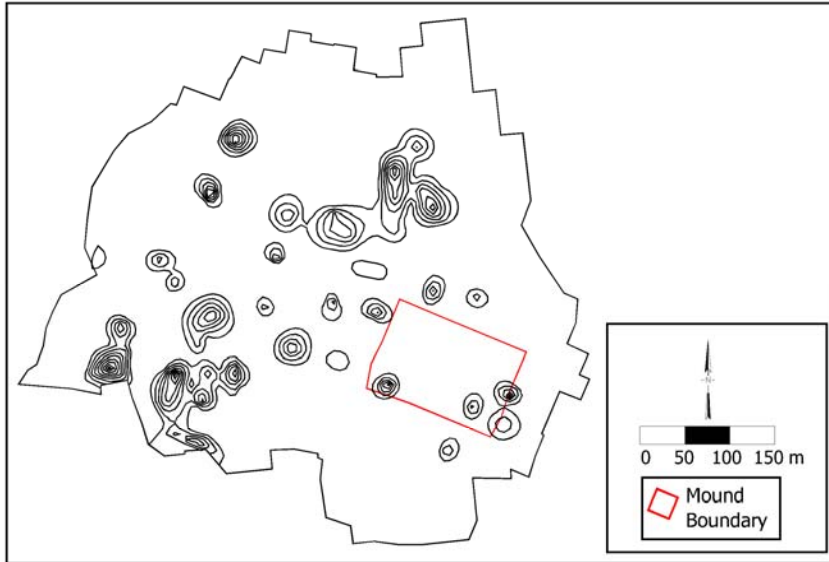


Figure 6.3 Contour map of proportions of Macaracas cooking vessel sherds.

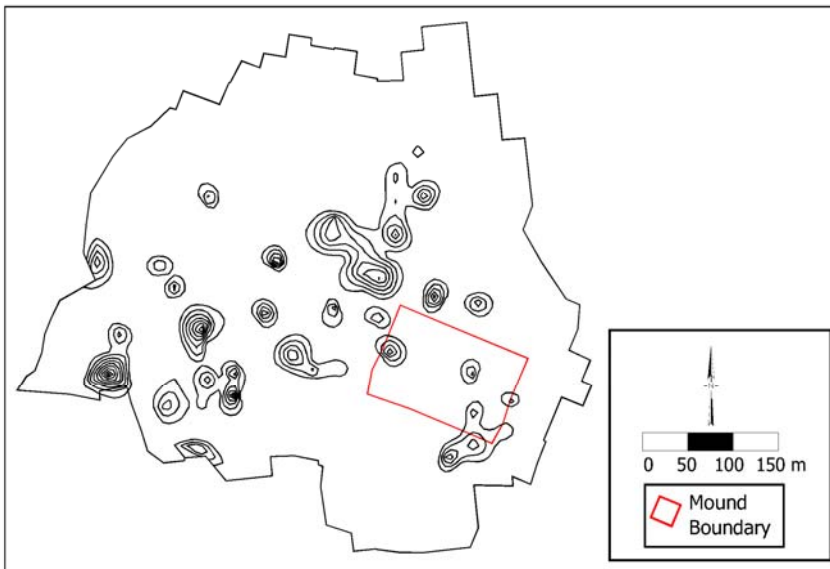


Figure 6.4 Contour map of proportions of Macaracas plain ware sherds.

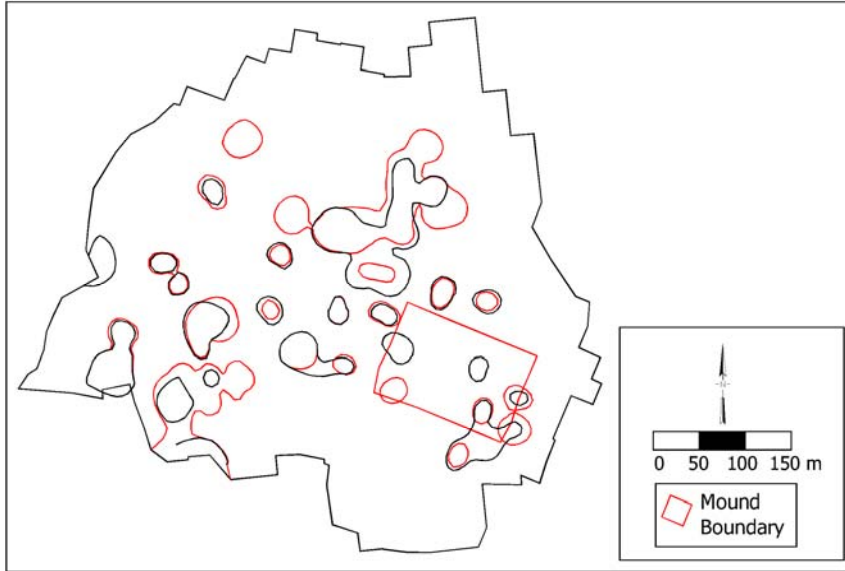


Figure 6.5 Contour map of proportions of Macaracas cooking vessel (red contour lines) and plain ware (black contour lines) sherds.

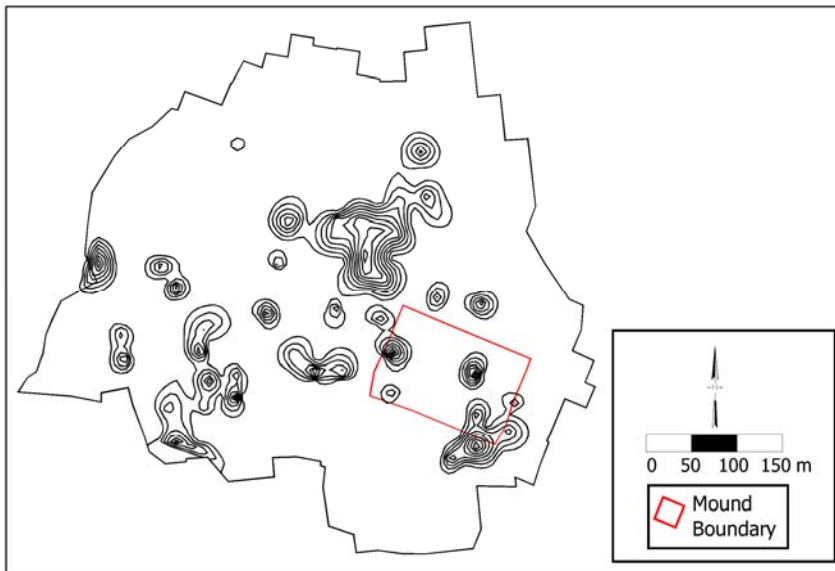


Figure 6.6 Contour map of proportions of Macaracas serving vessel sherds.

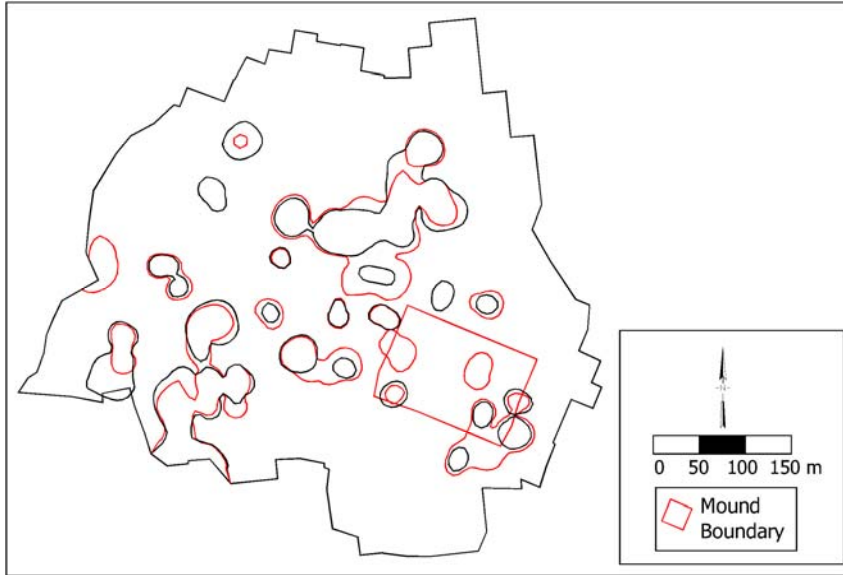


Figure 6.7 Contour map of proportions of Macaracas cooking (black contour lines) and serving vessel (red contour lines) sherds.

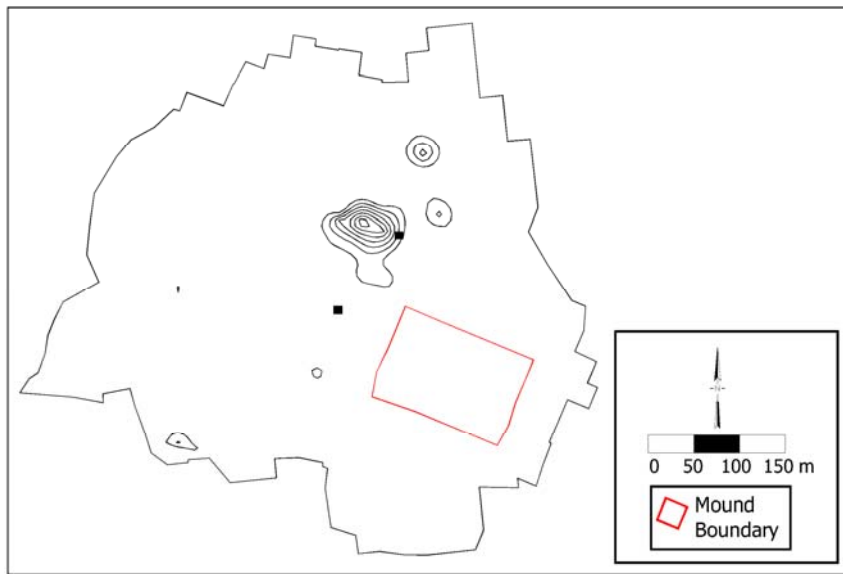


Figure 6.8 Contour map of proportions of Macaracas polychrome pedestal plates (black contour lines) and botellas (black squares).

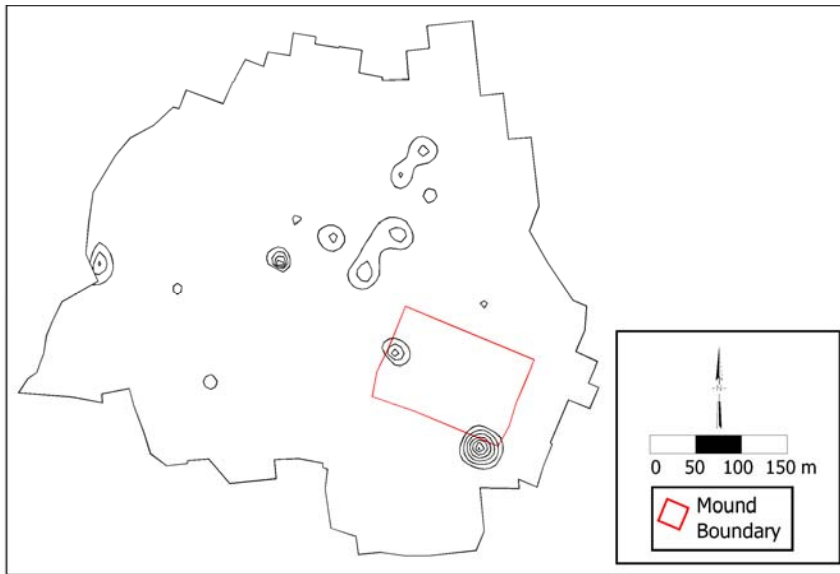


Figure 6.9 Contour map of proportions of Macaracas plain pedestal plate sherds.

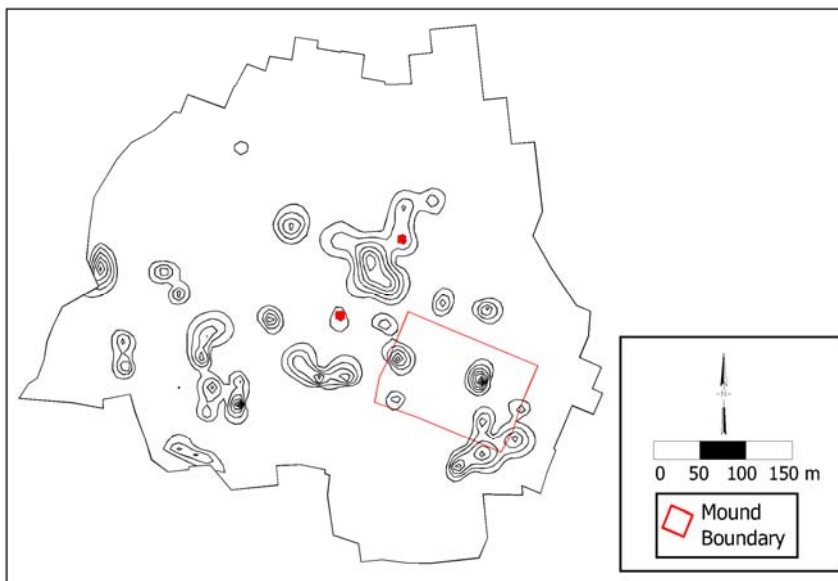


Figure 6.10 Contour map of proportions of Macaracas plate and bowl sherds (regardless of decoration); *botellas* are shown as red squares.

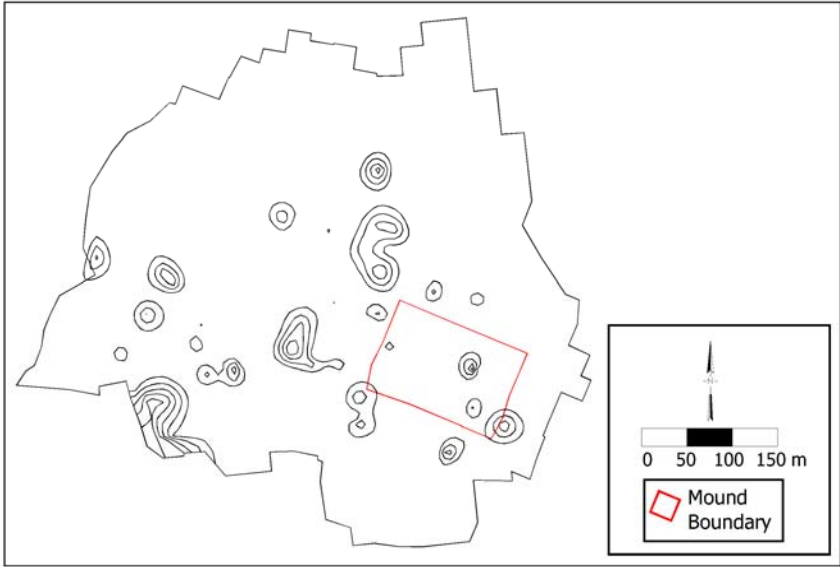


Figure 6.11 Contour map of proportions of Macaracas polychrome plate and bowl sherds.

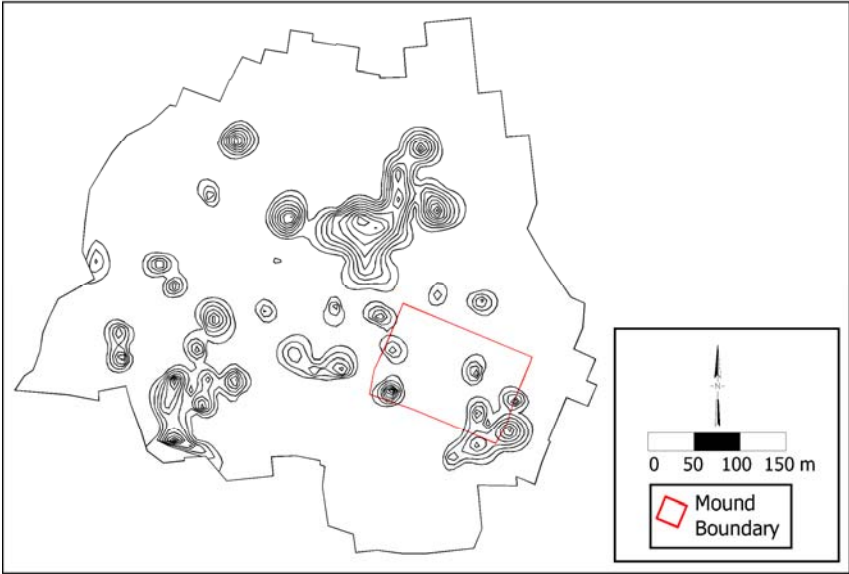


Figure 6.12 Contour map of proportions of Macaracas polychrome vessel sherds.

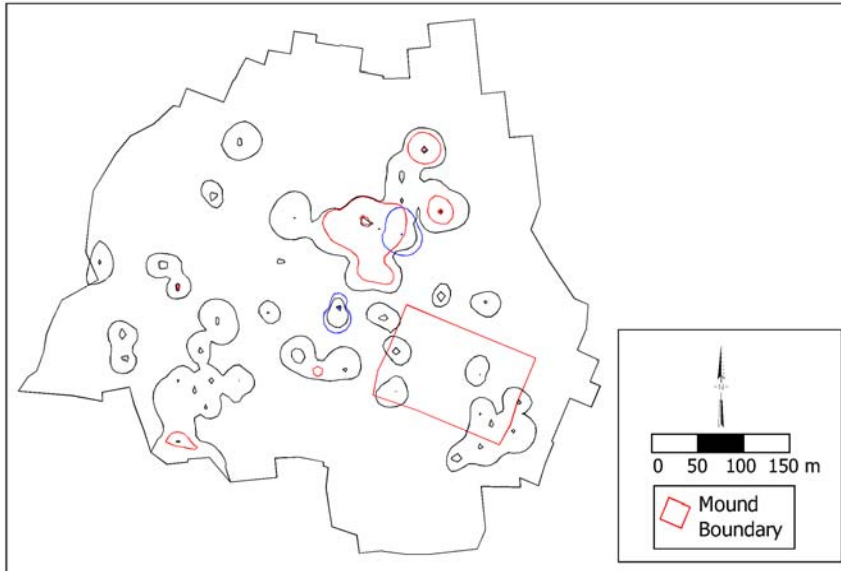


Figure 6. 13 Co ntour ma p of proportions of Macaracas polyc hrome vessel sherds (black contour lines), polychrome pedestal sherds (red contour lines) and *botellas* (blue contour lines).

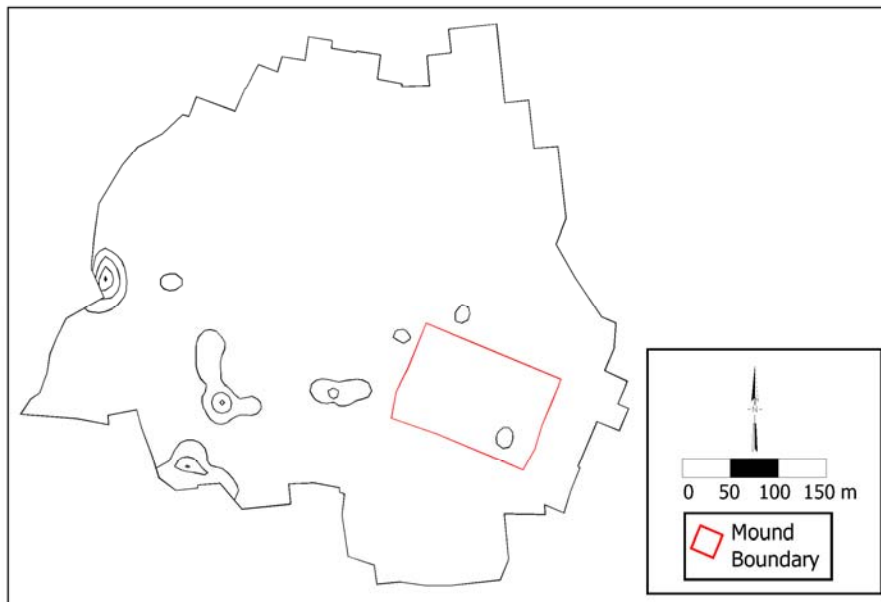


Figure 6. 14 Co ntour map of proportions of Mac aracas incised ware sherds (including incised pedestals).

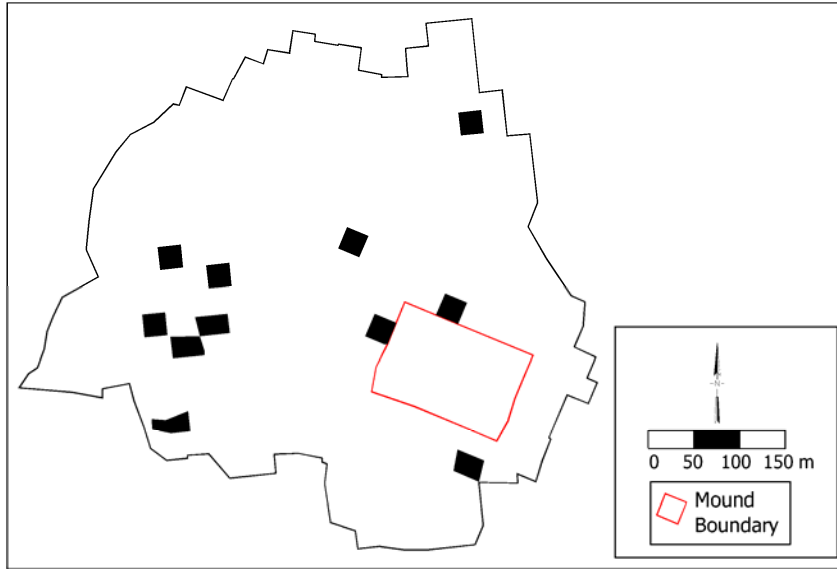


Figure 6.15 Collection units with faunal remains associated with the Macaracas phase.

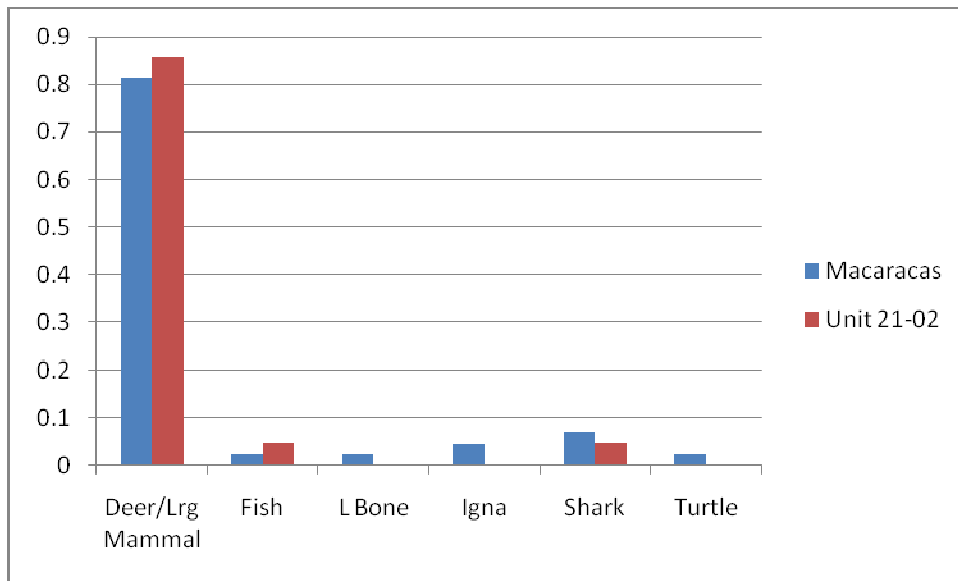


Figure 6.16 Relative proportions of faunal remains from all Macaracas collection units (blue) and Excavation Unit 21-02 (red).

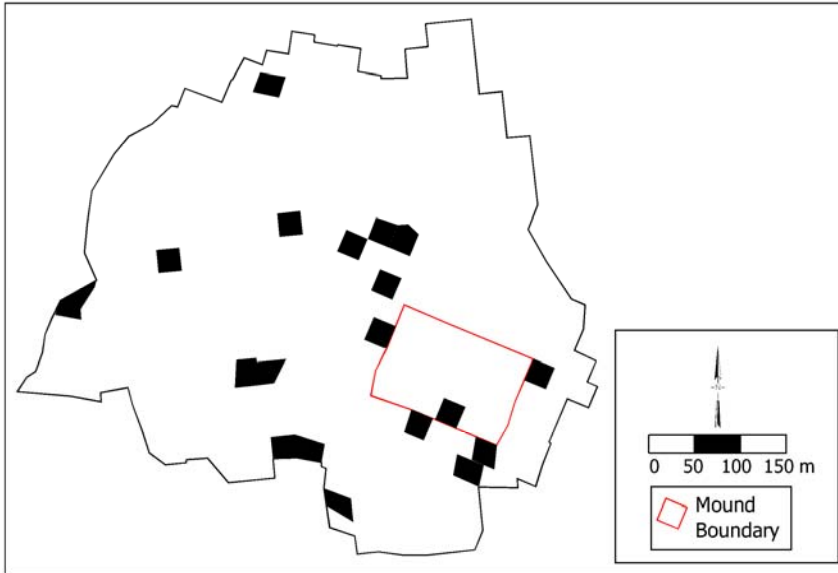


Figure 6.17 Collection units with shell remains associated with the Macaracas phase.

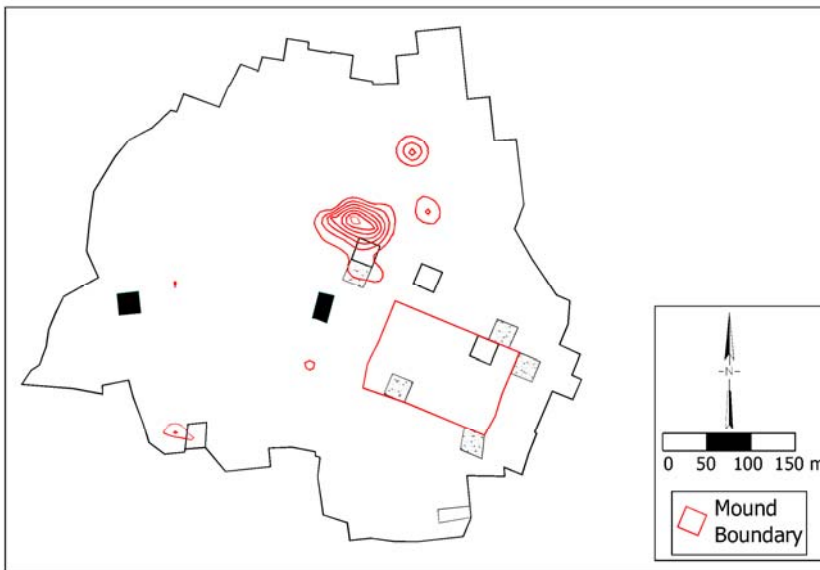


Figure 6.18 Macaracas axes and axe fragments. Solid collection units have both axes and axe flakes; hatched units have axes only and empty squares have only axe flakes. Polychrome Macaracas pedestal sherds are shown as red contour lines.

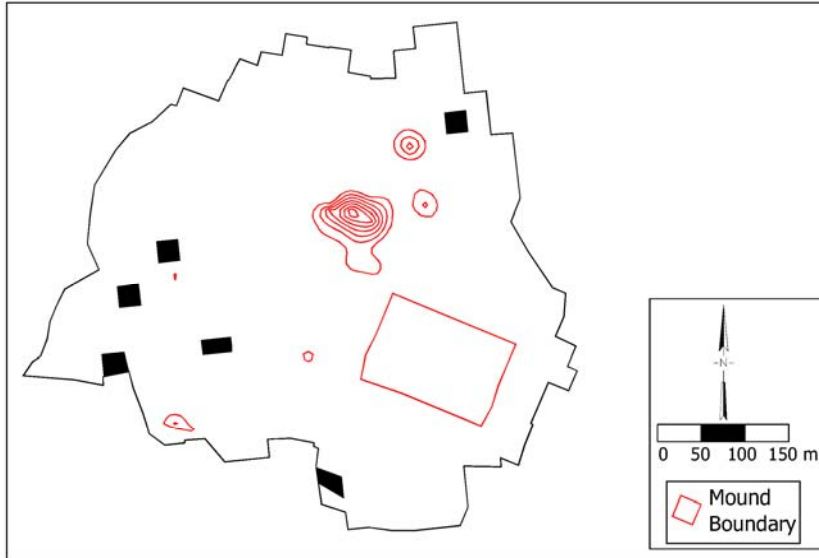


Figure 6.19 Collection units with chipped stone cores associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines.

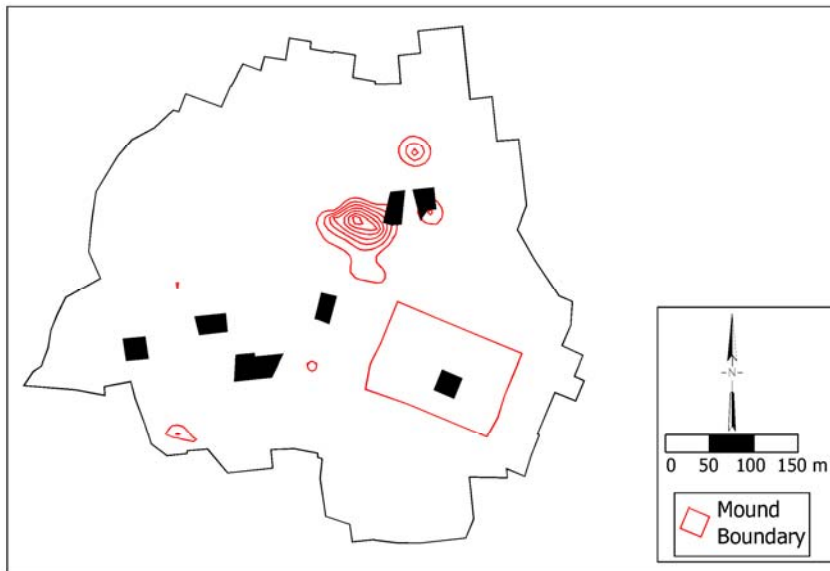


Figure 6.20 Collection units with cutting and scraping tools associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines.

