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THE LATE CLASSIC ORGANIZATION OF JADE ARTIFACT PRODUCTION
IN THE MIDDLE MOTAGUA VALLEY, ZACAPA, GUATEMALA

A Dissertation in
Anthropology
by
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ABSTRACT

Objects crafted from jade played a prominent social, political and ritual role in all prehispanic Mesoamerican civilizations from at least the Middle Formative period (ca. 1000-400 B.C.) through to the time of the Spanish Conquest. Based primarily on the consumption of jade artifacts by ancient Maya elites, scholars have argued that their production was under the direct control of elite members of society. Nevertheless, few studies have recovered evidence of jade artifact production. This dissertation presents the results of an archaeological project in the Middle Motagua Valley, Zacapa, Guatemala, where evidence demonstrates widespread production of jade artifacts in the only positively-identified jade source for prehispanic Mesoamerica. This field research involved archaeological survey and test excavation to document the organization of jade artifact production in the area during the Late Classic period (A.D. 600-900). These data and subsequent technological analyses suggest that jade artifact production took place in a variety of domestic and non-domestic, as well as elite and non-elite contexts. This evidence runs counter to many previous models of wealth goods production, which have viewed such production as an elite-dominated activity. Further, the data set of 9,920 jadeite artifacts represents the largest collection of jade artifact production evidence recovered to date, and provided the opportunity for a detailed analysis of the technological process of jadeite artifact production. This study provides valuable insights into the organization of wealth goods production in ancient Mesoamerica and offers a contribution to general anthropological theories of political economy.
# TABLE OF CONTENTS

LIST OF TABLES ......................................................................................................................... vii

LIST OF FIGURES ........................................................................................................................ ix

ACKNOWLEDGEMENTS ............................................................................................................... xii

CHAPTER 1 INTRODUCTION ........................................................................................................ 1

1.1 Problem Definition & Significance .................................................................................... 2
1.2 Specific Issues Covered in this Dissertation .................................................................... 10
1.3 Methodology and Data Collection .................................................................................. 11
1.4 Chapter Organization and Content .................................................................................. 14

CHAPTER 2 APPROACHES TO THE ARCHAEOLOGICAL STUDY OF CRAFT PRODUCTION .......................................................................................................................... 17

2.1 Archaeological Approaches to the Study of Preindustrial Craft Production .................. 19
2.2 Dimensions of Craft Production ..................................................................................... 22
2.2.1 Technology & Craft Production ............................................................................. 23
2.2.2 Craft Production Units ......................................................................................... 26
2.2.2.1 Spatial & Social Organization of Production Units .................................. 28
2.2.3 Types of Goods Produced ..................................................................................... 32
2.2.4 Sociopolitical Context of Production .................................................................. 36
2.3 Concluding Comments .................................................................................................. 40

CHAPTER 3 JADE AND ITS SIGNIFICANCE IN PREHISPANIC MESOAMERICA .......................................................................................................................... 43

3.1 What is Jade?: Jade, Jadeite and Greenstone .................................................................. 44
3.1.1 Jadeite Sources and Sourcing in Mesoamerica ..................................................... 47
3.2 The Cultural Significance of Jade in Prehispanic Mesoamerica ..................................... 52
3.2.1 Patterns of Formative Period Jade Use in Mesoamerica ......................................... 53
3.2.2 Patterns of Classic Period Jade Use in the Maya Area ........................................... 66
3.3 Discussion ....................................................................................................................... 74

CHAPTER 4 THE MIDDLE MOTAGUA VALLEY: PREVIOUS RESEARCH, RESEARCH DESIGN & SURVEY RESULTS ..................................................................................................... 76

4.1 The Middle Motagua Valley: Geological and Natural Environment ............................. 77
4.2 Prehispanic Cultural Geography of the Southeastern Maya Zone ................................. 80
4.2.1 Previous Archaeological Research in the SE Maya Periphery ............................... 80
4.2.2 Previous Archaeological Research in the Middle Motagua Valley ....................... 91
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3</td>
<td>4.3.1</td>
<td>Preliminary Work</td>
<td>103</td>
</tr>
<tr>
<td>4.3</td>
<td>4.3.2</td>
<td>Surface Survey Methodology</td>
<td>105</td>
</tr>
<tr>
<td>4.3</td>
<td>4.3.3</td>
<td>Surface Survey Results</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>4.3.1.1</td>
<td>Lower Lato River Valley Sites</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>4.3.1.2</td>
<td>Vargas IIIA</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>4.3.1.3</td>
<td>Vargas III</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>4.3.1.4</td>
<td>Magdalena</td>
<td>116</td>
</tr>
<tr>
<td>4.4</td>
<td>4.4.1</td>
<td>Sites outside the Lower Lato River Valley</td>
<td>117</td>
</tr>
<tr>
<td>4.4</td>
<td>4.4.2</td>
<td>Surface Survey Results Interpretation</td>
<td>118</td>
</tr>
<tr>
<td>4.5</td>
<td>4.5.1</td>
<td>Discussion</td>
<td>125</td>
</tr>
</tbody>
</table>

**CHAPTER 5**

LOWER LATO RIVER ARCHAEOLOGICAL JADE PROJECT

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Previous Excavations in the Middle Motagua Valley</td>
<td>126</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Smith and Kidder's Guaytan Excavations</td>
<td>129</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Walters’ Guaytan Excavations</td>
<td>132</td>
</tr>
<tr>
<td>5.2</td>
<td>Excavations for Lower Lato River Archaeological Jade Project</td>
<td>140</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Excavation Methodology &amp; Location of Excavation Units</td>
<td>141</td>
</tr>
<tr>
<td>5.3</td>
<td>Summary of excavations at Guaytan 4</td>
<td>147</td>
</tr>
<tr>
<td>5.4</td>
<td>Summary of Guaytan 3 Excavations</td>
<td>157</td>
</tr>
<tr>
<td>5.5</td>
<td>Summary of Guaytan 5 Excavations</td>
<td>158</td>
</tr>
<tr>
<td>5.6</td>
<td>Summary of Guaytan 6 Excavations</td>
<td>158</td>
</tr>
<tr>
<td>5.7</td>
<td>Summary of Guaytan 7 Excavations</td>
<td>159</td>
</tr>
<tr>
<td>5.8</td>
<td>Summary of Guaytan 8 Excavations</td>
<td>161</td>
</tr>
<tr>
<td>5.9</td>
<td>Summary of Magdalena I Excavations</td>
<td>162</td>
</tr>
<tr>
<td>5.10</td>
<td>Miscellaneous Excavations</td>
<td>163</td>
</tr>
<tr>
<td>5.11</td>
<td>Discussion of Excavation Results</td>
<td>164</td>
</tr>
</tbody>
</table>

**CHAPTER 6**

MAKING THE JADE: THE TECHNOLOGICAL PROCESS OF JADE ARTIFACT PRODUCTION

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Previous Studies of Jade Artifact Production</td>
<td>168</td>
</tr>
<tr>
<td>6.1.1</td>
<td>Percussion Methods</td>
<td>169</td>
</tr>
<tr>
<td>6.1.2</td>
<td>Grinding/Abrading</td>
<td>173</td>
</tr>
<tr>
<td>6.1.3</td>
<td>Sawing</td>
<td>176</td>
</tr>
<tr>
<td>6.1.4</td>
<td>Drilling</td>
<td>181</td>
</tr>
<tr>
<td>6.1.5</td>
<td>Incising</td>
<td>188</td>
</tr>
<tr>
<td>6.1.6</td>
<td>Polishing</td>
<td>190</td>
</tr>
<tr>
<td>6.2</td>
<td>Typology of Jade Artifact Production Evidence</td>
<td>192</td>
</tr>
<tr>
<td>6.2.1</td>
<td>Jade Cobble or Chunk</td>
<td>195</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Large Jade Flakes</td>
<td>195</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Small Jade Flakes</td>
<td>196</td>
</tr>
<tr>
<td>6.2.4</td>
<td>Jade Bead Preform</td>
<td>197</td>
</tr>
<tr>
<td>6.2.5</td>
<td>Broken/Unfinished Jade Bead</td>
<td>198</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

| Table 2.1 | Models of craft specialization.................................................................27 |
| Table 4.1 | Walters (1982) site hierarchy for the Middle Motagua Valley.................99 |
| Table 4.2 | Walters (1982) jade workshop classes for the Middle Motagua Valley..100 |
| Table 4.3 | Artifacts recovered from looter’s trenches at Vargas IIA.......................114 |
| Table 4.4 | Surface collections from Vargas III..........................................................116 |
| Table 4.5 | Definition of site hierarchy in the Middle Motagua Valley......................119 |
| Table 4.6 | Total jade and lapidary production evidence from surface collections...121 |
| Table 4.7 | Total production tools and large jade cobbles from surface collections..122 |
| Table 4.8 | Total jade and lapidary production evidence from surface collections, by hierarchical site type..........................................................123 |
| Table 4.9 | Total production tools and large jade cobbles from surface collections, by hierarchical site type..........................................................123 |
| Table 4.10 | Periods of occupation based on surface collected ceramics from Middle Motagua Valley sites..........................................................124 |
| Table 5.1 | Artifacts collected in 1m squares at Guaytan 4 prior to excavations........144 |
| Table 5.2 | Artifacts recovered in excavation units 1A-1 and 1A-2.........................151 |
| Table 5.3 | Artifacts recovered from Operation 1D excavations..............................153 |
| Table 5.4 | Artifact counts from Operation 1E and 1F excavation units....................161 |
| Table 5.5 | Artifacts recovered in Operation 1C excavations at Guaytan 3..............157 |
| Table 5.6 | Artifacts recovered in Operation 6A excavation at Guaytan 6..............159 |
| Table 5.7 | Artifacts recovered in excavation units 3A-1 and 3A-2.......................160 |
| Table 5.8 | Artifacts recovered in excavation units 4A-1 and 4A-2.......................162 |
| Table 5.9 | Artifacts from Magdalena I test units..................................................163 |
| Table 5.10 | Artifacts from miscellaneous test units..............................................164 |
| Table 5.11 | Artifact totals from all excavations at all sites..................................164 |
| Table 6.1 | List of typological categories for jadeite artifacts used in this dissertation...........................................................................................................194 |
| Table 6.2 | Measurements of hollow drill cores from surface collections & excavations..........................................................199 |
| Table 6.3 | Other lithic and shell artifacts from excavations and surface collections..........................................................204 |
| Table 6.4 | Size grades of small jade flakes from survey and excavations...............207 |
| Table 6.5 | Hollow drill cores, broken/unfinished beads, and complete beads showing evidence of grinding on one or more surfaces prior to drilling........208 |
| Table 6.6 | Comparison of diameter of jade bead drill holes with thickness of chert drill tips. Tips of many drills were too worn to obtain accurate measurements..........................................................209 |
| Table 7.1 | Chert drills and blades from surface collections.......................................227 |
| Table 7.2 | Chert drills and blades recovered from test excavations.......................229 |
| Table 7.3 | Sites at which beads broken or abandoned during the process of drilling were recovered from surface collections........................................230 |
| Table 7.4 | Evidence linked to possible jade bead production from excavations and surface collections..........................................................239 |
Table 7.5  Comparison of average diameter of holes in complete, broken and abandoned beads with the diameters of hollow drill cores............................242
Table 7.6  Comparison of diameters of interior holes of broken, abandoned and complete drilled beads (“Holes”) and hollow drill cores (“Cores”), by site type.................................................................243
## LIST OF FIGURES

| Figure 1.1 | Map showing Maya area, with Middle Motagua Valley in box | 12 |
| Figure 3.1 | World distribution of known geological sources of jadeite jade | 49 |
| Figure 3.2 | Location of Motagua Fault and its co-occurrence with serpentine rock beds | 49 |
| Figure 3.3 | Jade sources sampled by Hammond and colleagues | 52 |
| Figure 3.4 | Late Formative jades from Cerros | 65 |
| Figure 4.1 | Map of Maya area with major archaeological sites | 78 |
| Figure 4.2 | Extent of the Middle Motagua Valley | 81 |
| Figure 4.3 | Map of the Southeaster Maya Periphery | 82 |
| Figure 4.4 | Map of Middle Motagua Valley from Walters (1982) | 97 |
| Figure 4.5 | Map of SAAAZ sites from area inside triangle in Figure 4.3 | 98 |
| Figure 4.6 | Map of the eastern Middle Motagua Valley, showing extent of area surveyed as part of dissertation research | 102 |
| Figure 4.7 | Jadeite debitage (examples circled in red) at Guaytan 4 | 105 |
| Figure 4.8 | Lower Lato Valley survey area | 109 |
| Figure 4.9 | Map of Guaytan, dashed box is area of inset below (from Lopez nd.) | 112 |
| Figure 4.10 | Map of Guaytan showing location of sites with jade debitage scatters | 112 |
| Figure 4.11 | Extensive looting at Vargas IIA | 113 |
| Figure 4.12 | Jade production evidence from Vargas IIA looter's trench (Op. 51-1) | 113 |
| Figure 4.13 | Stone recovered at Vargas IIA, possibly used for grinding beads | 115 |
| Figure 4.14 | Map of southern portion of Magdalena I | 117 |
| Figure 4.15 | Jadeite debitage from KM92-III | 123 |
| Figure 5.1 | Map of Middle Motagua Valley | 128 |
| Figure 5.2 | Map of Guaytan, with locations of structures noted by Smith & Kidder | 131 |
| Figure 5.3 | Structure 24 at Guaytan | 132 |
| Figure 5.4 | Map of Guaytan, with approximate survey area boundaries (hatched lines) described by Walters (1980a, 1980b) | 133 |
| Figure 5.5 | Contour map of Areas 3, 4 & 5 (Walters 1980b: 88) | 135 |
| Figure 5.6 | Plan view of Area 4, Excavation 16 (Walters 1980b) | 136 |
| Figure 5.7 | Plan map of excavation units in Area 3 and the floor plan of Late Classic features revealed in those excavations (Walters 1980b) | 138 |
| Figure 5.8 | Map of excavation units from Area 4 (Walters 1980a: 13) | 139 |
| Figure 5.9 | Location of sites examined as part of this dissertation research | 142 |
| Figure 5.10 | Map of Guaytan, hatched lines indicate limits of map inset shown in Figure 5.11 (modified from Lopez n.d., in Ramon Ramirez 2006) | 144 |
| Figure 5.11 | Detail of southern portion of Guaytan, indicating location of areas with jade artifact production, identified during archaeological surface survey | 145 |
| Figure 5.12 | Map showing location of structures, grids established for excavations and looter's trenches at Guaytan 4 | 146 |
| Figure 5.13 | Map of southern portion of Guaytan 4, showing location of excavation units | 147 |
| Figure 5.14 | Panoramic view looking south toward Guaytan 4 | 149 |
Figure 5.15 Excavation profile of unit 1A-1
Figure 5.16 Plan photo of floor in Unit 1B-1, where excavation was terminated
Figure 5.17 Cache of obsidian blade cores from excavation at Guaytan 4
Figure 5.18 Fragments of worked shell recovered from Guaytan 4 excavations
Figure 5.19 Possible jaguar claw recovered from contents of obsidian blade core cache
Figure 5.20 View of Guaytan3, looking to the north
Figure 5.21 View of Guaytan5, looking west by southwest
Figure 5.22 Stratigraphic profile of unit 3A-1 at Guaytan 7
Figure 5.23 Sting ray spine and drilled obsidian from Guaytan 8 excavations
Figure 6.1 Jadeite flakes produced by hard-hammer, directed percussion
Figure 6.2 Early-stage percussion flakes and jade celt preforms from Cenegal
Figure 6.3 Possible jade anvil at Cenegal
Figure 6.4 Artist's rendition of Maori nephrite adze grinding
Figure 6.5 Maori technique of sawing nephrite using a sandstone saw
Figure 6.6 Workers in Peking cutting jadeite block using a wood-frame wire saw
Figure 6.7 Section drawings of cut jade fragments from Kaminaljuyu
Figure 6.8 Cut fragment of jadeite from Guaytan 4 excavations
Figure 6.9 String saw anchor recovered at Cancuen
Figure 6.10 Olmec jade mask. Note drilling to form nostrils and eyes of mask
Figure 6.11 Headress ornament recovered from Cancuen
Figure 6.12 Chert drills recovered from Nativitas, Puebla, Mexico
Figure 6.13 Jade bead broken during uniconical drilling
Figure 6.14 Alabaster tablet from Ixtapaluco
Figure 6.15 Jadeite hollow drill cores from Guaytan 4 excavations
Figure 6.16 Carved beads from Kaminaljuyu
Figure 6.17 Depiction of a pump drill showing flywheel and hafted drilling element (from Digby 1964:16)
Figure 6.18 Slate slabs and limestone earflare polisher from Cancuen
Figure 6.19 Limestone earflare polisher recovered from Cancuen
Figure 6.20 Jade cobble collected from KM91-III
Figure 6.21 Large flakes from Vargas IV
Figure 6.22 Small jade flakes from Guaytan 4 excavations (1A-2-001)
Figure 6.23 Jade bead preforms from Vargas III surface collections
Figure 6.24 Jade hollow drill cores from Guaytan 4 excavations
Figure 6.25 Complete jade beads
Figure 6.26 Drawing of an example of cut jadeite fragment from 1A-1-005
Figure 6.27 Jadeite hammerstone recovered from Guaytan 8 excavations
Figure 6.28 Examples of artifacts classified as ground jade fragments
Figure 6.29 Chert drills recovered from Vargas III
Figure 6.30 Occurrences of jade in the Middle Motagua Valley
Figure 6.31 Jade bead preform from Guaytan 4 excavations
Figure 6.32 Chert drills and jadeite bead from Guaytan 4 excavations
Figure 6.33 Flow chart depicting operational sequence of jadeite bead production in the Middle Motagua Valley
Figure 6.34 Jadeite artifacts showing evidence of having been cut
Figure 6.35  Fragments of worked shell and stone from Guaytan 4.........................214
Figure 7.1   Chert drills and blades from surface collections, by site type.............228
Figure 7.2   Chert drills per cubic meter from excavations..................................229
Figure 7.3   Chert drills per cubic meter from excavations, averaged per site type...229
Figure 7.4   Surface collected beads broken/abandoned during drilling by site type..231
Figure 7.5   Hollow drill cores recovered from surface collection, by site type......231
Figure 7.6   Small jade flake surface collections by site type..............................232
Figure 7.7   Avg. quantity of small jade flakes from surface collections
              per site type............................................................................................233
Figure 7.8   Average quantity of small jade flakes per cubic meter recovered from
              excavations, by site type.........................................................................234
Figure 7.9   Jade fragments showing evidence of sawing by site type....................240
Figure 7.10  Fragments with ground facets from surface collections, by site type....241
Figure 7.11  Hollow drill cores recovered from Guaytan 4 excavations..................241
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If there is one person
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Maria Inclan
CHAPTER 1

INTRODUCTION

Objects crafted from jade played a prominent social, political and ritual role in all prehispanic Mesoamerican civilizations. By the Middle Formative period (ca. 1000-400 B.C.), jade was used widely throughout Mesoamerica (Garber et al. 1993; Ortiz and Rodríguez 2000; Taube 2005) and its use and circulation continued to expand until the time of Spanish Conquest (Lange 1993). Jade was so precious that Aztec officials presenting a gift of several jades to Cortes noted that “each one [is] worth more and [is] esteemed more than a great load of gold” (Díaz 1956: 76-77). Beyond its economic value, jade was revered for its cosmological associations, being considered a physical representation of fertility, water, maize, centrality, breath, and the soul (Fields 1991; Freidel 1990; Miller and Samayoa 1998; Taube 2000, 2005).

The importance of jade for the ancient Maya is demonstrated by the inclusion of elaborate and abundant jade objects in many elite burials and from the many murals, stelae and painted pottery vessels depicting elites wearing abundant jade jewelry (Digby 1964; Proskouriakoff 1974; Garber et al. 1993; Krejci and Culbert 1995; Taube 2005). Despite this conspicuous use, we know little about how jade was acquired, how it was shaped into objects of value, and how this production and distribution was organized. More generally, many competing proposals have been presented about the nature of ancient Maya political systems and their economic bases (Masson and Friedel 2002; McAnany and Isaac 1989; Scarborough et al. 2003; Scarborough and Clark 2007).

This study evaluates current arguments about the organization of production of jade and other wealth goods in ancient Maya society through an investigation of the
organization and technology of prehispanic jade artifact production in the Middle Motagua Valley, Department of Zacapa, Guatemala. It is important because it is the first study to identify and reconstruct system of wealth goods production on a regional level. Furthermore, it is important because it provides new data that run contrary to assumptions of traditional models of wealth goods production.

1.1 Problem Definition and Significance

Understanding the organization of economic systems is crucial for understanding the structure and functioning of ancient societies. All economic systems are made up of three components: production, distribution and consumption. The study of production systems is particularly important because it can yield information relevant to a broad range of theoretical issues, such as domestic and political economy, social organization, and socio-cultural evolution, among others. Furthermore, in many instances economic activity associated with production is easier to identify because of the visible material remains that are created as a by-product of productive activity.

Archaeologists have long recognized that elites often seek to maintain and increase their power by controlling the production or distribution of valuable or necessary resources, materials or finished goods (Brumfiel and Earle 1987; D'Altroy and Earle 1985; Earle 1997; Frankenstein and Rowlands 1978). Despite the variety of means by which elites might achieve these ends, more studies focus on defining the role of elites in controlling the distribution and exchange of wealth goods rather than on how production was organized within particular polities or societies (Hirth 1992, 1996). This may result from the notion, expressed by Carol Smith (1976:311), that control of the distribution of
scarce or valuable resources, rather than their production, is the critical basis by which ranking and stratification are upheld in agrarian societies. However, even in sociopolitical systems where control of the distribution of necessary raw materials or crafted goods is vital to sociopolitical and socioeconomic inequality (cf. Frankenstein and Rowlands 1978; Sinopoli 2003), the manner in which production is organized is still important for understanding the nature of political power and economic organization within those societies. For example, while some valuable goods may have served disproportionately to validate and symbolize elite authority within the political economy, we cannot assume that their production was directly controlled by elites (Arnold and Munns 1994). Furthermore, it must be demonstrated, rather than assumed, that the production of wealth goods took place outside of the domestic economy, in which production was geared toward the support of individual households, rather than the political elite. In this dissertation, I use the more general term "wealth goods" to refer to what have traditionally been called "prestige goods" in the literature to avoid interpretive problems related to the term "prestige good," which implies a particular type of "prestige goods system" to many scholars.

A particular concern for many archaeologists has been documenting variation in the organization of craft production systems (Brumfiel and Earle 1987; Clark and Parry 1990; Costin 1991, 2001). One of the most prominent models for ancient chiefdoms and states dichotomizes craft production based on the nature of the goods produced and the degree to which production is controlled by political elites (Earle 1981; Brumfiel and Earle 1987). In this model, it is argued that everyday utilitarian goods tend to be produced by independent specialists who produce for general demand, while wealth
goods tend to be produced by attached specialists who produce for patrons on demand (Earle 1981; Brumfiel and Earle 1987). Although this distinction is useful, it has been criticized as overly typological and too closely tied to cultural evolutionary trajectories (Clark and Parry 1990; Costin 1991; Arnold and Munns 1994; Inomata 2001).

A number of recent studies however, have focused on documenting variability in the organization of different systems of craft production within a single society (e.g. Costin 1996; Masson and Friedel 2002; Underhill 1991; Wells and Davis-Salazar 2007a; Wright 1998). This line of research is congruent with the cross-cultural survey of craft production compiled by Clark and Parry (1990:320), which shows that there is a general correlation between greater polity/community size, sociopolitical complexity, and a greater diversity of types of specialized craft production. Taken together, this research demonstrates the need for studies of craft production in a wide range of political and social contexts that clarify the relationship between political and economic structures (Costin 2001:274).

This is especially true for the Classic Maya (A.D. 300-1000), where arguments abound about the possible economic bases of elite power (e.g. Blanton et al. 1996; Demarest 1992; Fox et al. 1996; Masson and Friedel 2002; McAnany and Isaac 1989; Sanders 1989; Scarborough et al. 2003; Scarborough and Clark 2007; Tourtellot and Sabloff 1972). Some scholars argue that ancient Maya elites at certain sites maintained power by controlling and managing vital natural resources such as agricultural land (e.g. Adams 1975, 1981; Chase and Chase 1987; Harrison and Turner 1978; Healy et al. 1983; Kunen 2001, 2004) or water (e.g. Matheny 1976; Scarborough 1993, 1998, 2003). Other scholars have noted the role that Maya elites at some sites played in controlling the
distribution of craft goods or raw materials generally (e.g. Hester and Shafer 1984), and of wealth goods more specifically (e.g. Aoyama 1999; Rathje 1970, 1972).