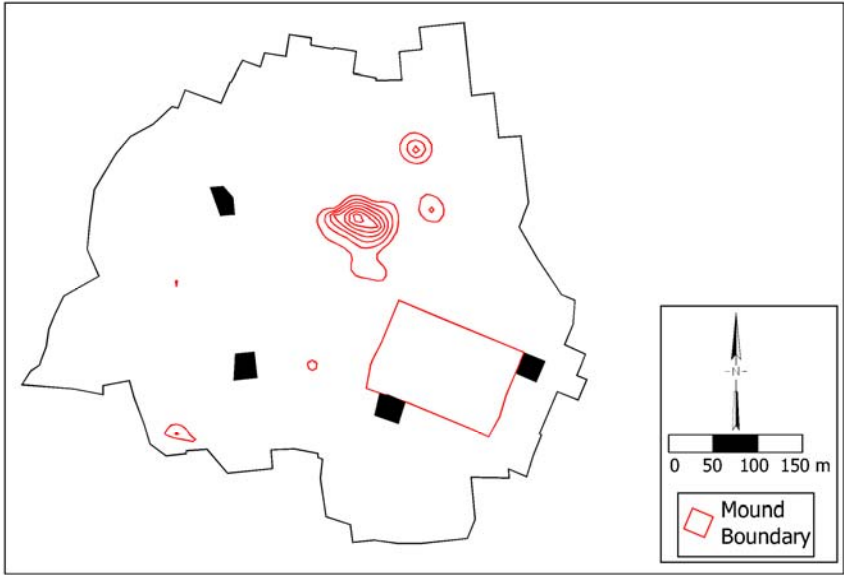


Figure 6.21 Collection units with polishing stones associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines.

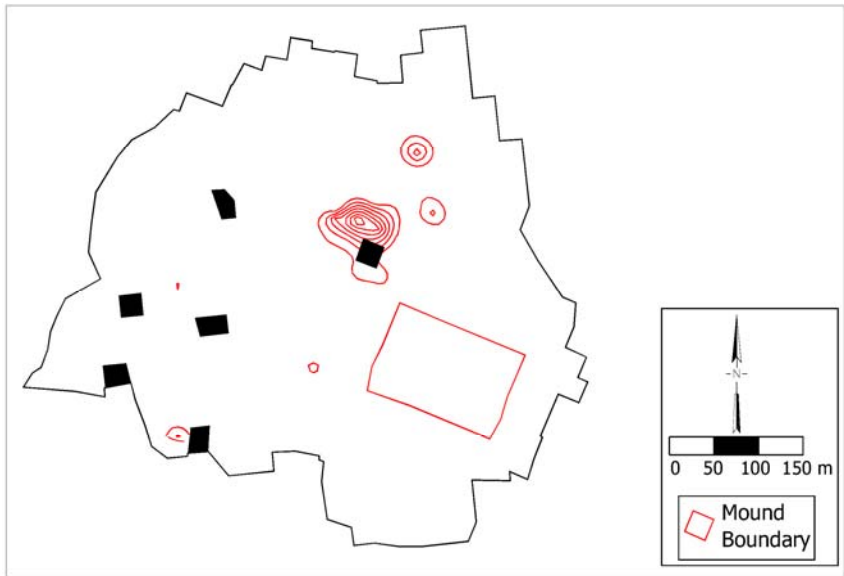


Figure 6.22 Collection units with manos associated with Macaracas ceramics. Polychrome Macaracas pedestal sherds are shown as red contour lines.

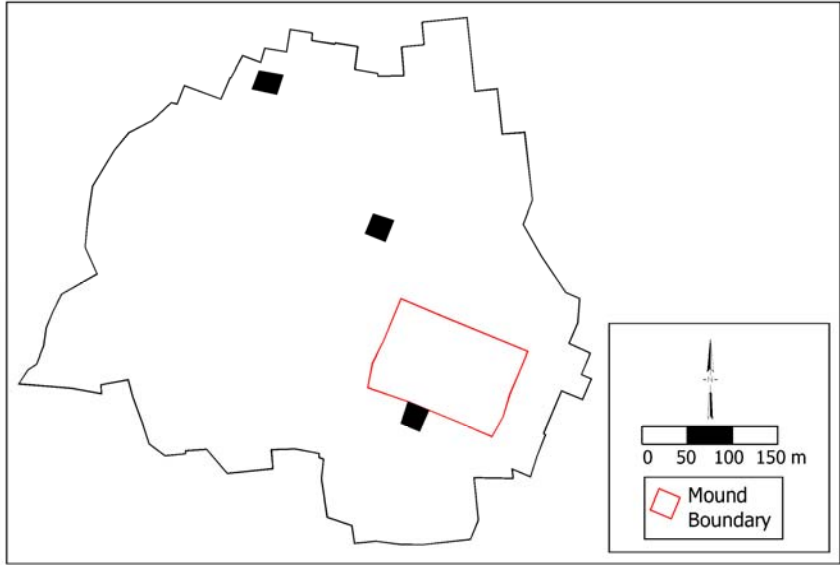


Figure 6.23 Collection units with worked shell associated with Macaracas ceramics.

7.0 SOCIAL HIERARCHY AT HE-4 DURING THE PARITA (A.D. 1100-1300) AND EL HATILLO (A.D. 1300-1522) PHASES

The periods preceding the Parita (A.D. 1100-1300) and El Hatillo (A.D. 1300-1522) phases have shown the appearance and persistence of a social hierarchy that was an important structuring element of daily life, although the basis of the apparent household differences up until this point does not appear to have been related to economic activities. The evidence for the periods leading up to the Parita and El Hatillo phases shows strong continuity in household autonomy and self-sufficiency in terms of basic tool production and daily domestic tasks. The Parita and El Hatillo phases might be seen as the apogee of a sequence of development beginning with the earliest agricultural villages in the Río Parita valley and moving towards increasingly complex social relationships between individuals, households and communities.

During the Parita phase there is a substantial increase (22%) in valley wide population from the Macaracas phase (Haller 2004:93, 95). He-4 continues to be situated at the head of the regional settlement hierarchy because it remains the largest site in the valley with the largest population; it also continues to have a nucleating effect with five smaller sites located nearby (Haller 2004:95, Figures 4.24 and 4.25). The regional survey estimate of the Parita phase size of He-4 (Haller 2004) is 14.9 ha, whereas the intensive survey estimate is 17.8 ha (based only on surface collections and not test units), a difference of 3.3 ha. The El Hatillo phase sees a general continuation of regional dynamics in that He-4 continues to be the largest site with the highest

population (Haller 2004:102). In spite of this, there are some important changes at the regional level. In the El Hatillo phase the population of the Río Parita valley decreases by 56% and several secondary sites (Sites 363 and 355) become more prominent (Haller 2004:102). The regional survey site size estimate for He-4 at this time is 19.5 ha (Haller 2004:102), although it is only 3.5 ha for the intensive survey.

The striking differences in site size for He-4 for the El Hatillo are a consequence of differences in ceramic classification for the regional and intensive surveys. It follows that there are also discrepancies in density area values that are used to estimate population levels. The regional survey has density area values of 4.7 and 2.3, respectively for the Parita and El Hatillo phases (Haller 2004:Table 4.3). The intensive survey density area index values are 7.2 and 0.25, respectively. The most obvious explanation for this discrepancy is a different approach to ceramic classification for the last two phases of the Late Ceramic II period. While the highly decorated El Hatillo ceramics are distinct (Cooke 1976:132, 1985; Mayo 2006:35). Associated with the El Hatillo phase are several varieties of Mendoza ceramics (Cooke 2003) which were not classified separately during the intensive survey ceramic classification. Although the regional survey analysis separated the Parita and El Hatillo phases, they were lumped as a more inclusive “Parita/El Hatillo” category for the intensive survey.

In spite of these differences in classification, it is still possible to attempt population reconstructions for He-4 using the same means as for earlier periods. The regional survey estimates a population of between 61 and 244 for the Parita phase and 30 and 120 people for the El Hatillo phase at He-4 (Haller 2004:126). Using the same methodology (as discussed in Chapter 4 for the Cubitá phase), the intensive survey population estimate for the Parita phase would be between 94 and 374 people. The intensive survey population estimate for the El Hatillo

phase would be between three and 13 people, using the density area index value of 0.25. This last population estimate is substantially lower than the regional estimate of 30-120 people for this phase (Haller 2004:126) and is a result of differences in ceramic classification. To overcome these discrepancies, we can treat the Parita and El Hatillo phases as one single phase. Doing so produces a density area value of 3.7 for all Parita and El Hatillo sherds. This figure was reached by calculating the density area value for Parita and El Hatillo sherds together and dividing by four centuries instead of two. This produces a population estimate of 48 and 192 people for the Parita/El Hatillo phase at He-4. To make this comparable to the regional survey estimates we can average the upper and lower Parita and El Hatillo regional population estimates and get a range of 46 and 182 people. While not ideal, there is a good correspondence between the population ranges for the regional and intensive surveys when these two phases are treated as a single unit.

In terms of He-4's regional importance during the Parita and El Hatillo phases, the central mound group that first came into regular use during the Macaracas phase continues to be used extensively; again showing that He-4 was unique in this regard. Haller's synthesis of the available literature describing mound burials and associated finds indicates that during the Parita phase seven out of eleven mounds were in use, and five of the eleven were in use during the El Hatillo phase (Haller 2004:95, 103). The available data also indicates that there were several well stocked burials during both the Parita and El Hatillo phases. One example of a particularly wealthy grave is Mound XI, excavated by Dade (1972). Of the three burials in this mound, Grave A was the most elaborate with 23 individuals. This burial also contained large quantities of decorated ceramics, effigy vessels, polychrome *botellas*, miniature vessels, plain ware vessels and some evidence of mortuary rituals involving burning (Haller 2004:98). Only three gold artifacts were recovered as well: a gold disc from Grave A and a gold disc and gold pendant were

found in Grave C, although there it has been suggested that a large collection (about 30 items) of hammered gold and a gold helmet were also recovered from the burials at He-4 (Haller 2004:98). For the El Hatillo phase (Haller 2004:106) five of the eleven mounds appear to have been in use and the most elaborate come from a number of burial urns recovered from Mound II that contained human remains and offerings (Haller 2004:103, 106; Ladd 1964:138). The most interesting of these is Urn 1 which contained the remains of three individuals and 737 perforated human incisors—that together make a necklace (Haller 2004:106; Ladd 1964:246). The other five urns contained few grave goods and between 1-3 individuals (Haller 2004:106). Located between these urns, however, were several pieces of carved manatee bone—labeled as Find 10 (Ladd 1964:245, Plate 1). Finds 14, 16, and 18 were similar to Find 10 in that they consisted of burial urns and in one case, Find 14, contained another necklace of perforated human teeth (Ladd 1964:264).

More recently, two 1 m² test pits were excavated in the mound group in 2006 as part of this project in an attempt to collect artifact samples that might be compared with household inventories from the remainder of the site collected during the intensive survey. Of these two units (22-01 and 22-02) Unit 22-02 produced a huge sample of artifacts that make it possible to contrast with previous published reports of the burials at He-4. Unfortunately this unit was also heavily disturbed, either from illegal looting activities or from the 1948 archaeological investigations (i.e. back dirt piles), or perhaps both. The soil was very sandy and was interspersed with evidence of burning and many sherds were also blackened. Notwithstanding this mixing, the unit is still informative in terms of mortuary ritual during the period of activity in the mound group. The ceramic inventory for Unit 22-02 shows that 97% of the identifiable sherds found in this unit date to the Macaracas, Parita or El Hatillo phases. An incredible

quantity of faunal remains and shell were also recovered throughout the mixed fill of Unit 22-02. Approximately 52% (n = 559 NISP) of the entire faunal assemblage for the whole site comes from this unit and almost 85% (n = 8360) of all shell remains recovered come from Unit 22-02. In sum, the mortuary record described by Ladd (1964) and others (Bull 1965; Dade 1972) for He-4 shows a tendency towards well stocked graves and the inclusion of items used in social display (necklaces, carved manatee objects) large quantities of ceramic offerings. The new data from Unit 22-02 also corroborates the more anecdotal evidence regarding the nature of the burial offerings and mortuary ritual in the mound group. All of this evidence points to clear differences in status and the differential treatment of the dead that suggest rigidly defined social positions.

In contrast to the more elaborate burials in the mound group, two Parita phase interments that were discovered during fieldwork in 2006 shed some light on the nature of more modest mortuary treatment in domestic contexts. These mortuary features are associated with Parita phase households and provide some insight into the nature of household burial practices at He-4. The only off-mound burials reported by Ladd are those excavated on the North Ridge (Ladd 1964:Figure 1) and which have Macaracas ceramics (Ladd 1964: 33-34, 254-255). No Parita phase household burials are reported by Ladd (1964). The new mortuary features were discovered during the test excavation phase of the project and are stratified. The first was encountered at a depth of 80-90 cm and consists of a partially preserved tamped earth floor (Figure 7.1) with reddish and yellow soil discoloration and evidence of burning. Associated with this floor were two Red-Buff ollas, one plain *taza*, a smoke ware bird effigy vessel, a polychrome jaguar effigy vessel (with the remains of a child inside), and several large fragments of a plain olla. The west wall profile revealed that the rest of the vessel extended to the west beyond the excavation wall, but that it was upturned. Additionally, two polishing stones, one

possible polishing stone, and a chert flake were found in association with the floor (Figure 7.2). Fragments of what was presumed to be human bone was recovered from this floor, perhaps indicating the deposition of cremated remains and one of these was identified as a fragment of an adult fibula. Inside the jaguar effigy vessel 7 fragmentary teeth were identified as those of an infant 3 ± 1 years of age (Claudia Díaz, personal communication).

The second mortuary feature was discovered at a depth of between 170 cm and 2 m, positioned within an uneven bedrock depression that might have been modified in antiquity (Figure 7.3). Ladd (1964:Figure 6) illustrates small chambers excavated into bedrock for off-mound burials at He-4 that might be similar to the one excavated in 2006. Associated materials include two plain ollas, fragments of a *taza* and a broken (but reconstructed) plain pedestal plate (Figure 7.1). All of the ceramics are associated with the Parita phase. There were fragments of bone and three fragmentary human teeth that are probably from an adult. Taken together these two new mortuary features provide a contrast to the much more elaborate burials found in and around the mound complex, particularly in terms of what more modest household burials looked like at the Parita/El Hatillo phase community of He-4. Equally important, these features suggest that the nature of household mortuary rituals might have differed from those of the mound group because there is no evidence for elaborate feasting rituals or ceremonial activities in these burials like there are in the mound group (e.g. Unit 22-02). Given the soil staining, evidence of burning and fragmentary condition of the bone it is possible that the interments were cremated or were secondary burials, a practice known for earlier periods at Cerro Juan Díaz (e.g. Cooke et al. 1998).

The following spatial analysis is based on Parita/El Hatillo ceramics. Parita/El Hatillo sherds ($n = 6431$), from 320 collection units or 91.4% of all collection units at He-4 (Figures 7.4

and 7.5). There is a much smaller number of collection units with more than five sherds ($n = 134$), although the total number of sherds is not that much different ($n = 6024$), and the spatial analysis is based on these units. For some analyses El Hatillo polychromes or specific Parita types were separated in order to explore one pattern more clearly. There are 6131 Parita sherds from 318 collection units. Only 5712 sherds from 125 collection units with more than five Parita sherds were included in the final analysis. Lastly, there is a large number ($n = 5072$) of sherds that could not be classified to phase, except that they were clearly Macaracas or later. These sherds were categorized as Macaracas/Parita/El Hatillo (MPH). While perhaps not ideal, these sherds were excluded from the analysis because they introduce too much random noise when trying to produce contour maps.

7.1 COMMON DOMESTIC CERAMICS

The following analysis is based on Parita and El Hatillo sherds lumped together to illustrate the distribution of common utilitarian ceramics within the community. As with previous phases at He-4, the distribution of cooking vessels is widespread. As before, this pattern indicates the ubiquity of cooking activities across the site and shows that all Parita/El Hatillo phase households were engaged in basic food preparation activities (Figure 7.6). The distribution of Parita/El Hatillo plain wares is consistent with this observation and Figure 7.7 shows that plain wares correspond very closely to the distribution of cooking vessels and indicates that virtually all households during this phase had a basic inventory of utilitarian vessels used in daily household activities.

The distribution of Parita/El Hatillo serving vessels is not as widespread as the cooking vessels and in several cases there are more discrete peaks of serving vessels that occur in “valleys” of low proportions of cooking vessels. In contrast to the Macaracas phase, this pattern is more widespread with several possible groups of households having more clearly defined cooking and serving areas. This pattern is especially clear in the northwest corner, the north-central area, the central area and there are also some peaks in the southwest corner of the site (Figure 7.8). The more obvious peaks of cooking and serving vessels during this phase could be a result of larger sherd samples from a greater number of collection units, although this pattern might represent a continuation of household patterns from earlier times that is simply more visible. Even if this pattern is something that emerges during the Parita/El Hatillo phases, it shows that the use of space within household groups seems to have been more clearly defined. This could be an indication that the conspicuous serving activities that were restricted during the Macaracas phase became more widespread during Parita/El Hatillo times.

7.2 SOCIAL DIFFERENTIATION

In order to examine in more detail the degree to which food service was restricted at He-4, it is necessary to explore the serving vessel category using more specific types. Even if conspicuous food service, and perhaps competitive feasting, was more widespread within the community at this time it is still possible that there were differences in the kinds of vessels used, or in the proportions of more elaborately decorated vessels. Such differences could reflect differences in household status and could point to competition between households or other social units. As with previous phases, pedestal plates are useful in this regard because they are more ostentatious

than basic plate forms. The distribution of Parita/El Hatillo pedestal plates, regardless of decoration, (Figure 7.9) shows that they are more widely distributed than for the Macaracas phase, but there are still noticeable peaks. The most apparent peaks are in the central area of the site in the same location as the high status households for previous periods, in the southwest corner of the site, and there are several moderate peaks scattered throughout the community. One trend that is noteworthy is the fairly moderate peak of pedestal plates that is adjacent to the zone of high status household for previous periods. While the peaks are more moderate, together they encompass an area that is much more extensive than any other single peak. For instance, the contour lines that define this area actually connect with the more dramatic peaks just to the north and seem to define a much larger and more contiguous group of households.

When pedestal plates are broken down further into only the painted varieties, there are even more obvious patterns that show that not all households had equal access to such elaborate vessels. For this analysis, the patterns are much clearer when only Parita polychrome pedestals are shown. Figure 7.10 illustrates that the distribution of polychrome pedestals was less widespread than pedestal plates more broadly and, more importantly, that three main areas had high proportions of these vessels. The first peak is also the largest and most contiguous. It includes the area previously defined as high status households for earlier periods as well as the area of moderate peaks of all types of pedestal plates (discussed above). While the area of previous high status households is incorporated into this large cluster of polychrome pedestals, it appears as though the focus of this peak is in the adjacent area just to the south. This might indicate that the location of the higher status households had shifted somewhat over the last few centuries. Another noticeable peak is in the southwest corner which is the same location that had begun to show some hints of status differentiation during the Macaracas phase. Aside from a few

scattered peaks of polychrome pedestal plates, the last important area is the mound group. There are several small peaks of polychrome pedestal plates in this zone and the relatively low proportion of these vessels is similar to the Macaracas phase. When a higher contour is used these patterns are even more obvious (Figure 7.11) and the three zones of interest (the center of the site, the southwest corner, and the mound group) remain the most visible.

A second serving vessel category, painted *tazas* and *platos*, shows a similar pattern to painted pedestal plates. Using only painted Parita *tazas* and *platos* shows three areas with high proportions: the center of the site, the southwest corner and the mound group (Figure 7.12). In this case the southwest corner has higher peaks than the center of the site, although the former does have moderate peaks compared to surrounding areas. The peaks in the center of the site are also more extensive than any other. The mound group also has one noticeable peak as well as some more moderate, but extensive, contour lines indicating that painted vessels and *tazas/platos* were found across the complex (Figure 7.12).

The distribution of all types of highly decorated ceramics continues to be widespread at He-4, showing continuity over the last 700-900 years. For Parita sherds (excluding El Hatillo) the pattern is consistent with previous periods (Figure 7.13). That is, in spite of the widespread distribution of painted sherds, there are peaks in the central zone and along the northeastern site limit. This indicates that some households had much higher proportions, but most notably in the center of the site. This pattern is not quite as clear for earlier periods, although the distribution of painted sherds does correspond fairly well to the distribution of serving vessel types including pedestal plates and *tazas/platos*.

For the Parita phase at He-4 there are also small samples of jewelry and polished bone and antler. There are a total of three bone beads from three collection units. These beads appear

to be worked vertebrae (possibly shark). They are found in the high status area to the east of the mound group, with a more moderate peak just to the north (Fig. 7.14). While not particularly elaborate, these worked bone beads do fit the pattern of more conspicuous display. This is consistent with the mortuary pattern at Sitio Conte in which higher status individuals were buried with an array of costume elements (Briggs 1989:137; Hearne and Sharer 1992:10-11; Lothrop 1937:112, 14) and the association of necklaces of perforated human teeth at He-4 itself.

One final line of evidence that supports the identification of high status households is the distribution of polished bone and deer antler. There is a small sample of this material: a total of only seven pieces of polished bone from five collection units. The largest peak of this material is at the northern edge of the mound group with a smaller peak at the western edge (Figure 7.15). There are also two moderate peaks of polished bone in the southwestern corner of the site. In both cases the distribution of this material corresponds with the areas identified as high status based on the ceramic distribution maps. This association seems to correspond with the Parita and El Hatillo phase mortuary record in which carved bone objects or batons are found associated with wealthier graves (see above).

The distribution of modified wares, such as incised and plastically decorated wares, does not correspond with either of the areas of high status households (Figure 7.16). This is consistent with the pattern seen in both the Conte and Macaracas phases and indicates continuity in the kinds of vessels that are indicators of household differentiation.

In sum, the identification of higher status households based on ceramic distribution maps for the Parita/El Hatillo phase remains similar to the Cubitá, Conte and Macaracas phases. Two areas can be distinguished (in addition to the mound group): the household clusters in the south-central zone and in the southwest corner. These households are distinguished by having high

proportions of serving vessels, particularly polychrome pedestal plates, painted *tazas/platos* and moderate proportions of polychrome vessels in general. The households in the center of the site have almost the only worked bone beads and the households in the southwest of the site have high proportions of polished bone objects. The small amount of jewelry (worked bone beads) and polished bone, however, does line up with the households identified as higher status. Nonetheless, it is clear that the differences in household status that appeared during the Cubitá and Conte phases continue into the Parita phase (almost 600 years later). The two clusters of high status households, however, show some changes from previous periods. For example, the southwest corner shows a much slower development of status than the most conspicuous area for the Conte and Macaracas phases. The second important change in household status for the Parita phase is the center of the site. The high status households in this zone might represent the replacement of the high status households from previous periods or simply the movement of this household group slightly to the south. The latter interpretation seems more likely since there are no real indicators from previous periods that households in this more southerly location were obtaining a higher social standing. Given the very slow development of higher status households in the southwest corner, it seems unlikely that the well entrenched households in the center of the site would be usurped so quickly.

7.2.1 Household Diet

Having identified at least two clusters of higher status households for the Parita/El Hatillo phase, it is possible to explore the extent to which they enjoyed a higher standard of living in terms of daily household diet. Unfortunately this has been difficult to determine for earlier periods because of the lack of associated faunal remains or samples that were too small to explore intra-

site variability. For the Parita/El Hatillo phases there is an adequate faunal sample ($n = 1004$) from a large number of collection units ($n = 48$). Only 18 collection units have faunal samples larger than five identified (NISP), although the sample remains quite large ($n = 958$; this figure includes “large mammal” bones). The following distributional maps of faunal remains can also be examined with some confidence because there are faunal samples of larger than five distributed across the site and not just in the areas identified as higher status or in areas with the highest artifact densities (Figure 7.17).

The majority of the faunal assemblage for He-4 is white-tailed deer; it makes up 82% of the entire faunal assemblage and 82% of the material from samples of more than five (both figures include large mammal in the calculations). When only samples of more than five are considered, it is clear that deer (and large mammal remains; $n = 790$ NISP) was widely accessible to households at He-4 regardless of status (Figure 7.18). There is also a large peak of deer remains in the mound group. Most of this peak comes from a single 1 m^2 test unit (Unit 22-02) in which 55.8% ($n = 560$ NISP) of the entire Parita/El Hatillo faunal assemblage was recovered. Notes taken by both Richard Cooke and Mikael Haller indicate that the remains suggest that whole animals were deposited in this context and that some of the bone was burnt. This is probably the remains of some kind of funerary feast or offerings included in the interments, household midden debris or a combination of both.

When the distribution of deer is explored in more detail by attaching error ranges to these relative proportions the strength of this pattern is even more apparent. The bullet graphs were made following the principles behind a cluster sampling (Drennan 1996b:247-251) that attaches error ranges based on the number of sampling units lumped into one group (e.g. lower status households or higher status households) rather than the number of bones in a single collection

unit. The results of this analysis show that we can be 95% confident the differences (of approximately 10%) in the relative proportions of deer between higher status and lower status households are not due to the vagaries of sampling (Figure 7.19). In sum, while deer meat was not restricted to higher status households, they had higher proportions than lower status households showing at least one important difference in household diet and standard of living. It has been suggested that deer capture would probably have been opportunistic as deer would have foraged in the anthropogenically modified landscape (Cooke and Ranere 1989:307) and that this might be similar to the “garden hunting” suggested by Olga Linares (Linares 1976b). Cooke and Ranere (1989:306) have also suggested that access to deer might have been “managed” for use in feasts rather than for regular household consumption, or that there might have been food taboos restricting consumption. The distribution of white-tailed deer at He-4 in large proportions in virtually all households makes both of these scenarios unlikely. This is not to say that deer meat was not important to feasting or that there were social conventions regarding its consumption, but these seem to be that higher status households had greater access to deer meat.

When the distribution of deer remains is broken down by meat utility, however, there are some interesting patterns that emerge. By calculating the proportion of deer remains that were high, medium, low and unknown meat utility for each collection unit with more than five faunal remains, it is possible to explore intra-site variability for access to high quality cuts of meat. It appears as though the higher status households in the center of the site (adjacent to the mound group) and the mound group itself had the highest proportions of high utility deer meat (Figure 20). The distribution of high quality cuts of meat is not exclusive to these areas, except that the peaks of this material cluster in or around the high status households in the center of the site and

the mound group. This again fits the pattern of higher status areas at He-4 having higher proportions of most things, but not exclusive access to them.

Other terrestrial fauna consumed by the inhabitants of He-4 include iguana and paca/agouti. The distribution of iguana ($n = 65$; 6.9%) is fairly restricted in spite of occurring in relatively high proportions in the assemblage. Of the three peaks of this material, the highest peaks are in the households in the southwest corner of the site and in the mound group (Figure 7.21). There is a small peak in a lower status household near the southwest corner. This pattern of distribution is again consistent with the trend of higher status households having the highest proportions, without having exclusive access. When a cluster sampling comparison using bullet graphs is done for iguana, it shows that lower status households had very small proportions of this material. The higher status households in the southwest corner had much higher proportions, as did the mound group. Interestingly, the higher status households in the center of the site did not have any iguana. No clear tie between household status and iguana consumption emerges from this comparison because iguana was present in all households except the higher status households in the center of the site. The high proportions of iguana in the mound group might have been a result of efforts to make the feasting menu more diverse.

The distribution of paca/agouti is similar to that of iguanas to the extent that there are three peaks and two of them come from higher status contexts: the mound group and the southwest corner (Figure 7.22). The third peak is located to the north of the mound group, but is directly adjacent. Overall this pattern suggests a pattern similar to iguana. That is, it appears that this rodent did not contribute much towards household diet, but the distribution of paca/agouti does suggest that higher status households consumed this more frequently than lower status households.

The distribution of fish at He-4 is somewhat more widespread than iguana and paca/agouti, but is by no means as extensive as white-tailed deer. A variety of fish species are present at He-4, including white corvina, puffer fish, rooster fish, and sawfish. A moderate sample of fish ($n = 51$; 5.5%) is mostly concentrated in the high status households in the center of the site and in the mound group, although there is a large peak in the southwestern corner (but not in the high status households here; Figure 7.23). A much smaller peak is located to the north of the mound group, from an excavation unit with a very large faunal sample (Unit 16-01). These contour maps make it seem as though fish might be a higher status food but this is probably a result of using collection units with more than five faunal remains. A comparison of the relative proportions of fish, using cluster sampling, in households at He-4 it shows that lower status households at He-4 consumed more fish (and less deer) than higher status households (Figure 7.24). At this point it is not possible to explore the distribution of different fish species between households of different status, although it is interesting that a rooster fish was found in the mound group Unit 22-02. This fish would have been approximately 11-12 kg (Richard Cooke, personal communication 2006). It is possible that more exotic or fiercer animals were associated with higher status individuals and were valued for their fierce behavior (Linares 1976a, 1976b).

The distribution of shark remains ($n = 21$; 2.2%) at the Parita/El Hatillo community of He-4 shows a relatively widespread pattern. While there are peaks in the mound group and both clusters of high status households, these are relatively moderate compared to the peak at the western edge of the site and in the collection unit just to the north of the mound boundary (Figure 7.25). This pattern suggests that most households at He-4 had access to shark and that in this instance it appears as though higher status households did not have the highest proportions of this material.

There is a variety of other fauna present in the household midden deposits from He-4 although the majority occurs in such small proportions (less than 1%) that it is not really useful to discuss intra-site distribution. They include armadillo, rabbit, duck, and turtle (mud turtle). In spite of the small quantity of this material in the assemblage, it should be noted that the higher status households and the mound group had the most diverse faunal assemblages. That is, while armadillo, rabbit, duck and turtle were found in tiny proportions overall, they tended to be found in areas with the most diverse ceramic inventories and in the possible feasting context (Unit 22-02) of the mound group.

The distribution of all types of edible shellfish at He-4 shows that the majority was concentrated in the mound group, particularly excavation unit 22-02 (Figure 7.26). The remaining peaks of edible shellfish at He-4 suggest relatively even access to this food.

In sum, there is some evidence that the higher status households at He-4 during the Parita/El Hatillo phase did enjoy a higher quality of life in terms of access to foodstuffs, but they did not have exclusive access to any of the animal remains found in the assemblage. For example, while higher status households did not have differential access to deer meat, they did consume more of it than lower status households, probably including better cuts of meat. In contrast, lower status households consumed more fish than higher status households, perhaps pointing to some kind rules regarding social status and food. Higher status areas also seem to have had a more diverse array of animal remains, particularly the mound group, including shellfish. In fact, Unit 22-02 had the most diverse faunal assemblage than any other context at He-4 which further supports the idea that the mortuary rituals in this area were quite elaborate.

7.3 CRAFT PRODUCTION

There is more evidence for craft production during the Parita/El Hatillo phase for He-4 because there are larger artifact samples from more collection units than for any other period. There are 438 stone tools from 249 collection units associated with the Parita/El Hatillo phase. As with other phases a much smaller proportion of collection units had lithic samples large enough to work with. In this case 22 collection units had more than five stone tools, giving a total sample of 132 lithics. Figure 7.27 shows that the distribution of stone tools is not simply a function of their association with higher densities of Parita/El Hatillo sherds. Stone tools associated with Parita/El Hatillo ceramics are widespread but tend to occur in smaller quantities in individual collection units. More importantly, samples of more than five lithics are not simply concentrated in higher status households. In fact, there are more collection units with more than five stone tools in areas outside of the high status households than in them.

The distribution of trapezoidal polished stone axes in collection units with more than five stone tools shows a pattern that suggests a strong association, although not exclusive, between higher status households and access to these tools (Figure 7.28). Figure 7.29, however, shows that trapezoidal axes are widespread at He-4 when considered in terms of presence/absence rather than as proportions. This pattern shows that most households probably had relatively equal access to these important tools and that higher status households did not necessarily have differential access to them.

In contrast, the distribution of chisels and adzes is much more restricted. All six of these tools are concentrated within the higher status households adjacent to the mound group (Figure 7.30). The highest peak (which consists of 50% of the chisels/adzes included in the assemblage) is located at the northern edge of the high status households in the central area. There are

presumably functional differences between trapezoidal axes and the narrower and thinner adzes and the more restricted distribution of the latter suggests that the high status households in the center of the site were engaged in different kinds of activities than the other higher status households in the southwest and with the rest of more common households. Two of the three contexts with chisels/adzes also had at least one trapezoidal axe, which provides further support that the higher status households were engaged in different activities. It seems likely that the thinner adzes were probably used for splitting wood or for more delicate wood working activities than the larger, heavier trapezoidal axes that might have been more appropriate for felling trees (e.g. Carneiro 1979) or used for heavier domestic tasks (Ranere 1975). Trapezoidal tools have a more obtuse bit angle that would make them more appropriate for such tasks.

It is also possible to explore lithic assemblage composition by broad household status categories. That is, we can examine lithic assemblages for all lower status households (lumped together), the higher status households in the center of the site and the higher status households in the southwest corner. Rather than use the proportions of artifacts in each category, this spatial approach requires that we use cluster sampling (Drennan 1996b:247) to explore household lithic assemblages. Figure 7.31 shows that there are meaningful differences in access to polished stone axes (and associated debitage) between the two clusters of higher status households as opposed to the lower status households. Higher status households appear to have nearly three times as many polished stone axes than lower status households. As with most other patterns, this shows that while higher status households did not have exclusive access to these tools, they had better access. This might indicate their increased role in trade for these items. The difference in the relative proportion of chisels is even more pronounced, comprising around 4% of the lithic assemblage in higher status households and lower status having none. Unlike most other

patterns, this distribution shows that higher status had exclusive access to polished chisels. The small samples of these axes, however, mean that we have little confidence in the patterns in spite of the apparent differences in lithic assemblages between types of households. Nonetheless, we can at least propose that these patterns indicate that higher status households were involved in a greater range of activities beyond the basic agricultural and domestic tasks common to all households at He-4. While this is certainly not unequivocal evidence of craft specialization in higher status households, it does fit with the overall picture of these households having more diverse ceramic assemblages and a slightly better diet.

The distribution of axe flakes is again not exclusive to higher status households, as they are found in many collection units. What is interesting is that there appears to be a tendency for axes and axe flakes to co-occur in high status households more often than in lower status households (Figure 7.32). Both axe flakes with polish and axe flakes without polish have a tendency to cluster in or adjacent to high status households. Given the large sample size for Parita/El Hatillo phase stone tools, it seems that we can be more confident that this is in fact the case. This pattern might then suggest a stronger association between axe finishing and higher status households, perhaps indicating that they were able to obtain these axes more easily. If axe flakes without polish do indeed represent repair flakes, then there might be some support for this scenario since these flakes are found in relatively high proportions in lower status households and flakes with polish are not (Figure 7.33). The distribution of cutting and scraping tools (utilized flakes, blades, and scrapers) at He-4 shows a somewhat ambiguous pattern because there are peaks of these tools in both high and low status areas (Figure 7.34). In contrast to earlier periods, there are peaks of cutting and scraping tools in both clusters of high status households. The distribution of cutting and scraping tools in many households at He-4, however,

seems to be consistent with the Conte, and to a lesser extent Macaracas phase lithic assemblages in which both higher and lower status households had roughly the same proportion of utilized flakes (Figure 5.20). When flakes and cutting and scraping tools are shown using bullet graphs of proportions with confidence intervals, these patterns are consistent (Figure 7.35). That is, it is clear that the production and use of flakes as well as other cutting and scraping tools was common to all households at He-4, regardless of status. Unlike axes and chisels, there is no indication of specialized activities based on these tool types.

The distribution of polishing stones at He-4 also show a tendency to cluster in the higher status households in the southwest corner and in the center of the site (Figure 7.36). Given the association of two (and possibly three) polishing stones with the on-floor Parita phase mortuary feature (described above) it is possible that higher status households at this time were more intensively engaged in either axe polishing or ceramic production. It remains unclear whether or not the polishing stones recovered from He-4 would have been used in either activity, although a polishing stone associated with Parita phase ceramics in a shovel probe less than 10 m from the location of these burials has red staining that might indicate its use in burnishing or polishing ceramic vessels. If this is the case then these two pieces of anecdotal evidence provide the only real hints that higher status households might have been engaged in the production of ceramics. While it is speculation at this point, it is possible that this might be a case of higher status households producing status-reinforcing goods, such as highly decorated vessels.

The widespread distribution of both chipped stone cores (Figure 7.37) and flakes (Figure 7.38) show that the production of basic household tools for daily tasks was common to most, if not all, households at He-4. In a similar vein, both manos and metates are widespread at He-4 for the Parita/El Hatillo phase, suggesting that food processing was also common to most, if not all,

households. There is also continuity in food preparation activities within the community at He-4, as seen through the distribution of manos and metates (Figures 7.39 and 7.40). As with previous periods Parita/El Hatillo phase households seem to have processed their own food. The single metate peak (Figure 7.40) in the mound group is also interesting since they were probably made by specialists and might have had ritual or ceremonial importance (Haller 2004:146).

7.4 SUMMARY

The Parita/El Hatillo phase has the clearest evidence for household differentiation and changing patterns of household production at He-4. The increasingly rigid social hierarchy is visible not only in the continued use of the burial mounds and the interment of important people with large quantities of fancy goods, but is also evident at the household level as well. By the Parita/El Hatillo phase there are at least two clusters of households that are set apart from the community by their access to the highest proportions of fancy vessels, the most diverse ceramic inventories and other fancy objects such as objects of polished bone and bone beads. There is also evidence for differences in household diet at this time. The two clusters of higher status households have higher proportions of deer meat, as well as better access to high quality cuts of meat. Lower status households seem to have eaten more fish than higher status households. There are also much clearer patterns of household economic organization than for any other period in the sequence. By this time higher status households have differential access to imported polished stone axes and might have been involved in finishing imported blanks since there are higher proportions of axe related debitage in these households. There are also hints that these same households, particularly the cluster in the center of the site, might have been engaged in some

specialized activities involving chisels/adzes. These households have the longest tenure as higher status and might have been engaged in different kinds of woodworking activities than most other households at He-4. These new economic activities represent an important change in the degree of household self-sufficiency at He-4 since higher status households might have been producing some items that others were not. It is still not possible to determine if they were producing fancy goods or status-reinforcing goods of ritual or religious significance. In spite of this pattern the increasing economic specialization in higher status households, however, is modest and does not seem to be very intense nor does it show that the remainder of households at He-4 were entirely dependent on them for the production of important subsistence goods. Instead, higher status households might have been differentially involved in regional exchange networks that enabled them to acquire axe blanks that were subsequently redistributed or allocated to the populace at He-4. Finally, the involvement of higher status households in some kinds of specialized craft activities could not have been a basis for the emergence of social hierarchy at He-4 since these changes in household economics appear around six hundred years after the initial appearance of hierarchical social relations. This suggests that the social hierarchy that had evolved at He-4 over several hundred years continued to be one based on largely non-economic factors and that the differences in household production related to chisels/adzes was a consequence, rather than a cause, of the privileged social standing of a small group of households.

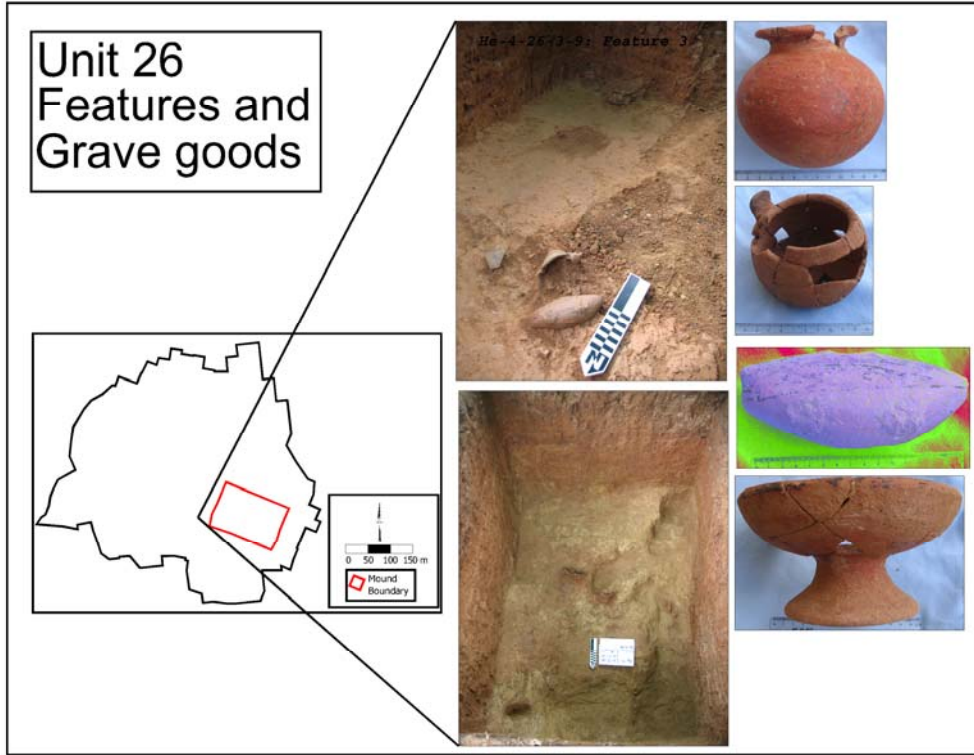


Figure 7.1 Parita phase mortuary features from excavation unit 26-01.

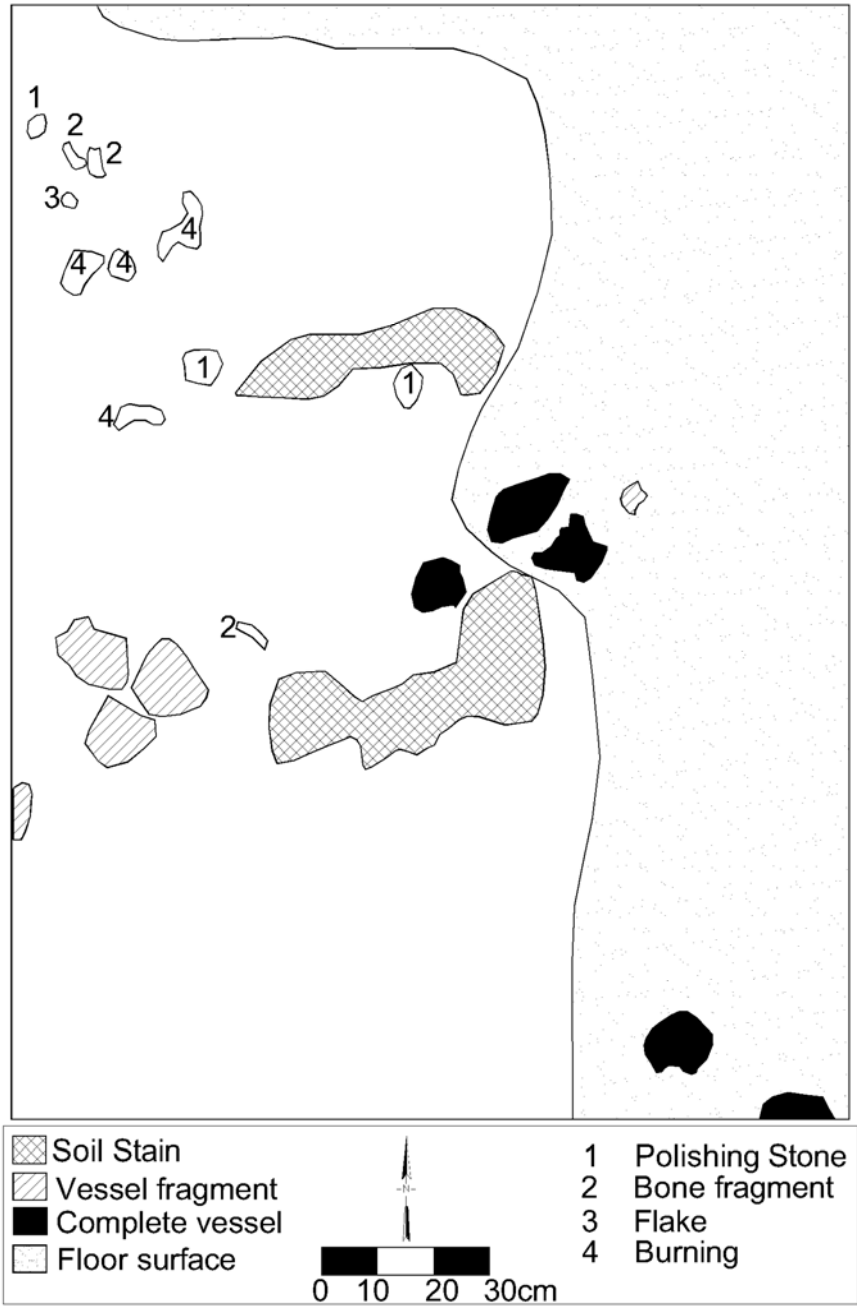


Figure 7.2 Plan of partially preserved Parita phase floor and associated mortuary feature.

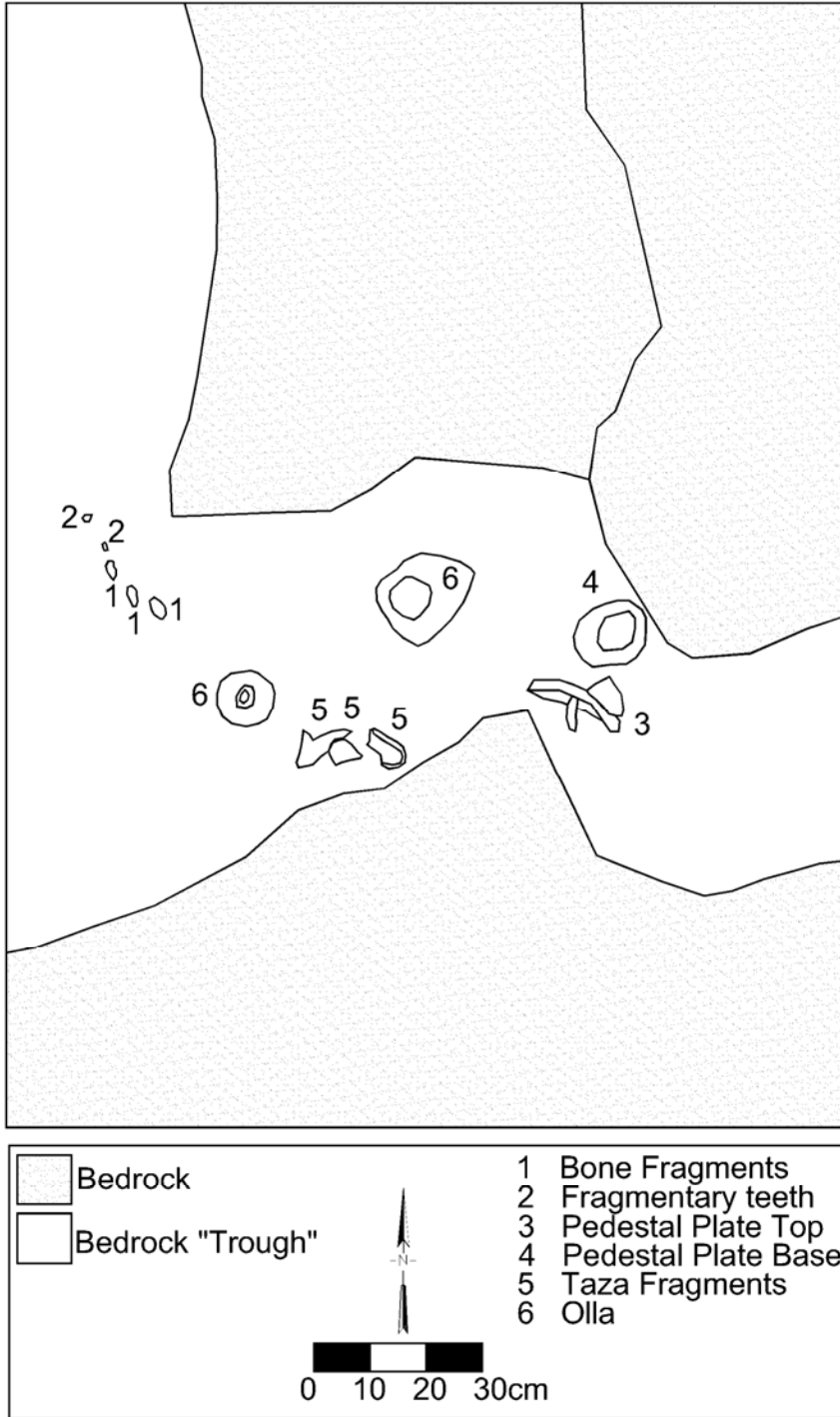


Figure 7.3 Plan of Parita phase mortuary feature on bedrock in excavation unit 26-01.

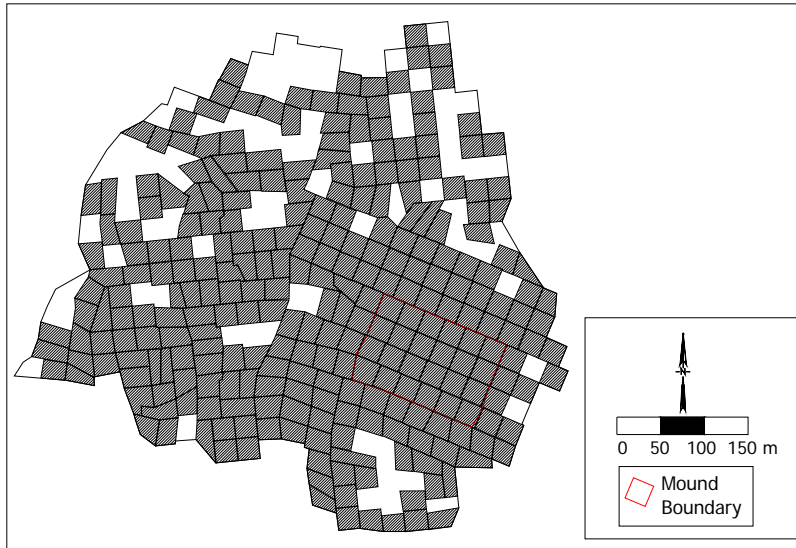


Figure 7.4 Collection units with Parita/El Hatillo sherds (n = 320).

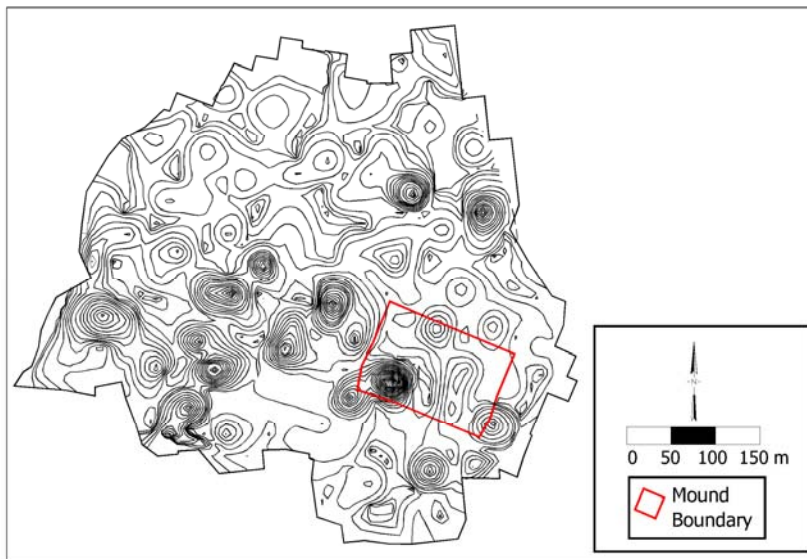


Figure 7.5 Contour map of the density of Parita/El Hatillo sherds at He-4.

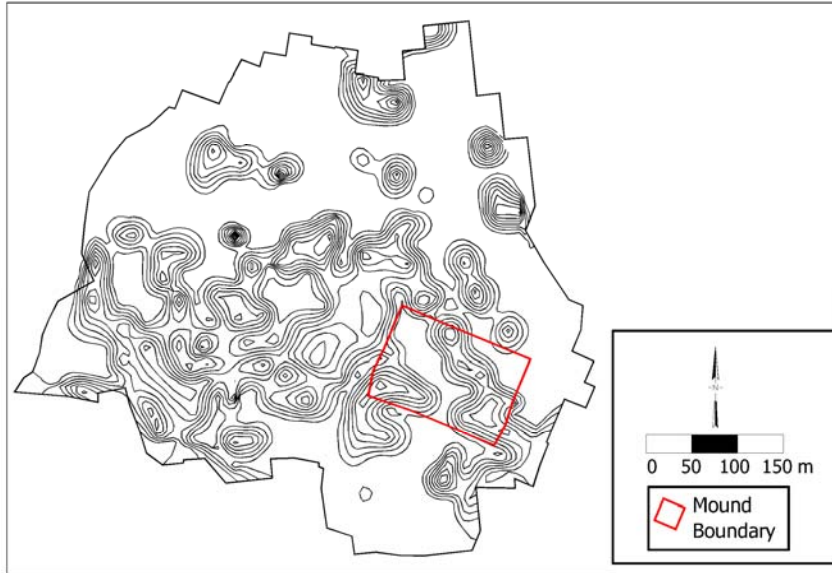


Figure 7.6 Contour map of proportions of Parita/El Hatillo cooking vessel sherds (including all Parita and El Hatillo, but excluding MPH sherds).

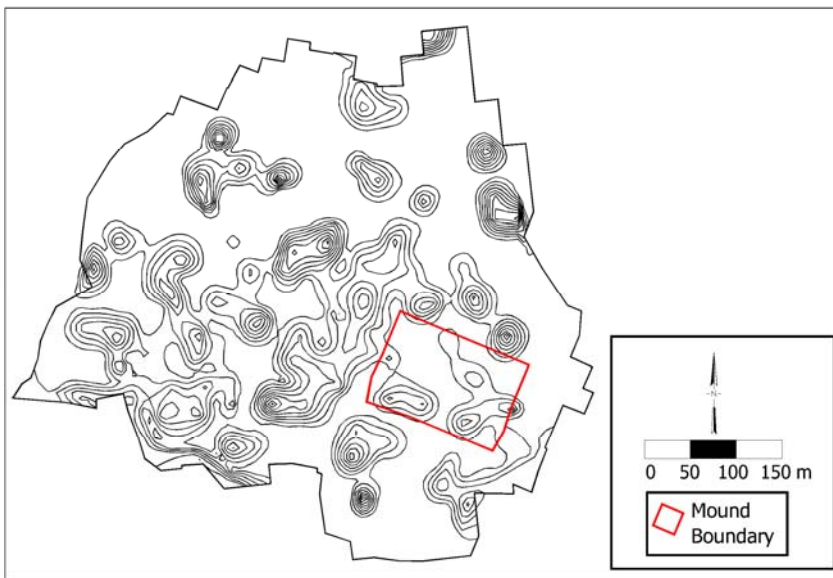


Figure 7.7 Contour map of proportions of Parita/El Hatillo plain ware sherds (including all Parita and El Hatillo, but excluding MPH sherds).



Figure 7.8 Contour map of proportions of Parita/El Hatillo serving vessel sherds (including all Parita and El Hatillo, but excluding MPH sherds).

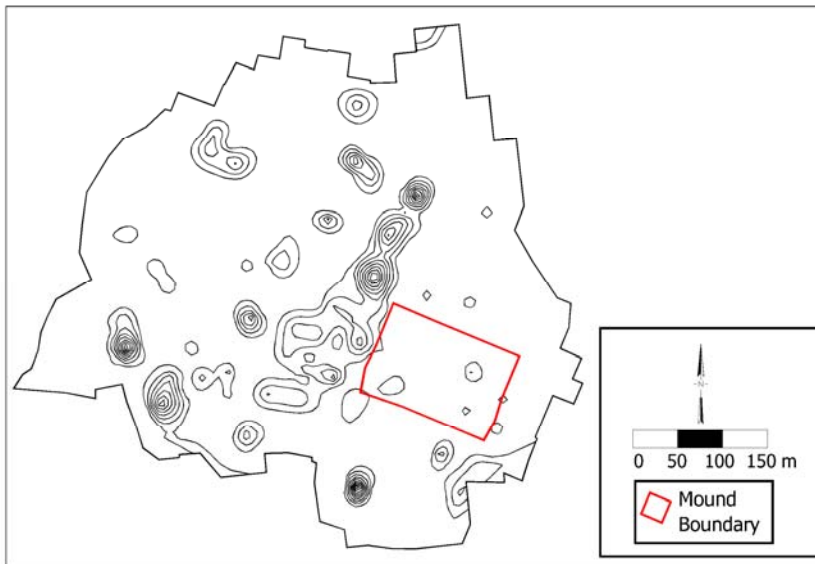


Figure 7.9 Contour map of proportions of Parita/El Hatillo pedestal plate sherds.

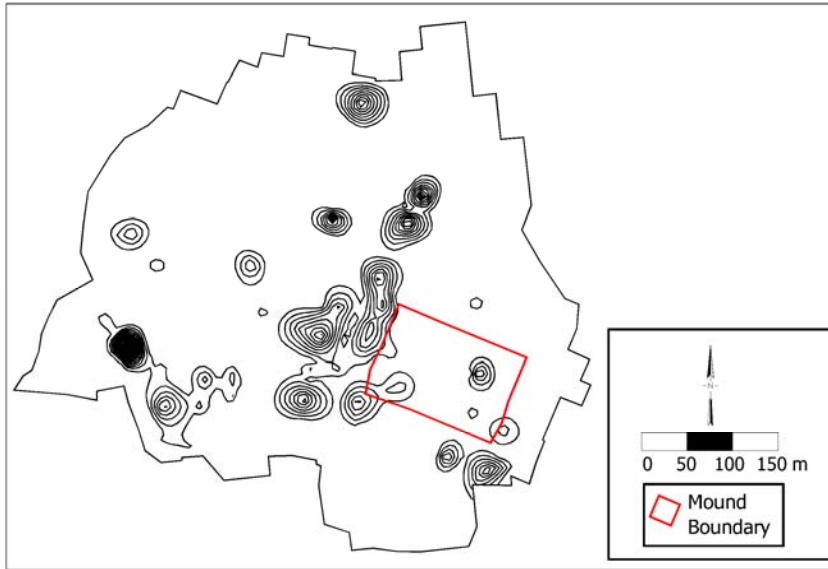


Figure 7.10 Contour map of proportions of Parita Polychrome pedestal plate sherds with no cutoff

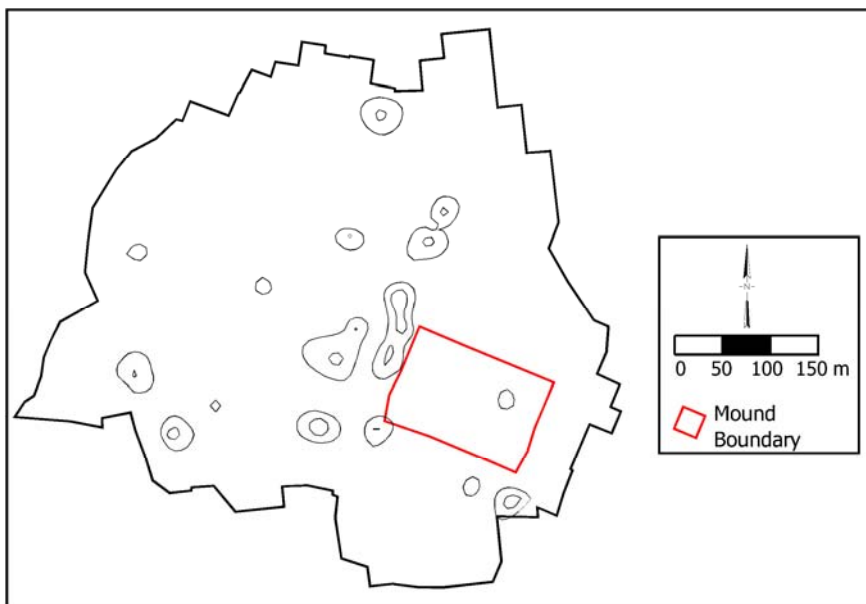


Figure 7.11 Contour map of proportions of polychrome Parita painted pedestal plate sherds at a higher contour cutoff



Figure 7.12 Contour map of proportions of of Parita painted cups and plate sherds.