Controlling the production of wealth goods can be a particularly effective strategy for enhancing or legitimating political authority, because doing so means having *de facto* control of their distribution (Lewis 1996). Elites may attempt to control craft production systems in a number of ways. They may sponsor production in attached facilities or undertake production within their own households (e.g. Ball 1993; Inomata 2001). They may obtain finished or semi-finished craft products from non-elite households within or outside of their polities though a variety of mobilization or exchange mechanisms. An example of the later situation comes from the Aztec empire during the Postclassic Period, when some wealth goods used by elites were produced by independent specialists as part of tribute payments, but over whose production very little direct control was exercised (Berdan 1994; Smith and Berdan 2003: 93). Alternatively, production of wealth goods may be an activity in which nonelite households engaged when the necessary resources to do so were available as part of a domestic economy, creating a situation in which the ability of elites to control distribution and acquisition of these finished goods was of paramount importance.

Nevertheless, few studies have documented ancient Maya systems of craft production. Those studies that have done so have generally focused on the production of utilitarian goods (Andrews 1983; Aoyama 1999; Hester and Shafer 1984; Mallory 1984; McKillop 2003; Michels 1979; Shafer and Hester 1983). Most studies of ancient Maya wealth goods production, however, have relied on secondary evidence such as distribution patterns and chemical sourcing to infer the organization of systems of wealth
goods production (Ball 1993; LeCount 1999; Rands and Bishop 1980; Reents-Budet 1998). This situation is partially attributable to the very characteristics from which wealth goods derive their value: their scarcity, the (often exotic) raw materials from which they are manufactured, and the allegedly specialized skills and knowledge sometimes needed to craft them properly (Wells and Davis-Salazar 2007b). These factors have often made it difficult for archaeologists to document many clear examples of wealth goods production in the Maya area. Studies that have been able to convincingly document wealth goods production are exceedingly rare, and often involve single, specialized contexts (Inomata 2001; Kovacevich 2007; Widmer 2009). This dissertation research is important because it is the first to reconstruct a regional system of wealth goods production in the Maya area in detail.

Working from these incomplete sources of evidence, some scholars have characterized ancient Maya elite authority and political economy as being based on or significantly enhanced by the production, consumption and display of elaborate wealth goods such as jade bead necklaces, ear spools, polychrome ceramics and feathered headdresses (e.g. Demarest 1989, 1992; Blanton et al. 1996; Wells and Davis-Salazar 2007a). Further, these authors characterize Classic Maya economy as one in which Maya elites exercised little, if any, direct control over the subsistence base of their polities, but instead where elites focused efforts on controlling and directing wealth goods production (Demarest 1989, 1992; Hendon 1991; Inomata 2001; McAnany 1993; Reents-Budet 1998). This reconstruction is often cast in terms of "competitive status rivalry" (e.g. Marcus 1993; Webster 1998), where elites compete with one another for purposes of prestige, territorial expansion and "aggrandizement" (Webster 1998:311), and use wealth
goods to demonstrate their elevated social status (c.f. Wells and Davis-Salazar 2007b). According to these models, by controlling wealth goods and their production, Maya elites effectively controlled the "materialization" (c.f. DeMarris, Castillo and Earle 1996) of ideologies and rituals that legitimated their elevated position within society.

These propositions lead to two basic questions. First, was the production of wealth goods controlled or directed in any demonstrable way by ancient Maya elites? Demonstrating control of the production of craft goods by elites is a notoriously difficult task for archaeologists, and this is especially the case for the ancient Maya because of the paucity of evidence of wealth goods production. Where there is evidence for elite involvement, it is typically argued to be within the context of a "palace economy" where elites produced goods within their own households for their own uses (Ball 1993; Ball and Taschek 1991; Inomata 2001; McAnany 2004; Widmer 2009). Some have argued for non-elite participation in the production of wealth goods (Ball 1993; Potter and King 1995; Rands and Bishop 1980), but the evidence for this participation is not straightforward and is open to interpretation.

A second question we must ask is whether all wealth goods used in the same manner by ancient Maya elites and commoners? Decades of research at ancient Maya centers has demonstrated the disproportionate consumption of highly crafted exotic objects by the elite. Nevertheless, a major interpretive problem for understanding how wealth goods production was organized derives from an insufficient recognition of the varied uses of many of these goods in the Maya area. Emphasis is often placed on the raw material from which they were produced, rather than on the stylistic characteristics of particular forms of wealth goods. This is especially true for artifacts produced from
exotic raw materials such as jade. Jade objects were certainly of high value in the Maya world and beyond, but not all of these objects were treated with the same reverence or used in the same contexts (Freidel 1993; Taube 2005).

The variety of ways in which wealth goods were used by individuals and social groups of differing status can been seen at a few sites in the Maya area (e.g. Krejci and Culbert 1995). In a study of Late Classic artifact distribution in the Copan Valley, Zeleznik (2002) concluded that although jade was found more frequently and with greater artistic and stylistic elaboration in elite contexts, it was still present at all levels of the social hierarchy. While jade was certainly a raw material with strong cosmological and symbolic associations, its use was not restricted to elites. Hirth's (1992:23) admonition is applicable in this regard:

"Archaeologists must discard the notion that the circulation of primitive valuables through interregional exchange networks was stimulated by a desire to obtain status markers...and begin to examine the more specific ways in which primitive valuables are used in the formation of status hierarchies"

Elites would have sought to manipulate the shared recognition between themselves and commoners of the cosmological significance of jade in ways that legitimated their authority. Therefore, it is essential that we examine the ways in which elite and commoner uses of jade both overlapped and diverged. Lesure (1999) suggests that to better understand the use and significance of valuable goods, we should focus on understanding how different artifact forms produced from the same raw material(s) were used, both in terms of the kinds of social relationships they mediated and the way particular artifact forms were valued. In Chapter 3, I explore the chronological development of jade use in Mesoamerica from the Early Formative period until the time of Spanish Conquest. Recognizing the diversity of uses of jade artifacts demonstrates
that simply labeling them wealth goods fails to capture adequately their role in Maya society and hinders our ability to understand the systems of craft production of which they were a part.

This contextual diversity has implications for our understanding of how elites might have sought to control both raw jadeite and its production into finished artifacts. As I discuss in Chapter 2, characterizing the production of wealth goods as full/part-time or attached/independent specialization does little to advance our understanding of how production was organized. Furthermore, this oversight prevents us from fully recognizing how different types of wealth and utilitarian goods were exchanged or transferred both amongst and between elites and commoners. Put simply, if jadeite consumption varied widely, then it cannot be assumed that control over the raw material, its production and exchange mechanisms did not similarly vary. During the Colonial period, Spanish conquistadors used a variety of pre-existing tribute and exchange networks to mobilize resources in the Maya area and throughout Mesoamerica (Feldman 1971; Restall 1997: 184-188). It is likely that Classic period Maya elites also used multiple exchange and distribution networks to meet their needs, just as they did in the Aztec empire through direct sponsorship of production and mobilization of tribute (Smith and Berdan 2003). Understanding the variety of ways in which resources were mobilized is crucial if we are to accurately reconstruct Classic Maya systems of craft production and political economy.

*The purpose of this dissertation is to understand the technological process of jade wealth goods production and the organization of jade artifact production in the Middle Motagua Valley, Guatemala.*
1.2 Specific Issues Covered in this Dissertation

The research presented in this dissertation focuses on answering two specific, but interrelated questions. First, I seek to understand the technological process or chaîne opératoire of jade artifact production in the Middle Motagua Valley. Descriptions of these processes, based on technological analysis of jadeite production debitage recovered from survey and excavation, are presented in Chapter 6. Few other attempts have been made to understand the process of prehispanic jade artifact production. The majority of studies that have attempted such reconstructions have been based primarily on the examination of finished artifacts (Easby 1968; Kidder, Jennings, and Shook 1946; Lothrop 1955). Still fewer studies have examined jade production by examining debitage and tools from the production sequence (Hirth et al 2009; Kovacevich 2006, 2007; Walters 1982), owing primarily to the scarcity of jade debitage recovered at most ancient Maya sites. Therefore, this study is a unique and important contribution to the small body of literature on prehispanic jade artifact production.

Second, I address how the production of jade artifacts was organized during the Classic Period (ca. A.D. 300-1000) in the Middle Motagua Valley. As I noted earlier, scholars have discussed Classic Maya economic systems by contrasting the organization of production of two classes of goods: utilitarian and “prestige” or wealth goods. As the argument goes, elites sought to control the production or distribution of wealth goods (including jade), while paying less attention to the control of the production and exchange of utilitarian goods (Rathje 1975; Brumfiel and Earle 1987; Fash 1991; Ball 1993; Demarest 1992; Potter and King 1995; Reents-Budet 1998; Aoyama 1999; LeCount 1999; West 2002; Kovacevich 2007; Foias 2007). Many of these models posit that
attached craft producers, and in some cases elites themselves, made wealth goods (c.f. McAnany 1993; Inomata 2001). This dichotomy is more often based on theoretical models and assumptions about the structure of ancient Maya political and power relations than on empirical evidence, a topic I discuss in Chapter 2.

Archaeologists have had exceedingly few opportunities to directly investigate and document the production of wealth goods (Inomata 2001; Kovacevich 2006). This study is unique, therefore, because of the abundant evidence of wealth goods production that was recovered from a variety of sociocultural contexts. In Chapter 7, I evaluate a number of models of wealth goods production against this data set. The evidence indicates that domestic craft production of wealth goods, in this case the production of jadeite artifacts, was more widespread and more varied in its organization than previously believed.

1.3 Methodology and Data Collection

The present study was designed to specifically address the issues noted in the previous section through a combination of archaeological survey and excavation. The goal of field research was to gather data on the system of jade artifact production from the initial gathering of raw jade through the processing of jade artifacts to the complete manufacture of finished jade artifacts. These data are used to construct a model for the production of jade artifacts in the Middle Motagua Valley that provides a baseline for determining the technological processes and organization of production of jade artifacts. These goals were addressed through a program of surface survey, surface collection, test excavation, experimental replication studies and laboratory analysis.

Field research was conducted in the Lower Lato River Valley, in the Middle
Motagua River Valley, Department of Zacapa, Guatemala (Fig. 1.1). I chose this area because a pilot surface survey in June 2004 identified four surface concentrations of jade production debitage near the modern town of Guaytan. These included angular debitage from the initial reduction of raw jade, as well as by-products of other production techniques such as drilling, grinding and polishing.

Figure 1.1 - Map showing Maya area, with Middle Motagua Valley in box.
With the support of FAMS and the Pennsylvania State University, I conducted systematic archaeological field research from October to December 2005 as part of the Proyecto de Investigación Sobre la Producción de Jade en el Río Lato (PJ 2005). The field research involved intensive surface survey of 8.5 km² centering on Lower Lato River Valley and limited test excavations at eight sites containing evidence of jade artifact production. This field research was designed to achieve four objectives:

1) Locate, surface survey and make surface collections at all sites in the Lower Lato River Valley and surrounding area, as well as to locate jade sources.
2) Undertake test excavations in areas with evidence of jadeite artifact production to confirm the presence of *in situ* production activity and to obtain samples from stratified deposits with which to date production activities.
3) Analyze lithic material from excavations and surface collections to understand the process of jadeite artifact production.
4) Use the results of these field and laboratory investigations to evaluate models of wealth goods production for the Middle Motagua Valley.

As part of the surface survey, we located and surface collected 32 sites, but no jade sources or outcrops were identified during the survey; 5,375 lithic and shell artifacts were recovered from surface collections, including evidence of all stages of jade bead production. The arid environment and sparse vegetation of the Middle Motagua Valley provided ideal conditions for the identification of production debris through surface survey, which is not possible in many other parts of the Maya lowlands, where dense tropical vegetation obscures the ground surface. While the test excavation program failed to yield *in situ* evidence of jade artifact production, we did recover over 5,757 pieces of jade in various stages of production from excavations, all of which produced deposits dating to the Late Classic period.
1.4 Chapter Organization and Content

Chapter 2 presents the theory and models used by archaeologists in the study of craft production. In particular, I focus on dimensions along which craft production may vary in order to provide a means for evaluating archaeological models of craft production. In doing so, I highlight ways in which these dimensions vary independently of one another in order to highlight problems with current assumptions about covariation between aspects. Chapter 2 also offers an overview of definitions and concepts relevant to this research in order to provide a common language and logic for subsequent chapters.

Chapter 3 provides an overview of the significance of jade in ancient Mesoamerican societies and its chronological development. During the development of the present study, I recognized the lack of a theoretical perspective that could address jade artifacts as both restricted wealth goods and goods available to non-elite members of ancient Maya society. Therefore, Chapter 3 provides a theoretical background and comparative perspective for understanding the various roles that artifacts crafted from jade played in ancient Maya society, drawing on evidence from archaeological, epigraphic, iconographic and ethnohistoric sources.

Chapter 4 presents a description of the methods used and a summary of the findings of archaeological surface survey carried out in the Lower Lato River Valley. The chapter provides an introduction to the study area, including information of the natural and geological environment of the Middle Motagua Valley. This is followed by a summary of previous archaeological research conducted in the Middle Motagua Valley in general, as well as a brief summary of archaeological research conducted in the greater southeastern zone of the Maya area. The broad scope of this information is necessary for
two reasons. First, the present study is one of the few studies to perform archeological research in the Middle Motagua Valley. Therefore, a broad review of this information is necessary because of the paucity of published information about the area. Second, the structure of the local jade production industry cannot be fully understood without reference to external factors influencing its development and organization. After this overview, I present the results of the archaeological survey and surface collections that were completed as part of this dissertation field research. Descriptions of the settlement patterns in the survey area are presented, as well as summary data of materials recovered from surface collections at these sites. I include technological categories of jade artifacts in these summaries; descriptions of these categories are found in Chapter 6.

Chapter 5 presents the methods and results of test excavations undertaken as part of this dissertation research; full descriptions of the excavations are provided in Appendix B. In addition, I summarize previous archaeological excavations at the site of Guaytan.

Chapter 6 presents the technological analysis of the process of jadeite artifact production in the Middle Motagua Valley. First I summarize historic, ethnohistoric, ethnographic and archaeological evidence regarding technological categories related to jade and other lapidary production. I then move on to discuss the technological typology of jade artifacts developed based on materials recovered from the Middle Motagua Valley. Finally, I present a technological model for the production of jade artifacts, particularly jade beads, in the Middle Motagua Valley during the Late Classic period.

Chapter 7 evaluates previous models of ancient Maya wealth production and compares them against the evidence from the Middle Motagua Valley. The evidence regarding the social and technological organization of jade artifact production in the
Middle Motagua Valley are summarized and discussed with regard to these models. I argue that the data from this dissertation field research do not match expectations of current models of the organization of wealth goods production. Based upon the current evidence, I propose two models of the production of jadeite wealth goods in the Middle Motagua Valley, one based on a political economy and another based on a domestic economy.

Chapter 8 contains the conclusions for this dissertation research and suggestions for further work to clarify the nature of jade artifact production in the Middle Motagua Valley.

Appendix A contains detailed descriptions of all sites encountered during archaeological surface survey in the Middle Motagua Valley.

Appendix B presents detailed descriptions of the test excavations undertaken as part of this dissertation research.

Appendix C provides details about of the measurements taken as part of the lithic materials recovered from both surface survey and test excavations during the 2005 field season.

Appendix D presents details of Middle Motagua Valley ceramic types recovered as part of this dissertation research, along with a description of the ceramic chronology used to date excavation lots.
CHAPTER 2

APPROACHES TO THE ARCHAEOLOGICAL STUDY OF CRAFT PRODUCTION

All humans must meet their needs and desires for material goods by producing them for themselves or by acquiring them through exchange or through direct expropriation from others. The ways that they meet these needs vary widely and has been a major focus of research in the social sciences and anthropology. In particular, archaeologists have long been interested in ancient craft production. Studies of craft production have become a fundamental part of archaeological research because of the potential they provide for examining a broad range of substantive, methodological and theoretical interests, including technology, material culture, ecology, economy, sociopolitical organization and political economy in a broad range of ancient societies (e.g. Brumfiel and Earle 1987; Childe 1951; Clark and Blake 1994; Costin 1996; D'Altroy and Earle 1985; Earle 1987, 1990; Helms 1993; Peregrine 1991b; Rice 1981; Service 1962; Stein 1998; Wailes 1996).

Despite a voluminous literature on preindustrial craft production, there is little agreement about key concepts related to craft production and how to operationalize these concepts using archaeological data. In addition, studies of craft production often frame investigations within larger research programs, typically the examination of exchange systems, political structure and socioeconomic differentiation, rather than investigating the structure of craft production before assuming the existence of particular forms of economic or political organization. Further, many studies of craft production assume, a priori, that there is a normal and regular link between particular systems of craft
production and particular forms of sociopolitical and economic organization (Kenoyer et al. 1991: 49).

Before these reconstructions are made, the *actual* contexts, intensity and methods of craft production need to be established using archaeological data. In this dissertation, I present evidence of prehispanic jade artifact and other lapidary production in the Middle Motagua Valley, Guatemala, during the Classic period (A.D. 300-900). In doing so, I make no assumption about the link between the observed patterns of archaeological evidence of craft production and particular political or economic structures. Rather, this dissertation research is an attempt to understand the organization of lapidary craft production in the Middle Motagua Valley. Although this research has implications for our understanding of ancient Maya economic organization and political economy, the primary focus here is on establishing the character of craft production itself.

In this chapter, I summarize archaeological approaches to studying craft production. In particular, I focus on ways in which current debates have been unproductive for characterizing and understanding systems of preindustrial craft production. I begin by examining the ways in which archeologists have traditionally approached studies of preindustrial craft production, particularly with regard to debates about the significance of specialized production. I then present a number of ways in which the organization of preindustrial craft production may vary. In doing so, I present a basic framework for understanding prehispanic systems of craft production and their relationship to broader issues of political and economic organization discussed in later chapters.
2.1 Archaeological Approaches to the Study of Preindustrial Craft Production

Crafts are defined in Webster’s Ninth New Collegiate Dictionary as “the products of artistic production or creation that require a high degree of tacit knowledge, are highly technical, require specialized equipment or facilities to produce and involve manual labor.” While this definition may be sufficient for modern concerns, it is insufficient for recognizing the broad range and diversity of crafts produced or practiced in preindustrial economic systems. For the purpose of this dissertation, I adopt a definition of craft goods that encompasses non-comestible material goods that may survive in the archaeological record, that require some degree of specialized knowledge and techniques to produce, and whose manufacture was intended for one or more consumers other than, or including, the producer himself or herself (Sinopoli 2003: 8). I define craft goods in this manner because it leaves open the possibility that craft producers may produce for their own consumption, for the consumption of others, or for both, depending on their own needs and desires. Such a definition includes the 'conventional' craft categories referred to by archaeologists interested in craft production, and excludes other categories that might be considered crafts (e.g. poetry, singing, food preparation and various services) which are difficult to identify in the archaeological record (but see papers in Hruby and Flad 2007 for some alternatives to this approach). Thus craft production here refers to the “investment of labor by (more or less) skilled practitioners who labor to transform potential into finished products” (Sinopoli 2003: 16).

Craft production is found to some extent in all human societies, past and present, regardless of sociopolitical complexity (Cobb 1993; Cross 1993; Sassaman 1998). What has been a particular concern for many archaeologists has been the appearance and
expansion of *specialized* craft production, particularly because of the ways in which it may serve to link craft producers with one another, as well as link them with non-producers (e.g. Childe 1951; Wailes 1996). Despite this importance, there is little general consensus about the meanings of specialization and specialist. Some scholars (e.g. Arnold and Munns 1994; Brumfiel and Earle 1987: 5; Evans 1978; Longacre 1999; Muller 1984; Rice 1991) define specialization in terms of a division of labor between producer and consumer. The key element of specialization for these scholars is that specialist producers meet some, if not most or all, of their subsistence needs from the exchange of the goods that they produce. For example, Muller (1984: 490) defines a “producer specialist” as someone whose “livelihood depends on a certain activity.” Such definitions rely on a notion of economic specialization, derived from earlier works about the role of craft specialization in cultural evolution by Emile Durkheim (1893), Adam Smith (1776), and Karl Marx (1867), that stresses a social division of labor where various specialized producers are dependent on one another within a larger economic system (see Clark 1995 for a discussion).

Other scholars define specialization in terms of the ratio of producers to consumers for any particular class of craft good (e.g. Clark 1995: 279; Clark and Parry 1990: 297; Costin 1991: 4, 2001: 276; Inomata 2001: 322; Shafer and Hester 1983; Stein and Blackman 1993: 29). According to this perspective, a specialist is someone who “controls a set of skills that most of his [sic] communal fellows do not control” (Rodgers 1966: 410). Such definitions shift the focus of studies of craft specialization to an examination of craft goods where there is a higher ratio of consumers in relation to producers. To expand on the definition presented earlier then, specialized craft
production can be defined here as “the investment of labor by (more or less) skilled practitioners who labor to transform potential into finished products that were in turn consumed by non-producers” (Sinopoli 2003: 1, emphasis added). Key to this definition is the fact that craft specialists produce more of a class of objects than they consume themselves (c.f. Costin 2001: 276). Further, this definition does not assume that specialists produce goods to meet the majority of their subsistence needs; specialists, by this definition, include producers that exchange very few craft goods to supplement their own subsistence production.

Despite the oppositional positions often taken in debates over the definition of craft specialization, these perspectives need not be mutually exclusive. Craft producers may specialize in the sense that they produce goods that few others in society produce while still meeting the majority of their subsistence needs through agricultural production. As an alternative to the full/part-time specialization dichotomy, Hirth (2009a: 18) has recently introduced the concept of *intermittent crafting* to refer to “discontinuous or periodic craft production that takes place within domestic contexts alongside other subsistence pursuits.” In addition, households may engage in *multicrafting* by producing multiple, but possibly related goods. Characterizing these various crafts as full or part-time does little to adequately describe their role helping households meet their subsistence needs (see discussion below in Section 2.2.1). For example, Feinman and colleagues (Feinman 1999; Feinman and Nichols 2000, 2004; Feinman, Nichols and Haines 2002) have documented production of a variety of crafts in Classic Period households in the Valley of Oaxaca which appears to have been performed as a supplement to normal household maintenance and subsistence activity.
Therefore, it is essential to move beyond typological representations of craft production and specialization and begin to understand the specific ways in which craft production was organized in particular societies. Only by documenting variation in craft production systems will we be able to construct cross-cultural models that reflect the archaeological data. In the next section, I discuss various ways in which archaeologists have approached the topic of variation in systems of craft production.

2.2 Dimensions of Craft Production

The organization of craft production, whether "specialized" or not, may vary along a number of important dimensions (Costin 1991, 2001, 2005). These include the identity of the producers, the technology of production, the social and spatial organization of production, the types of objects produced, and the relationship between producers and consumers. Any particular society may contain multiple, overlapping systems of craft production and consumption, ranging from highly valuable goods consumed by only a limited segment of the population to more widely consumed goods produced for more utilitarian or mundane purposes. The social, political, spatial and technological contexts of craft production may similarly vary, but there may be little correspondence between variation in the contexts of production and the type of goods being produced.

In the following sections, I discuss some ways in which the organization of craft production may vary, providing archaeological, ethnohistoric and ethnographic examples to illustrate this variation. In particular, I focus on aspects of craft production variability that are germane to this dissertation research: (1) production methods and technology, (2) scale and structure of production units, (3) the nature of the goods produced, and (4)
sociopolitical context of production. Archaeological models of craft production often expect co-variation among these dimensions of variation, which have led to a number of inappropriate expectations of particular forms or systems of craft production (c.f. Feinman 1999; Hirth 2006, 2009a). This is by no means an exhaustive overview of archaeological craft production studies, but is intended to provide the reader with a background for later discussions of craft production in Mesoamerica in general, and in the Maya area in particular.