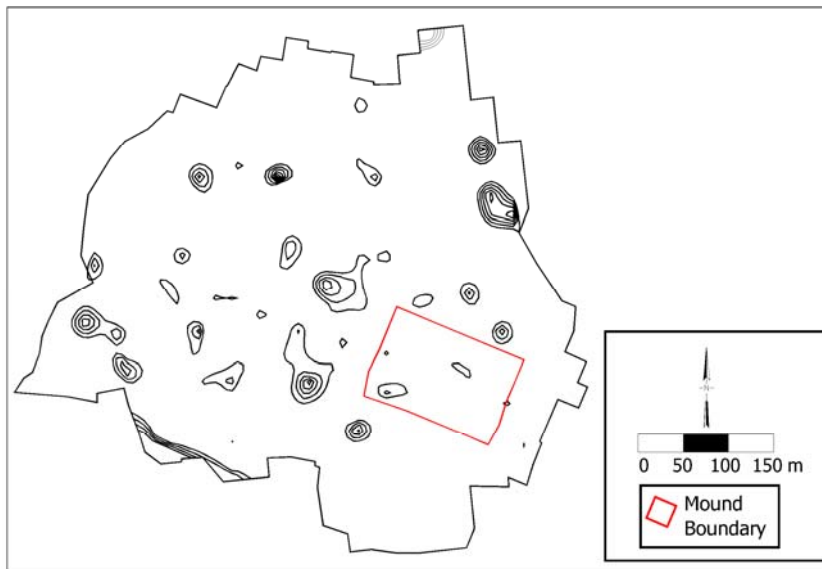


Figure 7.13 Contour map of proportions of painted Parita sherds.

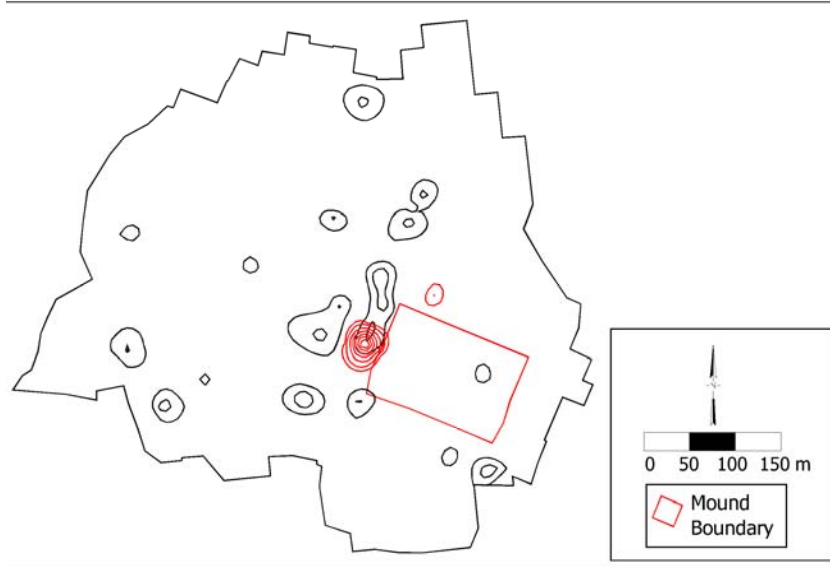


Figure 7.14 Contour map of proportions of Parita polychrome pedestal plate sherds (black contour lines) and bone beads (red contour lines).

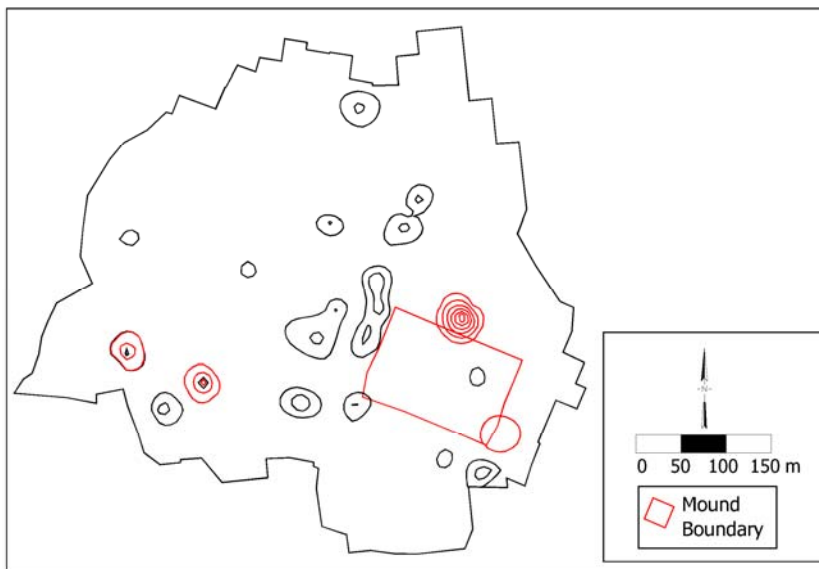


Figure 7.15 Contour map showing the distribution of Parita polychrome pedestal plate sherds (black contour lines) and polished/worked bone (red contour lines).

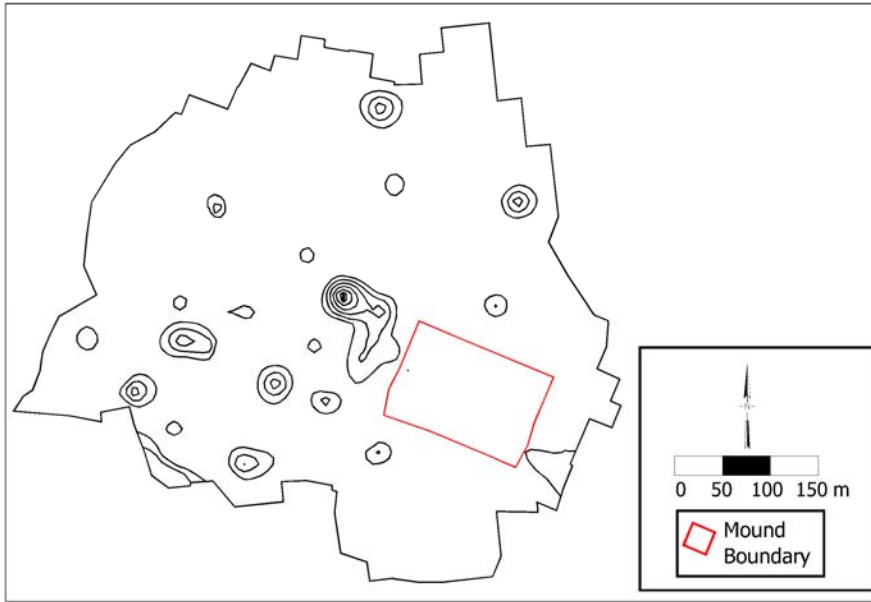


Figure 7.16 Contour map of proportions of Parita /El Hatillo modified ware sherds (incised and appliqué).

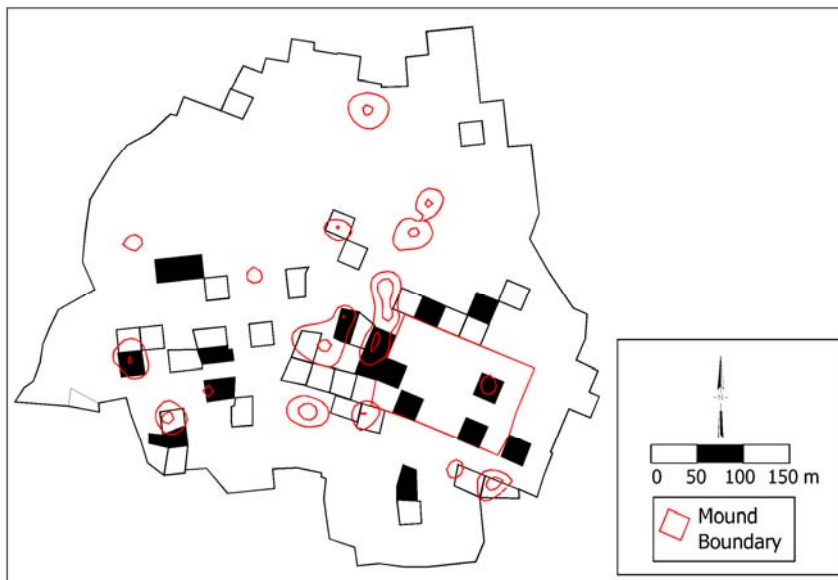


Figure 7.17 Collection units with faunal remains associated with Parita/Hatillo sherds; solid squares have more than 5 faunal remains. Proportions of polychrome Parita pedestal plate sherds are shown as red contour lines.

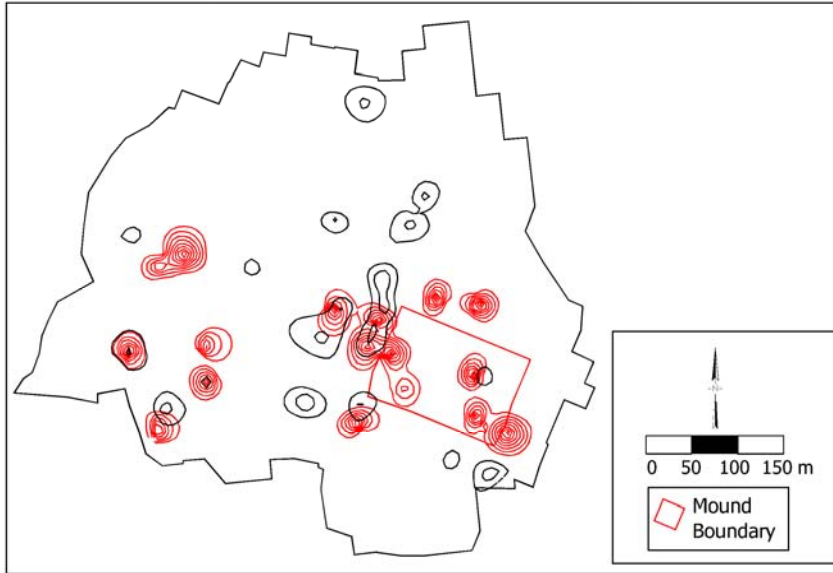


Figure 7.18 Contour map of proportions of white-tailed deer remains (red contour lines) associated with Parita/El Hatillo ceramics. Proportion of polychrome Parita pedestal plate sherds are shown as black contour lines.

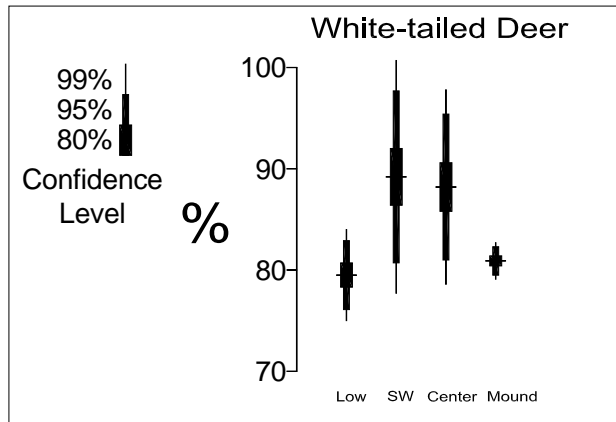


Figure 7.19 Bullet graph showing the proportions of white-tailed deer in Parita/El Hatillo households of different status.

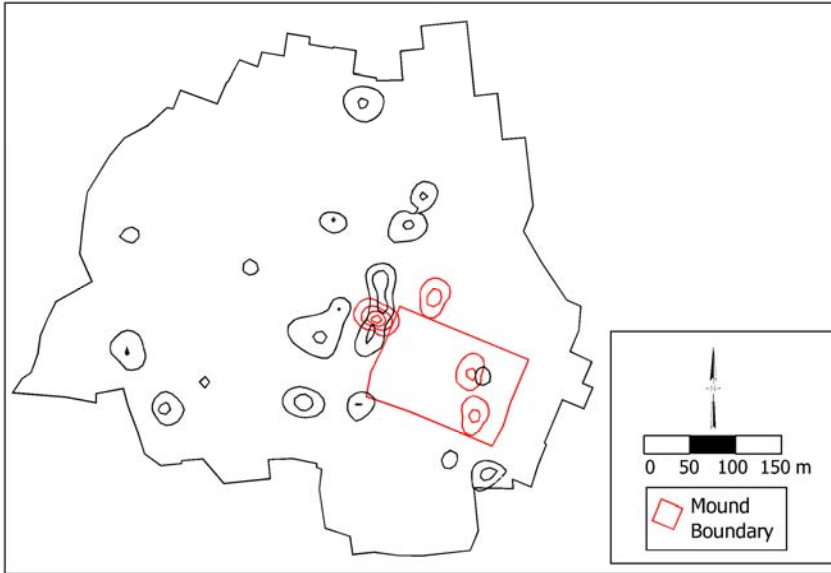


Figure 7.20 Contour map of proportions of high utility deer remains (red contour lines) and polychrome Parita pedestal plate sherds (black contour lines).

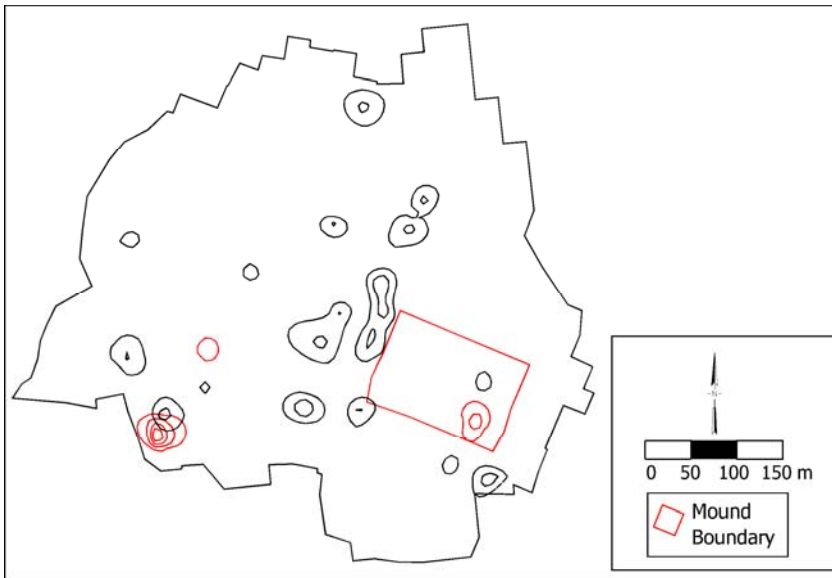


Figure 7.21 Contour map of proportions of Iguana remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

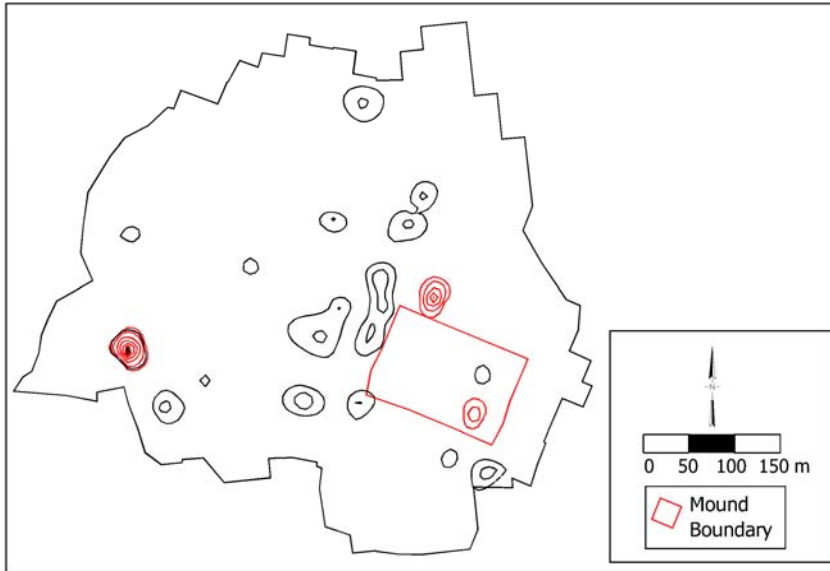


Figure 7.22 Contour map of proportions of pac a/agouti (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

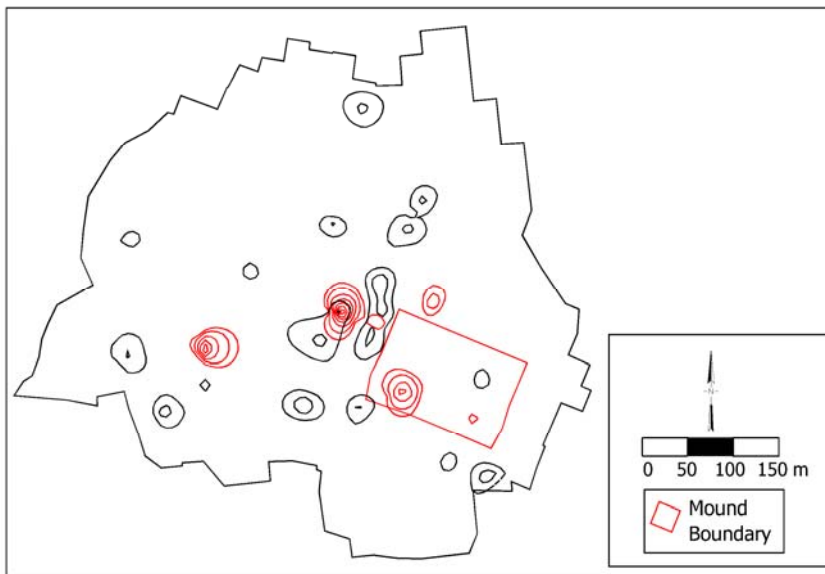


Figure 7.23 Contour map of proportions of fish remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

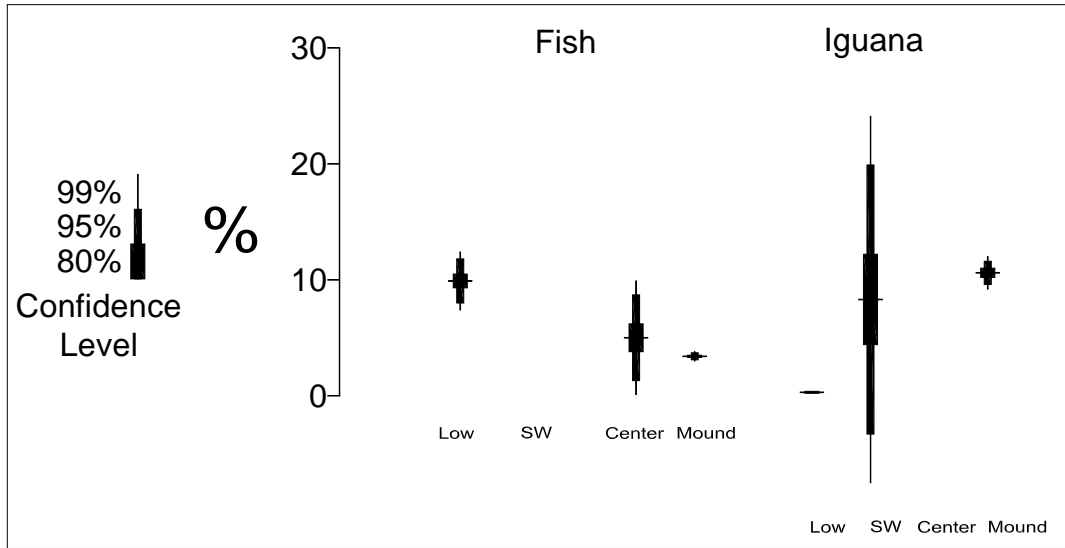


Figure 7.24 Bullet graph showing the relative proportion of fish and iguana in Parita/Hatillo households of different status.

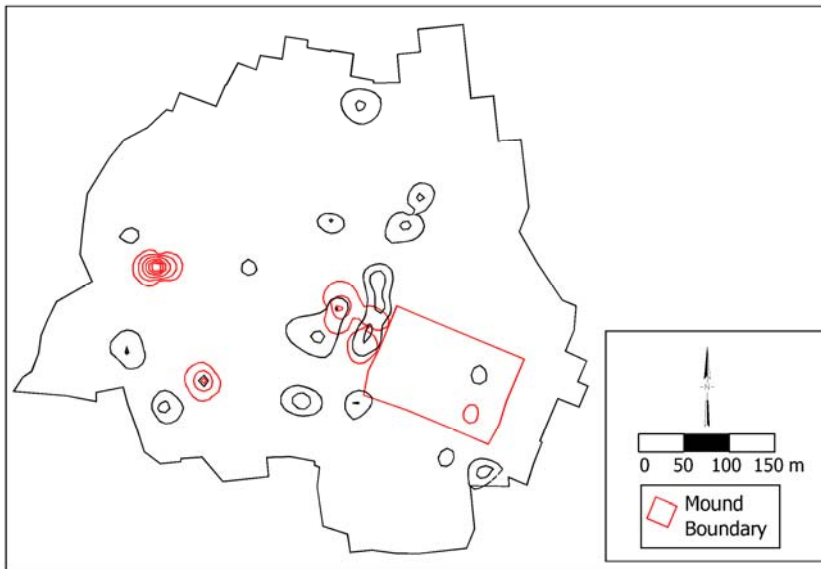


Figure 7.25 Contour map of proportions of shark remains (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

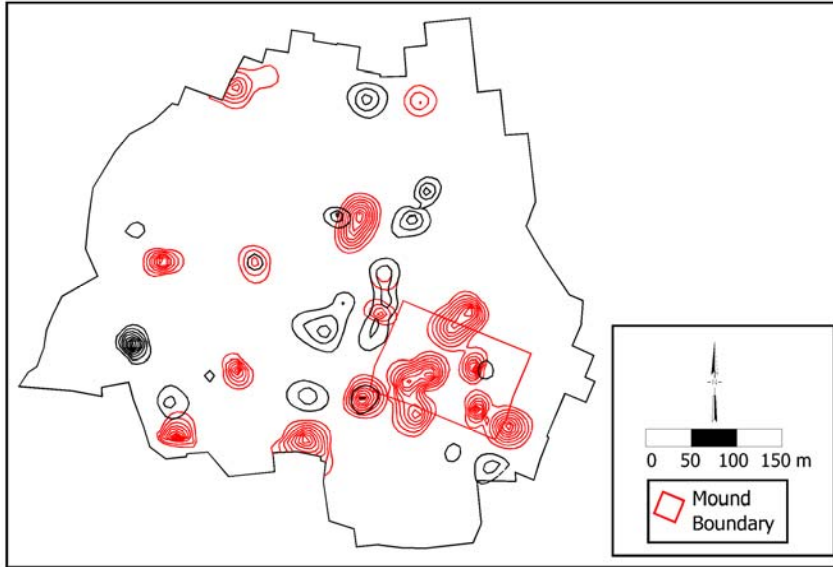


Figure 7.26 Contour map of proportions of identifiable shell (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.



Figure 7.27 Collection units with stone tools in association with Parita/Hatillo sherds. Solid squares are collection units with more than 5 stone tools; empty squares have less than 5 stone tools. Red contour lines indicate polychrome Parita pedestal plate sherds.

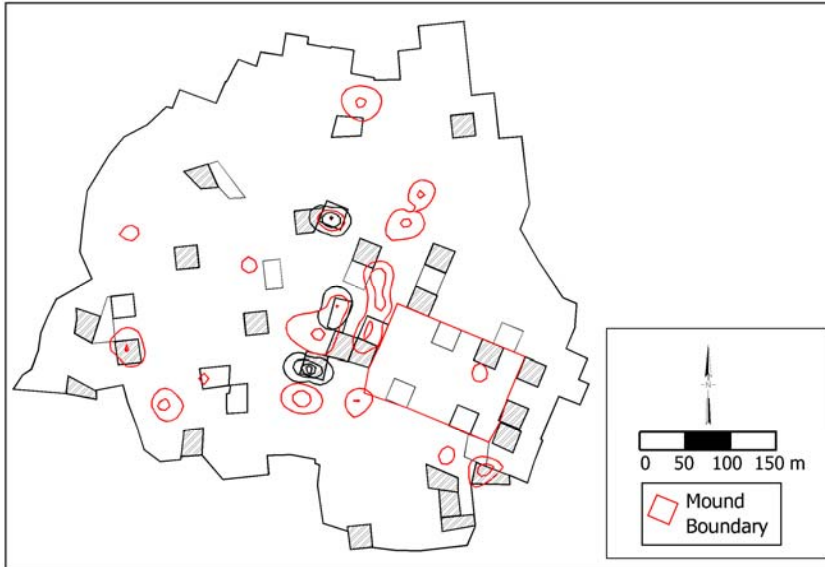


Figure 7.28 All axes and axe flakes at He-4. Black squares have both axes and flakes, hatched squares only have axes and white squares have only axe flakes. Proportions of polychrome Parita pedestal plate sherds are shown as black red lines.

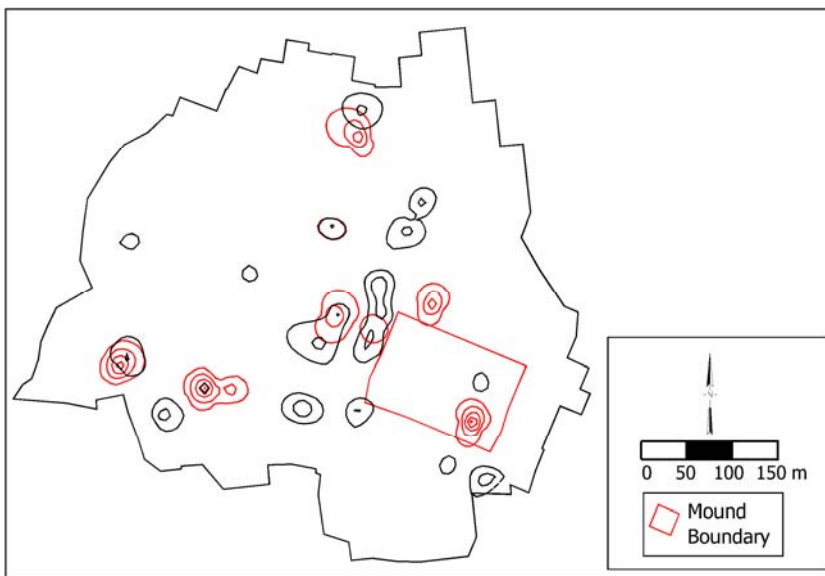


Figure 7.29 Contour map showing the distribution of trapezoidal axes (of samples of >5 lithics; red contour lines) and proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

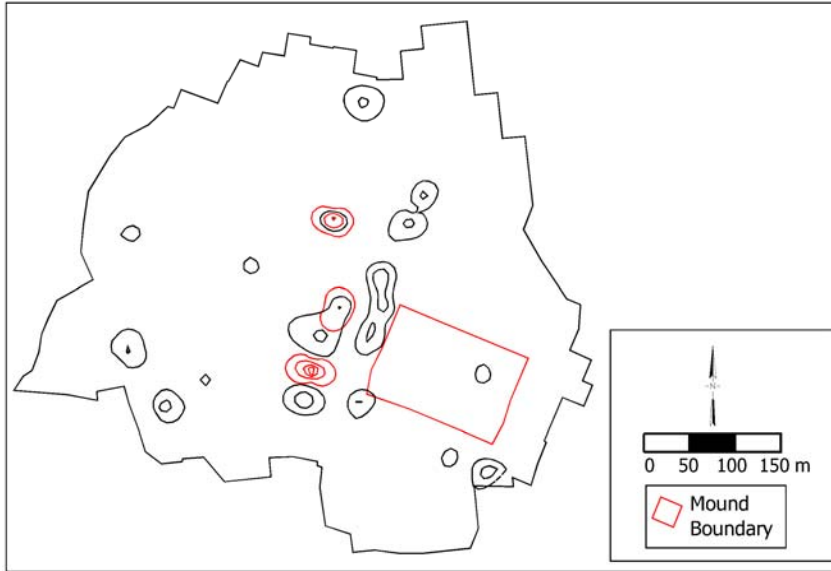


Figure 7.30 Contour map of proportions of chisels/adzes (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

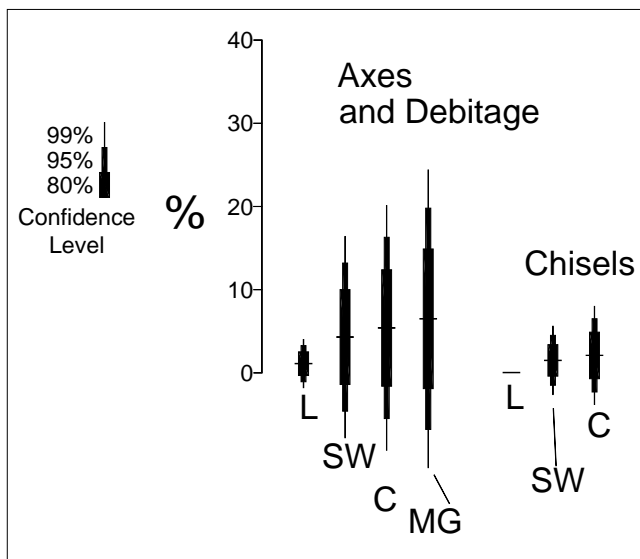


Figure 7.31 Bullet graphs showing the relative proportions of axes and axe related debitage in lower status households (L) and the two clusters of higher status households in the southwest corner (SW) and the center (C) and the mound group (MG).

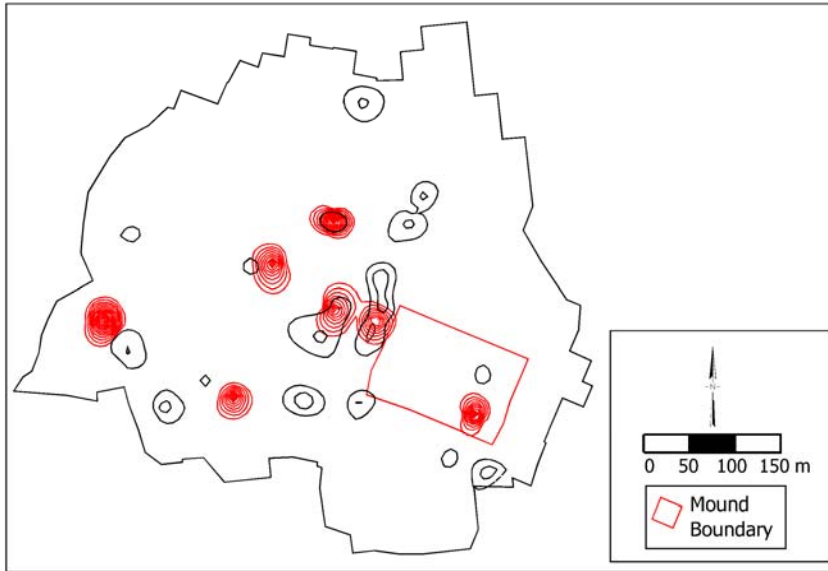


Figure 7.32 Contour map of proportions of axe flakes with polish (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

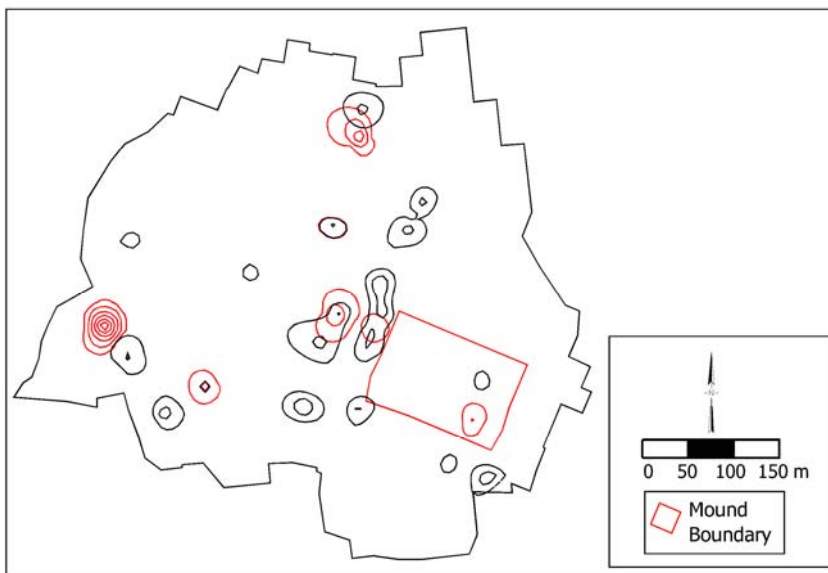


Figure 7.33 Contour map of proportions of axe flakes without polish (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

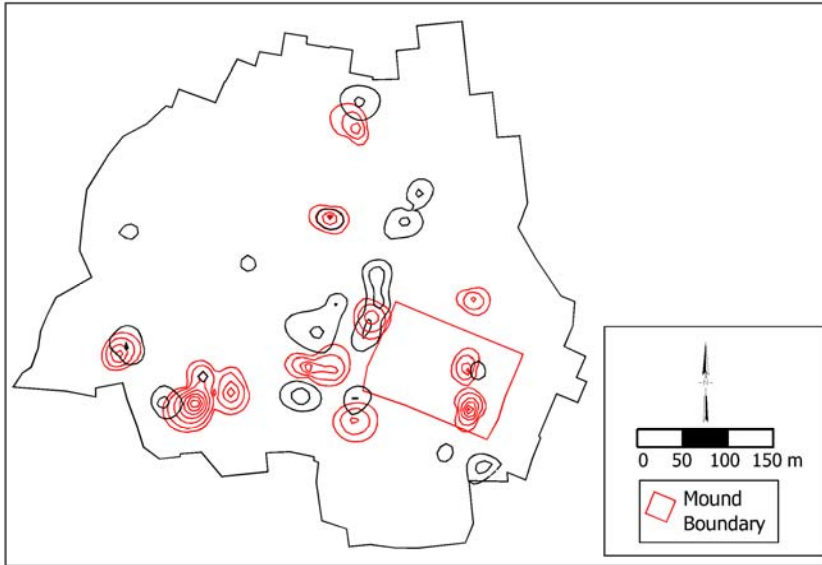


Figure 7. 34 Co ntour ma p of proportions of cutting and scraping tools (red contour lines).

Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

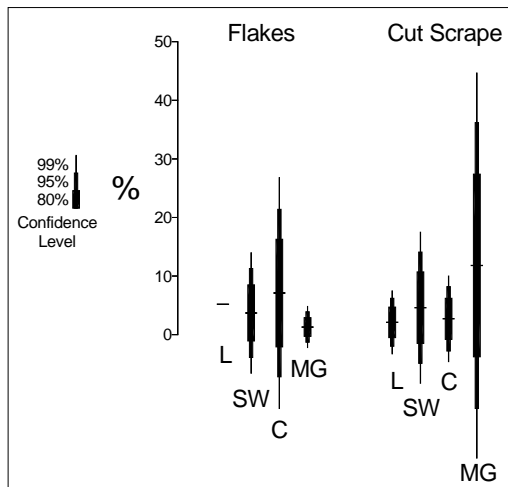


Figure 7 .35 Bullet graphs showing proportions of flakes and cutting and scraping tools for households of lower status (L), in the southwestern corner (SW), the center (C) and the mound group (MG).

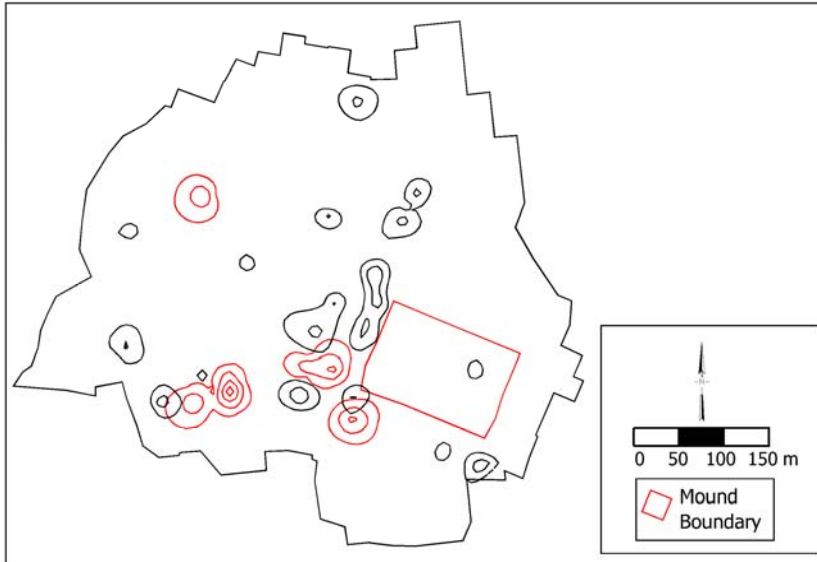


Figure 7.36 Contour map of proportions of polishing stones (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

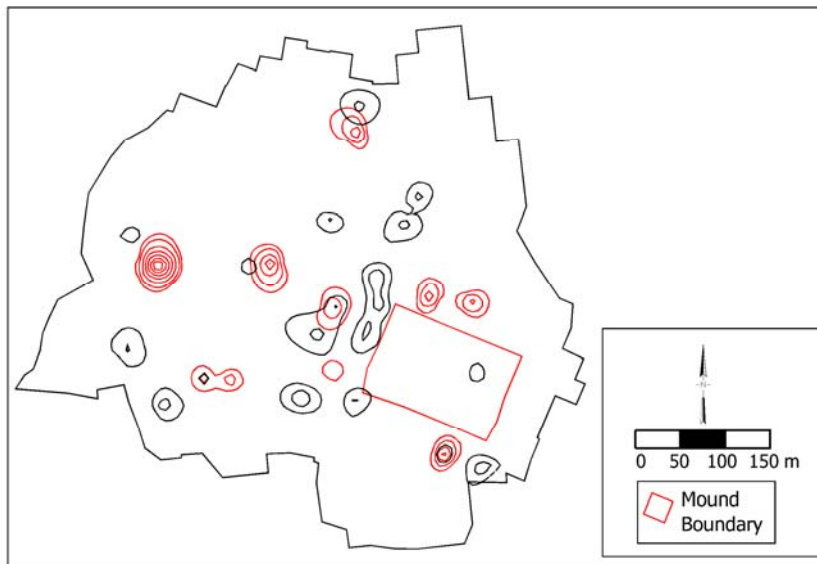


Figure 7.37 Contour map showing the distribution of chipped stone cores (red contour lines) and Parita pedestals (black contour lines).

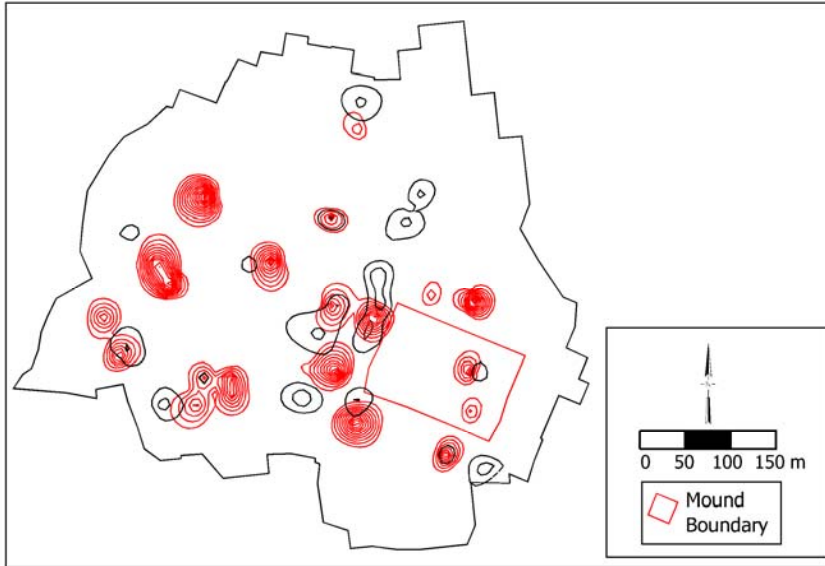


Figure 7.38 Contour map of the distribution of chipped stone flakes (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

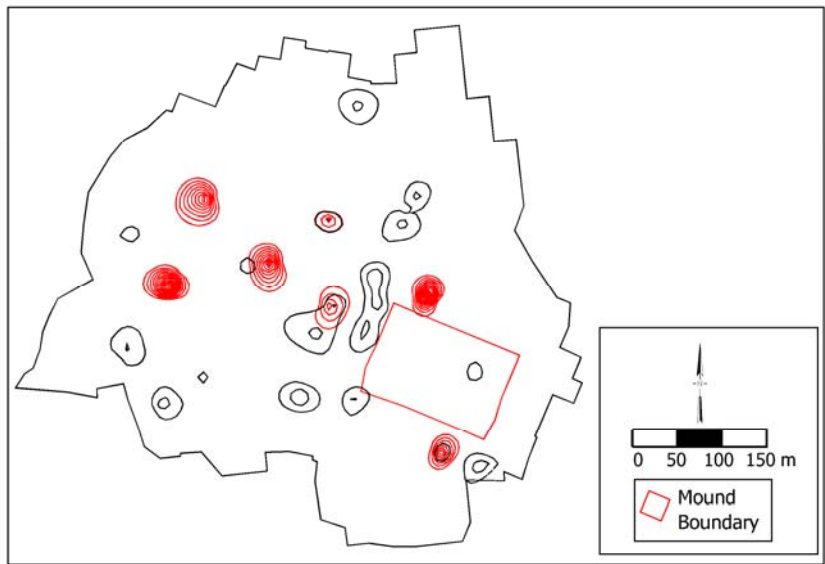


Figure 7.39 Contour map of proportions of manos (red contour lines). Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

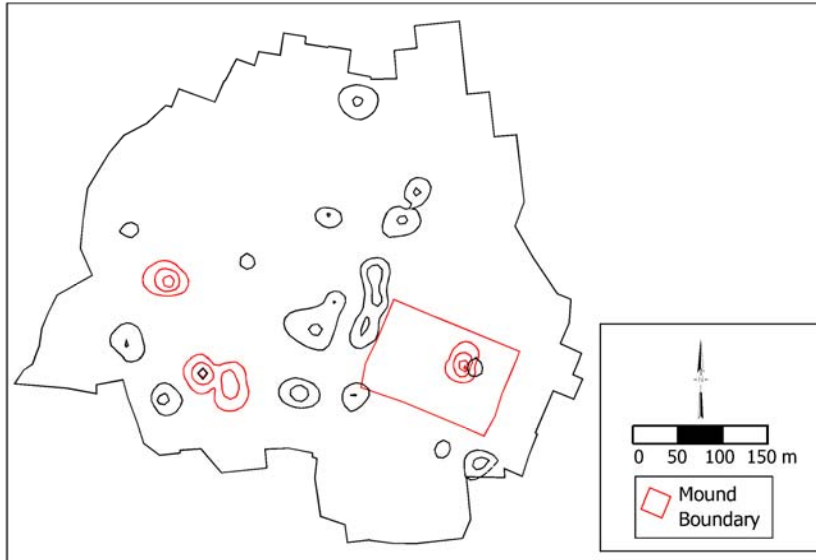


Figure 7.40 Contour map of proportions of metates. Proportions of polychrome Parita pedestal plate sherds are shown as black contour lines.

8.0 DISCUSSION AND CONCLUSIONS

The preceding discussion of the growth and development of the community of He-4 has shown that it first emerged as a cluster of farming households during the La Mula and Tonosí phases and grew into the regional center for the Río Parita valley with very clear hierarchical social relations. These social differences are apparent at the household level as early as A.D. 550-700 and persist until the 16th Century. The household perspective on the development of this community provides an alternative view on the origins of social hierarchy in the Central Region of Panama after A.D. 550-700.

8.1 RESEARCH QUESTIONS REVISITED

8.1.1 What kind of specialized production was taking place at He-4?

The first research question posed in this dissertation asked: “what kind of specialized production was taking place at He-4?” There is very little evidence for specialized household production at He-4 until very late in the history of the community. For example, there is no evidence that during its initial occupation the few households during the La Mula and Tonosí phases were producing anything beyond what was required for basic household subsistence. This range of household activities probably included axe repair but not manufacture. It is also possible that

early households at He-4 manufactured utilitarian pottery, although it remains unclear if this would have been undertaken by all households or by only a small number. Leaving aside imported tools, the relatively high degree of household self-sufficiency is consistent with other observations for Tonosí phase life in the Central Region. For example, contemporary households at Sitio Sierra were economically self-sufficient and engaged in agricultural activities, food processing and other productive tasks (Cooke 1984:284). Hour-glass shaped pits located outside of rectangular or oval household structures at Sitio Sierra also suggest household storage was common to each family unit (Cooke 1984:285). Household production at La Mula-Sarigua was organized at the household level (possibly part-time) and oriented towards the production of subsistence tools using the abundant chert material (Hansell 1988:213). There is no evidence that craft specialization was part of any political economy at this time (Hansell 1988:246-247) and there is no evidence for social differentiation related to these craft activities. There is also no evidence that households at La Mula-Sarigua were differentiated based on their ability to acquire non-locally manufactured goods such as polished stone axes or basalt manos and metates that would have probably have been imported from the cordillera. These tools were likely produced by specialists at quarry sites (Griggs 2005:245), although how production was organized and just how intensive it was remains poorly understood, except that it was oriented towards exchange by at least the Cubitá phase (Griggs 2005:245).

There is no indication of household craft specialization during the Cubitá phase either, even though the rapid population expansion and nucleation at He-4 represents the kind of social and economic context in which such economic reorganization might occur (e.g. Service 1962). It is only after A.D. 700-900 (the Conte phase) that there are any hints that specialized production might have been taking place at He-4. For example, axe reduction might have been an activity

more common in a few higher status households during the Conte phase. Little can be said about specialized production during the Macaracas phase, but it is unlikely that there was a major reorganization of household economic organization during this phase.

The clearest evidence for specialized household production comes from the Parita/El Hatillo phase. The most important change is that higher status households began finishing axe blanks that were imported, possibly from quarries in the Cordillera Central (Linares 1977:71; Mayo et al. 2007) or from sources near the headwaters of the Río La Villa in modern-day Herrera province (Isaza 2007:448). Haller (2004:152) notes that “the parent material used to manufacture axes was not found anywhere in the survey zone and was most likely imported into the Río Parita valley as axe preforms and then shaped for use.” The household data from He-4 shows that axe blanks were likely finished by higher status households. Using the same logic as Hansell (1988:233-234), the presence of axe finishing flakes at He-4 suggests that, unlike earlier phases at La Mula-Sarigua, axes were probably imported to He-4 as blanks rather than finished tools. This would have created some level of interdependence between households capable of acquiring and working these tools and those that could not (e.g. Drennan and Peterson 2006). It is also possible that the recipient households at He-4 might have been highly dependent on producer households near the source material, such as the communities in the cordillera. Recent survey in the Río Coclé del Sur watershed has identified pre-Columbian stone mines in the highlands as well as possible fortified sites (with very low stone walls) nearby (Mayo et al. 2007). Unfortunately the occupational sequences for these sites are not yet known and the mines themselves are difficult to date directly. As a result, it has yet to be established that these sites were fortified to defend against raiding or competition over the stone quarries since it is unclear if they were being exploited at the same time as people were living at the fortified sites.

Similarly, Griggs (2005) identified site LS-11 as a site that specialized in the manufacture of axe blanks. The specialized production of axes in Central Panama, therefore, seems to have been organized in response to the presence of an abundant resource and probably did not contribute to the emergence of more complex socio-political organization (see Braswell 2002). It is unclear to what extent the acquisition of suitable raw material for mano and metate production operated along the same exchange networks as polished axes, but it is clear that they are made from non-local materials and were probably imported in finished form. If this is the case it would have considerable time depth since this is the case at first millennium B.C. La Mula-Sarigua (Hansell 1988:135, 244).

The axes finished at He-4 were probably subsequently redistributed to households throughout the community and perhaps other villages in the Río Parita valley (Haller 2004:149) for use in agricultural and domestic chores. The same households that appear to have been involved in axe finishing at He-4 also had almost exclusive access to adzes or chisels during the Parita/El Hatillo phase. This is interpreted as evidence that these households were using these tools to produce craft goods that were not manufactured by other households. It is not possible to be more specific about what kinds of goods these might have been, but wood working is a likely possibility. Adzes or chisels are the appropriate tool for working large pieces of wood and might have been important for carving, perhaps of wooden canoes (although the distance from He-4 to the Parita River might make this a little hard to believe). Other wooden objects known from the Central Region include large wooden drums (Cooke and Sánchez 2004a:Figure 1I) that could have been used during ceremonies or celebrations such as feasts, or perhaps used for or long-distance communication. Although speculative, it is also possible that these tools could have been used to make wooden sculpture similar to the stone statues at El Caño or basalt columns at

Sitio Conte (Lothrop 1937:36, 39-40, fig. 24). There are also ethnohistoric accounts of highly decorated chiefs' houses with carved ceilings (presumably the timber beams) (Helms 1979:9).

Lastly, there is some evidence that chisels were used in gold work in Central Panama (Cooke and Bray 1985:35; Cooke et al. 2003:106) and the remains of gold working implements or casting failures have been found in Coclé province (Cooke and Bray 1985:35, Figure 1; Cooke et al. 2003:Figure 4c, 5; Fitzgerald 1996:62). It is speculative to argue that the chisels/adzes found the higher status households at He-4 were used to work gold, particularly given the lack of any associated finds, but it is possible since gold items are known from tombs at He-4 (Cooke and Bray 1985:44).

The little evidence for shell working for any period at He-4 suggests that this was a relatively unimportant craft activity and that the production of shell jewelry never reached the same kind of output as at Cubitá phase Cerro Juan Díaz (Mayo 2004; Mayo and Cooke 2004). Shell production at He-4 seems to have been undertaken infrequently and at a very low intensity. This is similar to sites of all sizes in the Río Parita valley (Haller 2004:155). In contrast, the organization of shell working activities at Cerro Juan Díaz seems to have been spatially concentrated, intensive (Cooke and Mayo 2005) and perhaps oriented towards exchange (Cooke 1998:102-103). The location of the shell workshop at the base of the hill in Operation 8 (Mayo 2004:60) revealed a shell and lithic workshop. The production of shell jewelry at Cerro Juan Díaz was oriented towards zoomorphic and geometric pendants made from marine shell such as *Strombus galeatus*, *Melongena patula*, *Spondylus sp.*, *Anadara grandis* and *Pinctada mazatlanica* (Mayo 2004:72) and all stages of manufacture (Mayo 2004) are represented in Operation 8.

There is little direct evidence of ceramic production at He-4. Certainly the increased standardization seen in ceramic production and iconography (on both pottery and gold work) associated with the Gran Coclé symbolic system can be taken as indicative of specialization (Cooke and Sánchez 1997; Cooke et al. 2003; Ichon 1980; Linares 1977:46), although exactly where the centers of production are remains unclear. Linares (1977:44) cites hundreds of pebbles found in the Sitio Conte graves and suggests these were used to polish ceramics. The distribution of polishing stones at He-4 does not suggest specialized ceramic production for any phase, although it is possible that most households were involved in ceramic production. The community itself might have been producing the highly decorated ceramics for distribution throughout the valley. The only anecdotal evidence for ceramic production is the feature on the partially preserved floor associated with the Parita phase (see Chapter 7). The three polishing stones found on this floor associated with human remains and evidence of burning, as well as the oblong polishing stone with red staining found in a nearby shovel probe is the best evidence of ceramic production.

8.1.2 How was craft production organized at He-4?

The second research question for this dissertation asked: “how was craft production organized at He-4?” The organization of household production can be characterized by a low degree of household inter-dependency for almost the entire occupational sequence at He-4. The inhabitants of He-4 engaged in a variety of productive activities associated with agrarian village life, such as the production of tools of a variety of raw materials and most households were probably engaged in land clearance and wood working, food processing, food preparation and storage. These

patterns appear to have been established at He-4, and in the Central Region more broadly, with the earliest agricultural villages and continued for much of the sequence.

8.1.3 Is the social hierarchy seen in the mortuary record seen in daily life?

The household data for the Tonosí phase at He-4 suggests a very small population of only a few families with no evidence for social differentiation beyond those of age, gender, occupation or achievement that is common in non-hierarchical societies. This portrayal of social life at He-4 is consistent with what is generally known about Tonosí social organization from mortuary practices. For example, burials at El Indio and El Cafetal in the Tonosí valley show homogeneity in child burials, heterogeneity in adult burials, and an increase in heterogeneity in adult burials by age grade (Briggs 1989:28, 33). Briggs interprets this as indicative of ranking based on achievement. Briggs also notes the irregular spacing of Phase II burials at El Indio and their placement below a layer of hard-packed earth described in Ichon's field notes. This is taken to indicate that these burials were interred beneath a living surface and do not represent a distinct cemetery, a feature often associated with more complex societies (Binford 1971; Saxe 1970).

The mortuary record for La Mula-Sarigua also shows limited status differentiation (Cooke and Ranere 1992:283), although Hansell (1987, 1988) argues that differences in mortuary treatment such as "package" burials and shaft tombs indicates some level of ranking. A household burial from Sitio Sierra has been interpreted as a specialist because of the presence of an axe-working toolkit (Cooke 1984:285), although this social role is consistent with a social system based on achievement rather than ascription. Finally, bone isotope data for a small sample of remains from Sitio Sierra and La Mula-Sarigua suggest differences in diet by gender

(Norr 1991:154). In sum, there is limited evidence for social differentiation throughout the Central Region for the La Mula and Tonosí phases in either the household or mortuary record.

It is during the Cubitá phase that household differentiation becomes clear, with the emergence of a cluster of households in the center of the site that had better access to serving vessels, fancier pottery and more diverse ceramic assemblages. These patterns show that differences in the status of the members of certain households or families had a privileged position in Cubitá society, but these disparities were still probably relatively modest. The mortuary record for the Cubitá phase in Central Panama shows that there were increasingly marked social divisions (Briggs 1989:62-63).

The mortuary record for Cubitá phase Cerro Juan Díaz illustrates relatively modest differences in status as well. In particular, the small number of grave goods, reuse of “oven” burial features, and presence of personal adornments such as shell and shell jewelry, and differential burial treatment based on sex (Díaz 1999) point to social differences based on sex and age (Cooke et al. 2000:166-167). Nonetheless, there are some indicators of social differentiation in the use of space in the Cerro Juan Díaz cemetery. For example the interments in Area A are primarily women and children and have modest grave offerings (sometimes one vessel for multiple individuals). This pattern, as well as dietary differences by sex (Norr 1991:154), seems consistent with the andocentric system of ranking in later chiefly society (Briggs 1989; Cooke 2004a). There is also mortuary evidence from Cerro Juan Díaz that is critical to our understanding of the evolution of social hierarchy in the region. Individual 3 from Feature 1 at Cerro Juan Díaz is dated through relative means to the Cubitá period. The small burial might have been covered during interment (Cooke et al. 1998:138), but the grave container itself is quite modest (Cooke et al. 1998:Figure 5a). This particular burial contained an adult

male with two hammered gold plaques with raised spirals, two incense burners, 24 jaguar and puma teeth (some with perforations) and “400-odd tubular *Spondylus* beads” (Cooke and Sánchez 2003:20; Cooke et al. 1998:139, Figure 5a). This burial is important because it is one of only a few burials for this time period that point to the interment of special individuals, perhaps shamans (Cooke and Sánchez 2003:20). This is one possible interpretation of Feature 1 and it is consistent with the household data from He-4 that suggests that the earliest appearance of social hierarchy was non-economic in nature and probably revolved around social display, status and prestige and perhaps “control” over ritual and religious ceremonies, or possibly success in warfare.

From a comparative perspective on early chiefdom burials, Feature 1 from Cerro Juan Díaz is much fancier than many. On one hand it is not nearly as fancy as the Middle Formative interments in Complex A from La Venta (Diehl 2004:67). Tomb A is one of the most elaborate of the five burials from Complex A and consists of a formal tomb made from basalt columns, with cinnabar, large quantities of carved jade figurines, jewelry (beads and pendants), stingray spines and a polished mirror (Diehl 2004:70-71, Figure 34). Tomb B is also very elaborate and consists of an elaborately carved sarcophagus and associated grave goods include: “a standing human figurine carved from serpentine, a jadeite bloodletter, and two large jadeite ear spools, each accompanied by jaguar canine tooth pendants of the same material” (Diehl 2004:71, Figure 34). These burials are part of a much larger architectural complex (Diehl 2004:Figure 33) and show much more energy investment in tomb construction and grave offerings.

Early chiefdom burials at San José Mogote, Oaxaca, are much less extravagant than the Gulf Coast of Mexico and those from Cerro Juan Díaz. Burials of the San José phase are simple and generally have few grave goods, but the most elaborate is Burial 18 that is associated with

the high status households 16 and 17 (Flannery and Marcus 1983:55). The grave of a young woman, Burial 18 included "two fine jade earspools and a jade labret" (Flannery and Marcus 1983:55). The most elaborate burial from the subsequent Rosario phase is Tomb 10 (Flannery and Marcus 1983:60, Figure 3.11). Located beneath the patio of a high status household, this grave consists of a formally constructed masonry tomb 3 m long and 1.7 m wide (Flannery and Marcus 1983:60). Aside from the more substantial labor investment apparent in tomb construction, this burial is not very elaborate since the only associated grave goods were "a large deposit of red ocher with 11 obsidian points" (Marcus and Flannery 1983:60).

The San José Mogote burials are only somewhat more elaborate than Formative burials from the village and cemetery of Tlatilco, in the Basin of Mexico (Joyce 2001; Piña Chan 1958; Tolstoy 1989) that show status differences much more clearly than other contemporaneous sites such as Zacatenco and El Arbolillo (Grove 1981:381). Status differences are apparent in some Middle Formative burial clusters at Tlatilco (Tolstoy 1989:102), possibly associated with households (Grove 1981:383). According to Tolstoy's analysis, Rank 1 burials at Tlatilco have more than 13 grave goods (and as many as 101) and also have the rarest artifact types as well, including iron ore mirrors, greenstone, red pigment, necklaces, conch shells and carved masks (Tolstoy 1989:109, 111, Table 6.4). Status differences also seem to increase over time (Tolstoy 1989:114).

Perhaps the least spectacular early chiefdom burials date to the Early and Middle Formative in Soconusco on the Pacific Coast of Mexico. These are much more modest than either Cerro Juan Díaz or La Venta. Early Formative burials from Paso de la Amada are simple and have very few associated grave goods (Ceja 1985; Clark 1994; Lesure and Blake 2002); those that have grave goods have simple vessels. One of the more elaborate burials for the

Soconusco is Burial 1 at Vivero (Clark 1994:407) which contained a mica mirror and a stone (Clark 1994: 406). Overall there is little evidence for social differentiation in the mortuary record (Lesure 1995:103-105; Rosenswig 2000:436) in spite of much discussion of the emergence of social inequality (e.g. Clark and Blake 1994). From this perspective Feature 1 from Cerro Juan Díaz is actually quite elaborate relative to Mesoamerican chiefdoms and represents the burial of an important person. In contrast, the emerging differences in household assemblages, such as they are, do not appear to have been quite as conspicuous as the emerging differences in mortuary treatment. While the emerging differences in both household and burial evidence do provide clear antecedents to later patterns, the degree of differentiation seen in the mortuary evidence is more obvious.