2.2.1 Technology and Craft Production

Craft production fundamentally involves the use of labor, skill and technology to transform raw materials into finished products. Technology can be understood as the series of steps that are involved in this transformation, including both the knowledge of the production process and the tools used to effect this transformation (e.g. Merrill 1968: 576-577). Technology can range from simple techniques using ad hoc or easily procured/produced tools, to complex production sequences involving specialized tools and facilities. Therefore, examinations of preindustrial systems of craft production need to consider the technologies involved in the production of particular crafts, and the possibilities and constraints they present for variation in production (e.g. Arnold 1985; Underhill 2002; van de Leeuw 1976). Despite the possible range of variation in productive technologies, artisans with knowledge of a production process will be limited in their ability to practice particular crafts by (1) the availability of raw materials necessary for the production process, (2) the need for specialized facilities to practice particular crafts and (3) the availability of tools necessary for production.
A number of researchers have attempted to explain differential participation in craft production (i.e., why in some societies only a limited number of people undertake production of certain goods) in terms of ecological and environmental conditions and demography (e.g., Arnold 1985; Wilson and Blinman 1995). Such adaptationalist approaches (Costin 2001a: 307-308) explain such differential craft production in relation to the abundance or scarcity of particular resources, such as adequate agricultural land (Hagstrum 2001; Halstead 1989) and local availability of materials needed for particular crafts (Arnold 1987; Arnold and Munns 1994; Muller 1997). Viewed from another perspective, the ability to practice certain crafts may be facilitated by the local availability of raw materials necessary for the production of particular craft goods, regardless of pressure to adopt craft production from demographic or environmental circumstances. For example, the presence of abundant raw materials necessary for the production of shell beads (purple oyster shell and chert for microdrills) on the Channel Islands of California is argued to have stimulated the development of intensive shell bead production on the islands (Arnold 1987; Arnold and Munns 1994). Thus, given sufficient demand for particular goods, artisans may practice craft production as a result of opportunities afforded by local availability of raw materials, especially when crafts require little specialized knowledge or tools.

In this dissertation I deal with lapidary production of stone and shell artifacts, which involves a reductive technological process in the sense that goods are produced by removing fragments from raw materials, rather than combining raw materials to produce finished goods. Although the skills needed to craft desired goods may be complex (especially when artifact forms or designs require specialized knowledge or iconography
to execute properly), the tools and raw materials needed for lapidary work need not be complex or elaborate. The technological basis of lapidary production minimally involves the application of abrasives of sufficient hardness to stone or shell in order to produce finished goods (see discussion in Chapter 6). While this characterization of lapidary production may be overly simplistic to describe the technology (i.e. skill) involved in the production of intricately carved goods, it certainly applies broadly to the production of simple lapidary goods such as beads. Thus, the ability to practice simple lapidary production as a craft is limited by the availability of sufficient supplies of abrasive material and raw materials (e.g. shell and jade and other stones) from which to produce finished goods which are desired by others. This can be contrasted with the practice of jade lapidary production in China, where metal and wheel-driven tools were available, which allowed for a greater elaboration of artifact forms (Hansford 1950: fig.11; Sax et al. 2004).

Simple technologies may also facilitate the ease with which craft producers may expand the range of goods they produce or the crafts they practice (Feinman 1999; Hirth 2009b). Recently, Hirth (2006, 2009a) and Shimada (2007) have used the concept of multicrafting to refer to production by "the same or closely related artisans performing a major part or the entirety of two or more crafts involving different media or raw materials in close proximity to each other to produce items primarily for suprahousehold consumption" (Shimada 2007: 5). For example, crafts based on similar technologies, such as shell and stone bead production, may be undertaken by the same craft producers (Feinman 1999) using intersecting technologies (c.f. Hagstrum 1992) that involve many of the same tools and technological processes. This point is important because most
studies of craft production systems tend to consider different crafts (e.g. ceramics, textiles, stone tools) as distinct analytical categories, rather than addressing the relationships among them (Shimada 2007: 3). As I argue in the following section, archaeologists often inappropriately link characterizations of the simplicity or complexity of craft production technology to other dimensions of craft production variation, such as the context of production or the types of craft goods produced (Hegmon 1998: 278).

2.2.2 Craft Production Units

One of the most basic units of production in all human societies is the household, which is organized to meet the economic and social needs of its members (Hirth 2009a; Wilk 1989). While individuals are certainly important economic actors, it is the household that has served as a primary focus of economic activity for people in preindustrial agrarian societies. Ethnographic and historic accounts demonstrate tremendous variability in the size, composition and structure of craft production units across time and space (e.g. D. Arnold 1985; Hassig 1985; Matson 1965; Nadel 1942; Peacock 1982; Rye and Evans 1976; Spence 1981; Stark 1985). While many scholars recognize the importance of household production for meeting the internal subsistence needs of household members, many archaeological studies have focused greater attention on other production units when considering ancient systems of craft production.

In an influential and oft-cited paper, van der Leeuw (1977, see also 1984) presented a six-part model of craft production, drawn from (primarily Old World) ethnographic and historic descriptions of pottery production. Subsequently, his model was slightly, though not significantly, modified by others (Peacock 1982; Rice 1981;
Santley et al. 1989). These models describe a series of production arrangements, defined primarily by the nature and composition of primary production units (e.g. household, workshop, factory; see Table 2.1 below). In them, household production is presented as the most basic form of production, and is characterized as small in both scale (a measure of the relative size of the production unit) and intensity (a measure of the output of production) (van der Leeuw 1977: 72, Table 1; 1984: Fig. 1). Household production is further characterized as "part-time" (Santley et al. 1989: 108) or "occasional" (van der Leeuw 1984: 722, Fig. 1), "amateur" in skill or execution, and using simple, impermanent technologies. In contrast, higher order production units (e.g. workshops and manufactories) are characterized by "full-time," high-intensity production, dedicated production facilities and larger work groups, made up of independent specialists.

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Table 2.1 - Models of craft specialization.

Such typologies, while useful for bringing order to an array of cross-cultural productive arrangements, are inappropriate for understanding variability in craft production within particular societies. Particularly, such models improperly group dimensions of variability that ought to be kept analytically distinct. For example, the term household production is a description of the context or location of the production unit, and has no direct and invariant relationship with other dimensions of variability of
craft production, such as intensity of production or the nature of goods produced.

Nevertheless, standard models of craft production units mute and subsume variability and hinder our ability to accurately characterize preindustrial systems of craft production. I argue that such typologies of craft production units need to be unbound from the other measures of variability in craft production, and need to be considered separately from one another (Costin 1991, 2001; Feinman 1999; Feinman and Nicholas 2000; Hirth n.d.; Shimada 2007). Therefore, I consider here a number of ways in which craft production units themselves may vary, both spatially and socially.

2.2.2.1 Spatial and Social Organization of Production Units

The identification of loci of craft production is important because they provide basic information about the physical location of crafting and clues about the social organization of craft production. Craft production loci are directly identified using three primary lines of archaeological evidence: (1) production-related facilities, (2) tools, and (3) debris. Formal production-related facilities are rarely encountered in preindustrial systems of craft production. In the New World, these facilities typically include features such as kilns used for pottery production and metallurgy (Arnold et al. 1993; Goldstein and Shimada 2007; Santley et al. 1989; Shimada and Merkel 1991). Nevertheless, as Santley et al. (1989: 110) caution, lack of permanent firing facilities does not preclude the presence of pottery production (see Maldonado 2007 for a similar argument concerning copper production in the Tarascan empire). New World lapidary production however, is unlikely to have been accomplished using special purpose, permanent facilities, owing to the limited technology associated with such production (see Section 2.2.1 above).
The recovery of production-related tools is a second line of evidence used to identify loci of craft production. For lapidary production, archaeologically-recoverable tools may include stone hammerstones, mortars for preparing abrasives, chisels, adzes or axes, scrapers/abraders, saws, awls, microdrills, polishers and blades (Arnold 1987; Flannery and Winter 1976: 39; Yerkes 1983, 1989, 1991). Metal drills and saws were also likely used where available; Sahagún (1547-1558) mentions the use of metal tools for Postclassic period Aztec lapidaries (Dibble and Anderson 1959: 79-82).

Identification of these lapidary tools may be problematic however, as some may have been used for purposes other than lapidary production, and therefore may have been recycled or curated in ways that would reduce their visibility in the archaeological record (Aldenderfer 1991). Further, perishable lapidary tools of wood (Clark 2006) or bone (Holmes 1919: 351-352) may have been used in place of functionally-equivalent stone and metal tools (also Kidder, Jennings and Shook 1946; Widmer 1991).

Finally, manufacturing by-products or debris (i.e. debitage) are the most frequently-used line of evidence for identifying loci of stone tool and lapidary production. Manufacturing debris may include: exhausted or partially-worked cores; partially-worked stone or shell artifacts; tools or ornaments broken in the process of production; and chipped stone flakes. However, identification of production debris is not unproblematic or straightforward. For example, care must be taken to distinguish tools or ornaments broken during production from those broken during or after use. Further, data from the archaeological and ethnoarchaeological studies caution against uncritically equating the loci of recovery of production debris with the physical location of past production activity (Clark 1986, 1990; Deal and Hayden 1987: 288; Moholy-Nagy 1990, 1997;
Identifying manufacturing debris associated with the final stages of lapidary production (e.g. grinding, carving and polishing) can be especially problematic, as these stages produce very little in the way of macroscopicdebitage other than broken pieces in the process of manufacture, and instead produce microscopic pieces as an object is abraded into shape (Chenault 1986). An alternative approach has been to use microscopic analysis of intact floor deposits to identify primary locations of lapidary production (Feinman 1999; Feinman and Nichols 2000; Kovacevich 2007; Widmer 1991).

Reliable identification of craft production loci must therefore rely on some combination of these three lines of evidence. If tools associated with lapidary production (e.g. microdrills, polishers) are found in direct association with by-products of lapidary production (e.g. unfinished or broken artifacts,debitage), it is reasonable to propose that production took place within the vicinity (c.f. Clark 1990). When such accumulations are found within close spatial proximity to identifiable structures, it may be possible to infer a correspondence between the two, particularly for small-scale production loci, such as households in non-urban environments (Santley and Kneebone 1993: 45).

Once craft production loci are identified, archaeologists need to identify the spatial context and "concentration" (c.f. Costin 1991: 13-15) of production by characterizing the relative dispersal or aggregation of production loci. Context refers to the actual location of production, while concentration “describes the relative dispersal or aggregation of producers serving a defined geographic area or population” (Costin 2001: 295). Concentration of production may be influenced by a number of factors, including: access to raw materials needed for products, tools or production (e.g. Arnold and Munns
1994; Shafer and Hester 1991; also see Section 2.2.1); access to labor (e.g. Kenoyer et al. 1991); access to transportation routes; or location of consumers or sponsors (Hayashida 1995). Therefore, concentration may vary from the presence of many producers evenly distributed throughout a given population to dense concentrations of producers in a defined location.

Concentration of craft production can also vary in terms of scale (small to large) and internal social composition (kin-based to non-kin based) of individual production units, and can include domestic households, workshops and manufactories. Scale is often defined in terms of the relative physical size of the structures or facilities with which production evidence is associated (e.g. van der Leeuw 1977, 1984; Peacock 1982). Scale and internal social composition are often assumed to covary, such that small scale production units are composed of kin members, while larger-scale production units consist of non-kin work groups (Santley et al. 1993: 110; van der Leeuw 1984: 756). While it is reasonable to assume that small-scale production units were composed of kin-based work groups, it is not clear that larger-scale production units, such as workshops, were not similarly composed. For example, in the early 20th century Nupe kingdom of Nigeria, blacksmith workshops were often stand-alone facilities near family compounds (i.e. "medium" to "large" scale) in operation year-round, and were operated by members of the same family (i.e. kin-based) (Nadel 1942: 263-264). Therefore, researchers must be careful to disentangle the dimensions of scale and internal social composition when constructing models of preindustrial craft production (see Ames 1995; Janusek 1999).
2.2.3 Types of Goods Produced

Most studies of preindustrial systems of craft production make distinctions among a variety of classes of goods based on their perceived value, utility and meaning in past societies. Commonly, a distinction is made between two general classes of goods: so-called wealth goods and utilitarian or necessary goods. In drawing this distinction, scholars posit a fundamental divergence in the nature, production and value of the goods in question. Utilitarian goods are often defined as those that satisfy basic household subsistence needs, and are valued and used by all members of a given society for biological and social ends (Brumfiel 1987; Brumfiel and Earle 1987: 4). Other terms that appear in the craft production literature include "staples" (D'Altroy and Earle 1985), "practical technologies" (Hayden 1998), and "subsistence goods" (Brumfiel and Earle 1987). Regardless of the term applied, all point to the usefulness of these goods for human physical survival, and emphasize that their use or possession is not limited by custom or law to particular classes of individuals within society. In this dissertation, I use the term "utilitarian good" to refer to these objects, despite problems of distinction (noted below).

In contrast, wealth goods are seen as those artifacts or objects that are used in "display, ritual, and exchange" (Brumfiel and Earle 1987: 4), particularly as markers of social identity (Peregrine 1991: 1), and are limited in their distribution to only certain classes of people within society. Wealth goods have also been referred to as "prestige goods" (Costin 2001b; Frankenstein and Rowlands 1978; Hayden 1998; Junker 1993; Peregrine 1991), "luxuries" or "luxury goods" (Appadurai 1986; Blanton and Feinman 1984; Childe 1951; Inomata 2007), "primitive valuables" (Arnold and Munns 1994; Earle
"preciosities" (Wallterstein 1976) and "elite goods" (Wells 1982). In the archaeological literature on craft production, these terms are often used interchangeably and are rarely explicitly defined, despite the fact that each term implies a particular kind of value, meaning or use for the goods or objects being described (Flad and Hruby 2007: 10).

Nevertheless, all of these terms share a broad similarity in that the goods involved are seen as (1) desired by many but restricted in distribution (by law or price) to a limited group or class of individuals ("elites"); (2) being semiotically-rich (i.e. capable of communicating complex messages, c.f. Appadurai 1986: 38); and (3) capable of being controlled. In this dissertation, I use the general term "wealth good" to refer to these classes of artifacts for two particular reasons. First, the term leaves open the possibility that the goods may simultaneously possess both economic and social value, meaning and utility. As I discuss further in Chapter 3, goods crafted from jadeite were characterized by gradations of value, with some jadeite goods (such as beads) distributed more evenly than others (e.g. carved pendants and diadems). Thus, different artifact forms may have been distributed and consumed in different ways. Second, I wish to avoid interpretive problems related to the term "prestige good," which implies a particular type of "prestige goods system" in which such goods are needed for social reproduction (c.f. Frankenstein and Rowlands 1978; Meillassoux, 1978). Specific distinctions such as these need to be demonstrated for particular cultures, a goal that is not feasible in this dissertation.

Because the focus of this study is the production jadeite wealth goods, I now discuss how such goods might be identified archaeologically.

Following the work of Helms (1993), some scholars have argued that wealth
goods are typically manufactured from exotic, non-local raw materials or involve high inputs of labor to produce (Earle 1987: 89; Flannery 1968: 100; Rathje 1972; Peregrine 1991). Wealth goods manufactured from non-local raw materials are seen as enhancing social status because of the messages that they communicate regarding ties to foreign (and mystical) lands and peoples (Helms 1993: 7), while those requiring high labor inputs or great skill to manufacture testify to an enhanced ability to control or otherwise direct the labor of others (Meillassoux 1978). The common assumption of these models is that they argue that wealth goods are those that involve great labor input, either in the procurement of materials or the manufacturing of the finished goods. Furthermore, they posit that these characteristics allow them to be more easily controlled by elites, thus reinforcing their value.

Ekholm (1972: 100) defines wealth goods as “products which were not needed for actual material support of life, but were definitely needed for social and political position within the society.” Though wealth goods are not necessary for the everyday provisioning of households, some may be manufactured in forms similar to utilitarian goods. Clark (1996: 193) calls these items "hypertrophic" goods that are "unusable as tools because they are too fragile or elaborately decorated." In some cases these goods are manufactured from valuable, non-local materials that may be expensive to procure. For example, in the highlands of Papua New Guinea, large (20-30 cm long) axes, unsuitable for agricultural work, were assembled and used in bridewealth transactions, and served as a symbol of wealth and social position for those that possessed them (Burton 1989; Strathern 1971: 105). Modern examples might include items such as fine china that convey social messages regarding prestige, wealth and taste.
Based on a cross-cultural ethnographic study, Peregrine (1991) argues that archaeologists need to exercise caution in identifying wealth goods. Focusing specifically on ethnographically known prestige-goods systems, he identified four basic categories of goods that are here termed "wealth goods": (1) furs and other raw material; (2) shell beads (especially strings of shell beads); (3) personal ornaments of durable and precious materials; and (4) larger, more complex personal ornaments manufactured from plant and animal materials such as feathers and plant fibers (Peregrine 1991: 4).

Interestingly, he found that ceramics did not function as prestige goods, possibly because of their necessity and to the ease with which they could be produced. This finding runs contrary to arguments for the Classic Maya, where a number of scholars have argued that elaborately decorated ceramic vessels were used to solidify inter-elite relationships, and in some cases to maintain the loyalty of commoners (LeCount 1999; Reents-Budet 1994, 1998; Rice 2009).

There are of course, other means by which status and prestige differences may be expressed, such as through greater elaboration of domestic architecture or through the sponsoring of public works of various kinds. The particular mix of strategies chosen for marking status differences vary widely, but they would be expected to be redundant with each other in marking the enhanced prestige or status of particular groups or individuals. Thus, when attempting to identify prestige goods in the archaeological record, care should be taken to examine redundancy of these goods with other potential markers of prestige or status. Simply showing that a particular artifact type has a differential distribution does not demonstrate by itself that it served as a wealth good. A demonstration of the artifact type's redundancy with other proposed wealth goods and
with other means of marking status is needed. If such redundancy cannot be demonstrated, then there is the possibility that the artifact type in question may have served other purposes, such as to mark social group affiliation, occupation, or some other social role.

The context in which they are found is another essential criterion for the proper identification of wealth goods. Because they were highly valued, it is unlikely that complete, finished wealth goods will be found regularly in domestic middens. However, we might expect to find evidence of the production of wealth goods in middens, especially when their forms, and not the material from which they were produced, was what was considered valuable. Conversely, if the raw material is what was valued, we might expect that by-products from production might be curated or otherwise taken out of circulation by inclusion in caches or burials (Moholy-Nagy 1997). Furthermore, if particular forms of wealth goods were desired or required, we might also expect to see production controlled or sponsored in some way, and issue to which I now turn.

2.2.4 Sociopolitical Context of Production

The sociopolitical context of production refers to the location of production in social space (c.f. Costin 2001a: 297), including the social rank or status or artisans, and the relationship of producers to consumers. In models of craft production, these two dimensions of production are often discussed together, and as such, I will address them simultaneously in order to highlight some ways in which models linking these concepts have caused interpretive difficulties for understanding particular systems of craft production.
In a highly influential and frequently cited model of craft production in ancient societies, Brumfiel and Earle (1987; also Earle 1981) dichotomize craft production based on the nature of the goods produced (addressed above in section 2.2.3) and the degree to which production is controlled by political elites. In their model, they argue that everyday utilitarian goods tend to be produced by independent specialists who produce for general demand, while prestige or wealth goods tend to be produced by attached specialists who produce for patrons on demand (Brumfiel and Earle 1987: 5; also Costin 1991: 71-72). Thus, independent production is depicted from the perspective of the producer and seen as motivated by a desire for profit (however defined), while attached production is often viewed from the perspective of the sponsor and seen as being motivated by the desire to control the production process (Costin 2001a: 298). As Hayashida 1995: 12) points out however, these are two different kinds of production, not ends on a continuum (as they are often depicted), and it is often difficult to fit particular cases within this framework. It is better, therefore, to examine ways in which the motivation for production and the control of final products varied individually, rather than assuming that they varied uniformly.

Costin (2001a: 298) argues that in these terms, some degree of "attachment" of producer to consumer exists when decision-making about any aspect of production is made by individuals or institutions outside of the production unit. This can include decisions about raw materials or technologies used in production, the organization of the production unit, the style or appearance of the goods produced, or the ultimate distribution of finished goods (Costin 2001a: 298). However, Clark and Parry (1990: 298) note that while attached producers are obliged to manufacture particular goods, no
physical control of producers, the production process, or the total output of producers is implied. Santley et al. (1989: 108) use the term "tethered specialization" in a similar manner to describe production "for elite use or consumption by the state institutional system, either on a commissioned basis or as a result of obligations owed to specific high-ranking individuals." The most common distinction is control of the distribution of finished products, which is an aspect of distribution, and not production per se.

Costin (1991: 25) suggests that control of production by attached producers will often have clear archaeological correlates. For example, she argues that "workshops of attached specialists most often are physically associated with elite domestic structures or government facilities [or...] may be physically separated from other activity areas, in places where access can be easily monitored or access restricted." A number of ethnographically and archaeologically known examples of this type of situation can be provided, including those of the Inka (Costin 1991), Hawaii (Earle 1987) and Classic Maya (Inomata 2001; Widmer 2009). Nevertheless, as noted earlier, production need not be physically controlled or monitored in order to be considered "attached" (Stein 1998: 20)

Sponsorship of attached specialists is not the only means open to elites for controlling production and distribution of prestige goods. Elites may also control distribution through the mobilization of finished goods from dispersed producers in the form of tribute. Such a strategy is known for a number of prehispanic New World societies, including the Aztec (Brumfiel 1987; Berdan 1992, 1994) and the Inca (Costin 1996; Earle 1987). Under such a strategy, individual households are required to contribute a specified amount of particular goods for use by elites or state institutions.
For example, women in conquered provinces of the Inca empire were required to provide thread and cloth to the state for use in the political economy and as payment to imperial beauracrats (Costin 1998). The goods produced under such a system are typically manufactured from materials available to non-elite households either through direct procurement or trade and exchange. Furthermore, they are goods that may be produced by a great many households because they either do not require a great deal of skill to produce or do not require the use of complex technologies. Under such a system, we would expect to find evidence of production dispersed among households regardless of social rank or status. In addition, we would expect that those households showing evidence of production would consume only a small proportion of their products.

Characterizing strategies for the control of wealth goods production as I have done here does not preclude the fact that any particular system may have involved all of these strategies at once. For example, within the Tarascan empire, metal objects used as ceremonial and wealth goods were produced by attached specialists and mobilized in the form of tribute from non-elites (Pollard 1987). The particular strategy or strategies that were employed are highly dependent on the means available to elites (Hirth 1996). In fact, as recent evidence suggests for the ancient Maya (discussed in Chapter 7), there may have been multiple strategies employed in the production of wealth goods.

Nevertheless, demonstrating the social rank or status of producers and the degree of control exerted on the production process may be particularly difficult. Until recently, craft producers in preindustrial societies have often been depicted as socially or economically marginal (e.g. Rice 1981). However, it is increasingly evident that the status of producers and their ability to negotiate the terms of their production varied
widely, and craft production by elites has been reported in a wide-range of societies (Ames 1995; Brumfiel 1998; Costin 1993; Inomata 2001; Lass 1998; Reents-Budet 1994, 1998; Sinopoli 2003). Identifying the social rank of producers may be more straightforward when evidence of craft production is recovered from domestic, non-elite contexts (e.g. Wattenmaker 1998; Feinman 1999). The task is considerably more difficult when production evidence is located within elite or nondomestic contexts. The interpretive difficulties are exemplified by Arnold and Santley (1993: 242) when they argue that kiln-fired ceramic production at an elite household at Matacapan was done by non-elite craft workers, rather than by the elite residents themselves, despite a lack of evidence to support this claim.

Identifying the social status of producers does not necessarily demonstrate the nature of the producer-consumer relationship. Demonstrating attached production requires evidence of both the contexts of production AND consumption. In other words, archaeologists must demonstrate that production levels surpassed the consumption levels of individual production units. In the absence of large-scale excavations however, such a determination may be difficult. This is especially true when one considers that producers may retain rights to the distribution or consumption of a portion of the goods they produce (Hayashida 1995: 17).

2.3 Concluding Comments

Archaeologists have long recognized the importance of craft production in the structure and function of complex societies. Nevertheless, the material evidence for craft production is potentially ambiguous because of the various ways in which craft
production systems may be organized. This variation, and the ambiguity of the archaeological evidence, has generated a great deal of discussion regarding the structure of these systems of craft production.