By the Conte phase differences in household status are increasingly visible and appear to have been consolidated to the extent that the same higher status families continue to occupy the central area of the community. Many of the patterns of household differentiation apparent during the Cubitá phase are more clearly established during the Conte phase and higher status households are again distinguished through greater access to elaborately decorated pottery, serving vessels, and non-local beige paste ceramics. The spatial continuity for the location of higher status households might also be an important consideration in characterizing the nature of household differentiation. The “founder effect” (Douglass 2002:7-8; McAnany 1995:8, 2004) might have been one source of social power for higher status Cubitá and Conte phase households. There are two elements to this: economic and spiritual. For example, McAnany (1995) has argued that the earliest households established in an area will often establish control over the best tracts of land for agriculture. When populations grow and new immigrants begin to settle in the area the original households will be of higher status given their control over arable

land. If these are organized as more inclusive corporate groups, rather than as a single household, there is often an economic basis since resources were shared (e.g. Hayden and Cannon 1982:134-135; Fortes 1953, 1969). The other element to the founder model is that social power is also maintained through veneration of ancestors (McAnany 1995:8), often because land tenure rights are legitimized through reference to a common ancestor (Fortes 1953:31). Much of the literature on ancestor veneration and lineage formation as a source of social power discusses it in terms of the monumentality of burial containers (e.g. Renfrew 1983) or using ceremonies and rituals over time (i.e. generations) to venerate the dead (Kuijt 2000). Looked at from the perspective of the household it is possible that the persistence of differences in household status in the same locations might be taken as indirect evidence of “founder” households being able to legitimize differential access to resources based on reference to a particular ancestor or a common descent group (Fortes 1953:31, 1969:276-277). In such situations deferring to families with closer ties to venerated ancestors could emphasize community cohesiveness, while at the same time subverting those ties in very subtle ways to increase social status or prestige (e.g. Kuijt 2000).

On the one hand it is difficult to establish that ancestor veneration was the source of social power at He-4 since there are no non-elite burials before the Parita and El Hatillo phases. There is anecdotal or circumstantial evidence for ancestor veneration in the mode of interment during early periods, particularly secondary "package" burials present at Cerro Mangote (McGimsey 1957), La Mula-Sarigua (Hansell 1988) and Cerro Juan Díaz (Cooke et al. 1998). Cooke et al. (2000) have suggested that bodies were preserved prior to interment in "oven" features, which also fits with Linares' (1977:77) suggestion that mortuary rituals at Sitio Conte only occurred during the dry season, a situation that would have necessitated some preservation if an individual died well in advance of this. Nonetheless, the complete articulated skeletons in

many of the most elaborate burials probably suggest more recently deceased individuals. It has also been suggested that Late Ceramic II societies were organized as hierarchically ranked lineages or descent groups (Cooke 2004b:281; Linares 1977). Richard Cooke has also suggested that at a macro-regional level the clan with the crocodile totem became increasingly dominant over time (Cooke 2004b:281). Although Cooke (2004b:281) argues that the only way to evaluate this is with contextualized mortuary remains, it might be possible to explore whether lineages existed using spatial approaches to settlement and community structure and corporate group strength (Befu and Plotnicov 1962; Hayden 1977; Hayden and Canon 1982, 1983; McAnany 2004; Plotnicov 1962).

Archaeological evidence for “founder” households developing into higher status households based on the control over resources is not entirely clear at this point, however, since Haller (2004:175) has shown that He-4 was not located on the best agricultural land in the valley. There is still the possibility that “founder” households at He-4 had an advantage over other households or communities by having better access to productive land within He-4’s catchment or mobilizing a variety of subsistence resources (Haller 2004:177). For example, it is possible that early high status households might have had certain land tenure rights within the vicinity of He-4 or to certain areas that were valued for hunting and fishing, rather than control only those tracts of land directly adjacent to He-4. Perhaps the earliest occupations at He-4 were able to assert their “rights” to tracts of land in a fashion similar to the Northwest Coast of North America where chiefs had the right to grant permission for others to hunt or fish on their land, demanding some tribute in exchange, but they did not own the land outright (Ames 1995).

Even though there is limited evidence for direct control over prime agricultural land at He-4, it is still possible that higher status households emphasized and manipulated descent to

legitimize their higher social position within the community. The spatial continuity between the earliest Tonosí phase households at He-4 and the location of higher status households shows incredible longevity (almost 1000 years) from the Cubitá phase until the Parita/El Hatillo phase. This scenario might have some negative implications for models relying on factional competition and the continual jockeying for position among aggrandizers (Brumfiel and Fox 1994; Clark and Blake 1994; Hayden 2001; Southall 1999) since unilineal descent groups are based on fixed membership (Plotnicov 1962:99-100). Even if most households were self-sufficient in economic terms, they might have been connected by political actions at a local-community level (Befu and Plotnicov 1962:324). In this sense competitive and aggrandizing behavior that is often assumed to be ubiquitous (Drennan 2000:185), might not have been the driving factor behind emerging social differences. Rather, they might have emerged more slowly under the guise of community cohesiveness (Kuijt 2000).

It is during the Conte phase that the striking disparities in mortuary treatment appear in the Central Region (Briggs 1989; Cooke 2004a, 2004b; Cooke and Sánchez 2003; Cooke et al. 2000; Lothrop 1937, 1942, 1954), representing a system of social ranking in which a few powerful male individuals seem to have amassed an incredible amount of wealth and influence. The burials at Sitio Conte are the clearest example of this. The site is located in the Coclé province of Central Panama along the banks of the Río Grande de Coclé (Linares 1977:34). It is approximately three to four hectares in size and is eleven kilometers from the Pacific Ocean (Briggs 1989:65). Recent contextual analyses of early gold work (Initial Group), polychrome ceramics and uncalibrated radiocarbon samples date the occupation at Sitio Conte to between 400/500-900/1000 A.D. (Cooke et al. 2000:155). The most elaborate graves at Sitio Conte are included in Briggs' cluster I and include burials 1, 5 and 26 (Briggs 1989:80). All three of these

burials are exceedingly rich and include the interment of multiple individuals and one principal individual; the grave container itself appears to have been an actual structure that was furnished with grave goods (Briggs 1989:79-81). Among the riches burial was Grave 1 with almost 2000 offerings, including an assortment of gold jewelry, fancy pottery, objects crafted from exotic raw materials (e.g. whale bone), animal teeth necklaces and an assortment of subsistence tools or weaponry (Briggs 1989:81; Lothrop 1937:227-237).

The series of cluster analyses performed by Briggs (1989) demonstrates that the number of individuals present in an interment corresponds with the number and diversity of grave goods (Briggs 1989: 137). When distinct clusters are examined, there is an obvious “hierarchy” as the diversity of artifact types within clusters forms a pyramidal shape (Briggs 1989:132, Table 31). An important observation is the patterning in “costume” items; these are generally found in the lower burials (or Clusters I, II and III) that are represented by multiple interments (Briggs 1989: 137). These costume elements include gold helmets, greaves, and plaques, as well as smaller adornments such as nose-rings, earrings, and bone bracelets. In addition, these graves included a variety of “utilitarian” objects consisting of ground stone axes, projectile points (Linares 1977:38, 40). There is also “negative” evidence (from preserved impressions in the soil matrix) for perishable objects such as woven bags or articles of clothing (Lothrop 1937:108-112, Figures 79 and 216). In sum, Briggs’ (1989) cluster analysis provides evidence for stratified social organization.

The “Gran Coclé semiotic tradition” (Cooke 1976) also illustrates a geographically widespread coalescence of a striking system of symbols (Labbé 1995; Linares 1977:43-58), the content of which is largely related to animal imagery (Cooke 2004a; Helms 1995; Labbé 1995), but which also communicates social information (Cooke 2004a, 2004b; Gell 1992:43-44). Most

studies of Coclé iconography have focused on design elements such as stylized animal motifs, or chromatics, and assign cosmological, ideological or political significance to them (Helms 1979, 1995, 2000). The most common themes represented on Coclé polychrome and gold are serpents (especially boa constrictors), crustaceans (Helms 1995), felids (Cooke 1993), spotted bear (Helms 1998) and crocodiles (Cooke and Ranere 1992:287). Motifs such as the plumed crocodilian, generally associated with both gold objects and polychrome vessels, is not exclusively found in “wealthy” graves nor is its appearance consistent across Central Panama between A.D. 700-1000 (Cooke et al. 2000:168). Nonetheless, the strong association of these designs with mortuary contexts (Helms 2000:5) and the animistic nature of this symbolism is highly significant in terms of identity, political authority and chiefly power.

The household perspective on the evolution of status and wealth at He-4 shows that some of the differentiation seen in the mortuary record can be found in daily life. That is, the differences in household status that appear during the Cubitá, however modest compared to the mortuary record, do show that this kind of behavior was present. The even more conspicuous differences in household status that appear during the Conte phase seem to have evolved in a similar fashion as mortuary differentiation and suggest that this process was gradual and evolved out of extant differences in status that structured daily life. It is clear that the logic behind the extravagance of the Sitio Conte burials was to communicate information to the living about the importance of a small sub-set of society. The household evidence suggests that social differentiation had a weak economic basis. For example, there is little to no evidence that craft specialization provided an avenue for wealth accumulation since higher status households do not appear to have been engaged in these activities until hundreds of years after the emergence of social ranking at He-4. Even when a few higher status families do appear to have become

interested in craft production during the Parita/El Hatillo phase the differences remain relatively small. Even more to the point, household inventories do not suggest that differences in the standard of living were very great. There is some ethnohistoric information to suggest that chiefs lived in larger and more elaborately decorated households (Helms 1979:9-11), but this is kind of information is beyond the scope of this project.

We are left with somewhat of a paradox in terms of our understanding of social organization and daily life at He-4. On one hand there is relatively little household evidence of economic differences or standard of living; on the other hand there is quite impressive burial evidence of differences that have often been interpreted as economic (wealth, standard of living). It is possible that the lack of extremely high status burials at He-4 during the Conte phase shows that the kinds of people buried at Sitio Conte were simply not living at the community during this time, suggesting that in pan-regional political terms He-4 was of a lower rank (Cooke et al. 2003:127). This might make sense given the central location of Sitio Conte and El Caño, interpreted as one large ceremonial complex (Cooke 2004a:273; Mayo et al. 2007:98). Burials further east at Playa Venado (Lothrop 1954) also show high status individuals. If we take Sitio Conte to be the focal point of a large paramount chiefly territory it might help to view He-4 as a peripheral or subordinate center at this time given its position much further to the west along Parita Bay. Ethnohistoric accounts describe loosely allied chiefly polities that often include several river valleys that could include quite a large area (e.g. Helms 1979:11). It seems that in spite of the well established differences in social status at He-4 during this time, these families were still subordinate in rank to the individuals buried at Sitio Conte.

During the Macaracas phase differences in household differentiation become more pronounced at He-4 and suggest the coalescence of the social hierarchy established during the

Conte phase. Although there is considerable continuity from the Conte phase into the Macaracas in terms of the ways in which higher status households were set apart, including greater proportions of fancy pottery, rare vessel types, serving vessels and perhaps access to non-local tools, the highest status families still only enjoyed a moderately different standard of living than most of the inhabitants at He-4. The construction of the mound complex at He-4 also represents an important characteristic of mortuary treatment at He-4 beginning in the Macaracas phase. The paradox seen for the Conte phase, however, persists during the Macaracas phase and differences in household assemblages are still not as dramatic as differences in mortuary treatment. These differences make it clear that the principles of social hierarchy remained the same. That is, the practice of interring important adult males continued and is apparent for the available mortuary record at He-4 (Haller 2004:Table 4.4). The inclusion of large quantities of elaborately decorated ceramics and rare vessels also represents a continuation of the mortuary tradition that emphasized the social status of the deceased and shows that mortuary treatment remained a more important focus of social display than material differences in daily life.

The construction of the mound complex at He-4 has been interpreted as a change in He-4's role within the Río Parita valley (Haller 2004:94) and possibly in much broader regional terms as well. Some scholars have argued that it became a pan-regional necropolis that replaced Sitio Conte (Cooke 2004b). The argument that He-4 never reached the same level of authority as Sitio Conte because it did not have stone architecture such as lines of basalt columns like at Sitio Conte or cobble pavements like at El Caño (Isaza 2007:88) is not convincing since it is essentially a trait-list approach to describe what kind of chiefdom community He-4 was (e.g. Peebles and Kus 1977; Renfrew 1973). The construction of the cemetery at He-4 occurred well after the substantial growth of this community and represents a very different developmental

history than the complex at Sitio Conte and El Caño. It is probably the case the He-4 never did reach the same pan-regional importance as Sitio Conte and El Caño, but the replacement of Sitio Conte by He-4 is more likely a result of a fragmentation of a much larger socio-political unit into smaller constituent chiefdoms (e.g. Blitz 1999; Earle 1987; Steponaitis 1978). Rather than simply assume that paramount status shifted to He-4, we might explore macro-regional socio-political dynamics with greater attention to settlement pattern studies in the region around Sitio Conte (e.g. Mayo et al. 2007) and the Azuero peninsula since some of the same settlement dynamics occur in the Río La Villa valley (Isaza 2007). If socio-political fragmentation explains He-4's lesser rank it puts the less extravagant Macaracas phase burials at He-4 in a new light. The individuals buried in the mounds after A.D. 900 might not have achieved the rank of those buried at Sitio Conte and might not have been able to marshal as many items for their burial hoard, because they could not draw on as large a territory with as many resources for tribute. Rather than view He-4 as Sitio Conte's successor or peer, we might take the burial, household, and regional evidence for centralization in the Río Parita valley (Haller 2004:94) and status differentiation at He-4 itself as indicative of a more localized phenomenon.

There is also considerable continuity into the Parita/El Hatillo phases at He-4. The household dataset shows that two clusters of higher status households are now set apart from the community, although one of these probably represents the descendants of the very first Tonosí phase households at He-4. This represents almost 1000 years of continuous occupation in the central zone and we might again explain the differentiation of these households in terms of their ability to appeal to their history at He-4 as one source of social power. The elaborate Macaracas, Parita and El Hatillo phase burials at He-4 would have been another way for these families to augment this source of power. A cluster of high status households is clearly visible in the

southwest corner of He-4 but represents a much later development, and hints at the variability seen in household status at He-4. Put another way, the differences in household status visible at He-4 are not as clear-cut as in some complex societies (Drennan and Peterson 2006; Santley 1993). For the first time there is clear evidence for differences in craft activities and higher status households were more intensively engaged in activities that might have included woodworking. There is little evidence, however, that these differences led to differences in household wealth which remained expressed in ways very similar to the Conte and Macaracas phases. The one difference is that there is evidence that higher status households consumed more deer meat than lower status households, although they did not have exclusive access.

The evidence for household differentiation during the Parita/El Hatillo phase again contrasts with the elaborateness of the burial evidence from the mound group at He-4. The corpus of burials continues to show elaborately stocked tombs and offerings of jewelry emphasizing the importance of ostentatious display. Ethnohistoric accounts also indicate that dead chiefs were important as ancestors and the burial rites included placing their remains in a burial place or, importantly, preserved aboveground in a special chamber of the chiefly *bohío*, where they were placed with the bodies of previous rulers in the order of chiefly succession (Helms 1979:17; Isaza 2007:87). The differences in Parita/El Hatillo household status parallel differences in mortuary treatment that are known from the mound group as well as 16th Century Spanish observations. There is a description of chief Parita's funeral by Espinosa: the bodies of three principal individuals (including Parita) had already been preserved (desiccated) during what might have been a series of protracted funerary rituals (Linares 1977:76-77). When Espinosa and his men unwrapped the bodies they found that they were adorned in large amounts

of gold jewelry, had been wrapped, painted and were to be buried in hammocks (Linares 1977:76; Lothrop 1937:46-48).

The ethnohistoric accounts of 16th Century indigenous societies in Panama seem to corroborate much of the archaeological evidence for social status and differentiation at He-4 which, relative to the description of Parita's funeral, seem more modest. For example, ethnohistoric accounts offer descriptions of a hierarchy of social positions (Helms 1994:56-57) with chiefs, subordinate chiefs, warriors, retainers, commoners and possibly slaves. Social rank and identity were conveyed by rules of dress and ornamentation and higher status individuals wore specific symbols indicating their rank (Helms 1979:16). These included not only gold jewelry, but other kinds of elaborate clothing as well. There are also descriptions of differences in daily life that might also have been present at He-4 during the Parita/El Hatillo phases such as differences in household size, construction and composition. There are some descriptions of chiefly dwellings; the one described for Comogre was "150 paces long by 80 paces" (Helms 1979:9) and Helms suggests that a pace would have been approximately three feet (or around 1 m). The area of this structure would have been approximately 108,000 square feet (or 12,000 m²). The area of a modern American football field is 57,564 square feet. While the size of this structure seems to be exaggerated, there is some archaeological evidence that very large buildings were constructed. Recent work at El Caño (e.g. Mayo and Mayo 2009; Mojica et al. 2007:Figure 5) has identified a long (200 m) linear feature as well as a probable structure 80 m in diameter (Mayo and Mayo 2009:3) that seem to date to the Conte phase (Mayo and Mayo 2009:12). These features are currently being being excavated and numerous other kinds of features (caches and burials) have been found (Mayo and Mayo 2009). Although the reports of the recent excavations at El Caño do not appear to show any substantial architectural elaboration,

such as stone foundations or walls, the chiefly house at Comogre described by the Spanish was apparently well constructed with both timber and stone walls (Helms 1979:9). Importantly, "the ceilings were carved and the floors "artistically decorated"" (Helms 1979:9) and there were associated storage structures. "The storerooms of the powerful lord Comogre contained multicolored piles of maize, quantities of roots, peanuts, green and red chili peppers, coconuts, pineapples and other fruits, smoked venison and pork, dried fish, baskets of corn meal, bundles of herbs, jars of maize beer, and a considerable assortment of...fermented drinks, or *chichas*" (Helms 1979:11). It is quite possible that subsequent excavations (Locascio 2009) will provide new data on household size and its relation to status at He-4.

In sum, the developmental history of the community at He-4 shows that the structure of social hierarchy was not expressed in the same ways in daily life and in death. Beginning with the first large population at He-4 between the period A.D. 550-700 there are emerging household differences and these become clearer over time. By the last few centuries before the arrival of the Spanish it is clear that the inhabitants of the community lived differently, but these differences were not especially dramatic when compared with other complex societies in Mesoamerica (Flannery and Marcus 1983; Santley 1993), for example. Put another way, the differences in social status that structured social interaction and that were a fundamental part of daily life at He-4 were still relatively moderate. The paradox, however, is that the mortuary record for Central Panama and He-4 (after A.D. 900) show quite dramatic differences in the way important people were buried. The differences in household assemblages never reach the same degree of differentiation that is seen in the mortuary record even after the mound group comes into use for the interment of important adult males at He-4. Although the pattern of burial elaboration emerges gradually out of earlier patterns of household differentiation, it must have been a

contested process in which new ideologies were required to legitimate new and unequal social relations (DeMarrais et al. 1996; Demarest 1992; Flannery and Marcus 1976; Marcus and Flannery 1994; Pauketat 2000; Paynter 1989; Treherne 1995).

8.1.4 Is there a connection between the form of social hierarchy present at He-4 and specialized craft production?

The household evidence presented in this dissertation shows that the social hierarchy that emerged at He-4 over several centuries was not fundamentally based on the coercive control over economic resources. More specifically, specialized craft production does not seem to have been an important factor in the emergence of the social hierarchy since there is no evidence for any very intensive craft production at He-4 at any point during the sequence. This is not to say that high status families or leaders were completely separated from economic activities, but rather that their involvement was not the initial impetus for the emergence of social hierarchy during the Cubitá phase. Similarly, while the social position of emergent leaders and higher status households does not appear to have been directly related to the production of important subsistence tools, these same families were involved in economic activities such as finishing of imported axes, exchange and redistribution. In sum, while economic control by higher status households was never very highly developed in terms of production, it seems that their involvement in exchange networks increased over time. Finally, the available evidence demonstrates that He-4 was not an important regional center for the production of goods of any sort, but rather that the community was an important focus for exchange and redistribution as well as the focus of religious activities in the valley.

In spite of the absence of evidence for well developed craft specialization at any point during the sequence at He-4, there is still evidence of craft specialization in the Central Region of Panama. It is possible that a range of goods were produced at secondary sites in the Río Parita valley, or elsewhere within the Central Region. It is also fairly likely that the production of utilitarian goods was undertaken by specialists elsewhere, such as axes and metates in the cordillera, or textile production on the Pacific plain. More exotic goods, such as gold, polychrome pottery, carved shell, and perhaps wood carvings also appear to have been the work of specialists, although in many cases it remains unclear just how this was organized. In sum, while there is little evidence of specialized production at He-4, it does not mean that the production of both utilitarian and luxury goods was not done by specialists; they were just not living at He-4. Similarly, the degree of household self-sufficiency at He-4 that has been demonstrated in this dissertation should be understood within this kind of regional social context in that households did acquire a variety of goods from across the Central Region.

The previous chapters have shown that the control over economic aspects of daily life was weakly developed at He-4 and political and social power was more closely related to non-economic variables. In more concrete terms, the development of social hierarchy, inequality and differences in daily life was the result of certain families engaging more successfully in socially competitive activities (i.e. feasting) or religious and ritual ceremonies emphasizing their connection to founding ancestors. On one hand this competitive feasting would have been a way to create obligations for labor that would have further contributed to creating new forms of social hierarchy (e.g. Drennan 2000; Pauketat 2000) but it does not explain how chiefs were able to accumulate such large quantities of grave goods since this kind of behavior is not typically acceptable in such social contexts (Mauss 1990; Sahlins 1963). The competitive feasting model,

however, is ultimately about mobilizing resources to some purpose, rather than actually controlling production itself. In such circumstances mobilizing resources for feasts could have created the contexts in which aspiring elites were able to monopolize involvement in exchange networks (Earle 1987:296). There are hints that higher status families at He-4 did acquire more non-local ceramics during the Conte phase and later burials include non-local materials (i.e. manatee bones). Higher status households were also more involved in finishing imported axe blanks during later periods of occupation (the Parita/El Hatillo phase). Both of these situations suggest that exchange was an important element of the political economy and one that did not require much involvement in other subsistence realms. Helms also notes that trade did occur, particularly in terms of coastal and inland resources (Helms 1979:10) and "elite" involvement in exchange would have been an important external means of compensating followers as well as kin (Helms 1979:34-35).

Feasting might also have been related to success in warfare which could have led to accumulation of material wealth by broadening the "income base" of a chief's territory (Earle 1987:297; see also Carneiro 1981, 1991, 1998; Linares 1977; Redmond 1994, 1998). Warfare might have been to increase territorial holdings, and gain access to hunting and fishing grounds as it seems to have been during the 16th Century (Helms 1979:33). Warfare also meant that commoners could increase their social standing through achievement and that success in warfare was an important element of chiefly authority and prestige for those of higher status standing (Helms 1979:32). The large quantities of projectile points, axes, and atlatls found in the Sitio Conte graves (Lothrop 1937) has been taken as archaeological evidence of the importance of warfare to social status and power (Isaza 2007; Linares 1977; Redmond 1998).

8.2 FUTURE DIRECTIONS

The question of what kinds of future research could enhance our understanding of early chiefly political economies in Central Panama is largely a function of scale. Many of the questions raised in this dissertation can be investigated in further detail at the household scale at He-4, through more intensive site investigations at many sites throughout the Río Parita valley and through artifact analyses such as ceramic sourcing and lithic usewear analysis.

Perhaps the most productive avenue of future research would be a finer-scaled analysis of household status and craft specialization at He-4. While the household dataset discussed in this dissertation has documented how the community of He-4 grew and how social relations changed, there are still elements of daily life that cannot be discussed from the available data, such as house size and composition. More detailed investigations of how daily life changed at He-4, in both higher and lower status households could provide much more information regarding the extent to which higher status households hosted feasts, whether or not they enjoyed a better diet than lower status households and perhaps how household membership might have differed (i.e. were higher status households larger, having more members?). In terms of the feasibility of such a project, the two test units placed within the mound group suggest that this area has been heavily damaged, given the extent of the looters pits across the mound area, it is doubtful that any further excavations in this area would advance our understanding of social life at He-4. In contrast, the test excavations carried out at He-4 as part of this dissertation have shown there are intact deposits that would be appropriate data for broader household excavations (i.e. floors, post-holes). This kind of research has already been undertaken by William A. Locascio who has been able to not only identify individual households and associated features, but he has also sampled midden deposits associated with both higher and lower status households (Locascio

2009). His research will provide a much more detailed view on the nature of feasting activities in high status households after the Cubitá phase and how this changed over 1000 years.

Many of the questions concerning the organization of craft specialization in the Río Parita valley could also be investigated on a larger scale as well. Haller's regional survey (2004, 2008) was not designed to investigate the organization of household production in the same way as this dissertation and was only able to provide a broad view of some aspects of economic organization changed over time. Recently Mikael Haller (Haller and Menzies 2008) has begun a multi-year project that will begin more intensive investigations at secondary and tertiary sites in the Río Parita valley, using the same methodology as this dissertation. These new investigations will provide much needed data to compare how household production, subsistence, and status differentiation developed and changed at smaller communities in the valley. This research will be particularly helpful in examining not only how internally differentiated these smaller communities were in terms of household status, but also whether or not it had any connection to craft specialization. It is entirely possible that many of these sites were much more intensively engaged in specialized production of either subsistence tools or luxury items. It will be especially interesting to explore the timing of any changes in economic organization throughout the valley since this dissertation has shown that for He-4, the most conspicuous change occurred hundreds of years after the appearance of social ranking in the valley.

This dissertation has shown that for over 1000 years (from the Cubitá phase to the Parita/El Hatillo phase) the chiefly political economy at He-4 was based primarily on a variety of non-economic factors. One line of evidence that would allow us to reevaluate this statement would be much better data on ceramic production. The lack of data on this subject for both He-4, and the Río Parita valley more broadly, means that some elements of relevance to discussions of

craft specialization and the emergence of chiefdoms are somewhat limited. On one hand stylistic analyses suggest that the designs were the work of specialists (Cooke and Sanchez 1997), but this kind of work could be supported further by ceramic sourcing techniques such as petrographic and chemical analysis as well as more detailed paste analyses.

It remains unclear if the production of fancy ceramics was taking place exclusively at He-4 and the production of utilitarian wares was something that most (or even a few) smaller communities were engaged in. If it turns out that fancy ceramics were produced exclusively at He-4 it would still show that the focus of the political economy at He-4 was ostentatious display and the production of “prestige” technologies (Hayden 1998; Vaughn 2004). This would be particularly convincing if production was connected to higher status families at He-4 because they could have been restricting the technology and artistic ability required to produce the elaborately decorated Coclé ceramics among high status households (e.g. Ames 1995). It would be particularly important to determine whether production of fancy ceramics was taking place at He-4 during the Cubitá phase since this is when the earliest evidence for social differentiation appears. If it turns out that fancy ceramics were manufactured at secondary sites, or perhaps only a single secondary site, it would lend more support to the idea that these goods were being produced by specialist communities and would mean that the production of such goods was not the focus of the chiefly political economy. If fancy vessels were being produced at sites of all sizes then there is even less support for higher status families controlling production. It is also important to consider where plain and utilitarian vessels were being made and how this might have changed over time. For example, it is possible that virtually all ceramics used in the Río Parita valley were being made by specialists at He-4 and distributed to smaller communities.

Such a situation would show a much more developed economic basis for the chiefly political economy at He-4, providing production was organized in this way from early on.

There are very large samples of both fancy and utilitarian ceramics from both surface and excavated contexts at He-4 as a result of the community-scale survey and Locascio's more intensive household investigations as well as Haller's new investigations in the Río Parita valley. The ceramic assemblages collected by all three projects could be sampled by phase in order to explore how production changed over time. Samples could also be drawn from households of different status in order to explore consumption patterns within He-4 in more detail. Larger samples of early material (e.g. Tonosí and Cubitá) will also be available from Haller's excavations at He-2 and will contribute to the diachronic perspective on ceramic production required to address its connection to the chiefly political economy.

One final line of research aimed at examining the relationship between craft specialization and the emergence of chiefdoms in the Río Parita valley would be to explore any differences in household activities using lithic use-wear analysis. It is possible that there are differences in household activities that were not apparent from the macroscopic lithic analysis conducted for this project. In spite of the expedient nature of household lithic assemblages for all periods at He-4, it is possible that these tools were used for different activities. A detailed analysis of stone tool attributes as well as a low-power use-wear analysis (up to 40X magnification) of the lithic assemblage from He-4 and from other sites in the Río Parita valley could offer greater insight into the range of domestic activities by comparing differences in production techniques or proportions of certain tool types at smaller communities as well as the intensity of use of all tools and flakes. It is possible that smaller communities in the Río Parita valley were engaged in specialized tool production. For example, these communities might have

been producing a different range of tools or been using different raw materials than the inhabitants of He-4. Alternatively, it is possible that the range of tools produced was similar at all sites throughout the valley.

Similarly, lithic use-wear analysis has the potential to provide more detailed information on craft production in terms of what kinds goods might have been manufactured with the stone tools themselves. The advantage of low-power use-wear analysis is that it provides information regarding the intensity of tool use (Tringham et al. 1974; Odell 1979, 1980). For example, it would be possible to discuss less intensive activities such as food processing, light woodworking, and cloth working (Tringham et al. 1974:188). More intensive uses might include shell working, heavier woodworking, or working bone and antler. A comparison of wear patterns would help identify specialized household production.

Obviously the diachronic aspect of such a study is critical in order to discuss how household craft specialization might have changed, if at all, with the emergence of social hierarchy and status differentiation. Based on the findings of this dissertation it is possible that this project would confirm that higher status households were not very much involved in specialized activities. Alternatively, this proposed research might show a stronger connection between household status and craft specialization. The sample of stone tools from the Río Parita valley that would form the basis of this study is also unusual in that it consists of several thousand artifacts systematically collected at three different scales: Haller's 104 km² regional survey of the Río Parita valley, my own intensive survey and test-pitting at He-4, and William A. Locascio's horizontal household excavations at He-4. In addition, Haller's 2008 and 2009 field seasons at several secondary and tertiary sites in the Río Parita valley, including He-2, also produced a large sample of tools that are available for study as well. Taken together, the large

sample of tools from several nested, but discrete scales of research provides a rare opportunity to explore the organization of stone tool production, trade and use for an entire socio-political and geographic unit.