In this chapter, I have focused on some dimensions along which preindustrial systems of craft production may vary, particularly with regard to the technology of production, the organization of production units, the nature of goods being produced and the sociopolitical context of production. The technology involved in the production of particular crafts may vary along a number of dimensions, including the skills need to practice a craft, the availability tools and raw materials needed for production and the possibility of producing items with multiple raw materials using intersecting technologies. Variation in these dimensions may influence the ability of individuals and households to practice particular crafts. The organization and structure of the physical loci in which production takes place may vary from domestic household contexts to the use of specialized facilities in which individual producers may not be related by ties of kinship. The types of goods produced may range from goods needed for physical survival to those that have no direct bearing on physical survival, but rather have more primary social significance. These goods may be more or less elaborate and may involve the use raw materials that are easy or difficult to acquire. Finally, craft production systems may vary in terms of the degree of attachment and sociopolitical relationship between producers and consumers, although these may not vary directly with the overall output of producers.

There are many more dimensions that might be added to these continua, but those discussed in this chapter present a framework for addressing variation in the organization of preindustrial systems of craft production, especially with regard to lapidary wealth.
goods production. Using these dimensions, it should be possible to discuss particular systems of craft production and compare them to see how and if these dimensions co-vary, particularly with the goal of linking the systems of craft production to other aspects of political, cultural and economic variation.

In the following chapters, I examine the production of wealth goods (particularly jadeite artifacts) in prehispanic Mesoamerica, particularly in reference to the Classic period Maya society. In doing so, I examine variability in the dimensions of craft production discussed in this chapter, and the implications such variation has for understanding prehispanic economic and political organization.
CHAPTER 3

JADE AND ITS SIGNIFICANCE IN PREHISPANIC MESOAMERICA

Although jade objects are most often associated with China in the popular imagination, they had important ritual, political, and economic significance for all prehispanic Mesoamerican civilizations. Jade was highly valued as a tough stone capable of being worked into both durable utilitarian objects and finely-crafted objects. The cosmological significance of jade for both elite and non-elite members of society seems to have developed early, during the Early Formative period (Blake and Clark 1999; Coe and Diehl 1980; Lange 1993; Lesure 1999), and continued until the time of the Spanish Conquest. The common recognition of the value of jade objects provided an opportunity for elite members of ancient Maya society to distinguish themselves using already established associations of jade with concepts such as centrality and fertility. In this chapter, I discuss the various meanings and uses of jade in the Maya area, and their implications for understanding the organization of jade artifact production.

I begin this chapter with a description of the mineralogical character of jade, focusing particularly on jadeite, the only 'true' lapidary jade found in Mesoamerica. Next, I examine the chronological development of jade use in prehispanic Mesoamerica, particularly for the ancient Maya. I focus specifically on how jade was transformed from a stone with ritual meaning and significance to all members of ancient Maya society into a symbol of elite authority. Recognizing the varied uses of jade artifacts for the ancient Maya provides the proper context for interpreting and understanding the organization of jade artifact production in the Middle Motagua Valley.
3.1 What is Jade?: Jade, Jadeite and Greenstone

The exact origins of the term "jade" are obscure, but it is clear however, that the term derives from Spanish and Portuguese accounts in the 16th century which referred to greenstone from China and Mesoamerica as *piedra de hijada* because of the curative powers that the stones were believed to possess (Desautels 1986:2-3). Specifically, *piedra de hijada*, or "loin-stone," reflected the belief that waving the stone over the loins or abdomen could heal ailments of the spleen, kidneys and liver (Miller and Taube 1993:102). The English term "jade" is derived from the French word for the stone, *pierre de l'ejade* (Desautels 1986: 3). It is unclear where the practice of using jade for healing originated. Desautels (1986: 3) suggests that the idea originated in China, and did not have antecedents in Mesoamerican folk medicine, while Thouvenot (1982: 131-132, cited in Taube 2004: 204) argues the concept was Mesoamerican in origin.

In the archaeological literature, the term “jade” is a commonly used catch-all for a mineralogically and chemically diverse set of greenstones. Rocks that have been termed “jade” in the archaeological literature of Mesoamerica include jadeite, serpentine, bowenite, albitite, and various quartzes and quartzites (Harlow 1993: 10). “True” lapidary jades, however, include only the minerals jadeite and nephrite. Nephrite, an amphibole mineral, does not occur naturally in Mesoamerica and was used only in Asia, New Zealand and the Arctic regions of North America; therefore, its mineralogical properties will not be discussed in detail in this dissertation.

Jadeite is a pyroxene mineral composed of sodium, aluminum, and silicates (NaAlSi$_2$O$_6$). In its pure state, jadeite is white in color, but observed colors of jadeite vary depending on its chemical composition, and include shades of green, blue, lavender,
and black. The green shades of jadeite that were highly prized in prehispanic Mesoamerica occur as a result of the presence of chromium and nickel (Harlow 1993: 17).

The most easily-recognized characteristic of jadeite is its hardness, which is in the range of 6.5 to 7 on the Mohs scale (talc is the softest with a hardness of 1, while diamond is the hardest with a hardness of 10). The individual crystals of jadeite are very granular, and much of the toughness of jadeite is attributable to the close interlocking of these grains. Jadeite has a specific gravity of about 3.3 to 3.6 and does not fracture predictably along regular cleavage planes.

Jadeite is most often found not in its pure mineral form, but rather as a rock composed mostly of jadeite and other minerals. Most jadeite rock contains smaller amounts of related minerals that typically form under similar geologic circumstances including albite, diopside, acmite, and chloromelanite. If the sodium and aluminum in jadeite are replaced by calcium and magnesium, for example, the result is omphacite, diopside, or enstatite (a magnesium rich diopside) (Harlow 1993: 20). Jadeite is also unstable, and as buried deposits of the mineral come closer to the surface and experience higher water saturation (especially below volcanic sediments) they can chemically break down into analcime or albite (Harlow 1993:16). Many of these minerals can occur with a green color, and some even have similar properties to jadeite (though not the same suite of mineralogical characteristics). Nevertheless, jadeite was certainly favored by prehispanic Mesoamerican artisans for its superior color, luster, and workability (Foshag 1957).

In addition to jadeite and the minerals mentioned above, a number of other greenstones were worked by prehispanic artisans that have been referred to as "jade" in
the archaeological literature. These include soapstone (sometimes called steatite), serpentine (a much softer rock), agate (a cryptocrystalline silicate), amazonite (a type of quartz), muscovite, and jasper (related to quartz). All of these stones, however, are softer than jadeite and do not retain a fine polish like jadeite, nor do they have the same bright luster. In this dissertation, the term jade will be used to refer to all greenstone recovered archaeologically in the Middle Motagua Valley, because it is the only positively-identified jadeite source region in Mesoamerica.

Aztec ethnohistoric sources refer to jade by a number of terms that reflect the physical properties of different varieties of the stone. Chalchihuitl was the generic term for jade and all its varieties, and is derived from the Nahuatl word xalxihuitl, or xalli, sand or jewel and xihuitl, herb or herb-colored (Foshag 1957: 7). Sahagún (Dibble and Anderson 1963: 221-229) described the many different types of greenstone for the Aztecs, depending on color and quality: Quetzalitztli, or emerald green jade, was a bright emerald green; Quetzachalchihuitl was described as high-quality, transparent, and without imperfections; Xiuhtomoltetl was described as green and white mixed, but was referred to as turquoise in other sources. Sahagún (Dibble and Anderson 1961: 168) also described poor quality “chalchihuities fingidos” that were used by the commoners who were not permitted to use jade (cited in Foshag 1957: 9).

The variety of terms suggests that many Aztecs citizens (both craftspersons and the general public) could discern different levels of quality for greenstones, possibly according each different amounts of prestige. It is possible, but by no means clear, that differences in the types of greenstone displayed by Aztec elites were representative of rank. Meosamerican scholars have argued that sumptuary laws were one means by which
nonelite members of society were prevented from possessing symbols of rank and
authority (Anawalt 1980). Although the distinctions noted above by Sahagún suggest
discernment about various types of greenstones, it may be the case that the symbols or
ornaments into which greenstone was carved was more important than the precise
material.

3.1.1 Jadeite Sources and Sourcing in Mesoamerica

A number of jade source regions have been identified in the world, all widely
separated from one another. Of these however, only six are sources of jadeite jade (Fig.
3.1). The natural rarity of jadeite is attributable to the fact that it forms in unique
geological environments where high-pressure and low-temperature conditions in the
earth’s crust are associated with major tectonic fault zones, often in association with
serpentine rock (Harlow 1993). All three of these conditions are found in the Middle
Motagua River valley in Guatemala, which follows the Motagua Fault Zone (Fig. 3.2).

The recognition of the Middle Motagua Valley as an important jadeite-bearing region
first came when Robert Leslie documented the location of extensive in situ jadeite
sources at Manzanotal in 1952 (Foshag and Leslie, 1955). Since this discovery however,
there has been considerable debate about whether the Motagua Valley was the only
prehispanic jadeite source in Mesoamerica and greater Central America. Some scholars
note the distinct visual differences between jadeite from the known Motagua sources and
the fine blue-green jadeite used by the Olmec and ancient cultures of Costa Rica. This
apparent discrepancy has led some scholars to propose that other, as-yet-unidentified
jadeite sources existed, possibly in Guerrero or Costa Rica (Coe 1968: 100-103; Easby
Data from Instrumental Neutron Activation Analysis (INAA) performed on jadeite artifacts from sites in the Maya area and samples from known jadeite sources in the Motagua Valley led Bishop and colleagues (Bishop et al. 1985; Bishop and Lange 1993) to argue that the Motagua Valley was not the only jadeite source exploited in prehispanic Mesoamerica. Their argument is based primarily on the observation of the chemical and structural variability between jades found at Maya sites and jades collected from the known Motagua sources. This led them to suggest that there were multiple jadeite sources exploited in ancient Mesoamerica that have since been exhausted or are yet undiscovered. For example, Bishop and colleagues (Bishop et al. 1985; Bishop and Lange 1993) note that the chemical signatures of jadeite samples taken from the Motagua region clustered into distinct groups (the Motagua groups were composed of Motagua Light, Motagua Dark, Motagua Exceptional and Chichen Green groups). However, there was more observed chemical heterogeneity between the Motagua samples and jadeite artifacts from Maya sites than there was within the Motagua samples (i.e. there was more similarity between the Motagua source samples than there was between the Motagua source samples and the sampled jadeite artifacts from Maya sites as a whole).
Figure 3.1 - World distribution of known geological sources of jadeite jade.
(Source: Lange 1993: 3, Fig.1)

Figure 3.2 - Maps showing location of Motagua Fault and its co-occurrence with serpentine rock beds. Motagua Fault shown as M in upper image
(Source: Avé Lallemant 2005).
In addition, Bishop and colleagues included greenstone artifacts from sites in northwestern Costa Rica, where they were used almost exclusively as burial goods from 300 B.C. to A.D. 700 (Lange and Bishop 1988). In general, the Costa Rican jadeite samples also clustered into light and dark groups, but were compositionally distinct from the known Motagua samples. Only 10 artifacts from the Maya region matched the chemical composition of the Costa Rican samples, and only 5 Costa Rican artifacts matched the Motagua data. Thus, they argued that the Coast Rican cultures had access to, or exploited, some unidentified jadeite source in Costa Rica or elsewhere (Bishop et al. 1985).

More recent chemical characterization was completed on 27 pieces of greenstonedebitage from the ancient Maya site of Cancuen, Guatemala by Kovacevich and colleagues (Kovacevich, Neff and Bishop 2005) using Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS). The results paralleled those of the earlier INAA studies in a number of respects. First, the Cancuen samples clustered into light and dark groups, reflecting compositional variations in chromium and nickel content. Additionally, LA-ICP-MS confirmed that rocks from the same source location, as well as different parts of the same rock, exhibit the same variation in light and dark composition (Kovacevich, Neff and Bishop 2005: 51). Importantly, the study did not produce secure, specific source attributions for most of the artifacts, indicating that more source sampling is needed. Interestingly, the study showed the Cancuen samples to compositionally distinct from the known Motagua sources, but compositionally similar to samples from sites in the Salama Valley in the Alta Verapaz, Guatemala (Sharer and Sedat 1987).
Kovacevich (2006: 138) argues that this result may indicate that Cancuen and the Salama Valley sites were exploiting some unidentified jadeite source. Harlow (1993) however, has argued that jadeite sources contain enough chemical heterogeneity that inadequate source sampling and the presence of unidentified sources within the Middle Motagua Valley could easily account for the differences in the chemical compositions noted by Bishop and colleagues. Thus, he argues that demonstrating the chemical and structural variation between documented jadeite sources and sampled jadeite artifacts does not preclude the possibility that all jadeite used in prehispanic Mesoamerica derived from the Middle Motagua Valley.

Despite this scholarly interest in identifying jadeite sources exploited in prehispanic Mesoamerica, relatively few actual sources have been documented. As part of their research attempting to compositionally characterize jadeite sources, Hammond et al (1977) documented seven jadeite sources along a 10 km stretch of the north side of the Rio Motagua, an area located about 10 km east of Guaytan, the largest site in the Middle Motagua Valley (Fig. 3.3). A number of shops in Antigua continue to exploit sources in the region for commercial purposes, although the location of these sources is a closely-guarded trade secret. Erosion in the valley and the surrounding Sierra de las Minas and Sierra de Chuacús mountain ranges caused by Hurricane Mitch in 1998 led to the recent discovery of a number of jadeite sources, significantly increasing the known extent of the jadeite-bearing zone (Broad 2002; Seitz et al 2001). These include sources at the headwaters of the Rio El Tambor to the south and Rio Teculutan to the north (Taube, Hrubby and Romero 2006). These sources await further investigation and may prove to be some of the unidentified jadeite sources alluded to by compositional studies. Most
importantly, no *in situ* jadeite sources have yet been identified outside of the Middle Motagua Valley. Therefore, the most parsimonious explanation of the available data is that the Motagua region was the only jadeite source region exploited in prehispanic Mesoamerica and greater Central America.

![Figure 3.3 - Jade sources sampled by Hammond and colleagues (Source: Hammond et al. 1977: fig. 3)](image)

### 3.2 The Cultural Significance of Jade in Prehispanic Mesoamerica

Jade had cosmological and ritual significance for all prehispanic Mesoamerican cultures from the Early Formative period (ca. 2000 - 1000 B.C.) until the time of the Spanish conquest (Lesure 1999; Coe and Diehl 1980; Lange 1993). Because of the ambiguous descriptions of the mineralogy of greenstone objects recovered at many Mesoamerican sites, I will be treat *greenstone* and *jade* objects as equivalent in this discussion. Current archaeological evidence suggests that jade objects were first used as markers of social status during the Middle Formative period (Lesure 1999), although the symbolic and ritual significance of jade was established earlier, in the Early Formative. Although jade use is often treated as a marker of elite status in the archaeological
literature on the ancient Maya, jade is often found in small amounts in nonelite households as well (e.g. A. Chase 1992; Haviland and Moholy-Nagy 1992; Krejci and Culbert 1995; Moholy-Nagy 1997; Palka 1997; Zeleznik 2002; Guderjan 2007).

In this section, I summarize the evidence of early jade use in Mesoamerica, through the end of the Late Formative period. The term "Formative" is generally applied in Mesoamerican chronology to early sites outside of the Maya area. In the Maya area, the term "Preclassic" is generally synonymous with "Formative." I will use the term "Preclassic" to refer to this early time period only for sites located in the Maya area, and use "Formative" for all other sites. From there I focus specifically on the use of jade in the Maya area during the Classic and Postclassic periods. Examining jade use chronologically highlights how jade's significance was first established during the earliest periods of village life in Mesoamerica and was later used as a means of legitimizing elite authority as sociopolitical complexity developed in Mesoamerica. In doing so, I highlight the multiple uses to which jade artifacts were put by both elite and nonelite members of ancient Maya society.

3.2.1 Patterns of Formative Period Jade Use in Mesoamerica

Jade artifacts were already widely traded and used in Mesoamerica as early as 1500 B.C., and current evidence suggests that the ideological and ritual significance of jade had already been established by this early period. One of the earliest manifestations of jade use occurs during the initial phases of the Early Formative (1600-1200 B.C.) at Paso de La Amada, in the Mazatán region of the Pacific Coast of Chiapas, Mexico, an area characterized by some of the earliest settled villages in the area. There is little
evidence of internal social differentiation at these sites, which does not begin to appear until the end of the Early Formative period (Blake and Clark 1999).

During this early period, jade appears in many prosaic contexts, including (in descending order of frequency): construction fill, middens, occupation surfaces, floors, burials and offerings (Lesure 1999: 42). Residents in all areas of the site, including those in platform and non-platform residences, had access to small quantities of jade, with no significant differences between households (Lesure and Blake 2002). Most non-utilitarian jade artifacts were objects of personal adornment, typically single beads or small pendants. More elaborate forms such as earspools are absent, as is the use of carved or incised iconography on jade. Jade celts occur at Paso de La Amada, but they were predominantly utilitarian objects found in fill, middens and occupation surfaces, and the majority were well used prior to disposal (Lesure 1999: 45; Blake 1991:40). Lesure (1999: 42) argues that jade was already imbued with special ceremonial and ideological significance at this time. His interpretation is based primarily on the placement of a single jade celt beneath the floor of a large building dating to around 1400 B.C. and the placement of a jade bead in a subfloor cache in a building of modest size, dating to around 1250 to 1100 B.C. Lesure (1999: 44) further argues that items of personal adornment may have been inalienable personal possessions that served as markers of personal identity, but were not yet used as markers of social status or prestige.

The most conspicuous Early Formative ritual use of jade occurs during the Manatí A Phase (ca. 1600-1500 B.C.) at the sacred spring at El Manatí, in southern Veracruz (Ortiz and Rodriguez 1999; Ortiz and Rodriguez 2000; Rodriguez and Ortiz 2000). The earliest deposits at El Manatí include jade axes that appear to have been deposited by
tossing individual axes into the deepest parts of the natural pool at the site (Ortiz and Rodriguez 1999: 246). All of the jade axes are highly-polished and very finely crafted, demonstrating a high-level of craftsmanship that appears to have been intended to highlight the material, form, color and surface finish of the jade from which the axes were manufactured (Ortiz and Rodriguez 2000: 87). It is interesting to note that these are hypertrophic versions of utilitarian forms, which contrasts the the adze forms found at Paso de la Amada. Especially intriguing is the location of the jade axes in the center of the pool, repeating the central placement of a jade axe in Mound 6 at Paso De La Amada around 1400 B.C. (Blake 1991: 40). It thus appears that jade was already associated with the concept of centrality at this early time, which is an association that continued until the time of the Spanish Conquest (Taube 2005). Despite these ritual associations, jade was not yet used as a symbol of status and prestige in either region.

It is during the later stages of the Early Formative period when archaeological evidence suggests some of the first uses of jade objects as markers of social distinction and prestige. During the San Jose phase (1150-850 B.C.) at Tomaltepec in the Valley of Oaxaca, jade beads and celts appear as burial goods with individuals of proposed high status (Whalen 1981: 61). No exclusive connection exists at Tomaltepec during this time between high status individuals and jade. Instead, the placement of jade beads (a number of which were placed in the mouths of the deceased) indicates that jade was ritually significant and available to most individuals regardless of status. Nevertheless, the use of jade beads in the form of necklaces and the fact that 88 % of all jade beads were found with flexed (presumed elite) burials may indicate that jade, and the ability to procure and wear large amounts of it, had become a symbol of status (Marcus and Flannery 1996: 97).
These initial steps toward the use of jade as a marker of elevated social status are also evident at San José Mogote, where a similar gradient of access to jade is apparent, and where certain forms, such as earring pendants, appear in a limited number of burials (Marcus and Flannery 1996: 104).

In the Valley of Mexico, patterns of jade usage are somewhat different, but still suggest the ritual manipulation of jade and its possible use as a marker of social status. At Coapexco, two jade bead "blanks" were reported from household excavation; no jade was reported in burials (Tolstoy 1989). At Tlatilco, on the other hand, jade was found in a number of burials, where it is restricted to graves containing 10 objects or more (Tolstoy: 109). No jade beads were placed in the mouths of deceased individuals. Instead, jade beads were apparently worn as necklaces, in combination with shell beads. Joyce (1999) argues that the evidence at Tlatilco, while falling short of demonstrating the presence of an emergent elite, demonstrates the engagement of different social groups in the competitive displays of wealth to attract followers. Interestingly, Coe and Diehl (1980) report very little jade at San Lorenzo on the Gulf Coast of Mexico, one of the largest ceremonial sites of the time period. Thus, while jade appears to have had ritual and symbolic significance, its use as a marker of differential social status was not yet established throughout Mesoamerica, even in the Olmec area where elites at sites like San Lorenzo did not use it to represent status.

During the Middle Formative period (1000 - 400 B.C.) numerous ranked societies emerged throughout Mesoamerica and it is within this sociopolitical milieu that jade’s ritual and symbolic significance was expanded and considerably elaborated upon at many sites. Iconography that had previously appeared on ceramic vessels began to appear with
increasing frequency on jade artifacts, as emerging elites sought a more restricted medium for iconographic expression (Garber et al 1993: 213; Lesure 1999: 40). For example, “babyface” figurines that were previously made from clay were replaced by jade figurines during the Middle Formative period. Nevertheless, although jade was becoming a material manipulated by elites for maintaining social distinctions, its use was not restricted to elites, and the archaeological contexts in which jade is recovered from this time period varies considerably.

Patterns of jade use at Chalcatzingo, Morelos, Mexico suggest that jade artifacts served to define multiple social identities, and were not items that were exclusive to the elite. Fragments of jade are found in every house area at the site, suggesting that all households had some access to jade artifacts (Merry de Morales 1987: 99). The distribution of jade in Chalcatzingo burials (n=116), however, suggests a differential ability by some individuals to have jade artifacts included as burial furniture. While the majority of burials (84%, n=98) do not include any jade regardless of grave type, half of the simple interments that contain jade (n=6) have only a single jade bead placed in the mouth of the deceased; single jade beads are found only in simple interments. Only two burials (2%) contain more than a single bead; both burials are slab-lined graves associated with the largest structure at the site (PC Structure 4), and have the only complete jade jewelry (necklace and belt, respectively) at Chalcatzingo, along with unbroken jade earflares. Ten burials (9%) have non-bead jade artifacts, including two graves that contained broken jadeite "awls," which may have been used as bloodletters, suggesting an attempt by Chalcatzingo elites to replicate ritually-significant items in more-restricted media. Broken jade artifacts are also reported at Cerros, Belize, during
the Late Preclassic, suggesting that the smashing of jade artifacts was a way of removing them from circulation, thus increasing their value or indicating their specificity or inalienability (Garber 1993). The evidence suggests that while jade beads were available for ritual or status purposes to most members of Chalcatzingo society, more ornate jewelry such as earspools and jade beads in large quantities were restricted to elites, and may have been personal, non-transferable possessions.

Evidence elsewhere in Mesoamerica suggests similar patterns of use, where jade artifacts began to be used to mark social distinctions beyond those of age and sex. During the Early Middle Preclassic period (1250-650 B.C.) at Cuello, Belize, jade was recovered (although rarely and in small quantities) in a diverse range of burial assemblages, with few indications of differentiation between individuals (Hammond 1999). During the subsequent Late Middle Preclassic period (650-400 B.C.), jade continues to be rare in burial assemblages, but is found only with adult males, in contexts that suggest jade beads were worn as jewelry (probably bracelets), and in combination with shell ornaments. Hammond (1999: 55) interprets the overall pattern at Late Middle Preclassic Cuello to be reflective of social differentiation that was not evident previously.

Along the Pacific coast of Guatemala, a number of centers show similar patterns of limited jade use. At La Blanca (Love 1991), 15 pieces of jade were recovered, while at La Victoria (Coe 1961) only one piece of jade was found dating to the Middle Formative; unfortunately the type of contexts in which jade was found were not reported. At El Mesak, Guatemala, two small fragments of finely polished jade adzes were found in domestic middens, suggesting that they were possibly utilitarian items used at the site (Pye and Demarest 1991: 91).
In southeastern Mesoamerica, particularly in Honduras and El Salvador, jade use was widespread during the Middle Formative. Joyce (1992: 243) reports that most "costume ornaments" in Honduran burials were manufactured from greenstone. In a Jaral phase interment in the summit of the dominant Structure 1 at Los Naranjos (Baudez and Becquelin, 1973: 49, 91-93; cited in Joyce, 1992: 246), an elite individual was buried with a double-stranded jade bead belt, a jade collar and two large jade earflares that were apparently part of an elaborate headdress. At Copan, Fash (1985; cited in Joyce, 1992: 245) reports a burial with 8 jade celts and 300 jade beads, along with other indicators of high status. At Puerto Escondido (Joyce and Henderson 2001: 13), jade appears at the same time as the construction of the first large earthen platform at the site, and refuse from jade production is found in structure fill. At Kaminaljuyu, however, no jade artifacts occurred with any mound burials (Brown 1984).