APPENDIX A

LITHIC DEFINITIONS BY ADAM MENZIES AND CHRISTIAN E. PETERSON

A.1 TOOL TYPE

Utilized flake : any flake with usewear (see Manufacturing Type below)

Retouched flake (no usewear): flake without usewear evidencing at least three contiguous microflake removals from an edge to repair or rejuvenate it.

Utilized and retouched flake: see both tool types above (usewear and retouching present).

Unifacially-worked scraping/chopping tool: flake-based tool with additional removal of flakes from edges on one face only.

Bifacially-worked scraping/chopping tool: flake-based tool with additional removal of flakes from edges on both faces.

Core: objective piece from which flakes are struck. Cores may be unidirectional (originating from one platform only), or multidirectional (originating from multiple platforms). These were classified as unidirectional or multi-directional based on the direction of flake scars, which would indicate if flakes were removed from one platform or from multiple.

Hammerstone/opportunistic chopper: object used as lithic percussor or other hammer/chopper. Must have evidence of usewear in the form of battering/crushing at either/or/both ends and edges.

Tool blank/unfinished tool (no usewear): preform or tool abandoned prior to completion due to breakage, manufacturing error, or raw material flaw. If usewear is present, then tool has been reused, and is coded as such.

Axe/adze/chisel: bifacial cutting/chopping tools (undifferentiated as to hafting). May include flaked and ground examples. These were coded separately using the regional typology for Central Panama.

Projectile points: any regular uni-/bifacial point hafted as a projectile. May include a range of sizes, e.g., both arrowheads and spearpoints. There are several types typical to Central Panama, including La Mula unifacial knives, trifacial points, etc. and these were coded separately.

Mano (handheld grinding roller): pecked and/or ground oblong grinding roller. For use with metates.

Metate (grinding slab): pecked and/or ground basin or variable size for the processing of vegetable matter. For use with manos.

Grooved abrader: coarse to fine, usually oblong stone object grooved as a consequence of use in shaping or sharpening tool edges during manufacture or as maintenance.

Drill: clear bit protruding from object body with evidence of edge crushing and microflaking from friction associated with rotation.

Indeterminate ground and polished fragment: fragment of groundstone with lustrous surface (see Manufacturing Type below).

Indeterminate ground only fragment (no polish from production): fragment of groundstone without lustrous surface.

Multiple function grinding implement: usually smallish, flattened coarse stone object used to process vegetable matter or manufacture/maintain tools, etc.

Indeterminate flaked only fragment: any unclassifiable tool fragment of flaked manufacture.

Chisel/graver: narrow groundstone object with beveled end used to gouge or scrape materials such as wood.

Utilized debris/debitage: any shatter with a sharp enough edge for subsequent use in cutting/scraping.

Not applicable (debitage): any debris from manufacture (irregular/blocky/chunky shatter) that cannot be identified as a flake or other tool.

Flake (no utilization): any intentionally produced whole or partial flake without evidence of having been used (no usewear).

A.2 TOOL CONDITION

Angular/blocky/shatter: see debitage type below.

Flake fragment, no platform: any broken flake, sans platform; includes both medial and distal flake fragments (lower two-thirds of flake).

Flake fragment, platform: broken flake retaining a platform and associated attributes (upper one-third of flake).

Complete flake: flake with both platform, distal termination, and all associated attributes.

Thermal spall: see debitage type below.

Almost complete tool: any broken tool, the remaining portion of which can be estimated as nearly complete.

Broken–proximal (tool): proximal one-third of any broken tool; applied to tools only.

Broken–distal (tool): distal one-third of any broken tool; applied to tools only.

Broken–medial (tool): middle medial one-third of any broken tool; applied to tools only.

Broken–lateral (tool): middle lateral one-third of any broken tool; applied to tools only.

Complete tool: unbroken formal tool.

Indeterminate: could not be classified.

Broken core: any core unintentionally broken during reduction, leading to abandonment of the core.

A.3 CORTEX

Presence of external rind of raw material that was coded according to the proportion of the dorsal surface with cortex (e.g. < 25%; >25% but < 50%).

A.4 DEBITAGE TYPE

Primary Flake: flake from first stage of core reduction; approx. 99–100% dorsal cortical coverage of flake.

Secondary Flake: flake from secondary stages of core reduction; these flakes have additional dorsal flake scars present; cortex can be present, but less than total dorsal coverage of flake.

Tertiary Flake: flake from last stages of core reduction; usually trimming and shaping flakes; tend to be smaller and very thin flakes, often with very narrow platforms, but not exclusively; cortex is rare, but does appear occasionally in the form of cortical platforms; usually have more dorsal flake scars than secondary flakes.

Shatter: irregular, blocky, or angular fragments of raw material, possibly with cortex, than show no signs of platforms, bulbs of percussion, or similar features associated with flakes; size is highly variable.

Any Tool: any formalized lithic implement not considered to be a flake or shatter.

A.5 THERMAL ALTERATION

As identified in the assemblage, spalling or potlidding of cortical surface of flake or tool due to the application of heat for the purpose of improving material workability prior to reductive manufacture.

A.6 MANUFACTURING TYPE

N.B. Up to four different manufacturing types could be coded per specimen.

None, Use-Wear Only: macroscopic edge damage resulting from use; identifiable with 10x hand lens or less; damage includes glossing, abrasion, stepping and stacking of edge, microfractures; positive identification requires patterned evidence (at least 3–4 contiguous patches).

Flaking: lithic reduction via the application of force to produce conchoidal fracture.

Pecking: hammering of material with a harder, denser material to reduce and shape the former.

Grinding: wasting of material via abrasion with coarse material; may include the use of sand, water, or other media to improve frictive properties.

Polishing: late stage grinding of surfaces with fine abrasives to create a surface gloss.

Thermal Alteration: see above.

Bipolar Flaking: flakes produce using a hammer and anvil technique, where force is loaded into both ends to produce fracture.

A.7 MANUFACTURING LOCATION

The categories used here are collapsed versions of definitional locations often used by analysts. Because analyses were not be undertaken that would make use of expanded criteria, said criteria were not employed here. Up to three different manufacturing locations were coded per specimen. Locations of manufacture were not coded for flakes (only for tools). Manufacturing location was coded using the following locations: One face; two or more faces; one edge; two or more edges; one end; both ends; all.

A.8 REUSE

Presence or absence of reuse, where reuse is defined as the subsequent secondary utilization of a lithic implement other than that for which it was initially manufactured.

A.9 REUSE LOCATION

See Manufacturing Location above. Only one reuse location was coded per specimen.

APPENDIX B

The He-4/El Hatillo surface collection, shovel probe and test unit data collected and analyzed for this dissertation is available in computerized form on-line in the Latin American Archaeology Database. The dataset consists of counts of artifacts by type (ceramic, lithic, faunal, shell) by collection unit (with spatial coordinates). The objective of the on-line database is to provide detailed primary data in a form directly amendable to further analysis by computer, and thereby complement printed volumes, such as this dissertation, in serving the fundamental function of an archaeology report; that is, making available the full datasets upon which conclusions are based so that interested scholars can explore them further. Since electronic media, standard formats, and means of access all evolve, and since the Latin American Archaeology Database will attempt to keep pace with this evolution, it is impossible to provide permanently valid full descriptions here of the contents of this database and means of access to them. As of this writing, the detailed datasets on which this study is based are directly accessible to Internet users via the following URL: <http://www.pitt.edu/~laad>.

The files containing the data can be downloaded using tools in popular web browsers such as Firefox, Mozilla, Opera, Netscape, and Internet Explorer. An alternative means obtaining the dataset is by contacting the Latin American Archaeology Database via e-mail (laad@pitt.edu). Current information about the datasets and access to them (as well as about

other contents of the Latin American Archaeology Database) can be obtained via the Internet or e-mail as described above.

9.0 BIBLIOGRAPHY

Ames, K.

1995 Chiefly Power and Household Production on the Northwest Coast. In *Foundations of Social Inequality*, edited by T.D. Price, and G.M. Feinman, pp. 155-181. Plenum Press, New York.

Anderson, David, D. W. Stahle and M. K. Cleaveland

1995 Paleoclimate and the potential food reserves of Mississippian societies: a case study from the Savannah River Valley. *American Antiquity* 60:258-286.

Andrefsky, William

1998 *Lithics: Macroscopic approaches to analysis*. Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

Arnold, Jeanne E. and A. Munns

1994 Independent or Attached Specialization: The Organization of Shell Bead Production in California. *Journal of Field Archaeology* 21:473-489.

Banning, Edward B.

2002 *Archaeological Survey*. Kluwer Academic/Plenum Publishers, New York.

Befu, Harumi and Leonard Plotnicov

1962 Types of Corporate Unilineal Descent Groups. *American Anthropologist* 64(2):313-327.

Berrey, Charles A.

2008 Crecimiento Poblacional e Interacción Social: Patrones de Cambio de la Estructura de la Comunidad al Sur de América Central y Norte de Sudamérica. Actas del simposio *Regiones, Comunidades, y Áreas Domésticas: Acercamiento al Estudio del Cambio Social Precolombino en América Central Meridional y el Norte de América del Sur Utilizando Múltiples Escalas de Análisis*, organizado por M. Murillo Herrera y A. Menzies. II Congreso de Latinoamericano de Antropología, San José, Costa Rica.

Binford, Lewis R.

1962 Archaeology as Anthropology. *American Antiquity* 28:217-225.

1971 Mortuary practices: their study and their potential. *American Antiquity* 3: 6-29.

1979 Organization and Formation Processes: Looking at Curated Technologies. *Journal of Anthropological Research* 35(3):255-273.

Binford, Lewis R., Sally R. Binford, Robert Whallon, and M. A. Hardin

1970 Archaeology at Hatchery West, Carlyle, Illinois. *Memoirs of the Society for American Archaeology* No. 24.

Blanton, Richard E., Gary M. Feinman, Stephen A. Kowalewski and Peter N. Peregrine

1996 A Dual-Processual Theory for the Evolution of Mesoamerican Civilization. *Current Anthropology* 37(1):1-14.

Blitz, John R.

1999 Mississippian Chiefdoms and the Fission-Fusion Process. *American Antiquity* 64:577-592.

Breece, Laura A. H.

1997 *An Assessment of the Archaeological Potential of Natá, a Precolumbian Colonial Town in Central America*. Ph.D. Dissertation, University of Los Angeles.

Briggs, Peter

1989 *Art, Death and Social Order: the Mortuary Arts of Pre-Conquest Central Panama*. B.A.R. International Series 550, Oxford.

1993 Fatal Attractions: Interpretation of Prehistoric Mortuary Remains From Lower Central America. In *Reinterpreting Prehistory of Central America*, edited by Mark Miller Graham, pp. 141-168. University Press of Colorado, Niwot.

Brumfiel, Elizabeth M. and Timothy Earle (editors)

1987a *Specialization, exchange and complex societies*. Cambridge University Press, Cambridge.

1987b Specialization, exchange, and complex societies: an introduction. In *Specialization, exchange, and complex societies*, edited by Elizabeth M. Brumfiel and Timothy Earle, pp. 1-9. Cambridge University Press, Cambridge.

Bull, Thelma H.

1965 Report on Archaeological Investigations, Azuero Peninsula, Province of Herrera, Republic of Panama. *Panama Archaeologist* 6:42-47.

Braswell, Geoffrey E.

2002 Praise the Gods and Pass the Obsidian? The Organization of Ancient Economy in San Martín Jilotepeque, Guatemala. In *Ancient Maya Political Economies*, edited by M. A. Masson, and D. A. Freidel, pp. 285-306. Altamira Press, Walnut Creek, CA.

Brumfiel, Elizabeth M. and John W. Fox (editors)

1994 *Factional competition and political development in the New World*, Cambridge University Press, Cambridge.

Carneiro, Robert L.

1979 Tree Felling with the Stone Ax: An Experiment Carried Out Among the Yanomamö Indians of Southern Venezuela. In *Ethnoarchaeology: Implications for Archaeology*, edited by Carol Kramer, pp. 21-58. Columbia University Press, New York.

1981 The Chiefdom: Precursor to the State. In *The Transition to Statehood in the New World*, edited by G. D. Jones and R. R. Kautz, pp. 37-79. Cambridge University Press.

1991 Chiefdom-level warfare as exemplified in Fiji and the Cauca Valley. In *The Anthropology of War*, edited by J. Haas, pp. 190-211. Cambridge University Press, Cambridge.

1998 What happened at the Flashpoint? conjectures on chiefdom formation at the very moment of conception. In *Chiefdoms and Chieftaincy in the Americas*, edited by E. Redmond, pp. 18-42. University Press of Florida, Gainesville.

Ceja Tenorio, Jorge Fausto

1985 *Paso de la Amada: An Early Preclassic Site in the Soconusco, Chiapas*. Papers of the New World Archaeological Foundation 49, Provo, Utah.

Chapman, John

2000 Tension at funerals: Social practices and the subversion of community structure in later Hungarian prehistory. In *Agency in Archaeology*, edited by Marcia-Anne Dobres and John E. Robb, pp. 169-195. Routledge, London.

Chapman, Robert

2003 *Archaeologies of Complexity*. Routledge, London.

Claessen, H.J.M.

1984 The Internal Dynamics of the Early State. *Current Anthropology*. 25(4): 365-379.

Claassen, Cheryl

1998 *Shells*. Cambridge University Press, Cambridge.

Clark, John E.

1986 From Mountains to Molehills: A Critical Review of Teotihuacan's Obsidian Industry. *Research in Economic Anthropology* 8: 23-74.

1991 Modern Lacandon Lithic Technology and Blade Workshops. In *Maya Stone Tools*, edited by Thomas R. Hester and Harry J. Shafer, pp. 251-265. Monographs in World Archaeology No.1. Prehistory Press, Wisconsin.

1994 The Development of Early Formative Rank Societies in the Soconusco, Chiapas, Mexico. Ph.D. dissertation, Department of Anthropology, University of Michigan.

1995 Craft Specialization as an Archaeological Category. *Research in Economic Anthropology* 16: 267-294.

Clark, John E. and Michael Blake

1994 The Power of Prestige: Competitive Generosity and the Emergence of Rank Societies in Lowland Mesoamerica. In *Factional Competition and Political Development in the New World*, edited by Elizabeth M. Brumfiel and John W. Fox, pp. 17-30. Cambridge University Press, Cambridge.

Clark, John E. and William J. Parry

1990 Craft Specialization and Cultural Complexity. *Research in Economic Anthropology* 12:289-346.

Cobb, Charles R.

1996 Specialization, Exchange, and Power in Small-Scale Societies and Chiefdoms. *Research in Economic Anthropology* 17: 251-294. vol. 17.

2003 Mississippian Chiefdoms: How Complex? *Annual Review of Anthropology* 32:63-84.

Cooke, Richard G.

1972 *The Archaeology of the Western Coclé Province*. Unpublished Ph.D. Dissertation, University of London.

1976 Panamá, Región Central. *Vínculos* 2:122-140.

1980 Polychrome Pottery from the Central Region of Panama at La Pitahaya (IS-3). In *Adaptive Radiations in Prehistoric Panama*, edited by Olga F. Linares and Anthony J. Ranere, pp. 376-384. Peabody Museum Monographs. vol. 8. Harvard University, Cambridge.

- 1984 Archaeological Research in Central and Eastern Panama: A Review of Some Problems. In *The Archaeology of Lower Central America*, edited by Frederick W. Lange and Doris Z. Stone, pp. 263-302. University of New Mexico Press, Albuquerque.
- 1985 Ancient painted pottery from central Panama. *Archeology* July/August: 33-39.
- 1993 Animal Icons and Pre-Columbian Society: the Felidae with Special Reference to Panama. In *Reinterpreting Prehistory of Central America*, edited by Mark Miller Graham. University Press of Colorado, Niwot.
- 1998 Cupica (Chocó): A Reassessment of Gerardo Reichel-Dolmatoff's Fieldwork in a Poorly Studied Region of the American Tropics. In *Recent Advances in the Archaeology of the Northern Andes*, edited by Augusto Oyuela-Caycedo and J. Scott Raymond, pp. 91-106. Monograph 39. The Institute of Archaeology, University of California, Los Angeles, Los Angeles.
- 2004a Rich, poor, shaman, child: animals, rank, and status in the 'Gran Coclé' culture area of pre-Columbian Panama. In *Behaviour Behind the Bones*, edited by Sharyn Jones O'Day, W. Van Neer and A. Ervynck, pp. 271-284. Oxbow Books.
- 2004b Observations on the religious content of the animal imagery of the 'Gran Coclé' semiotic tradition of pre-Columbian Panama. In *Behaviour Behind the Bones*, edited by Sharyn Jones Jones, O'Day, W. Van Neer and A. Ervynck, pp. 114-127. Oxbow Books.
- 2005 Prehistory of Native Americans on the Central American Land Bridge: Colonization, Dispersal and Divergence. *Journal of Archaeological Research* 13(2):128-187.
- Cooke, Richard G., Ilean Isaza, John Griggs, Benoit Desjardins and Luis A. Sánchez
- 2003 Who Crafted, Exchanged and Displayed Gold in Pre-Columbian Panama? In *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, edited by Jeffrey Quilter and John W. Hoopes, pp. 91-158. Dumbarton Oaks Research Library and Collection, Washington D.C.
- Cooke, Richard and Warwick Bray
- 1985 The Goldwork of Panama: An Iconographic and Chronological Assessment. In *The Art of Pre-Columbian gold: The Jan Mitchell Collection*, edited by Julie Jones, pp. 35-49. Weidenfeld and Nicholson, London.
- Cooke, Richard G. and Anthony J. Ranere
- 1984 The "Proyecto Santa Maria": A Multi-Disciplinary Analysis of Prehistoric Adaptations to a Tropical Watershed in Panama. In *Recent Developments in Isthmian Archaeology*, edited by Frederick W. Lange, pp. 3-30. B.A.R. International Series 212, Oxford.

1989 Hunting in prehistoric Panama: a diachronic perspective. In *The Walking Larder: Patterns of Domestication, Pastoralism and Predation*, edited by J. Clutton-Brock, pp. 295-315. Unwin Hyman, London.

1992 The Origin of Wealth and Hierarchy in the Central Region of Panama (12,000-2,000 BP), with Observations on its Relevance to the History and Phylogeny of Chibchan-speaking Polities in Panama and Elsewhere. In *Wealth and Hierarchy in the Intermediate Area*, edited by Frederick W. Lange, pp. 243-316. Dumbarton Oaks, Washington D. C.

Cooke, Richard G. and Luis Sánchez

1997 Coetaneidad de Metalurgia, Artesanías de Concha y Cerámica Pintada en Cerro Juan Díaz, Panamá. *Boletín del Museo del Oro* (Colombia) 42:57-85.

2000 Cubitá: a New Stylistic Link in the Ceramic Tradition of Gran Coclé, Panamá. *Precolombart* 3:5-20.

2003 Alain Ichon in Panama (1967-1970): A reappraisal of the Tonosí Research Project in Light of New Research. In *Misceláneas en Honor a Alain Ichon*, edited by M. Charlotte Arnaud, Alain Breton, Marie-France Fauvet-Berthelot, and Juan Antonio Valdés, pp. 13-27. Centro Francés de Estudio Mexicanos y Centroamericanos Asociación Tikal, Impresora Caudel, México and Guatemala.

2004a Panamá Indígena: 1501-1550. In *Historia General de Panamá*, edited by Alfredo Castellero Calvo, pp. 47-89. vol. 1, Tomo II. Comité Nacional del Centenario de la Republica de Panamá.

2004b Panamá Prehispánico. In *Historia General de Panamá*, edited by Alfredo Castellero Calvo, pp. 3-46. vol. 1 Tomo II. Comité Nacional del Centenario de la Republica de Panamá.

Cooke, Richard G., Luis A. Sánchez H., Ilean Isaza A., and Aguilaro Pérez Y.

1998 Rasgos mortuorios y artefactos inusitados de Cerro Juan Díaz, una aldea precolombina del 'Gran Coclé' (Panamá central). *La Antigua* (Panamá) 53:127-196

Cooke, Richard G., Luis A. H. Sánchez and Koichi Udagawa

2000 An Update Based on Recent Excavations and New Radiocarbon Dates for Associated Pottery Styles. In *PreColumbian Gold*, edited by Colin McEwan, pp. 154-176. Fitzroy Dearborn Publishers, Chicago.

Costin, C. L.

1991 Craft Specialization: Issues in Defining, Documenting and Explaining the Organization of Production. *Advances in Archaeological Method and Theory* 3:1-56.

Costin, C., and M. Hagstrum

- 1995 Standardization, Labor Investment, Skill, and Organization of Ceramic Production in Late Prehistoric Highland Peru. *American Antiquity* 60(4):619-639.
- Cotterell, Brian and Johann Kamminga
- 1987 The Formation of Flakes. *American Antiquity* 52: 675-708.
- Creamer, Winifred and Jonathan Haas
- 1985 Tribe Versus Chiefdom in Lower Central America. *American Antiquity* 50(4):738-754.
- Dade, Philip
- 1972 Bottles from Parita, Panama. *Archaeology* 25(1):35-43.
- D'Altroy, Terence and Timothy K. Earle
- 1985 Staple Finance, Wealth Finance, and Storage in the Inka Political Economy. *Current Anthropology* 26(2):187-206.
- DeMarrais, Elizabeth, Luis J. Castillo, and Timothy K. Earle
- 1996 Ideology, Materialization, and Power Strategies. *Current Anthropology* 17: 15-31.
- Demarest, Arthur
- 1992 Ideology in Ancient Maya Cultural Evolution: The Dynamics of Galactic Polities. In *Ideology and Pre-Columbian Civilizations*, edited by A. Demarest and G. Conrad, pp. 135-158. School of American Research Press, Santa Fe.
- DeYoung, Ashley
- 2008 *Mortuary Practices and Social Organization at Cerro Juan Díaz, Central Panama*. Unpublished Honour's Thesis, Department of Sociology and Anthropology, St. Francis Xavier University, Antigonish, Nova Scotia.
- Díaz, Claudia P.
- 1999 Estudio Bio-Antropológico de Rasgos Mortuaries de la "Operación 4" del Sitio Arqueológico Cerro Juan Díaz, Panamá Central. Undergraduate Thesis, Department of Anthropology, Universidad de los Andes, Bogotá.
- Diehl, Richard A.
- 2004 *The Olmecs*. Thames and Hudson, London.
- Dietler, Michael and Brian Hayden (editors)

2001 *Feasts: archaeological and ethnographic perspectives on food, politics, and power*. Smithsonian Institution Press, Washington D.C.

Drennan, Robert D.

1985 Archeological Survey and Excavation. In *Regional Archaeology in the Valle de la Plata Colombia: A Preliminary Report on the 1984 Season of the Proyecto Arqueológico Valle de la Plata*, edited by Robert D. Drennan, pp. 117-180. Museum of Anthropology, University of Michigan Technical Reports No. 16, Ann Arbor.

1991 Pre-Hispanic Chiefdom Trajectories in Mesoamerica, Central America, and Northern South America. In *Chiefdoms: Power, Economy, and Ideology*, edited by Timothy Earle, pp. 263-287. Cambridge University Press, Cambridge.

1995a Mortuary Practices in the Alto Magdalena: The Social Context of the "San Agustín Culture". In *Tombs for the Living: Andean Mortuary Practices*, edited by Thomas D. Dillehay, pp. 79-110. Dumbarton Oaks, Washington D. C.

1995b Chiefdoms in Northern South America. *Journal of World Prehistory* 9:301-340.

1996a Betwixt and between in the Intermediate Area. *Journal of Archaeological Research* 4(2):95-132.

1996b *Statistics for Archaeologists: A Common Sense Approach*. Kluwer Academic/Plenum Publishers, New York.

2000 Games, Players, Rulers, and Circumstances. In *Cultural Evolution: Contemporary Viewpoints*, edited by Gary M. Feinman and Linda Manzanilla, pp. 177-196. Kluwer Academic/Plenum Publishers, New York.

Drennan, Robert D., and Christian E. Peterson

2006 Patterned Variation in Prehistoric Chiefdoms. *Proceedings of the National Academy of Sciences* 103(11):3960-3967.

Drennan, Robert D. and Teng Mingyu, Christian E. Peterson, Gideon Shelach, Gregory G. Indrisano, Zhu Yangping, Katheryn M. Linduff, Guo Zhizhong, and Manuel A. Locayo

2003a Methods for Archaeological Settlement Study. In *Regional Archeology in Eastern Inner Mongolia: A Methodological Exploration*, pp. 122-151. Science Press, Beijing

2003b Approaches to Regional Demographic Reconstruction. In *Regional Archeology in Eastern Inner Mongolia: A Methodological Exploration*, pp. 152-165. Science Press, Beijing.

Drennan, Robert D. and Carlos A. Uribe (editors)

1987 *Chiefdoms in the Americas*. University Press of America, Lanham, MD.

Drennan, Robert D. and Dale W. Quattrin

- 1995 Social Inequality and Agricultural Resources in the Valle de la Plata, Colombia. In *Foundations of Social Inequality*, edited by T. D. Price and G. M. Feinman. Plenum, New York.

Douglass, John C.

- 2002 *Hinterland Households: Rural Agrarian Household Diversity in Northwest Honduras*. University Press of Colorado, Boulder.

Earle, Timothy

- 1977 A Reappraisal of Redistribution: Complex Hawaiian Chiefdoms. In *Exchange Systems in Prehistory*, edited by T.K. Earle and J. E. Ericson, pp. 213-229. Academic Press, New York.
- 1987 Chiefdoms in Archaeological and Ethnohistorical Perspective. *Annual Review of Anthropology* 16:279-308.
- 1991a The evolution of chiefdoms. In *Chiefdoms: Power, Economy, and Ideology*, edited by Timothy Earle, pp. 1-15. Cambridge University Press, Cambridge.
- 1991b Property rights and the evolution of chiefdoms. In *Chiefdoms: Power, Economy, and Ideology*, edited by Timothy Earle, pp. 71-99. Cambridge University Press, Cambridge.
- 1997 *How Chiefs Come to Power*. Academic Press, New York.
- 2002 Commodity Flows and the Evolution of Complex Societies. In *Theory in Economic Anthropology*, edited by J. Ensminger, pp. 81-103. Alta Mira Press, Walnut Creek.

Einhaus, Catherine Shelton

- 1980 Stone tools from La Pitahaya. In *Adaptive Radiations in Prehistoric Panama*, edited by Olga F. Linares and Anthony J. Ranere, pp. 429-466. Peabody Museum Monographs 5. Harvard University Press, Cambridge.

Emerson, Thomas E.

- 1997 *Cahokia and the Archaeology of Power*. University of Alabama Press, Tuscaloosa.

Espinosa, Gaspar de

- 1994 Relación hecha por Gaspar de Espinosa, Alcalde Mayor, hize en el viaje...desde esta Ciudad[sic] de Panamá a las provincias de Paris e Nata, e a las otras provincias comarcanas. In *Indios y Negros en Panamá en los Siglos XVI y XVII: Selecciones de los Documentos del Archivo General de Indias*, edited by Carla F. Jopling, pp. 42-58. Centro de Investigaciones Regionales de Mesoamerica, Antigua, Guatemala; Plumstock Mesoamerican Studies, South Woodstock, Vermont.

Fitzgerald, Carlos M.

- 1996 Prestige Goods in the Archaeological Sequences of Costa Rican and Panamanian Chiefdoms. In *Chieftains, Power and Trade: Regional Interaction in the Intermediate Area of the Americas*, edited by C. H. Langebaek and F. Cardenas-Arroyo, pp. 47-62. Departamento de Antropología, Universidad de los Andes, Bogotá.

Flannery, Kent V.

- 1976a Sampling by Intensive Surface Collection. In *The Early Mesoamerican Village*, edited by Kent V. Flannery, pp. 51-62. Academic Press, New York.

1976b *The Early Mesoamerican Village*. Academic Press, New York.

Flannery, Kent V. and Joyce Marcus

- 1976 Formative Oaxaca and the Zapotec Cosmos. *American Scientist* 64:374-383.

- 1983 The Growth of Site Hierarchies in the Valley of Oaxaca: Part I. In *The Cloud People: Divergent Evolution of the Zapotec and Mixtec Civilizations*, edited by Kent V. Flannery and Joyce Marcus, pp. 53-64. Academic Press, New York.

Fleming, Stuart

- 1992 Sitio Conte Goldwork: Alloying and the Treatment of Surfaces. In *River of Gold: Precolumbian Treasures from Sitio Conte (Appendix B)*, edited by Pamela Hearne and Robert J. Sharer, pp. 54-59. University Museum, University of Pennsylvania, Philadelphia.

Fonseca, Oscar M. and Richard G. Cooke

- 1993 El Sur de América Central: Contribución al Estudio de la Región Histórica Chibcha. In *Historia General de Centroamérica*, edited by Robert M. Carmack, pp. 217-282. vol. Tomo I. Sociedad Estatal Quinto Centenario, Madrid.

Fortes, Meyer

- 1953 The Structure of Unilineal Descent Groups. *American Anthropologist* 55(1):17-41.

1969 *Kinship and the Social Order*. Routledge and Kegan Paul, London.

Frankenstein, Susan and Michael J. Rowlands

- 1978 The Internal Structure and Regional Context of Early Iron Age Society in South-Western Germany. *Bulletin of the Institute of Archaeology* 15:73-112.

Fried, Morton H.

1967 *The Evolution of Political Society: An Essay in Political Anthropology. Studies in Anthropology.* Random House, New York.

Friedman, Jonathan and Michael J. Rowlands

1977 Notes towards an epigenetic model of the evolution of "civilization". In *The Evolution of Social Systems*, edited by Jonathan Friedman and Michael J. Rowlands, pp. 201-276. Duckworth, London.