In contrast to the varied contexts in which jade artifacts are found elsewhere, the most elaborate uses of jade during the Middle Formative occur at the Olmec center of La Venta in the Gulf Coast region. Jade artifacts appear primarily in two types of contexts at La Venta: burials and caches (Garber et al. 1993: 214). Drucker, Heizer and Squier (1959) report numerous "offerings," some of which were likely burials in which the human remains have not preserved. A number of these possible burials contain elaborate combinations of personal ornaments of jade such as celts, pendants, earspools and beads. As was the case at Chalcatzingo, a number of burials included jade "awl" bloodletters. Fourteen caches were also uncovered at La Venta, along the centerline of Complex A or in association with major monuments or features (Garber et al. 1993: 215). The majority of these caches include jade and serpentine celts, ranging in quantity from two to 51 celts.
Many of these jade celts show signs of battering and use-wear (Drucker et al. 1959: 139), suggesting that they served more prosaic purposes before being interred in a ritual manner. Other forms of jade artifacts in caches include figurines, "canoes" and "spoons."

By the end of the Middle Formative period, jade had become a widely recognized medium for expressing a number of cosmological themes, continuing and expanding upon earlier symbolic uses of jade artifacts (c.f. Lesure 1999). The color of jade was associated with the color of the maize crop and fertility, a symbolic relationship that likely reflects the increasing importance of maize agriculture in early farming communities throughout Mesoamerica (Taube 2005: 23). Middle Formative caches with jade artifacts at a number of sites include jade celts and other jade artifacts oriented to the cardinal directions (Smith 1982: 245; Taube 2000: 301; Estrada-Belli et al. 2003). In some of the caches, jade celts are placed upright at the cardinal directions and laid flat at the center, suggesting that the caches served as miniature models of the four-sided world, a cosmological model of the world that continued in Mesoamerica into the Postclassic period (Taube 1998: 429-432, 2005: 23). Thus, by the end of the Middle Formative period, jade had become an instrumental component of developing iconographic systems and cosmological practices throughout Mesoamerica.

At the same time, certain forms and combinations of jade artifacts were increasingly appropriated as symbols of status and prestige in some regions of Mesoamerica, though certainly not in a uniform manner. Jade itself does not seem to have functioned as a wealth or status good. Rather, it was the forms into which jade was manufactured that were important symbols of status, although one possible exception is San Jose Mogote, where Winter (1984: 205) notes that jade ear spools are found in both
high and low status graves. During the Middle Formative the practice of transferring iconography onto jade objects began to spread in some regions, possibly as a means by which elites could further separate themselves from nonelites (Joyce 1999; Lesure 1999). Nevertheless, in Honduras, where jade was more readily available because of the proximity to the Motagua Valley sources, jade was widespread enough that elites appear not to have attempted to transfer this iconography to jade, but instead continued to inscribe iconography on ceramics (Joyce 1992: 249). Rather than there being a single trend in Middle Formative Mesoamerica toward the use of a revered and exotic material for the expression of social differences, we see a much more mosaic-like pattern, where elites in different regions attempted to signify their greater status and prestige through locally meaningful avenues of expression.

A number of scholars note that it was during the Middle Formative period that jade was first clearly symbolically associated with water and food, specifically sprouting maize (Joralemon 1971, 1988: 38; Coe 1988: 225; Fields 1989; Miller and Samaya 1998; Taube 2000, 2005; Wagner 2001). As Friedel and colleagues note: "jade and greenstone were thus anchored into the hopes and needs of farmers in ways that promoted the desirability of the material among them" (Friedel, Reese-Taylor and Mora-Martin 2002: 45). For example, these linkages can be seen in numerous Middle Formative Olmec incised jade celts that portray the Olmec maize god (Taube 2005: 24, Fig. 1a-b). Taube (2000: 303) further argues that the jade celts themselves represented celtiform ears of maize, especially when placed at the cardinal directions of caches, such as the one recovered at Cival from the Late Middle Preclassic period (ca. 500 B.C.) (Estrada-Belli et al. 2003).
By the Late Formative period (400 B.C. - A.D. 200), jade had become a widespread symbol of wealth, status and authority in Mesoamerica that was primarily associated with elites and elite ritual contexts, although jade continued to be used to a limited degree and in smaller quantities by non-elites (Krejci and Culbert 1995). In the Valley of Guatemala at Kaminaljuyu and other sites, Brown (1984: 223) notes that jade does not become an elite good until after 200 B.C., even though jade had been available to people in the valley for over 600 years and the valley is located within 100 km of the Middle Mogtagua Valley. At Cuello, jade is now found only with males buried in ceremonial/ritual contexts, and often in placements suggesting it was worn as jewelry (Robin and Hammond 1991: 221). These changes suggest that jade artifacts had become a requisite piece of elite regalia. Elites by this time appear to have effectively co-opted the symbolic meanings of jade and associated themselves with jade so as to enhance their claims to supernatural connections, attempts that are clearly visible on monumental architecture (Friedel et al., 2002).

In addition to the use of jade as an elite status marker, the use of jade in rituals, especially those associated with structure dedication and termination, became even more widespread in the Late Formative, especially in the Maya area. Hammond and colleagues (Hammond 1987; Justeson, Norman and Hammond 1988) and have noted the similarities between three elaborate Late Preclassic caches that all contain jade artifacts at the sites of Cerros, Nohmul and Ponoma, all located in Belize. All three caches contained combinations of jade artifacts, deliberately placed in central locations within ceremonial structures. This pattern of jade use in caches within structures is paralleled at Caracol, where many Late Preclassic caches have been recovered (Chase and Chase
Taube (2005: 24-25) argues that this repeated pattern is an expression of the symbolic associations of jade with centrality, directionality and the *axis mundi*, which parallels the central placement of jade during the Early Formative at Paso de la Amada noted earlier (Lesure 1999).

The use of jade in structure dedication and termination rituals at Cerros, Belize has been detailed by Garber (1983, 1989, 1993). At Cerros, jade artifacts were recovered from a variety of contexts, but never from burials. Strikingly, the majority of jade artifacts (187 of 236) recovered were broken and have been interpreted to be deposited as part of termination rituals in Late Preclassic and Early Classic structures. The remaining jade artifacts were recovered from caches (*n* = 31) and other contexts, including construction fill, humus, wall fall, and domestic middens. All jades recovered from caches were whole artifacts, while 92 % (*n* = 172) of jades from termination rituals were broken (Garber 1993: 167, Table 12.1). Intriguingly, 108 jade fragments (including fragments of beads, earflares and celts) at Cerros were recovered from a residential zone associated with a docking facility, or wharf (Garber 1993: 168). The reason for this pattern of deposition is unclear, though Cliff (1982) suggests that the fragments were part of a termination ritual in this part of the site. A similar pattern has been documented at Salitrón Viejo in central Honduras during the Late Formative/Early Classic period (Hirth 1982; Hirth and Hirth 1993). Although Salitrón Viejo is located outside of the Maya area, patterns of jadeite disposal show striking similarity to that noted by Garber, where broken jade objects were deposited in caches as part of rituals associated with the termination of structures before new construction. A similar practice of smashing jade artifacts is documented for Chichen Itza, where over 20,000 jade artifacts have been recovered, a
great many of which were intentionally smashed or otherwise damaged prior to deposition, although it is impossible to determine when these objects were deposited and thus, when the practice began (Proskouriakoff 1974).

Overall, the Late Formative period saw an expansion and elaboration of the forms of jade artifacts in the Maya area. In addition to those already mentioned (i.e. beads and celts), these new forms include elaborate pendants and earflares, spangles, inlays, mosaics, and a variety of elaborate, portable carvings. One particular form that appears during this period is the bib-style head pendant (Fig. 3.4), examples of which have been recovered from a number of Late Preclassic sites. Friedel and Schele (1988) argue that these pendants functioned as elements of a royal crown which were later incorporated into the Classic period system of iconography associated with rulership. Ahau pectorals (Fig. 3.4) also first appear during the Late Preclassic and become a common part of the regalia of Classic Period depictions of elites on stelae and painted ceramics. Recently, a jade ahau pectoral was found with the oldest known royal burial in the Maya lowlands at the site of San Bartolo (Taube 2005). Thus, by the Late Preclassic period, Maya rulers and elites increasingly transferred iconography related to their superordinate rank within society onto jade, which provided them with both a medium of low availability to express these ideas, as well as a medium with well-established symbolic and cosmological meanings for Mesoamerican peoples. At the same time, Maya elites began to use jade in ever-more elaborate ways in their personal adornment. Late Preclassic images of elites often depict them with large amounts of jade jewelry among their regalia, a pattern that can also be seen in a number of Late Preclassic burials (Schele and Miller 1986: 105-107). At Kaminaljuyu, Late Preclassic burials of royal elites, including that of the ruler buried
in the tomb on Structure E-III-3, included great number of jade objects and regalia as grave goods (Shook and Kidder 1952). Similarly extravagant elite burials have been excavated at Rio Azul (R.E.W. Adams 1992) and Copan (Fash 1991: 68-70).

During the course of the Formative period in Mesoamerica we see the development of a widespread system of ideological and ritual meaning attached to jade as a culturally meaningful raw material that comes gradually to be associated with high status and authority. To date, no jade has been found in contexts dating to prior to the Formative period, though more projects designed to uncover such deposits may yield more information on the possible origins of jade use. Nevertheless, jade began its career in the Early Formative as a material used for the manufacture of ritually important objects and as a means of personal adornment available to most members of society. By the Middle Formative, jade objects worn in large amounts, or manufactured in certain forms, appear to become means by which high status individuals could materially represent their status.

This process was no means uniform throughout Mesoamerica and certain regions seem to have been less inclined to use jade as a status symbol at this point. To some degree this may have been due to the availability of jade. In areas where it was available only intermittently, jade appears to have been utilized differently than it was in areas.
where supplies were more reliable. In areas where jade was abundant, such as Honduras, it appears that while it was still utilized as a wealth good and status symbol, local materials (including animal bone and teeth, amphibolite and reddish-brown stones) were used to replicate the artifact forms that were important to emergent elites (Joyce 1992; 1999). Nevertheless, jade was still available to individuals of varying status and had not yet become the near exclusive domain of elites yet. By the Late Formative, however, jade had clearly become one of the primary means of materially representing authority and status. Elites by this time appear to have also co-opted the symbolic meanings of jade and associated themselves with it so as to enhance their claims to supernatural connections, attempts that are clearly visible on monumental architecture and other media depicting elites with elaborate jade regalia (Friedel, Reese-Taylor and Mora-Martin 2002). By the end of the Late Formative period, the stage had been set for the explosion of jade use by elites among the ancient Maya that we see in the archaeological record represented by lavish tombs and elaborate caches and by hypertrophic displays of jade goods depicted in Classic Maya art.

3.2.2 Patterns of Classic Period Jade Use in the Maya Area

By the Classic Period (A.D. 300 – 1000), jade had become one of the primary symbols of Maya elite status and rulership (Schele and Miller 1996). Taube (2005: 23) emphasizes this point by noting that "one of the more common ways of portraying the abject and pathetic state of captive elites is to have them stripped of their jade finery."

Even a cursory examination of Classic period Maya art illustrates the range of jade artifact forms that were used as items of personal adornment, including: flares (worn both
as ear flares and attached to belts and bracelets; necklaces of spherical beads, sometimes with pectoral pendants, plaques or tubular beads; bracelets of spherical and tubular beads; belts of beads, often with suspended celts; and numerous types of headdress ornaments (Digby 1964). The most common contexts for recovery of jade artifacts from the Classic Period are tombs and dedicatory caches; jades are much less frequently recovered from mundane contexts, such as construction fill and middens. Nevertheless, jade was by no means an exclusive item of elite consumption, and is often found in small quantities in nonelite households (Zeleznik 2002).

The rarest categories of Classic period jade artifacts were those that contained certain types of iconography and were restricted to the upper echelons of Maya society, typically the royal elite. These items include larger than average large earflares (e.g. Pendergast 1998), ahau pendants (Friedel 1993; Friedel and Schele 1988; Schele and Friedel 1990), and royal diadem elements, such as the jester god ornaments (Eberl and Inomata 2001; Schele and Miller 1986), which were worn by Classic period rulers. These types of items are found almost exclusively in royal burials and were likely personal items and that were the inalienable possessions of the individuals that possessed them. As I discuss later in Chapter 7, evidence from the Maya site of Aguateca, Guatemala, demonstrates that some of these artifacts were crafted by members of the Maya elite (Inomata 2001). If this is the case, it stands to reason that many of the most iconographically complex items worn by Classic Maya rulers were crafted specifically for their personal use.

Of the many exceptional jades produced during the Classic period, the mosaic jade burial mask of the Palenque ruler K'inich Janaab' Pakal stands out as a remarkable
specimen. As Taube (2005) and Digby (1964) note, masks of this type were elaborations of the earlier practice of placing a jade bead in the mouth of the deceased upon burial. Jade was particularly associated with wind, the "carrier of rain" and the breath spirit (Taube 2005: 30). Coe (1988: 225) notes that the Classic Maya practice of placing a jade bead in the mouth of buried individuals likely had the same meaning as the sixteenth-century funerary ritual performed at the death of Pokom Maya lords. Las Casas (translation in Miles 1957: 749) notes that “[w]hen it appears [...] that some lord is dying, they had ready a precious stone which they placed at his mouth when he appeared to expire, in which they believe that they took the spirit, and on expiring, they very lightly rubbed his face with it. It takes the breath, soul or spirit." Thus, the elaborate jade masks found in royal Maya burials were hypertrophic extensions of much more ancient patterns of jade symbolism in Mesoamerica.

In addition to the increase in elaborate jade carving, some scholars note a general trend of decreasing quantity of jade recovered at Maya sites from the Early Classic to the Late Classic period, with jade becoming increasingly restricted to the elite level of Maya society (Rathje 1970; Moholy-Nagy 1994, 1997; Guderjan 2007). One possibility is that during the Late Classic period, elites were able to restrict the use of jade status goods through the enforcement of sumptuary laws or the control of production and exchange networks (Rathje 1972; Kovacevich 2006: 147). The idea that sumptuary laws may have been in place is alluded to in ethnohistoric sources in central Mexico at the time of Spanish conquest.

A major difficulty with evaluating this line of argument is the considerable lack of adequate distributional studies at Classic period sites that examine both elite and non-elite
contexts. Most studies in the Maya area have focused on the most elaborate, elite portions of ancient Maya sites, often neglecting the great majority of non-elite households that lie at the peripheries of these sites. As a result, our understanding of regional patterns of distribution of jade artifacts in both elite and nonelite contexts is limited. This bias has only recently begun to be addressed by research projects at Maya centers intent on systematically recovering a representative sample of both elite and nonelite contexts, especially the excavation of nonelite households (see Webster and Gonlin 1988; Robin 2003; Lohse and Valdez 2004). Nevertheless, taken together, we can sketch a general picture of Classic period jade distribution at a number of Maya sites where this type of research has been conducted, supplementing them with more anecdotal evidence from elite centers.

Evidence at a number of Maya sites suggests that jade was valuable both as a raw material and as finished artifacts. Some scholars (Digby 1964; Chenault 1986) note that jade was so highly valued that many times no piece ofdebitage was wasted, and were instead shaped in small objects. The value of jade artifacts is also attested to by the special contexts in which they were deposited, especially in caches and burials. Jade is rarely encountered in household refuse at many Classic period Maya sites. When it is recovered from such contexts, it is often deposited as part of termination rituals, like those noted earlier for Cerros (Garber 1983, 1993; see also Pendergast 1976; Potter 1980, 1982; Hammond 1982, 1986). Raw or partially-worked pieces are also rarely encountered at Classic Maya sites; when they are, they are cached in structures or under monuments (Willey 1978; Moholy-Nagy 1997). Sites containing jade in domestic contexts (not deposited as part of termination rituals) include Ceren, El Salvador (Sheets
Copan (Widmer 2009), Cancuen (Kovacevich 2003, 2006, 2007; Kovacevich, Neff and Bishop 2005) and the sites in the Middle Motagua Valley jade source region (Smith and Kidder 1943; Walters 1980, 1982; Rochette 2007, 2009; Rochette and Pellecer 2006, 2008; Pellecer and Rochette 2006). All of these are extraordinary in certain respects. At the Middle Motagua Valley sites (the focus of this dissertation), Copan and Cancuen, jade was recovered from domestic contexts in production areas (the production data from Copan and Cancuen are detailed in Chapter 7). At Ceren, extraordinary preservation of the site as a result of the eruption of the Loma Caldera volcano in A.D. 595 preserved the in situ locations of jade artifacts in nonelite households, each of which had at least one jade axe (Sheets 2000: 221).

Jade use at the site of Piedras Negras, Guatemala reveal some interesting patterns of access to the material and the use and deposition of finished artifacts. Overall, Piedras Negras contains relatively low amounts of jade, even in the most elite contexts (Kovacevich and Hruby 2005). Three proposed elite burials at the site contain only five to ten small jade beads each. Even the tombs of Rulers 3 and 4 contain low amounts of jade for Classic period royal burials, the majority of which were small jade beads. Interestingly, both tombs contained many clay beads that were painted blue in order to imitate the color of jade beads and function as substitutes (Kovacevich 2006: 149). Similarly, another Early Classic elite tomb at the site contains 24 blue quartz beads in the same necklace as a number of jade beads, although the quartz beads were by far the largest in the necklace. Kovacevich and Hruby (2005) argue that the paucity of jade at Piedras Negras was the result of the site's being "cut out" of the jade trade because of the high levels of warfare in the region. Regardless of the cause, the paucity of jade at
Piedras Negras, as well as the use of alternate materials meant to imitate jade demonstrates both the symbolic and economic value of the material.

For the site of Tikal, Guatemala, Moholy-Nagy (1994, 1997) has documented the wide variety of depositional contexts of jade artifacts, further demonstrating jade's value. In all, she describes 13,343 pieces of jade, including 7,611 finished artifacts (more than 2,500 were beads) and 5,723 pieces ofdebitage. Unfortunately, neither the original notes from which Moholy-Nagy worked, nor her descriptions provide a clear definition of what types of material were deemed to be jade debitage. The depositional contexts of jade at Tikal parallel those already mentioned: monument caches, structure caches, burial (both chamber tombs and others types), as well as "problematic deposits," which were defined as contexts where "significant amounts of domestic refuse were included in what otherwise would have been classified as a burial or cache" (Moholy-Nagy 1997: 299). The value of jade at the site is attested to by the fact that most of the material was not recovered in domestic contexts, but was instead deposited, along with other domestic refuse at times, in special caches or in burials. Nevertheless, some jade debitage was recovered from general excavations (the exact type and locations are not specified), and sometimes in nonelite contexts (n=21). Moholy-Nagy (1997: 308) interprets this material as evidence of the possible production of jade artifacts at Tikal. Unfortunately, the location of this production is not known, because the great majority of the material was encountered in secondary depositional contexts. Moholy-Nagy (1994:89) also notes that the many jade artifacts are nearly exclusively restricted to elite chamber burials in the Late Classic, following the expectations of an increasing restriction of jade use during that time period.
This pattern of increasing restriction of jade to elite members of society through the Classic period is supported by recent excavations at the site of Blue Creek, Belize, where 1,350 jade artifacts have been recovered (Guderjan 2007). The majority (n = 1,253) of these artifacts are from Late Preclassic and Early Classic contexts, recovered in association with public architecture in ten caches and burials. In contrast to many other Classic Maya sites, 148 pieces of jade were recovered from nonelite contexts, about one-third of which were from burials and caches. The remaining jade artifacts were recovered from general excavations, with 48 pieces found as part of a "ceramic concentration" of unknown function (Guderjan 2007: 143). In line with the cases already mentioned, in the Late Classic period jade use at Blue Creek is nearly absent (3 small fragments and one celt). Guderjan (2007) suggests that this is a result of a consolidation of power at larger Maya sites that may have controlled access to jade in the region.

The site of Copan in Honduras is one of the most thoroughly excavated Classic period Maya sites, with excavations at all levels of the site hierarchy (Webster, Freter and Gonlin 2000; Fash 1991). In a study of Late Classic artifact distribution in the Copan Valley, Zeleznik (2002) concluded that although jadeite was found more frequently and with greater artistic and stylistic elaboration in elite contexts, it was still present at all levels of the social hierarchy. The majority of jade recovered at Copan came from mortuary contexts, where it was remarkably common, while jade was rarely encountered in domestic contexts. The close proximity of Copan to the Middle Motagua Valley (ca. 60 km) may explain the abundance of jade at the site during the Late Classic period. Nevertheless, Palka (1997) has also recovered jade at all levels of the settlement hierarchy at the site of Dos Pilas, Guatemala.
It is clear that during the Classic period jade and jade artifacts had become a primary means of marking elite status, both because of the intrinsic rarity of jade at most lowland Maya sites, but also because of the cosmological and ritual meanings that had already been attached to jade. Nevertheless, although jade is certainly found primarily in elite contexts, its use was not restricted to elites. Jade continued to function in many of the same ways that it had previously: as a means of performing small-scale ritual and defining social relationships. It is likely that as the current trend of studying and excavating nonelite contexts proceeds, we will begin to get a more complete picture of jade use by ancient Maya commoners.

By the Postclassic period (A.D. 1000-1521), jade use in the Maya area had declined greatly and is nearly absent at many Maya sites (Garber et al. 1993: 229). The most notable exception is the many jades deposited in the Cenote of Sacrifice at Chichen Itza, although many of these were carved in the "Toltec" style, while some were heirloom objects from much earlier (Proskouriakoff 1974: 15-17). Proskouriakoff (1974: 16) notes that after the fall of Chichen Itza, jade working declined rapidly throughout the Maya area. At Mayapan, one of the most powerful lowland Postclassic Maya sites, few pieces of jade have been recovered (Masson and Lopez 2007). At Nebaj, in the Guatemalan highlands, Postclassic jades are rare (Smith 1951; Becquelin 1969). Friedel (1993; Friedel et al, 2002) argues that items such as shell and jadeite beads were fungible currencies that could be used in quotidian market transactions. The evidence (see Tozzer 1941: 96) to support this claim, however, is equivocal. Furthermore, evidence of markets in ancient Maya society before the Postclassic is conspicuously absent or ambiguous. Regardless of
the particular uses to which it was put during the Postclassic period, it is clear that jade had become much less significant in the ritual and economic lives of most Maya.

3.3 Discussion

Jade and jade artifacts were ritually, cosmologically and economically significant for all prehispanic Mesoamerican cultures, especially the ancient Maya. The significance of jade in Mesoamerica dates to the time of the earliest village life, when jade artifacts served as markers of social distinction that were meaningful in marking individual social identity and in small-scale ritual behavior (Lesure 1999). Through time, jade and its attendant symbolism and meaning were co-opted by elites attempting to associate themselves with a cosmologically significant material as a means of legitimating their elevated social status and demonstrating their differential ability to communicate with and control the spiritual realm on which all depended (c.f. Helms 1993). Despite the differential access to jade that eventually characterized ancient Maya society, it was still used by members of all levels of ancient Maya society until the time of the Spanish Conquest.

This contextual diversity has implications for our understanding of how elites might have sought to control both raw jadeite and its production into finished artifacts. Characterizing the production of status goods as full/part-time or attached/independent specialization does little to advance our understanding of how production was organized. Furthermore, this over-simplification prevents us from fully recognizing how different types of status and utilitarian goods were exchanged or transferred both amongst and between elites and commoners. Put simply, if jadeite
consumption varied widely, then it cannot be assumed that control over the raw material, its production and exchange mechanisms did not similarly vary. In Chapter 7, I discuss how this more nuanced understanding of jade use in the Maya area may contribute to more complete interpretations of systems of status goods production, such as the one present in the Classic period for jade artifacts in the Middle Motagua Valley. In Chapters 4 through 6, I present evidence from this dissertation research of the non-elite, domestic production of jadeite artifacts in the Middle Motagua Valley.
CHAPTER 4

THE MIDDLE MOTAGUA VALLEY: PREVIOUS RESEARCH, RESEARCH DESIGN AND SURVEY RESULTS

As I discussed in the previous chapter, archaeologists have long recognized the ritual, social, political and economic significance of jade and jade artifacts in all prehispanic Mesoamerican civilizations, including that of the ancient Maya. Despite this recognition, we know very little about how people in prehispanic Mesoamerica obtained jade artifacts, especially how their production was organized (see Chapter 2). This situation is partially attributable to the very characteristics from which wealth goods derive their value: their scarcity and the often exotic raw materials from which they are manufactured. Therefore, archaeologists in the Maya area have had few opportunities to study the organization and contexts of wealth goods production. In this regard, the Middle Motagua Valley is a unique setting in which to examine ancient Maya wealth goods production because of the ample evidence of such production known for the area (Kidder 1935; Smith and Kidder 1943; Foshag 1957; Feldman et al 1975; Hammond et al 1977; Walters 1980a. 1980b, 1982, 1989).

In this and the following chapter, I summarize prior research in the Middle Motagua Valley and the goals, methods and summary results of this dissertation research. In this chapter, I provide background on the prehispanic cultural geography of the southeastern Maya periphery and the archaeological surface survey and surface collections completed as part of this dissertation field research. I begin this chapter with a discussion of the geological and natural environment of the Middle Motagua region. Then I discuss the history of archaeological survey and research in the Middle Motagua
Valley and surrounding regions, to provide context for understanding the current research. Next I summarize the survey methods employed in this dissertation field research. Finally, I present the results of the archaeological surface survey completed as part of this dissertation research.

4.1 The Middle Motagua Valley: Geological and Natural Environment

The Middle Motagua Valley (Fig. 4.1) is located in east-central Guatemala and includes the Motagua River Valley between the modern communities of Paloamontonado on the west and Rio Hondo on the east (Smith and Kidder 1943). The valley is bounded to the north by the Sierra de las Minas range, 15-30 km wide from north to south, whose highest peak is Cerro Raxón, at 3,015 m above sea level. The Sierra de las Minas are composed of rugged, metamorphic formations that were created by tectonic activity from the Motagua Fault, a strike-slip fault that runs generally parallel to the Motagua River. The highest elevations of the Sierra de las Minas support dense, lush vegetation, including cloud forest environments in places; an area of 2363 km² is currently designated as the Sierra de las Minas Biosphere Reserve. The Sierra are important sources of marble and timber for modern industry, in addition to being part of the only positively identified source region for jadeite exploited in prehispanic Mesoamerica (see Chapter 2). To the south, the valley is bounded by rugged terrain that forms the foothills of two mountain ranges: the Sierra del Espíritu Santo to the east and the Sierra the Chuacús to the west. Higher elevations in these ranges support alpine forests. Although not mentioned often in discussions of the source region, jadeite sources have been documented south of the Motagua River, including a large outcrop of "Olmec" blue and
blue-green translucent jadeite in the Upper Rio El Tambor region (Taube, Hruby and Romero 2005).

Figure 4.1 - Map of Maya area with major archaeological sites. Middle Motagua Valley is indicated by box surrounding Guaytan.
The Middle Motagua Valley lies entirely in the *tierra caliente* altitudinal zone, with an altitude on the valley floor of 275 m at the west to 160 m above sea level to the east (Smith and Kidder 1943:109). The environment on the valley floor has been described as arid and semi-desert, with annual rainfall in the valley averaging about 500 mm, which occurs almost exclusively during the rainy season between May and October (Simmons, Tarano and Pinto 1959: 83). Vegetation on the valley floor consists mainly of low, thorny scrub brush and other xerophytic vegetation, as well as various species of cactus. Lush tropical vegetation does occur in limited areas of the valley bottoms however, where high water tables exist. Most rainfall is lost in the form of runoff because it typically falls in short, hard showers and the local soils and steep slopes effectively prevent water retention. The lack of sufficient vegetation and high temperatures (32° C average annual temperature) result in the loss of about 10% of annual rainfall to evaporation, the highest rate in all of Guatemala, making it a marginal, high-risk area for rainfall agriculture (Walters 1982: 17).

Today, agriculture without the use of modern techniques and industrial equipment is only practical on the floodplains of the Motagua River and a few of its tributaries. Elsewhere, rainfall agriculture of maize and other subsistence crops is practiced with varying success (Simmons, Tarano and Pinto 1959: 83). Bedrock in the area consists primarily of serpentine and schists, and the soils that they generate are “shallow, infertile, highly susceptible to erosion, and poor for agriculture” (Simmons, Tarano and Pinto 1959: 83). The exceptions to this pattern include the wide alluvial plain of very fertile soils along the banks of the Rio Motagua between El Jicaro and El Rancho (Fig. 4.2). This amounts to about 5,000 ha of land. The other exception is the about 600 ha of “shallow,
heavy textured soil formed over semiconsolidated deposits of volcanic ash near the southern side of the alluvial plain” which is intermediate in fertility between the typical valley soils and the alluvial deposits (Simmons, Tarano and Pinto 1959: 83).

4.2 Prehispanic Cultural Geography of the Southeastern Maya Periphery

The Middle Motagua Valley (MMV) is generally considered to be part of the southeastern zone of the Maya area (Leventhal 1981; Smith and Gifford 1965), and is often referenced in archaeological discussions of the Southeastern Maya Periphery (Fig. 4.3), which includes central and western Honduras, eastern Guatemala, and all of El Salvador (Boone and Willey 1988; Urban and Schortman 1986). I used the term "periphery" to encompass both Maya and non-Maya populations and sites in the region. Despite over 100 years of research, outside of the sites of Copan (Baudez 1983; Fash 1983, 1991; Webster 1999; Webster et al 2000); and Quirigua (Schortman 1993; Sharer 1978a, 1990), the area today remains less well-known than the Lowland Maya regions to the north and the Guatemalan Highlands to the west. Nevertheless, research in the area over the last three decades has begun to clarify the nature and extent of prehispanic settlement in the area (Ashmore 2007; Boone and Willey 1988; Douglass 2002; Robinson 1987; Schortman and Nakamura 1991; Schortman and Urban 1986a; Sharer and Sedat 1987).

4.2.1 Previous Archaeological Research in the Southeastern Maya Periphery

Archaeological, ethnohistoric and linguistic evidence demonstrate that the Southeastern Maya Periphery was an area of intense interaction between various ethnic
Figure 4.2 - Extent of the Middle Motagua Valley. Box indicates extent of map in Figure 4.6.
Figure 4.3 - Map of the Southeastern Maya Periphery.
groups which shared cultural traits with both Maya groups and with non-Maya groups south of Mesoamerica (Brinton 1887; Fash 1983; Feldman 1998; Joyce 1986, 1991; Lange and Stone 1984; Lothrop 1939; Miles 1957; Schortman 1986; Schortman and Nakamura 1991; Urban and Schortman 1986; Wisdom 1940). Although scholars have long-debated the exact location of the southeastern boundary between "Maya" and "non-Maya" populations, recent archaeological research in the area suggests that no clear boundary existed (Joyce 1986; Schortman 1986; Schortman and Nakamura 1991; Sheets 2000; Urban and Schortman 1986). Instead, prehispanic peoples in the area cycled between different ethnic and cultural affiliations through time, especially at the level of elite culture (Brown 1984; Schortman and Nakamura 1991; Sheets 2000). Much of this interaction was structured by the web of trade networks that developed throughout the area beginning in the Early Preclassic period, which spurred the development of many regional traditions (see Sharer 2000 for an overview).

Prehispanic occupation in the southeastern Maya periphery dates back to at least the Early Preclassic (ca. 2000-1000 B.C.) and continued through to the time of Spanish conquest in the 16th century (Willey 1988). Although evidence from the oldest portion of the Early Preclassic has rarely been recovered, the archaeological record from the later portions of this period mark the appearance of early agricultural villages by as early as 1400 B.C. in the Copan Valley (Webster et al. 2000: 22), and 1200 B.C. at Chalchuapa in western El Salvador (Sharer 1978b) and in the Valley of Guatemala (Popenoe de Hatch 2002: 279; Shook and Popenoe de Hatch 1999: 291). Ceramics at Chalchuapa from this period are similar to those found in the Maya area along the Pacific coast of Guatemala (Coe and Flannery 1967).
The Middle Preclassic period (ca. 1000 - 400 B.C.) marks some of the earliest population expansions and sociopolitical developments in the southeastern periphery. Middle Preclassic deposits contain evidence of the earliest occupation in the Naco Valley (Schortman and Urban 1996), Alta Verapaz (Arnauld 1986), the Valley of Guatemala (Michels 1979), and La Entrada region (Inomata and Aoyama 1996). By the end of this period, the Copan Valley had thriving village populations with some evidence of social ranking (Fash 1991: 67-71). Further south, Chalchuapa developed into a regional chiefdom, with monumental architecture and evidence of contact with the Gulf Coast Olmec (Sharer 1978b). Some of the most precocious developments of sociopolitical complexity in Honduras during this period are seen at Los Naranjos (Baudez and Becquelin 1973) and Playa de los Muertos (Kennedy 1981), where chiefdom-level societies seem to have developed by around 600 B.C. In eastern and southern Guatemala, there is evidence of the possible development of regional chiefdoms centered on Los Mangales and El Porton in the Salama Valley (Sharer and Sedat 1987) and centered on Kaminaljuyú in the Valley of Guatemala (Michels 1979: 135; Popenoe de Hatch 2002: 279-280). Interestingly, no evidence of Middle Preclassic occupation has been recovered from the Middle Motagua Valley itself (Rochette 2009; Walters 1982). Based on the presence of "unfinished jade ornaments [and] workshop debris" in Middle Preclassic deposits, Sharer and Sedat (1987: 90) argue that El Porton was the primary production and distribution node for Middle Motagua jade at the time.

Trends of increasing sociopolitical complexity and population expansion continued during the Late Preclassic period (ca. 400 B.C. - A.D. 100) throughout the southeastern Maya periphery. By this time a number of large centers had developed,
marked by the construction of complexes of monumental architecture for public gatherings and rituals, elaborate elite residences and burials, and nonportable carved monuments. Kaminaljuyú emerged as arguably the largest and most powerful site in the southern Maya area at this time (Sharer 2000: 465). During this period, the population of the Valley of Guatemala doubled, and a number of smaller sites arose in the valley, most of which appear to have been satellites of Kaminaljuyú at one time or another (Brown 1984). Kaminaljuyú's prominence has been partially attributed to its location on the divide between the Pacific and Caribbean watersheds, which allowed it to benefit from the flow of highland goods like jadeite and obsidian that moved along a number of trade routes in the region (Brown 1984; Michels 1979; Popenoe de Hatch 2002; Shook and Kidder 1952). The Salama Valley, which shows steady increases in sociopolitical complexity throughout the Late Preclassic, seems to have suffered a major population decline or reorganization towards the end of this period, possibly as a result of dominance by Kaminaljuyu (Sharer and Sedat 1987: 434).

Although available data from Late Preclassic period sites indicate regional variation in cultural development, similarities in elite burial practices and architecture at many site centers suggest political or economic ties between independent polities in the southeastern Maya periphery. A particularly visible expression of this regional unity at the elite level is seen in the widespread appearance of Usulutan ware ceramics. The distinctively decorated ware, with cream colored swirling "resist" lines set against an orange background, is found at sites throughout the southeastern Maya periphery and has been recovered as far away as the northern Maya lowlands at El Mirador and Tikal and at Chiapa de Corzo in Chiapas (Goralski 2008; Sharer 2000: 469). Although rare, Usulutan
ceramics are among some of the earliest sherds recovered in the Middle Motagua Valley (Rochette 2009; also see Appendix D).

The transition from the Late Preclassic to the Early Classic periods (ca. A.D. 100-600) marks a shift in occupation and organization at many sites throughout the southeastern Maya periphery. In general, the Late Preclassic-Early Classic transition is characterized by dramatic changes in the regional sociopolitical geography, as centers that had been prominent give way to new powers that appear in the Classic period. These changes are particularly dramatic in western El Salvador and along the southeastern portion of the Pacific coast of Guatemala. Excavations at Chalchuapa and Ceren suggest that much of the area was devastated by the eruption of the Ilopango volcano sometime around A.D. 200, which made agriculture impossible in the affected region for many generations (Sheets 2000: 422; 2002). At Kaminaljuyú, construction activity and the erection of monuments had ceased by the end of the Santa Clara phase (ca. A.D. 100-200), and much of the valley was abandoned, possibly as a response to intrusion and encroachment by foreign groups from the northwest (Popenoe de Hatch 2002: 288-290). In the Salama Valley, the population declines that began during the end of the Late Preclassic continued, with many sites being completely abandoned and sparse settlement concentrated in the southern portion of the Valley (Sharer and Sedat 1987: 434-436).

The Early Classic marks the establishment of royal dynasties at Copan and Quirigua, which would eventually become the two most prominent and perhaps powerful centers in the southeastern Maya periphery during the Late Classic period. Notably, both royal dynasties were established in A.D. 426 (Looper 2003: 36; Schele and Matthews 1998: 134). Although the evidence is limited, the establishment of the royal dynasties
seems to be connected, and they appear to have been linked to influence from foreign
groups or powers, possibly Tikal (Fash 2001: 75-76; Looper 2003 36-38). Furthermore,
these events transpire along with the relatively sudden appearance of many of the
material trappings of elite identity associated with Lowland Maya centers to the north,
which were notably different from local and regional styles and traditions (Webster et al.

As is the case elsewhere in the Maya area, the Late Classic period (ca. A.D. 600-900) in the southeastern Maya periphery is characterized by explosive population growth
and expansion, the elaboration of elite architecture and associated material culture, and
vigorous interregional interaction (Schortman and Urban 1994; Willey and Boone 1988).
Copan provides some of the most visible examples of these trends, and appears to have
been the most prominent center at the outset of the Late Classic period, with its royal
elites completing a series of monumental constructions in the Main Group (Fash 2001;
Webster et al 2000). Quirigua shows similar manifestations of Late Classic elite Maya
culture, with the erection of numerous elaborately carved stelae in its site center as well
(Looper 2003; Ashmore 2007). Although not as elaborate, similar increases in
population and monumental elite construction are seen at a number of sites throughout
the southeastern Maya periphery (Baudez and Becquelin 1973; Henderson 1992;
Henderson et al. 1979; Inomata and Aoyama 1996; Schortman 1986; Schortman and

Sociopolitical relations between polities during the Late Classic period are seem
most readily at site centers and among the elite level of society. As noted earlier, Copan
and Quirigua seem to have had a particularly close relationship, with Copan as appearing
to be dominant over Quirigua (Fash 2001; Looper 2003). This situation changed, at least temporarily, after A.D. 738, when hieroglyphic texts at both Copan and Quirigua record the capture and killing of the Copan ruler 18 Rabbit by the Quirigua ruler Cauac Sky (Jones and Sharer 1986). Some scholars have argued that Copan was interested in dominating Quirigua in order to control the important trade networks for jade and obsidian along the Motagua River from which Quirigua was strategically located to benefit (Fash 1988: 160; Hammond 1972; Sharer 1990: 101-102, 106-107).

Some scholars have argued that the influence of Copan, and by extension, lowland Maya material culture, on local elites during the Late Classic period can be seen at a number of other sites in the southeastern Maya periphery. Schortman and Urban (1987) note this pattern in the Naco Valley, Honduras at the primary center of Gualjoquito, located approximately 100 km northeast of Copan. Local non-Maya elites at Gualjoquito, which was strategically located along major trade and communication routes, emulated the symbols of status and wealth used at Copan, possibly as a reflection of their participation in regional elite-interaction networks (Schortman and Urban 1987: 22). Outside of Gualjoquito however, hinterland populations continued to adhere to local traditions throughout the Late Classic. The variable reach of lowland Maya symbolic expression is highlighted by the absence of carved stelae and their secluded locations at site (rather than placement in open plaza areas) and the absence of elite wealth items (such as jade, carved shell or flint and obsidian eccentrics) at all site centers in Lower Motagua Valley other than Quirigua (Schortman 1986, 1993). Site centers in the La Entrada region, however, show such close ties to lowland Maya patterns that they are discussed as "Maya" centers (Inomata and Aoyama 1996; Schortman and Nakamura
1991; Schortman and Urban 1994). Despite this vigorous interaction and the influence of Copan and lowland Maya elite material culture seen at many sites southeastern periphery sites, there is little evidence to suggest that Copan, or any other site for that matter, controlled interregional trade networks in any meaningful sense (Webster et al, 2000: 192).

The effects and severity of the lowland Maya collapse that marks the beginning of the Postclassic period (ca. A.D. 900-1500) were variably felt in the southeastern Maya periphery. Both Copan and Quirigua suffered the collapse of their dynastic lines by A.D. 900 (Fash et al. 2004; Looper 1999; Martin and Grube 2000: 225), while their hinterlands were largely depopulated by the beginning of the early Postclassic (Ashmore 2007; Fash et al. 2004; Webster et al. 2004). Neither area appears to have recovered demographically from this collapse until well into the Colonial period. Sharer (1978) postulates that the collapse of trade networks along the Motagua River at the end of the Late Classic precipitated Quirigua's collapse, though this is purely speculation. Regardless of the cause, much of the Motagua River Valley appears to have abandoned during the Postclassic period, with only small pockets of population remaining (Ashmore 2007; Feldman 1998; Miles 1957; Walters 1982).

Most regions in the southeastern Maya periphery are characterized by a number of new cultural developments, including the emergence of a number of groups that seem to have been recent migrants from outside of the Maya area. The most pronounced of these cultural changes occurred after A.D. 1000 in the Guatemalan highlands to the west of the southeastern Maya periphery proper, although these developments may have had significant impacts on cultural patterns within the region. At the time of Spanish contact,
the Guatemalan highlands were a patchwork of ethnolinguistically-related Maya groups engaged in "an incessant, Machiavellian web of negotiations, alliance, betrayal, and war" (Hill 1991: 15). The Cakchiquel and Quiché were the two most politically and territorially dominant ethnolinguistic groups in the highlands (Brown 1985; Fowler 1989; Fox 1987; Hill 1991; Hill and Monaghan 1987; Kelly 1988). Indigenous histories claim that the elite lineages in Quiché-Cakchiquel society were dominated by foreign groups that had migrated to the area in the last few centuries before contact and subjugated the indigenous population (Carmack 1981: 43-44; but see Brown 1985 for an alternative interpretation of Quiché-Cakchiquel origin myths). The available ethnohistoric and archaeological evidence suggests that individual polities were geographically small units. Although the areas they dominated likely extended into the Upper Motagua Valley, their domination does not seem to have included the Middle Motagua Valley (Carmack 1981; Fox 1987). The appearance of central Mexican characteristics early in the Postclassic period is seen in central and western El Salvador at Chalchuapa (Sharer 1978b) and Cihuatan (Kelly 1988).

Although populations in some regions of the southeastern Maya periphery seem to have rebounded demographically by the later part of the Postclassic period (ca. A.D. 1200-1500), there is no evidence of major centers on par with those of the Late Classic period (Henderson 1992: 168; Sheets 2000: 437). Nevertheless, Naco, in northwest Honduras, thrived during this time as trading community, linked to the circum-Yucatan trading network that extended into central Mexico (Wonderly 1986: 321). The ethnolinguistic affiliation of peoples at Naco is debated, with Henderson (1977) proposing Chontal Maya occupation. In contrast, Healy (1984) argues for a Nahua-
speaking Pipil population at the site, though the two proposals need not be mutually exclusive, as multiple ethnic groups could have occupied the important "international" trading center simultaneously.

On the eve of the Spanish Conquest (ca. A.D. 1524), the southeastern Maya periphery was inhabited by a variety of ethnolinguistic groups, many of whom were linked together by economic and political ties (Feldman 1971). Evidence of the ethnic character of the inhabitants of the Middle Motagua Valley at this time is extremely fragmentary and difficult to assess. Late Postclassic archaeological remains from the Middle Motagua Valley are virtually non-existent (Smith and Kidder 1943; Rochette 2008; Walters 1982). In addition, there are exceedingly few direct references to towns in the Middle Motagua Valley in the early ethnohistoric literature (Walters et al 1982: 595). While some scholars (Brinton 1887) have argued for the presence of Nahua-speaking Pipil Maya at San Cristobal Acasaguastlan and San Agustin Acasaguastlan, others (Miles 1957) have countered that the presence of Nahua-speakers was a result of post-Conquest resettlement. Still other sources suggest that Middle Motagua Valley inhabitant were Chorti Maya speakers (Feldman 1998: 33-34). Regardless of its specific ethnic affiliations, the Middle Motagua Valley was sparsely inhabited, with only a few hundred tributaries listed for the area in early Colonial documents (Alvarado 1526; Cerrato et al. 1549; both cited in Walters et al 1982: 595).

4.2.2 Previous Archaeological Research in the Middle Motagua Valley

The first description of archaeological remains in the Middle Motagua Valley was made in 1878 by the parish priest of San Cristobal Acasaguastlan, Don Jose Inocente
Cordon (quoted in Brinton 1887). The report focuses primarily on descriptions of a large archaeological site at the confluence of the Motagua and Teculutan Rivers, which is today known as Vega Del Cobán. Importantly, Cordon also noted the presence of continuous mound groups on both sides of the Motagua River between Teculutan and San Cristobal Acasaguastlan. Later, Sapper (1895, cited in Walters 1982) and Seler-Sachs (1900, cited in Walters 1982) briefly reported the presence of archaeological remains near San Agustin Acasaguastlan.

The first archaeological research in the Middle Motagua Valley was carried out by Kidder and colleagues (Kidder 1935; Smith and Kidder 1943) at the request of Dr. Gustavo Espinoza, director of the Instituto De Antropologia e Historia. Data from these initial explorations led Kidder to conclude that the architecture at sites in the valley was unlike any previously reported for the Maya area. The data from the ceramic collections indicated a long period of occupation and included ceramics associated with neighboring regions in Guatemala and Honduras. These two observations led Smith and Kidder (1943: 109) to undertake further "exploration and excavation" in the area "to define the local culture and establish its geographical limits [and] provide chronological linkages between it and other Maya cultures." This field research took place in 1940 and consisted of two months of excavation at Guaytan and ten days devoted to a hasty survey of the valley in search of archaeological sites. The results of the survey are described here; descriptions of the excavations are provided in Chapter 5.

Survey of the valley indicated that the greatest concentration of archaeological sites was in the lower Lato River Valley; archaeological remains became "smaller and more scattered" away from this core zone (Smith and Kidder 1943: 112). Observations
of the architectural features at Guaytan and the results of their survey led Smith and Kidder (1943: 116) to label the archaeological remains between the towns of Paloamontonado and Rio Hondo as the Middle Motagua Culture (Fig. 4.2), based on the observation that settlement was almost absent beyond these points. In all, Smith and Kidder (1943: 112) noted 1,600 mounds between the Rio Morazan on the west and the Rio Sunsapote (now known as the Rio Pasabien) on the east. The majority (over 1,000) of mounds were located on the northern bank of the Motagua River between the modern settlements of San Gertrudis and Los Chaguites, with 142 mounds reported for the site of Guaytan itself. In addition to sites in the valley itself, Smith and Kidder (1943: 112-133) briefly visited two sites in the Sierra de las Minas to the north of the Motagua River: Los Cimientos and San Jose Apantes. Architecture and structure arrangements at both sites was different from that found in the valley sites, leading Smith and Kidder (1943: 133) to argue that they were not part of the “Middle Motagua Culture,” but were similar to architecture at the site of Rabinal in the Baja Verapaz.

Particularly striking was the lack of carved stelae at any sites in the Middle Motagua Valley, a characteristic that set the area apart from then-known Maya sites. Smith and Kidder also identified a unique tomb style not found elsewhere in the Maya lowlands that consisted of subsurface chambers centered below mounds, with walls of schist or waterworn stones that were capped with long slabs that spanned the chamber walls, or with a rough corbeled arch formed by two or three rows of large stone slabs (Smith and Kidder 1943: 129-130). Each tomb had a narrow entrance that permitted its continued use after interment of the buried individual, and many of the tombs show
evidence of having been used continuously for successive interments (see discussion in Chapter 5).