Gell, Alfred

1992 The Technology of Enchantment and the Enchantment of Technology. In *Anthropology, Art and Aesthetics*, edited by J. Coote and A. Shelton, pp. 40-63. Clarendon Press, Oxford.

Gilman, Antonio

1981 The development of social stratification in Bronze Age Europe. *Current Anthropology* 22(1):1-8.

1987 Unequal development in Copper Age Iberia. In *Specialization, Exchange, and Complex Societies*, edited by Elizabeth M. Brumfiel and Timothy K. Earle, pp. 22-29. Cambridge University Press, Cambridge.

1991 Trajectories towards Social Complexity in the Later Prehistory of the Mediterranean. In *Chiefdoms: Power, Economy and Ideology*, edited by T. Earle, pp. 146-168. Cambridge University Press, Cambridge.

2001 Assessing Political Development in Copper and Bronze Age Southeast Spain. In *From Leaders to Rulers*, edited by Jonathan Haas, pp. 59-80. New York: Kluwer Academic/Plenum Publishers.

Gledhill, John

1988 Introduction: The Comparative Analysis of Social and Political Transitions. In *State and Society: The Emergence and Development of Social Hierarchy and Political Centralization*, edited by J. Gledhill, B. Bender and M. T. Larsen, pp. 1-29. Unwin Hyman, London.

Goldman, Irving

1970 *Ancient Polynesian Society.* University of Chicago Press, Chicago.

Gosden, Chris and Yvonne Marshall

1999 The cultural biography of objects. *World Archaeology* 31:169-178.

Graeber, David

2001 *Toward an Anthropological Theory of Value: The False Coin of Our Own Dreams*. Palgrave, New York.

Grayson, Donald K.

1984 *Quantitative Zooarchaeology: Topics in the Analysis of Archaeological Faunas*. Academic Press, Orlando.

Griggs, John

2005 *The Archaeology of Central Caribbean Panama*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Texas, Austin.

Grove, David C.

1981 The Formative Period and the Evolution of Complex Culture. In *Supplement to the Handbook of Middle American Indians, Volume 1 Archaeology*, edited by Jeremy A. Sabloff, pp. 373-391. University of Texas Press, Austin.

Hagstrum, Melissa

2001 Household Production in Chaco Canyon Society. *American Antiquity* 66(1):47-55.

Haller, Mikael J.

2004 *The Emergence and Development of Chiefly Societies in the Rio Parita Valley, Panama*. Ph.D., University of Pittsburgh.

2008 *Asiento Viejo and the Development of the Río Parita Chiefdom, Panama*. University of Pittsburgh Memoirs in Latin American Archaeology No. 19, University of Pittsburgh, Pittsburgh.

Haller, Mikael J. and Adam C. J. Menzies

2008 Parita: La Historia y la Continuación del Pueblo Antiguo. In *Parita: 450 Años de Cultura y Tradición*, pp. 8-11. La Fundación para la Ayuda de Estudiantes Pariteños (FADEPA), Panama.

Hansell, Patricia K.

1987 The Formative in Central Pacific Panama: La Mula-Sarigua. In *Chiefdoms in the Americas*, edited by Robert D. Drennan and Carlos A. Uribe. University Press of America, Lanham, MD.

1988 *The Rise and Fall of an Early Formative Community: La Mula-Sarigua, Central Pacific Panama*. Ph. D. Dissertation, Temple University.

Hassan, Fekri A.

1981 *Demographic Archaeology*. Academic Press, New York.

Hayden, Brian

1977 Corporate Groups and the Late Ontario Iroquoian Longhouse. *Ontario Archaeology* 28: 3-28.

1987 Traditional Metate Manufacturing in Guatemala Using Chipped Stone Tools. In *Lithic Studies Among the Contemporary Highland Maya*, edited by Brian Hayden, pp. 8-119. The University of Arizona Press, Tucson.

1998 Practical and Prestige Technologies: the Evolution of Material Systems. *Journal of Archaeological Method and Theory* 5(1):1-55.

2001 Richman, Poorman, Beggarman, Chief: the Dynamics of Social Inequality. In *Archaeology at the Millennium: A Sourcebook*, edited by Gary M. Feinman and T. Douglas Price, pp. 231-272. Kluwer Academic/Plenum Publishers, New York.

Hayden, Brian and Aubrey Cannon

1982 The Corporate Group as an Archaeological Unit. *Journal of Anthropological Archaeology* 1:132-158.

1983 Where the Garbage Goes: Refuse Disposal in the Maya Highlands. *Journal of Anthropological Archaeology* 2:117-163.

Hayden, Brian and Robert Gargett

1990 Big man, big heart? A Mesoamerican view of the emergence of complex society. *Ancient Mesoamerica* 1:3-20.

Hearne, Pamela and Robert J. Sharer (editors)

1992 *River of Gold: Precolumbian Treasures from Sitio Conte*. University Museum of Archaeology and Anthropology, Philadelphia.

Helms, Mary W.

1979 *Ancient Panama: Chiefs in Search of Power*. University of Texas Press, Austin.

1988 *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance*. Princeton University Press, New Jersey.

1994 Chiefdom Rivalries, Control, and External Contacts in Lower Central America. In *Factional Competition and Political Development in the New World*, edited by E. M. Brumfiel and J. W. Fox, pp. 55-60. Cambridge University Press, Cambridge.

1995 *Creations of the Rainbow Serpent*. University of New Mexico Press, Albuquerque.

1998 The Spectacled Bear in Iconic Imagery of Ancient Panama and Colombia. In *Recent Advances in the Archaeology of the Northern Andes*, edited by A. Oyuela-Caycedo and J. S. Raymond, pp. 129-141. Monography 39, Institute of Archaeology, University of California Los Angeles.

2000 *The Curassow's Crest*. University Press of Florida, Gainesville.

Hill, Warren D. and John E. Clark

2001 Sports, Gambling and Government: America's First Social Compact? *American Anthropologist* 103(2):331-345.

Hirth, Kenneth G.

1984 The Analysis of Prehistoric Economic Systems: A Look to the Future. In *Trade and Exchange in Early Mesoamerica*, edited by K. G. Hirth, pp. 281-302. University of New Mexico Press, Albuquerque.

1993a Identifying Rank and Socioeconomic Status in Domestic Contexts: An Example from Central Mexico. In *Prehispanic domestic units in western Mesoamerica: studies of the household, compound, and residence*, edited by R. S. Santley and K. G. Hirth, pp. 121-146. CRC Press, Boca Raton.

1993b The household As An Analytical Unit: Problems in Method and Theory. In *Prehispanic domestic units in western Mesoamerica: studies of the household, compound, and residence*, edited by R. S. Santley and K. G. Hirth, pp. 21-36. CRC Press, Boca Raton.

Hoopes, John W.

2005 The Emergence of Social Complexity in the Chibchan World of Southern Central America and Northern Colombia, AD 300-600. *Journal of Archaeological Research* 13(1):1-47.

Hoopes, John W. and Oscar M. Fonseca

2003 Goldwork and Chibchan identity: Endogenous change and diffuse unity in the Isthmo-Colombian area. In *Gold and Power in Ancient Costa Rica, Panama, and Colombia*, edited by Jeffrey Quilter and John W. Hoopes, pp. 49-90. Dumbarton Oaks, Washington D.C.

Ichon, Alain

1980 *Archeologie du Sud de la Peninsule d'Azuero, Panamá*. Études Mesoamericaines, Serie 2, No.3. Mission Archeologique et Ethnologique Francaise au Mexique, Mexico D.F.

Inomata, Takeshi

2001 The Power and Ideology of Artistic Creation. *Current Anthropology* 42(3):321-349.

Isaza, Ilean

- 1993 *Desarollo Estilístico de la Cerámica Pintada del Panamá Central con Énfasis en el Período 500 a.C-500 d.C.* Tesis de grado, Universidad Autónoma de Guadalajara.
- 2007 *The Ancestors of Parita: Pre-Columbian Settlement Patterns in the Lower La Villa River Valley, Azuero Peninsula, Panama.* Unpublished Ph.D. dissertation, Boston University.

Jessome, MacKenzie

- 2008 *An Examination of the Balsería and the Nature of Overproduction in Central Panamanian Chiefly Societies.* Unpublished Honours Thesis, Department of Sociology and Anthropology, St. Francis Xavier University, Antigonish, Nova Scotia.

Jopling, Carla F. (editor)

- 1994 *Indios y Negros en Panamá en los Siglos XVI y XVII.* Serie Monográfica 7. Centro de Investigaciones Regionales de Mesoamerica, South Woodstock, Vermont.

Joyce, Rosemary A.

- 2001 Burying the Dead at Tlatilco: Social Memory and Social Identities. *Archeological Papers of the American Anthropological Association* 10:12-26.

Joyce, Rosemary A. and John Henderson

- 2007 From Feasting to Cuisine: Implications of Archaeological Research in an Early Honduran Village. *American Anthropologist* 109:642-654.

Kozák, Vladimír

- 1972 Stone Age Revisited. *Natural History* 81:14-24.

Kolb, Charles C.

- 1985 Demographic Estimates in Archaeology: Contributions from Ethnoarchaeology on Mesoamerican Peasants. *Current Anthropology* 26(5):581-599.

Kopytoff, Igor

- 1986 The cultural biography of things: commoditization as a process. In *The social life of things*, edited by Arjun Appadurai, pp. 64-91. Cambridge University Press, Cambridge.

Kristiansen, Kristian

- 1991 Chiefdoms, states and systems of social evolution. In *Chiefdoms: Power, Economy and Ideology*, edited by Timothy Earle, pp. 16-43. Cambridge University Press, Cambridge.

Kuijt, Ian

2000 Keeping the peace: ritual, skull caching, and community integration in the Levantine Neolithic. In *Life in Neolithic Farming Communities*, edited by Ian Kuijt, pp. 137-159. Kluwer, London.

Labbé, Armand J.

1995 *Guardians of the Life Stream: Shamans, Art and Power in Prehispanic Central Panamá*. Bowers Museum of Cultural Art, Los Angeles.

Ladd, John

1964 *Archaeological Investigations in the Parita and Santa Maria Zones of Panama*. Bureau of American Ethnology Bulletin 193. Smithsonian Institution, Washington D. C.

Las Casas, Fray Bartolomé de

1986 *Historia de las Indias 3 vols*. Fondo de Cultura Económica, México and Buenos Aires.

Lesure, Richard G.

1995 *Paso de la Amada: Sociopolitical Dynamics in an Early Formative Community*. Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor.

Lesure, Richard G. and Michael Blake

2002 Interpretive Challenges in the Study of Early Complexity: Economy, Ritual, and Architecture at Paso de la Amada, Mexico. *Journal of Anthropological Archaeology* 21:1-24.

Lewis, Brandon

1996 The Role of Attached and Independent Specialization in the Development of Sociopolitical Complexity. *Research in Economic Anthropology* 17: 357-388.

Linares, Olga F.

1976a Animals that were bad to eat were good to compete with: an analysis of the Conte style from ancient Panama. In *Ritual and Symbol in Native South America*, edited by Philip D. Young and James D. Howe. University of Oregon Anthropological Papers No.9. University of Oregon Press, Eugene.

1976b Garden Hunting in the American Tropics. *Human Ecology* 4(4):331-349.

1977 *Ecology and the Arts in Ancient Panama*. Studies in Pre-Columbian Art and Archaeology 17. Dumbarton Oaks, Washington D.C.

Linares, O., and P. Sheets

1980 Highland Agricultural Villages in the Volcan Baru Region. In *Adaptive Radiations in Prehistoric Panama*, edited by O. Linares, and A. Ranere, pp. 44-55. Peabody Museum Monographs, vol. 5. Harvard University Press, Cambridge.

Locascio, William A.

2009 Feasting and Status in the Prehispanic Communities of He-4/El Hatillo, Panama. Proceedings of the symposium *Reconstructing the Natures of Communities in the Intermediate Area*, organized by S. Palumbo and W. Locascio. 74th Annual Meeting of the Society for American Archaeology, Atlanta.

Lothrop, Samuel K.

1937 *Coclé, an Archaeological Study of Central Panama, Part I*. Memoirs of the Peabody Museum of Archaeology and Ethnology, Memoir No. 7. Museum of Archaeology and Ethnology, Harvard University, Cambridge.

1942 *Coclé: An Archaeological Study of Central Panama, Part 2*. Memoirs of the Peabody Museum of Archaeology and Ethnology Memoir No. 7. Harvard University.

1950 *The Archaeology of Southern Veraguas, Panama*. Peabody Museum of Archaeology and Ethnology, Harvard University, Volume IX, Number 3, Cambridge.

1954 Suicide, sacrifice and mutilations in burials at Venado Beach, Panama. *American Antiquity* 19:226-34.

Malinowski, Bronislaw

1961 *Argonauts of the Western Pacific*. Dutton, New York.

Marcus, Joyce

1976 The Size of the Early Mesoamerican Village. In *The Early Mesoamerican Village*, edited by Kent V. Flannery, pp. 79-90. Academic Press, New York.

Marcus, Joyce and Kent V. Flannery

1994 Ancient Zapotec ritual and religion: an application of the direct historical approach. In *The Ancient Mind*, edited by Colin Renfrew and Ezra B. W. Zubrow, pp. 55-74. Cambridge University Press, Cambridge.

Mauss, Marcel

1990 *The gift: the form and reason for exchange in archaic societies*. Translated by W. D. Halls. Routledge, London.

Mayo Torne, Julia d. C.

2004 *La Industria Prehispánica de Conchas Marinas en "Gran Coclé", Panamá.* Ph. D. Dissertation, Universidad Complutense de Madrid.

2007 Los estilos cerámicos de la region cultural de Gran Coclé, Panamá. *Revista Española de Antropología Americana* 36:27-46.

Mayo, Julia and Richard G. Cooke

2004 La industria lítica de Gran Coclé, Panamá, a finales del period Cerámico medio. Resultados del análisis de material lítico de la Operación 8 de Sitio Cerro Juan Díaz. *Arqueología* Mayo-Agosto: 140-160.

2005 La industria prehispánica de conchas marinas en Gran Coclé, Panamá. Análisis tecnológico de los artefactos de concha del basurero-taller Sitio Cerro Juan Díaz, Los Santos, Panamá. *Archaeofauna* 14:285-298.

Mayo, Julia, Alexis Mojica, Alberto Ruiz, Enrique Moreno, Carlos Mayo and Guillermina Itzel de Gracia

2007 Estructuras arquitectónicas incipientes y areas de explotación minera prehispánica de las cuencas de los ríos Grande y Coclé el Sur, Panamá. *Revista Española de Antropología Americana* 37:93-110.

Mayo, Julia and Carlos Mayo

2009 Proyecto Arqueológico El Caño. Avance de los Resultados de la Campaña de Excavación 2008. Proceedings of the symposium *Reconstructing the Natures of Communities in the Intermediate Area*, organized by S. Palumbo and W. Locascio. 74th Annual Meeting of the Society for American Archaeology, Atlanta.

McAnany, Patricia

1995 *Living with the Ancestors.* University of Texas Press, Austin.

McGimsey, Charles R.

1957 Further data and a date from Cerro Mangote, Panama. *American Antiquity* 23:434-435.

McGuire, Randall H.

1983 Breaking down cultural complexity: inequality and heterogeneity. *Advances in Archaeological Method and Theory* 6:91-142.

McGuire, Randall H. and Dean J. Saitta

1996 Although They Have Petty Captains, they Obey Them Badly: The Dialectics of Prehispanic Western Pueblo Social Organization. *American Antiquity* 61:197-213.

McIntosh, Susan K. (editor)

1999 *Beyond Chiefdoms: Pathways to Complexity in Africa*. Cambridge University Press, Cambridge.

Mitchell, Russell H. and John Acker

1961 A Pottery Collection from Parita. *Panama Archaeologist* 4:4-30.

Moholy-Nagy, Hattula

1990 The Misidentification of Mesoamerican Lithic Workshops. *Latin American Antiquity* 1:268-279.

Mojica, Alexis, Julia Mayo, Carlos Mayo, José Ramon Chantada, Guillermina Itzel de Gracia and Nicolas Florsch

2007 Resultados de las prospecciones magnetic y eléctrica del yacimiento arqueológico El Caño (NA-20), Gran Coclé, Panamá. *Revista Española de Antropología Americana* 37:111-126.

Netting, Robert Mc., Richard Wilk and E. Arnould

1984 Households: Changing Forms and Functions. In *Comparative and Historical Studies of the Domestic Group*, edited by Richard Netting, Richard Wilk and E. Arnould, pp. 1-28. University of California Press, Berkeley.

Norr, Lynette C.

1991 *Nutritional Consequences of Prehistoric Subsistence Strategies in Lower Central America*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Illinois, Urbana.

Oberg, Kalervo

1955 Types of Social Structure among the Lowland Tribes of Central and South America. *American Anthropologist* 57:472-488.

Odell, George H.

1979 A New Improved system for the Retrieval of Functional Information from Microscopic Observations of Chipped Stone Tools. In *Lithic Usewear Analysis*, edited by B. Hayden, pp. 329-344. Academic Press, New York.

1980 Toward a More Behavioral Approach to Archaeological Lithic Concentrations. *American Antiquity* 45: 404-431.

Oviedo y Valdes, Gonzalo Fernández de

1944 *Historia General y Natural de las Indias, Islas, y Tierra-firme del Mar Océano*. 4 vols. Banco de America, Managua.

Parker Pearson, Michael

1984 Social Change, Ideology and the Archaeological Record. In *Marxist Perspectives in Archaeology*, edited by Matthew Spriggs, pp. 59–71. Cambridge: Cambridge University Press.

Pauketat, Timothy R.

2000 The tragedy of the commoners. In *Agency in Archaeology*, edited by Marcia-Anne Dobres and John Robb, pp. 113-129. Routledge, London.

Paynter, Robert

1989 The Archaeology of Inequality. *Annual Review of Anthropology* 18:369-399.

Peebles, Christopher S. and Susan M. Kus

1977 Some Archaeological Correlates of Ranked Societies. *American Antiquity* 42:421-448.

Peterson, Christian E.

2006 “Crafting” Hongshan Communities? Household Archaeology in the Chifeng Region of Eastern Inner Mongolia, PRC. Unpublished Ph.D. dissertation, Department of Anthropology, University of Pittsburgh, Pittsburgh.

Piña Chan, Román

1958 *Tlatilco*. Instituto Nacional de Antropología e Historia, Serie Investigaciones, no. 1-2. Mexico, D. F.

Plotnicov, Leonard

1962 Fixed Membership Groups: The Locus of Culture Process. *American Anthropologist* 64: 97-103.

Pollock, Susan, Melody Pope, and Cheryl Coursey

1996 Household production at the Uruk mound, Abu Salabikh, Iraq. *American Journal of Archaeology* 100:683–698.

Price, T. Douglas and Gary M. Feinman (editors)

1995 *Foundations of Inequality*. Plenum, New York.

Ranere, Anthony J.

1975 Toolmaking and Tool Use Among the Preceramic Peoples of Panama. In *Lithic Technology*, edited by E. S. Swanson, pp. 173-210. Mouton, The Hague.

1980 Stone Tools and Their Interpretation. In *Adaptive Radiations in Prehistoric Panama*, edited by O. Linares, and A. Ranere, pp. 118-145. Peabody Museum Monographs, vol. 5. Harvard University Press, Cambridge.

Ranere, Anthony J. and Richard G. Cooke

1996 Stone tools and cultural boundaries in prehistoric Panama: an initial assessment. In *Paths to Central American Prehistory*, edited by Frederick W. Lange, pp. 49-77. University of Colorado Press, Niwot.

Ranere, Anthony J. and Patricia Hansell

1978 Early Subsistence Patterns along the Pacific Coast of Central Panama. In *Prehistoric Coastal Adaptations*, edited by B. L. Stark and B. Voorhies, pp. 43-60. Academic Press, New York.

Ranere, Anthony J. and E. J. Rosenthal

1980 Lithic Assemblages from the Aguacate Peninsula. In *Adaptive Radiations in Prehistoric Panama*, edited by Olga F. Linares and Anthony J. Ranere, pp. 467-484. Peabody Museum Monographs No. 5, Harvard University, Cambridge.

Redmond, Elsa M.

1994 *Tribal and Chiefly Warfare in South America*. Memoirs of the Museum of Anthropology, No. 28. University of Michigan, Ann Arbor.

1998 *Chiefdoms and Chieftaincy in the Americas*. University Press of Florida, Gainesville.

Renfrew, Colin

1973 Monuments, Mobilisation, and Social Organisation in Neolithic Wessex. In *The Explanation of Culture Change*, edited by C. Renfrew, pp. 539-558. Duckworth, London.

1983 The Social Archaeology of Megalithic Monuments. *Scientific American* 249:152-163.

Renfrew, Colin and John F. Cherry (editors)

1986 *Peer polity interaction and socio-political change*. Cambridge University Press, Cambridge.

Rosenswig, Robert M.

2000 Some Political Processes of Ranked Societies. *Journal of Anthropological Archaeology* 19:413-460.

2007 Beyond Identifying Elites: Feasting as a Means to Understand Early Middle Formative Society on the Pacific Coast of Mexico. *Journal of Anthropological Archaeology* 26:1-27.

Roosevelt, Anna C.

1979 The goldsmith: the cocle style of Ancient Panama. In *The Ancestors: Native Artisans of the Americas*, edited by Anna C. Roosevelt and J. G. E. Smith, pp. 67-102. Museum of the American Indian, New York.

Sahlins, Marshall D.

1963 Poor Man, Rich Man, Big-Man, Chief: Political Types in Melanesia and Polynesia. *Comparative Studies of Sociology and History* 5:285-303.

1972 *Stone Age Economics*. Aldine-Atherton, Chicago.

Sánchez H., Luís Alberto

1995 *Análisis Estilístico de Dos Componentes Cerámicos de Cerro Juan Díaz: su Relación con el Surgimiento de las Sociedades Cacicales en Panamá*. Tesis de grado, Universidad de Costa Ricagía.

2000 Panamá: Arqueología y Evolución Cultural. In *Artes de América Central: Nicaragua, Costa Rica y Panamá*, pp. 115-145. Museu Barbier-Mueller d'Art Precolombi de Barcelona, Barcelona.

Sanders, William T. and David Webster

1978 Unilinealism, Multilinealism, and the Evolution of Complex Societies. In *Social Archaeology: Beyond Subsistence and Dating*, edited by Charles L. Redman, M. J. Berman, E. V. Curtin, J. W. T. Langhorne, N. M. Versaggi and J. C. Wanser, pp. 249-302. Academic Press, New York.

Santley, Robert S.

1993 Late Formative Period Society at Loma Torremote: A Consideration of the Redistribution vs. the Great Provider Models as a Basis for the Emergence of Complexity in the Basin of Mexico. In *Prehispanic domestic units in western Mesoamerica: studies of the household, compound, and residence*, edited by Robert S. Santley and Kenneth G. Hirth, pp. 67-86. CRC Press, Boca Raton.

Sauer, Carl O.

1966 *The Early Spanish Main*. University of California Press, Berkeley.

Saxe, Arthur

1970 *Social Dimensions of Mortuary Practices*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.

Schortman, Edward and Patricia Urban

2004 Modeling the Roles of Craft Production in Ancient Political Economies. *Journal of Archaeological Research* 12(2):185-226.

Service, Elman R.

1962 *Primitive Social Organization: An Evolutionary Perspective*. Random House, New York.

Sheets, P. D.

1992 The Pervasive Pejorative in Intermediate Area Studies. In *Wealth and Hierarchy in the Intermediate Area*, edited by Frederick W. Lange, pp. 15-41. Dumbarton Oaks Research Library and Collection, Washington D. C.

Shennan, Stephen

1982 Exchange and Ranking: The Role of Amber in the Earlier Bronze Age of Europe. In *Ranking, Resource, and Exchange: Aspects of the Archaeology of Early European Society*, edited by Colin Renfrew and Stephen Shennan, pp. 33-45. Cambridge University Press, Cambridge.

1998 Producing copper in the eastern Alps during the second millennium BC. In *Social Approaches to an Industrial Past*, edited by Arthur Bernard Knapp, Vincent C. Piggott and Eugenia W. Herbert. Routledge, London.

Sinopoli, Carla

1988 The Organization of Craft Production at Vijayangagara, South India. *American Anthropologist* 90:580-597.

Smith, Michael E.

1987 Household Possessions and Wealth in Agrarian States: Implications for Archaeology. *Journal of Anthropological Archaeology* 6:297-335.

Southall, Aiden

1999 The segmentary state and the ritual phase in political economy. In *Pathways to Complexity*, edited by S. K. McIntosh, pp. 31-38. Cambridge University Press, Cambridge.

Spencer, Charles S.

1993 Human Agency, Biased Transmission, and the Cultural Evolution of Chiefly Authority. *Journal of Anthropological Archaeology* 12:41-74.

Spencer, Charles and Elsa M. Redmond

1994 Prehispanic chiefdoms of the western Venezuelan llanos. *World Archaeology* 24(1):134-157.

Spencer, Charles S., Elsa M. Redmond and Milagro Rinaldi

1998 Drained Fields at La Tigra, Venezuelan Llanos: A Regional Perspective. *American Antiquity* 5(2):119-143.

Stanish, Charles

2004 The Evolution of Chiefdoms: An Economic Anthropological Model. In *Archaeological Perspectives on Political Economies*, edited by Gary M. Feinman and Linda M. Nicholas, pp. 7-24. University of Utah, Salt Lake.

Stark, Barbara L. and Barbara A. Hall

1993 Hierarchical Social Differentiation Among Late to Terminal Classic Residential Locations in La Mixtequilla, Veracruz, Mexico. In *Prehispanic domestic units in western Mesoamerica: studies of the household, compound, and residence*, edited by R.S. Santley and K. G. Hirth, pp. 249-260. CRC Press, Boca Raton.

Stein, Gil

1994 Economy, Ritual and Power in 'Ubaid Mesopotamia. In *Chiefdoms and Early States in the Near East*, edited by Gil Stein and Mitchell S. Rothman, pp. 35-46. Madison, WI: Prehistory Press.

Steponaitis, Vincas P.

1978 Locational Theory and Complex Chiefdoms: A Mississippian Example. In *Mississippian Settlement Patterns*, edited by Bruce Smith, pp. 517-453. Academic Press, New York.

1991 Contrasting Patterns of Mississippian Development. In *Chiefdoms: Power, Economy, and Ideology*, edited by T. K. Earle, pp. 193-228. Cambridge University Press, Cambridge.

Steward, Julian H. and Louis C. Faron

1959 *Native Peoples of South America*. McGraw-Hill, New York.

Stirling, M.

1950 Exploring ancient Panamá by Helicopter. *National Geographic Magazine* 97(2):227-246.

Storey, Rebecca

1992 Preindustrial urban lifestyle and health. In *Health and Lifestyle Change*, edited by R. Huss-Ashmore, J. Schall, and M. Hediger, pp. 33-42. MASCA Research Papers in Science and Archaeology 9.

Torrence, Robin

1986 *Production and Exchange of Stone Tools*. Cambridge University Press. Cambridge.

Tosi, Maurizio

1984 The notion of craft specialization and its representation in the archaeological record of early states in the Turanian basin. In *Marxist Perspectives in Archaeology*, edited by M. Spriggs, pp. 22-52. Cambridge: Cambridge University Press.

Tolstoy, Paul

1989 Coapexco and Tlatilco: Sites with Olmec Materials in the Basin of Mexico. In *Regional Perspectives on the Olmec*, edited by R. J. Sharer and David C. Grove, pp. 85-121. Cambridge University Press, Cambridge.

Treherne, P.

1995 The warrior's beauty: the masculine body and self-identity in Bronze-Age Europe. *Journal of European Archaeology* 3: 105-144.

Trigger, Bruce G.

1990 Monumental Architecture: A Thermodynamic Explanation of Symbolic Behavior. *World Archaeology* 22:119-132.

Tringham, Ruth, G. Cooper, George Odell, Barbara Voytek, and A. Whitman

1974 Experimentation in the Formation of Edge Damage: A New Approach to Lithic Analysis. *Journal of Field Archaeology* 1: 171-196.

Vaughn, K.J.

2004 Households, Crafts, and Feasting in the Ancient Andes: The Village Context of Early Nasca Craft Consumption. *Latin American Antiquity* 15(1):61-88.

Verrill, Hyatt A.

1927 Excavations in Coclé Province, Panama. *Indian Notes* 4(1):47-61. Museum of the American Indian, Heye Foundation, New York.

Webster, Gary S.

1990 Labor control and emergent stratification in prehistoric Europe. *Current Anthropology* 31:337-366.

Weiland, Doris

1984 Prehistoric Settlement Patterns in the Santa Maria Drainage of Central Pacific Panama: A Preliminary Analysis. In *Recent Developments in Isthmian Archaeology*, edited by Frederick W. Lange, pp. 31-53. BAR International Series 212, Oxford.

Welch, Paul D.

1996 Control over Goods and the Political Stability of the Moundville Chiefdom. In *Political Structure and Change in the Prehistoric Southeastern United States*, edited by J. F. Scarry, pp. 69-91. University Press of Florida, Gainesville.

Wilk, Richard and William Rathje

1982 Household Archaeology. *American Behavioral Scientist* 25(6):617-639.

Wobst, H. Martin

1977 Stylistic behavior and information exchange. In *For The Director*, edited by C. Cleland, pp. 317-342. University of Michigan Museum of Anthropology Anthropological Papers No. 61. Ann Arbor.

Yanagisako, Sylvia J.

1979 Family and household: the analysis of domestic groups. *Annual Review of Anthropology* 8: 161-205.

Yoffee, Norman

1993 Too many chiefs? (or safe texts for the '90's). In *Archaeological Theory: Who Sets the Agenda?*, edited by Norman Yoffee and Andrew Sherratt, pp. 60-78. Cambridge University Press, Cambridge.

Young, Philip D.

1976 The Expression of Harmony and Discord in a Guaymí Ritual: The Symbolic Meaning of Some Aspects of the *Balsería*. In *Frontier Adaptations in Lower Central America*, edited by Mary W. Helms and Franklin O. Loveand, pp. 37-66. Institute for the Study of Human Issues, Philadelphia.