Despite the unique tomb style and the lack of carved stelae, many other architectural features typically found elsewhere in the Maya area are present in the Middle Motagua Valley. Smith and Kidder (1943: 118-119) recorded twelve ballcourts during their explorations, two of which were at Guaytan; the specific locations of ten of these ballcourts were not provided in the report. The ballcourts resemble those found in the Guatemalan highlands, northwestern El Salvador and western Honduras (Smith and Kidder 1943: 178-179), with long, narrow playing alleys, wide sloping benches and tenoned stone heads above the playing alley. Other architecture and structure arrangements were noted as typical of the Maya area, including low platforms supporting thin-walled superstructures, multichambered buildings containing multiple rooms separated by low walls, and small, multi-structure plaza groups. Orientation of individual structures and structures groups varied considerably, with little evidence of consistent formalized patterns of site planning (Smith and Kidder 1943: 113).

Ceramic analysis indicated three periods of occupation in the valley between 400 B.C and A.D. 1000 (Smith and Kidder 1943: 174). Although subsequent reanalysis of the ceramics led Smith and Gifford (1965) to identify six periods of occupation spanning from 1000 B.C. to A.D. 1250, later work by Walters (1982) confirmed the initial ceramic chronology developed by Smith and Kidder. Some of the earliest material included ceramics similar to Miraflores (400 B.C. - A.D. 250) phase materials from Kaminaljuyu, as well as possible Usulutan ceramics from Honduras (Smith and Kidder 1943: 174-175). Following this period, Smith and Kidder proposed two subsequent occupation phases,
Lato and Magdalena, although specific chronological time periods were not assigned to these sequential phases. Generally, the Lato and Magdalena phases appeared to correspond, respectively, with the Early and Late Classic periods.

During their survey, Smith and Kidder did not mention the presence of any surface appearance of jade production debris from sites in the Middle Motagua Valley (see Chapter 5 for description of jade recovered from their excavations). During salvage operations at the site of Puente Hato in 1952, Espinoza recovered a jade bead core produced by a hollow drill, two unpolished and unperforated spherical beads, and an unworked fragment of jade (Espinoza 1952, cited in Walters 1982: 37). Following these initial reports, evidence of jade artifact production was reported from the Manzanal jade source (Foshag and Leslie 1955; Bequelin and Bosc 1973). Feldman and colleagues (1975) reported extensive evidence of jade working at the "Terzuola" site, where over twenty pounds of jadedebitage were collected, including two drill cores and a ground fragment with a cut groove on one face. Eight small, residential mounds were reported for the site.

The most extensive archaeological project undertaken in the Middle Motagua Valley began in the late 1970s when Walters (1982) conducted a surface survey of the San Agustin Acasaguastlan Archaeological Zone (SAAAZ), located in the lower Lato Valley, as part of his dissertation research (Fig. 4.4). His research yielded a number of important insights about the chronology, settlement patterns and the jadeite-processing industry in the region. A total of 32 sites were recorded during his survey; an additional nine sites described by Guatemalan archaeologists and local informants are included in his dissertation, but were not examined directly (Fig. 4.5). Ceramic comparisons
indicated that the Middle Motagua Valley was occupied during the Late Preclassic, Middle Classic, Late Classic and Late Postclassic periods. It was unclear from his research whether sites in the valley were abandoned in the intervening periods or if the ceramic chronology was insufficient to identify these time periods (Walters 1982: 129).

Based on the results of the surface survey, Walters created a four-level site hierarchy for classifying sites in the valley (Table 4.1). The classes were based on the occurrence of combinations of mound types and heights and the presence or absence of other architectural features (Walters 1982: 47). Ceramic analysis of surface collections allowed for the reconstruction of the local site hierarchy during the Middle and Late Classic periods. The earliest Classic period occupation in the SAAAZ dates to ca. A.D. 500, with the appearance of a three-tiered site hierarchy (Walters' Classes 1-3). By the Late Classic period, a four-tiered settlement hierarchy had emerged, with four sites occupying the highest (4th) tier. Walter's (1982: 131) data suggested that the area had been largely abandoned by A.D. 850.
Figure 4.4 - Map of Middle Motagua Valley, showing location of the San Agustin Acasaguastlan Archaeological Zone within triangle. (modified from Walters 1982: Fig. 20)
Figure 4.5 – Mapp of SAAAZ sites from area inside triangle in Figure 4.3.
<table>
<thead>
<tr>
<th></th>
<th>Class 1/ non-mounded</th>
<th>Class 2/ small</th>
<th>Class 3/ medium</th>
<th>Class 4/ large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural debris only</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mounds over 2m tall</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mounds over 5m tall</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platforms w/ thin superstructure walls</td>
<td></td>
<td>maybe</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Multi-room structures</td>
<td>maybe</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Funerary monuments</td>
<td>maybe</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ballcourt(s)</td>
<td>maybe</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 4.1 - Walters' (1982: 47) site hierarchy for the Middle Motagua Valley.*

A primary aim of Walters' research was the reconstruction of the jade-processing system in the Middle Motagua Valley and how it changed through time. Based on the surface remains however, he was only able to reconstruct the Late Classic jadeite-processing system because of limited evidence of Preclassic and Postclassic production sites. All of the sites where he recovered evidence of jade artifact production contained ceramics dating to the Late Classic period, while only one jade workshop, Guaytan-Castillo, could be securely dated to the Middle Classic period (Walters 1982: 133). He defined four types of jadeite workshops (simple to complex): Types I, II, III, and IV (Table 4.2). Type I workshops were characterized entirely by jadeite debitage produced by shattering, or strong percussion blows (flakes > 5 cm). Type II workshops consisted exclusively of "flakes produced by pecking" (flakes < 5 cm). Type III workshops contained pecking flakes, as well as debitage shaped by abrasing, drilling and polishing. Type IV workshops contained all the evidence of Type III workshops, plus evidence of sawing and incising (in the form of broken or unfinished artifacts). In general, his data indicated that the most complex jadeite workshops (Type IV) were confined to the largest
sites in the site hierarchy (Class 4), all of which are located in the Lower Lato River Valley. Type III workshops were found at some Class 3 sites. Type II workshops were found in all site classes. Finally, Type I workshops were only located near jadeite outcrops.

<table>
<thead>
<tr>
<th></th>
<th>Large Flakes</th>
<th>Small Flakes</th>
<th>Drilling</th>
<th>Abrading/Polishing</th>
<th>Sawing/Incising</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type II</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type III</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Type IV</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*Table 4.2. Walters' (1982: 61-62) jade workshop classes from the Late Classic in the Middle Motagua Valley.*

Walters proposed a model for the movement of jadeite within the Middle Motagua Valley that relied heavily on an assumption of complete elite control over all aspects of the jade processing system. In his model, Type I workshops were controlled by elites at Class 3 and Class 4 sites. Type I workshops extracted jadeite from outcrops and provided raw material to Type II, III and IV workshops for further processing (Walters 1982: 134). Type II workshops served primarily as places where raw jadeite would be partially worked, but were not locations where finished jadeite artifacts were produced. Instead, Walters (1982: 135) argued that all finished jadeite artifacts were produced at Type III and Type IV workshops. Type III workshops were controlled either indirectly by elites at Class IV sites, or directly by "secondary" elites at Class III sites, for their own consumption. Walters (1982: 135) argued that most finished jadeite artifacts produced at Type III workshops were channeled to the "primary elite" at Class 4 sites for "redistribution within the system or for export." Finally, all finished jadeite artifacts from Type IV workshops would have went directly to the elite at Class 4 sites. In sum,
Walters proposed a system in which simpler jadeite workshops passed raw or partially worked jadeite to higher order sites and more complex workshops, which performed the final stages of artifact production, positing an elite control model for the Middle Motagua Valley.

Based on ceramic ties with neighboring areas and with the level of production evidence, Walters (1982: 135-138) speculated about the distribution of jadeite artifacts beyond the Middle Motagua Valley, but could not discern whether direct or indirect modes of exchange were involved. His speculation is based primarily on the presence of Motagua jade in archaeological assemblages recovered in Costa Rica, though he noted some "Costa Rican products" were recovered in the Middle Motagua Valley; he does not specify the types of "products" (Walters 1982: 137). It is difficult to evaluate these arguments because Walters does not provide specific data to support these claims.

Walters' research ended in 1981 with the spread of fighting from the Guatemalan civil war to parts of the Middle Motagua Valley. Research picked up again in the late 1980s and continued into the 1990s, with various projects directed by Guatemalan archaeologists. The Proyecto de Arqueológico Sansare, directed by the Universidad de San Carlos de Guatemala and initiated in 1986, undertook a program of surface survey south of the Motagua River in the department of El Progresso, including investigation in the municipios of Sansare and El Jícaro (Fig. 4.2). The project produced an inventory of sites in the region and made preliminary plan maps of every site, including 22 new sites along the margins of the Motagua River (Rámon Ramírez 2006: 18).

In 1997, the project continued under the direction of José Héctor Paredes and Luis Romero under the name Programa de Arqueología del Motagua Medio (PAMM). The
focus of these new investigations was further east in the Middle Motagua Valley, in the municipios of Río Hondo and Estanzuela (Romero 1999). Research focused on a continued program of surface survey, as well as systematic excavations at a number of sites, including La Vega del Coban, the largest site in the eastern part of the Middle Motagua Valley (Fig. 4.2). Excavations in Plaza 3 of Group D at La Vega de Coban uncovered a small jade workshop, although this was the only jade production evidence recovered by PAMM (Paredes 2003: 3, cited by Rámon Ramírez 2006: 23). More intriguing is the fact that despite the extensive survey and excavations undertaken by the project, jade artifacts were rarely recovered from funerary contexts (Rámon Ramírez 2006: 31).

Despite the important contributions of these projects, we were still left with a vague and incomplete description of the organization of jadeite artifact production in the Middle Motagua Valley and how it articulated with the broader domestic and political economy. Walters provided only general descriptions of the sites he encountered but did not include detailed information about their spatial configurations, or the areas of the sites where evidence of jade artifact production was recovered. Further, Walters did not provide information about the location of particular stages of jadeite artifact production at each site. For example, we do not know whether production was situated close to “elite” residences or compounds, or even at site centers.

Another difficulty is that Walters reported only the presence or absence of jadeite productiondebitage at each site, rather than the quantities of debitage recovered; quantitative data of jadeite production evidence recovered in the limited excavations undertaken during his fieldwork were never published. Although collections and
summary counts of the debitage were made during the course of his fieldwork, these are no longer available because of the destruction of much of his data in a fire at the University of Missouri before the dissertation work was complete and the loss of the artifacts themselves (Walters 2003, personal communication).

4.3 Understanding Jade Artifact Production in the Lower Lato Valley

This dissertation research is concerned with understanding the organization of prehispanic jade artifact production in the Middle Motagua Valley, Department of Zacapa, Guatemala (Fig. 4.6). Given the lack of detail about the structure of the jade processing industry noted above, more focused and rigorous archaeological research in the Middle Motagua Valley had the potential to produce a powerful data set regarding the structure of the local jadeite-processing industry.

The purpose of this study is to identify the contexts of jade artifact production through an examination of the location and stages of jadeite artifact production at sites in the Middle Motagua Valley. The results would provide the first detailed documentation of a region-wide system of jade artifact production in the Maya area. Further, they would provide a data set with which to evaluate the types of sites in which wealth goods production took place during the Classic period. This work represents the first fully reported study of community-wide wealth goods production for prehispanic Mesoamerica.

4.3.1 Preliminary Work

Before initiating field research, I undertook a small pilot project in the Middle Motagua Valley, with funding from the Department of Anthropology, Penn State
University, to determine where systematic archaeological research could yield data related to jadeite artifact production. Over the course of two weeks in July 2004 I visited known archaeological sites and jade sources throughout the valley and surrounding mountains with the assistance of Licenciado Luis Romero and local jade prospector Carlos Gonzalez. Specifically, I focused on locating areas with evidence of jade artifact production.

Based on the results of the pilot project, I decided that systematic research in the Lower Lato River Valley, covering much of the area previously reported by Walters, would provide the greatest amount of data about local jadeite artifact production. This determination was made for two reasons: 1) archaeological evidence was highly visible on the surface and 2) it was already known that jadeite artifact production took place at
sites in the Lato Valley. Examination of sites in this area confirmed the presence of prehispanic evidence of jade artifact production, including dense concentrations of jadeite percussion debitage and evidence of later stage of jadeite artifact production (Fig. 4.7).

Figure 4.7 – Jadeite debitage (examples circled in red) at Guaytan 4.

4.3.2 Surface Survey Methodology

Walters' (1982) survey of the San Agustin Acasaguastlan Archaeological Zone (SAAAZ) identified twenty-eight sites within the Lower Lato River Valley, along with associated concentrations of jadeite production debitage at a number of those sites (Fig. 4.5). As noted earlier, Walters' reports only provide vague details about the location and nature of jadeite artifact production at these sites. With the assistance of Licenciado Monica Pellecer, in October 2005 I initiated archaeological surface survey to locate archaeological sites, jadeite production areas and jadeite sources as part of the Lower Lato River Archaeological Jade Project (Fig. 4.6). Our efforts focused on re-surveying
the area examined by Walters to confirm the basic details of his research and generate new data. Approximately six weeks were devoted to surveying, mapping and making surface collections over an area of 8.5 square km (Fig. 4.8).

The principal goals of the archaeological survey were to identify and define the extent of all sites in the survey area, their periods of occupation, and to locate and surface collect evidence of lithic production, particularly of jadeite artifacts. For the purposes of the survey, I defined a "site" as a collection of cultural material (regardless of the presence of architectural remains) that was separated from the nearest such collection by at least 50 m or by some natural feature, such as a quebrada (a naturally-formed ravine or gully). Survey areas were identified on Walters' maps and on the corresponding 1:50,000 San Agustin Acasaguastlan map of the Instituto Geográfico Nacional (NAD 83 / WGS 84). Systematic surface survey was carried out in all parcels of land in the survey area to which we could get access from local landowners, including agricultural fields, cattle pasture, and residential, commercial and public properties. Unfortunately, we could not negotiate access to all areas of interest. Additionally, the location of the communities of Magdalena and Guaytan over much of survey area prevented us from defining the full extent of prehispanic occupation.

A two or three person survey team led by myself conducted an intensive archaeological surface survey of each survey area. Because of the rugged nature of the terrain (with many steep-sided quebradas) and information provided by local informants, we concentrated our survey on areas of level, or gently sloping terrain. Spot checks of steep-sided terrain near areas with dense concentrations of artifacts or architectural remains confirmed the absence of sites in these types of terrain. We used parcel boundary lines as reference points rather than following a grid system whenever possible.
Full-coverage survey of all areas and parcels to which we could gain access was directed toward a goal of obtaining a sample of the variability in jade production contexts.

At each site encountered, the team (1) took GPS readings of a central point (and borders of larger sites), (2) recorded observations regarding the number and dimensions of structures, site disturbance, current land use and abundance of surface material, (3) drew a map of the site using a compass and tape (when time permitted) and (4) made surface collections of artifacts for evaluating site function and period of occupation. At each site, a team member was assigned to make a full-coverage survey of a quadrant or half of the site, depending on site size. Each quadrant or half was defined by the central point of the site, which was determined by quick reconnaissance after the site was identified.

We attempted to make complete surface collections of all jadeite production debris at each surveyed site. However, if dense concentrations of jadeite production debris were found, collection was halted so that their locations could be recorded before collection. This allowed us to identify particular loci at individual sites where jadeite artifact production potentially took place. In addition to jadeite production debitage, we also made collections of other artifact classes. We attempted to collect all examples of other lapidary artifacts (including shell and stone production debitage), and noted in survey notebooks where production evidence was encountered. In addition we collected samples of obsidian artifacts, paying particular attention to the location of non-blade flakes of obsidian that seemed to represent the presence of obsidian artifact production activities. The locations of large artifacts such as manos and metates were noted, but these items were not collected because of issues of transport and storage. Finally,
diagnostic ceramic sherds were collected to provide a chronological framework for each site.

Site designations were made as modifications of the site names used by Walters (1982). Sites located in the core Guaytan zone along the Rio Lato were given designations that reflected the name of the site and the sector (e.g. Guaytan 4; Vargas I; Madgalena I). Sites located in the survey area along the Motagua River were given names that corresponded to the kilometer marker nearest the location of the site, as well as a site number (site number progressed west to east). For example, KM93-II is located to the east of KM93-I. Detailed descriptions of all sites, along with figures, are presented in Appendix A. The results of the archaeological surface survey are summarized below.

4.4 Surface Survey Results

Archaeological surface survey identified a total of 28 sites, ranging from artifact scatters without associated architecture to clusters of residential and civic-ceremonial architecture (Fig. 4.8). All sites have been extensively looted and many have been partially destroyed by modern construction or agriculture. Sites were most densely clustered along the banks of the Lower Lato River and became more dispersed and less numerous to the east and west of the Lato River valley.

Sites along the Motagua River are generally located along the southern edge of the bluffs that overlook the northern banks of the river (about 15 m above the river’s flood plain) and are found on level or gently sloping terrain, often immediately adjacent to steep quebradas. We were unable to survey some of the more rugged foothills of the Sierra de las Minas because of time constraints and lack of permission to access land.
Figure 4.8 - Lower Lato Valley survey area.
Nevertheless, outside of the Lower Lato River valley, we encountered only one site north of the CA-9. In addition, we were unable to make surface collections at two sites (KM 91-I and KM 93-IV) because we could not obtain permission from land owners.

In general, sites consist of small groups of 4 to 6 structures, sometimes organized around plazas, though no consistent site plan was evident. Sites range from simple (non-elite) residential housemound groups to larger ceremonial/residential (elite) groups with more elaborate architecture. Structure categories included low substructure platforms that likely supported thatch superstructures, vaulted funerary monuments (identifiable by looted slab-lined tombs), and multi-roomed platforms with low masonry walls that likely supported perishable superstructures. The largest and most architecturally elaborate sites in the valley contained monumental architecture (structures of about 4 m in height or larger) and ballcourts, including Guaytan Ciudadela (now a protected archaeological park where we were not allowed to excavate, Fig. 4.9), and portions of the Magdalena, Vargas and El Terron sites. In addition, we located two sites that contained no structures, but consisted entirely of surface debris.

The largest sites (in terms of the number of structures) and largest structures in the survey area are found in the lower Lato River valley at Guaytan, Vargas, Magdalena, Puente Hato, and El Terron. As noted earlier, Guaytan has been the focus of numerous archaeological projects and has been mapped, so our goal was to locate evidence of jadeite artifact production at the site. The presence of the modern village of Guaytan over much of the ancient site limited our survey to those areas under protection by IDAEH and the areas of the site south of the residential core of the modern village. We located four areas of jadeite artifact production at Guaytan (in addition to those located in
July 2004): Guaytan 5, Guaytan 6, Guaytan 7, Guaytan 8 (Fig. 4.9, 4.10). Descriptions of test excavations in these areas are provided in Chapter 5.

4.4.1 Lower Lato River Valley Sites

Portions of all of the lower Lato River valley sites show evidence of elite occupation, indicated by larger, more elaborate structure groups and the presence of ball courts at Guaytan (Guaytan Ciudadela, Guaytan 6), Vargas I, and El Terron. Walters (1982) noted the presence of a ballcourt at Magdalena II, but we could not confirm this report. Local informants indicated that Walters may have been referring to a part of the site that has since been destroyed by the construction of a driveway and private residential outbuilding on part of the site. Although we encountered evidence of jadeite artifact production at all sites in the lower Lato River Valley, the densest concentrations were found at Guaytan 4, Vargas IIA, Vargas III, Magdalena I, and El Terron Norte; Guaytan 4 is described along with summary of excavations in Chapter 5. Full descriptions of all sites are provided in Appendix A.

4.4.1.1 Vargas IIA

Jadeite production evidence at Vargas IIA was associated with a core of elite architecture that has been badly destroyed by looting and modern construction (Fig. 4.11). Ceramics collected from looter's trenches and surface collections indicate occupation from the Late Preclassic through the Late Classic, and include Late Preclassic period imported Usulutan ceramics and locally-made imitations of Usulutan vessels, including plates and bowls (Craig Goralski 2005, personal communication). Evidence of
Figure 4.9 - Map of Guaytan, dashed box is area of inset below (from Lopez nd.)

Figure 4.10 - Map of Guaytan showing location of sites with jadedebitage scatters (Modified from Lopez nd.)
jade production was concentrated behind the largest structure of the site, on a large artificial platform atop a bluff overlooking the Rio Lato. Collections here included evidence of all stages of jadeite bead production, as well as evidence indicating production of beads from other stones, such as jasper and other unidentified stones.

Figure 4.11 - Extensive looting at Vargas IIA. (a) View of architecture exposed by large trench dug into center of Structure 1; collections for Op. 51-2 were taken from center of trench, in foreground of photo. (b) Portion of plaza floor (on left of photo) exposed by excavation and erosion in southern plaza area.

Figure 4.12 - Jade artifact production evidence from Vargas IIA looter's trench (Op. 51-1). Percussiondebitage (a, f), broken beads (b), polished fragments (c), bead preforms (d), complete beads (e).
Collections from Vargas IIA include material obtained by screening 360 liters of backdirt from a recent shallow looter’s trench (Op. 5I-1) dug into the western edge of the artificial platform (Fig. 4.12); we could not secure permission from local landowners to excavate at the site (Table 4.3). Ceramics from this looter's trench were restricted to the Late Classic period. An additional 288 liters of backdirt were screened from the large looter’s trench dug into the center of Structure 1 (Op. 5I-2, 5I-3; Fig. 4.9a) and included only Late Preclassic period ceramics (Table 4.3). Unfortunately, because of the level of disturbance, it is not possible to make a clear association between the Late Preclassic ceramics and the jade production debitage. Collections were also made from the walls of looters’ trenches dug into structures and plaza floors that included material similar to that found on the surface (Fig. 4.11b), as well as cut jadeite pieces and a stone with circular depressions that may have been used for grinding or polishing jadeite beads (Fig. 4.13).

It is significant that jadeite production evidence was collected from plaza-floor levels that also contained some of the Usulutan ceramics mentioned above. Taken together, evidence at Vargas IIA suggests lapidary production of wealth goods directly associated with elite civic-ceremonial and residential architecture.

<table>
<thead>
<tr>
<th>VARGAS IIA Artifact Type</th>
<th>Quantity (5I-1)</th>
<th>Quantity (5I-2 &amp; 5I-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>85</td>
<td>40</td>
</tr>
<tr>
<td>Finished Jade Beads</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Partial/Broken Jade Beads</td>
<td>30</td>
<td>12</td>
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<tr>
<td>Jadeite Bead Preforms</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Jade Bead Drill Cores</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Polished/Ground Jade Fragments</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Chalcedony Drills</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Obsidian Blades/Blade Fragments</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Non-greenstone bead fragments</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4.3 - Artifacts recovered from looter’s trenches at Vargas IIA.
4.4.1.2 Vargas III

The site of Vargas III contains two groups of structures. In the northern portion of the site, 12 structures run generally east-west along gentle slopes; only one group of five structures formed part of a typical Maya plaza group. The majority of the structures in the northern sector are 1m-tall platform terraces built into gently-sloping terrain; there are also two vaulted funerary monuments less than 2 m tall (both with looted tombs). Three additional groups of low platform structures (two to three structures per group, nine structures in all) are located 20 m further southwest, closer to the river; no map was made of the site because of time constraints.

Little jadeite production evidence was found within the central portion or northern perimeter of the northern portion of the site. The majority of production debitage and associated production tools (i.e. chert drills) were found scattered around the smallest platform structures at the site. These structures are located on the western and southwestern perimeter of the northern portion of the site and their function is difficult to assess currently, but the structures form a small patio group of four structures located 20m away from the nearest structure group. As was the case with Vargas IIA, evidence...
of all stages of jade artifact production are in this portion of the site, with smaller
amounts elsewhere in the northern portion of the site (Table 4.4). Surface collections of
ceramics indicated occupation from the Late Preclassic through the Late Classic.

<table>
<thead>
<tr>
<th>VARGAS III Lithic Artifact Type</th>
<th>Quantity (SW)</th>
<th>Quantity (other)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Jade Flakes</td>
<td>310</td>
<td>97</td>
<td>407</td>
</tr>
<tr>
<td>Jade Fragment w/ Ground Facet</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Partial/Broken Jade Beads</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Jade Bead Prefoms</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Cut Jade Fragments</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Jade Cobbles/Chunks</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Large Jade Flakes</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Jade Hammerstone</td>
<td>0</td>
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<td>1</td>
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<tr>
<td>Chert Microdrills</td>
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<td>4</td>
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<td>Obsidian Blades/Blade Fragments</td>
<td>58</td>
<td>20</td>
<td>78</td>
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<tr>
<td>Obsidian Flakes</td>
<td>13</td>
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<td>23</td>
</tr>
<tr>
<td>Mano Fragments</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.4 - Artifact recovered from surface collections in southwestern (SW) and all other (other) portions of Vargas III.

4.4.1.3 Magdalena I

Magdalena I is the northernmost group of structures that form part of the elite
core of the site of Magdalena; the site is comprised of more than 25 structures on the
bluffs above the eastern edge of the Lato River and is bounded to the south by a small
quebrada. Unfortunately, we could not secure permission from a local landowner to
explore a portion of the site. Evidence of jadeite artifact production was concentrated on
the eastern and western peripheries of Magdalena I (Fig. 4.14). The eastern portion
consists of eight structures, some of which are situated on a large artificial platform built
into the naturally sloping terrain. Jadeite debitage was found around two low platform
structures of uncertain function and Structure 3, a 2m tall, rectangular, multi-roomed structure. Significant concentrations of debitage were also found in direct association with, as well down-slope, from two multi-roomed, stone walled structures on the western perimeter of the site. The entire group was almost certainly an elite residential and ceremonial group. Ceramics collections indicate occupation from the Late Preclassic through Classic periods.

Figure 4.14 - Southern portion of Magdalena I. Test excavations are described in Chapter 5.

4.4.1.4 Sites outside the Lower Lato River Valley

Outside of the Lower Lato River valley, the largest scatters of production debitage are at KM 93-I, which was first described as the "Terzuola site" by Feldman et al. (1976). With the exception of four low platform structures, the area has been leveled for aloe
cultivation. Jadeite production evidence was concentrated on the southern and southwestern portions. Descriptions by Feldman et al. (1976), Walters (1982) and local informants indicate that KM 93-I likely consisted of two domestic patio groups before its destruction. The site is bisected by the CA-9 highway and to the north of the highway are an additional two mounds which have been almost completely destroyed in the process of field preparation for aloe cultivation.

Further east, the site of KM 93-III contained no evidence of surface architecture (the area showed no evidence of modern destruction, an assessment that was confirmed by local informants), although jadeite production debitage and broken bead fragments were found in surface scatters with domestic refuse (e.g. bowl and jar fragments). Still further east, the site of Los Chaguites 02 consists of a series of three groups of low domestic structures (all less than 2m tall; seven structures in all). Bead production evidence was concentrated on the southern and eastern peripheries of the site.

### 4.5 Surface Survey Results Interpretation

Based on the survey results, a five-level settlement hierarchy for the Middle Motagua Valley was created based on: number of mounds/structures at each site, mound/substructure heights, presence of multi-roomed masonry superstructures, and presence of 'elite/ceremonial' features such as ballcourts and stelae (Table 4.5). Characteristics used to define each are not confined to that specific site type, but may be also present in higher-order types. For example, Vargas IIA (Type V site), includes a ballcourt, one multi-roomed structure over 2 meters tall, and 2 m tall vaulted funerary monuments, but also includes three low substructure platforms less than 50 cm in height.
<table>
<thead>
<tr>
<th>Hierarchical Site Type</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Unmounded or no architecture (i.e. only cultural material/artifacts)</td>
</tr>
<tr>
<td>Type II</td>
<td>Low mounds only (all less than 1 m tall)</td>
</tr>
</tbody>
</table>
| Type III               | All mounds less than 2 m tall  
|                        | Multi-roomed masonry substructures |
| Type IV                | Some mounds greater than 2 m tall  
|                        | Multi-roomed masonry superstructures with high (> .5 m) stone walls |
| Type V                 | Multi-roomed masonry structures over 2 m tall  
|                        | Vaulted funerary monuments greater than 4 m tall  
|                        | Ballcourt (not found at all Type V sites) |

Table 4.5. Definition of site hierarchy in the Middle Motagua Valley.

These criteria were chosen because larger, more elaborate residential architecture is generally taken as indicative of greater social rank of the inhabitants. All sites, regardless of their designation within the local site hierarchy, contained structures and artifacts that suggest residential functions. Type I sites aside, all other sites contain low mounds which likely served as substructures for perishable, thatched superstructures; low mounds between 1 to 2 m in height are the most common mound types within the survey area. Principle of abundance would thus suggest that the most frequent structure types in any settlement pattern likely represent domestic, residential structures. Additionally, many of these structures are grouped around patios, a pattern typical of domestic households in the Maya area (Ashmore 1981). In addition, all sites contained domestic artifacts, including manos and metates, and domestic ceramic forms, such as comales, bowls and jars.

In regard to craft production, the survey data and surface collections show that jadeite artifact production was present at all levels of the site hierarchy (Tables 4.6 and 4.7). While it is possible that higher-orders sites reflect length of occupation, or the function of the site, rather than the social status of its inhabitants, the important point is
that no matter how the site hierarchy is constructed, their is evidence of jade artifact production at all sites in the Middle Motagua Valley. Tables 4.8 and 4.9 further underscores this point by breaking down these totals according to the local site hierarchy. In total, 4,072 pieces of jade were recovered in the surface collections, representing almost all the steps involved in the production of jadeite beads, as well as fragments of polished plaques and possibly pendants. We found no evidence of more elaborate artifact forms, such as tubular beads, diadems, figurines, or any evidence of incising or carving. The majority of the material (96%) consisted of jade flakes (n = 3,910), which resemble a coarse gravel (Fig. 4.15). In addition, 29 jadeite cobbles were collected during the archaeological surface survey. Analyses of these materials are summarized in Chapter 6.

Ceramic surface collections provided periods of occupation at 23 sites; five sites did not yield temporally-diagnostic ceramic sherds (Table 4.10). The earliest ceramics date to the Late Preclassic period (Motagua phase, 200 B.C - A.D. 200) and were recovered from seven sites. The most abundant ceramic types recovered in the Middle Motagua Valley date to the Classic period (A.D. 200 - 900). Nineteen sites yielded evidence of Early Classic period (A.D. 200 - 600) occupation in the Huisajo ceramic phase (A.D.200-550). All sites show evidence of occupation during the Late Classic period (A.D. 550 - 900), in the Manzanal (A.D. 550 - 650) and Magdalena (A.D. 650 - 900) ceramic phases. Most sites (n = 17) show evidence of continued occupation during the subsequent Early Postclassic period (Palmilla phase, A.D. 900 - 1150), while only seven sites yielded ceramics from the Late Postclassic period (A.D. 1150-1600). A full description of the ceramic typology is provided in Appendix D.
<table>
<thead>
<tr>
<th>Site Name</th>
<th>Hierarchy Type</th>
<th>Jade Flakes</th>
<th>Jade beads</th>
<th>Broken Jade Beads</th>
<th>Jade Bead Preforms</th>
<th>Jade Hollow Drill Cores</th>
<th>Cut Jade Fragments</th>
<th>Ground Jade Fragments</th>
<th>Non-greenstone beads</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaytan 3</td>
<td>I</td>
<td>29</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>29</td>
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<td>—</td>
<td>—</td>
<td>18</td>
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<td>18</td>
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Table 4.6 - Raw counts of jade and lapidary production debitage from surface collections.
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<th>Site Name</th>
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Table 4.7 - Raw counts of lapidary production tools, large jade flakes and jadeite cobbles recovered from surface collections at Middle Motagua Valley sites.
### Table 4.8 - Raw counts of jade and lapidary production debitage from surface collections, grouped by hierarchical site type.

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Jade Debitage</th>
<th>Jade Beads</th>
<th>Broken Jade Beads</th>
<th>Jade Bead Preforms</th>
<th>Jade Bead Drill Cores</th>
<th>Cut Jade Fragments</th>
<th>Ground Jade Fragments</th>
<th>Non-jade beads</th>
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### Table 4.9 - Raw counts of lapidary production tools and large cobbles of jadeite recovered from surface collections, grouped by hierarchical site type.

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<th>Site Type</th>
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### Figure 4.15 - Jadeite debitage from KM92-III.
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Table 4.10 - Periods of occupation based on surface collected ceramics from Middle Motagua Valley sites. X indicates ceramics from that period.
4.6 Discussion

In this chapter, I have described the Middle Motagua Valley and the methodology and summary results of archaeological surface survey conducted as part of this dissertation field research. The summary of the prehispanic cultural geography of the southeastern Maya zone provided the background information necessary to put the results of this dissertation field research into their larger regional context. In addition, the character of the natural environment influenced patterns of economic, cultural and political development in the Middle Motagua Valley. Although a full exploration of the interaction between the natural and cultural environment is beyond the scope of this study, the general sociopolitical and natural environment likely influenced cultural patterns at MMV sites, a point to which I will return in Chapter 7.

The archaeological survey data provide valuable new information regarding the organization of jade artifact production in the Middle Motagua Valley, Guatemala. Archaeological evidence demonstrates that jadeite artifact production took place on some scale at all sites where surface collections could be made as part of this dissertation field research. The majority of this evidence (96%) consists of small jadeite percussion flakes, although the evidence suggests that the production of jadeite beads took place at every site in the survey area. These sites ranged from small, amorphous surface scatters of artifacts not associated with mounds or architecture, to elite residential and ceremonial sites with multiple stone-walled structures. Ceramic evidence recovered during the surface survey suggests that all sites in the survey area were occupied throughout the Classic period, while some sites show evidence of Preclassic and Postclassic occupation as well. The majority of ceramic evidence, however, dates to the Late Classic period.
Although the surface survey and collections provide a great deal of new data for addressing the goals of this dissertation research, evidence from excavations are required to confirm these data. In the Chapter 5, I describe the excavation undertaken as part of this dissertation field research. These excavations were intended to provide evidence that subsurface deposits were reflective of surface collection material. In addition, excavations could provide more securely-dated contexts for evaluating the time periods during which sites were occupied in the Middle Motagua Valley. Excavation data, in addition to evidence from surface survey, provide a basis for understanding the technological process and organization of jade artifact production in the Middle Motagua Valley.
CHAPTER 5

LOWER LATO RIVER ARCHAEOLOGICAL JADE PROJECT EXCAVATIONS

This dissertation research is concerned with understanding the organization of prehispanic jade artifact production in the Middle Motagua Valley, Guatemala. As I noted in the previous chapter, one of the primary goals of this dissertation research was to undertake test excavations in areas with evidence of jadeite artifact production to confirm the presence of in situ production activity and to obtain samples from stratified deposits with which to date production activities. Data from these excavations could also provide a substantial database for observations about the technological processes of jade artifact production.

In this chapter, I summarize the methods and results of the test excavations undertaken as part of this dissertation research at the sites of Guaytan and Magdalena. I begin by summarizing the results of previous excavations undertaken at Guaytan (Kidder 1935; Smith and Kidder 1943; Walters 1980a, 1980b, 1989), in order to provide the reader with context about previous archaeological research carried out at these sites. Next, I describe the excavation methods employed in this archaeological field research. I then summarize the results of these excavations. Finally, I discuss the excavation data in regard to the objectives described in Section 4.3

5.1 Previous Excavations in the Middle Motagua Valley

Previous archaeological excavations in the Middle Motagua Valley have focused on two particular sites: Guaytan and La Vega de Coban; in this section, I describe only excavations at Guaytan, as La Vega de Coban is located toward the eastern limit of the
Middle Motagua Valley, and is well outside the area covered as part of this dissertation research (Fig. 5.1). Excavations
at Guaytan were completed by Espinoza (1952) in 1934, Smith and Kidder (1943) in 1940 and Walters in 1979-1980 (1980a, 1980b, 1982, 1989). In this section, I describe the location and results of excavations of the later two projects, to provide the reader with a frame of reference for comparing the excavation methodology and results of this dissertation field research. Espinoza's excavations are sparsely documented and consisted of tunneling into ten structures to examine tombs.

5.1.1 Smith and Kidder's Guaytan Excavations

In addition to the "hasty exploration" of ruins along the Motagua River described in the previous chapter, Smith and Kidder (1943; Kidder 1935) completed a series of excavations in some of the largest mounds and two ballcourts at Guaytan in an attempt to define the local ceramic chronology and material culture of the Middle Motagua Valley (Fig. 5.2); here I will summarize the excavations that are well-described in the published reports.

Excavations at Mound 23, a long, low structure (25m x 9m x 2m), revealed a 10-room "multichambered" structure with few ceramic sherds and no burials, leading Smith and Kidder (1943: 120) to hypothesize that the structure was "never a permanent residence" that may have been occupied "during certain ceremonial occasions."

Exploration of Mounds 9 and 9a, located in the central portion of Guaytan, revealed two nearly square structures, both possibly of Late Classic construction (Smith and Kidder 1943: 122). Subfloor excavations in Mound 9a uncovered a crypt burial containing the decayed remains of two children, one of which had a jade bead laying inside its lower jaw, in a fashion similar to practices discussed earlier in Chapter 3. Excavation of
Mound 24, described as a conical mound 12 m in diameter, and 3 m high, uncovered a series of three building phases, each associated with a tomb of the type described earlier in Chapter 4. The lower two tombs (Tombs II and III) contained 11 and 37 individuals, respectively; an additional four burials were uncovered surrounding the structure itself (Fig. 5.3). Excavations were initiated into Mound 25, the largest at Guaytan, but were never completed before the end of the field season; they yielded ceramics from the Early/Late Classic transition (Smith and Kidder 1943: 129).

Based on their excavations and examination of looted structures at Guaytan and other sites, Smith and Kidder (1943: 172) noted that "Middle Motagua Valley sites served to an unusually great extent as cemeteries." Especially perplexing was the fact many of the structures appeared to have been erected over the tombs and burials, rather than containing intrusive burials. This conclusion, however, must be viewed in light of the fact that Smith and Kidder concentrated their excavations on the largest structures at Guaytan, which are more likely to have served as mortuary facilities. Nevertheless, it is difficult to evaluate these claims because of the sparse reporting of the full extent of their excavations, which included more mounds than those that were described in the eventual publications (Kidder 1935; Smith and Kidder 1943). Interestingly, Smith and Kidder reported relatively few pieces of jade artifact productiondebitage from their excavations, the majority of which came from mortuary contexts. What little material they did recover was termed "Jade-worker's Material (?)", including "sub spherical beads in process of manufacture; shaped but unpolished and unperforated (n = 3); conical drill cores (n = 3); rest small waterworn pebbles, sawed pieces, broken fragments, some of fine stone" (Smith and Kidder 1943: 165). These pieces were found scattered in the fill of Structure
24, located approximately 150 m from the area designated as Guaytan 4 in our survey. They do not report finding tools related to jade artifact production in any of their excavations in the portions of with the most elaborate architecture and tombs.

Figure 5.2 - Map of Guaytan, with locations of structures noted in the descriptions of work by Smith and Kidder (modified from Lopez n.d., reproduced in Rámon Ramírez 2006)
5.1.2 Walters' Guaytan Excavations

Between 1978 and 1980, Walters (1980a, 1980b) completed excavations in eight areas at Guaytan, the majority of which were in the southern portion of the site (Fig. 5.4). In addition to these excavations, the caretaker of the protected zone of Guaytan, Don Gustavo Guillen, told me of limited excavations that Walters undertook at Magdalena and El Terron (both sites are to the east of Guaytan, across the Rio Lato); the results of these excavations were not mentioned or published by Walters or any other members of the San Agustin Acasaguastlan Archaeological Project.
Figure 5.4 - Map of Guaytan, with approximate survey area boundaries (hatched lines) described by Walters (1980a, 1980b) (modified from Lopez n.d., in Rámon Ramírez 2006).
Walters' only published excavations outside of the southern portion of Guaytan were located immediately north of the Ciudadela elite mound complex, where he completed four excavations in an undisturbed portion of the plaza that revealed a series of Classic period floors; deposits below the lowest of these floors contained Late Preclassic period ceramics (Walters 1980a: 8). No other description of the artifacts recovered from these excavations was published.

In the southern portion of Guaytan, Walters' concentrated his excavations in six survey areas (Fig. 5.4). In Area 2, Walters excavated a single 1x1m unit into a small, heavily damaged Late Classic period structure at the top of a natural hill, which yielded few artifacts (Walters 1980a: 11). Fifteen excavation units of varying size were completed in Area 6, and were focused on an area of domestic debris that Walters believed to be the remains of a household; excavations revealed the presence of a Late Classic tomb and associated structure that had been looted in antiquity (Walters 1980a: 25). In Area 7, Walters excavated a tomb that had been looted previously, though incompletely, in order to obtain "data that had been missed by the looters" (Walters 1980a: 27); the tomb dated to the Late Classic period. Interestingly, excavation of the floor of the tomb chamber revealed a sub-grave cache consisting of a ceramic vessel containing "over a pound of crushed jade" (Walters 1980a: 31). A similar cache was found during excavations in Area 6. In Area 8, no excavations were initiated, although a looted Late Classic tomb was cleared out, revealing a mass burial of 15 individuals (Walters 1980a: 35).

The majority of Walters' excavations focused on the jade workshop that covers portions of his Areas 3 and 4 (Fig. 5.5). Area 3 contained three extensively-looted
mounds; Area 4, adjacent and north of Area 3, contained "a number of low mounds, all of which have been extensively looted" (Walters 1980a: 12). All structures are associated with a sunken patio, and Walters' excavations were located on the western, northern and southern perimeters of the walls.

Figure 5.5 - Contour map showing location of structures and excavations in Areas 3, 4 and 5 (Source: Walters 1980b: 88). The portion of Area 3 that lies immediately south of the modern fence is now covered by the local elementary school and adjacent concrete schoolyard.
defining the plaza, in areas with surface evidence of jadeite artifact production.

Excavations in both areas were completed over the course of two field seasons in 1979 and 1980 (Walters 1980a, 1980b, 1989).

On the western edge of the platform (Fig. 5.5, area marked by “13-20”), eight 2x2 m units were excavated, revealing two occupation levels, one Late Classic (A.D. 800-1000) and one Middle Classic (A.D. 650-800), which were separated by a single instance of re-building (Walters 1982b: 114). One unit exposed a 10 cm tall retaining wall of schist slabs with no mortar, which defined the western edge of the sunken patio. In the western side of the same unit (Excavation 16), Walters uncovered a small (25 cm x 50 cm) stone-lined box, covered by three schist slabs, containing a small vessel filled with red pigment on one end and two obsidian prismatic blades on the other (Fig 5.6). Walters (1980b: 110) argues that the box was a sub-floor storage unit for "precious or ritual items". Although the contents could not be dated, Walters proposes that it was deposited during the Late Classic period, based on dates from ceramics in the associated stratigraphic levels (Walters 1980b: 110). Although he does not provide artifacts counts, Walters (1980b: 114) notes that the excavations in the western edge of the plaza contained greater numbers of imported polychrome pottery, and suggests it was "the focus of the controller elite who directed the specialized activities of the plaza group."

Figure 5.6 - Plan view of Area 4, Excavation 16, showing the location of the platform wall on the right and stone-lined box with contents on the left (from Walters: 1980b: 111).
The evidence for such "specialized activities" comes predominantly from excavations on the northern (Area 4) and southern (Area 3) edges of the sunken patio. Twenty-one 2 m x 2 m units were excavated along the southern perimeter of the patio, where Walters reports heavy concentrations of jade and obsidian debitage. Excavations revealed an access ramp descending from south to north into the sunken patio area (Fig. 5.7). Excavations to the north of the southern retaining wall (i.e. inside the sunken patio) uncovered 14 caches of exhausted obsidian blade cores (n = 5199), clustered to the east and west of the entrance ramp, and in contexts dating to the Late Classic period (Walters 1989). In addition to the blade cores, excavations in the southern portion of patio group uncovered 4,500 obsidian fragments from Classic period contexts. Walters (1989: 256) does not elaborate on the specific portions of the Classic period, or about the types of obsidian fragments recovered (i.e. blades fragments vs. early stage percussion reduction debris). Only 200 fragments of jadeite were recovered from excavations in the southern portion of the patio group; the "vast majority" of artifacts recovered were "domestic and foreign ceramic fragments" (Walters 1980b: 103-104). Based on this evidence, Walters (1980b: 104) argues that the southern portion of the patio group was occupied by a domestic household focused on the production of obsidian blades, for either internal consumption within the patio group, or for external consumption. All of the structures in the southern portion of the patio group were destroyed by the construction of the local elementary school in the late 1980s.

Excavations in the northern perimeter of the sunken patio were located within the area that Walters designated Area 4; in total, eight 2 m x 2 m and three 1 m x 1 m units were excavated (see Fig. 5.5). When one of the units (Area 4, Excavation 4), revealed a
series of floors extending to a depth of 1.8 meters below the surface, Walters (1980a: 12) opened eight 2 m x 2 m units oriented north-south in the vicinity of Excavation 4. The northern retaining wall of the

Figure 5.7 - Plan map of units excavated in Area 3 and the floor plan of Late Classic features revealed in those excavations. Roman numerals point to the location of caches of obsidian blade cores (modified from Walters 1980b: 90).

patio group was encountered in Excavation 11 and 12, and these units were left unexcavated (Fig. 5.8). Units located north of the wall (Excavations 5-8) revealed an occupational history spanning from the Late Preclassic through Late Classic periods, while Excavation 9 and 10, located to the south of the wall, contained only Late Classic period contexts (Walters 1980a: 12). Although no artifact counts are provided, Walters
(1980a: 18) notes recovering jadeite production debitage and tools associated with jadeite debitage production (e.g. jadeite hammerstones and polishing stones) in all levels of Excavations 4-8, with the highest concentrations in the upper (Late Classic) levels of the units. In Excavation 9 and 10, jadeite debris was limited, but "numerous obsidian cores and core and blade fragments" were recovered. The greater quantities of jadeite debris recovered from the northern portion of the patio group led Walters (1980a, 19880b, 1989) to argue that craft specialization was internally segmented within the patio group, with residents of the southern portion producing obsidian blades, the northern portion producing jadeite artifacts, and the western portion of the patio directing these activities, as well as practicing a limited amount of jade artifact production.

![Map indicating the location of excavation units from Area 4](from Walters 1980a: 13). "Ground surface" indicates profile of ground level from X to Y on sketch map.

Data from excavation the excavations of Smith and Kidder (1943; Kidder 1935) and Walters (1980a, 1980b, 1989) provided important indications about the prehispanic inhabitants of Guaytan. Although Late Preclassic ceramics were recovered from Middle Motagua Valley sites during the archaeological survey conducted as part of this dissertation research, previous excavations rarely recovered ceramics from that time period. In accord with the results of our survey, the great majority of ceramics from
Smith and Kidder's and Walters' excavations date to the Classic period, with Late Classic ceramics being most abundant.

Despite the important contributions of both of these projects, we were still left with an incomplete and fragmentary database for understanding the prehispanic organization of jade artifact production at Guaytan. Particularly, neither Smith and Kidder nor Walters published any details about the evidence of jade artifact production recovered in their excavations. Because of this lack of specific data, further excavations were necessary for detailing and reconstructing the structure of jade artifact production. The methodology and results of excavations completed as part of this dissertation research are summarized below.

5.2 Excavations for Lower Lato River Archaeological Jade Project

A critical part of this dissertation research involved excavation in areas identified in July 2004 as possible jadeite workshops based on the presence of high concentrations of surface debitage. The goals of these excavations were twofold: (1) to determine whether the surface evidence was indicative of in situ jadeite workshops; and (2) to collect evidence regarding the social context of this jadeite artifact production (i.e. specialized vs. domestic contexts). Excavations began on October 17, 2005 and focused on three of these previously identified areas: Guaytan 3, Guaytan 4 and Magdalena I. In addition, eight test pits were excavated at Guaytan 5 (3 test pits), Guaytan 7 (2 test pits), Guaytan 8 (2 test pits) and KM 93-I (1 test pit). A summary of the results of these excavations are provided here; full descriptions of the excavations can be found in Appendix B.
5.2.1 Excavation Methodology and Location of Excavation Units

As noted above, in July 2004, archaeological reconnaissance identified surface scatters of jadeite debitage at the sites of Guaytan (Guaytan 3 and Guaytan 4) and Magdalena 1 (Fig. 5.9). Based on the surface remains, I decided to undertake a program of test-pitting in these areas to locate in situ evidence of jade artifact production and to obtain a stratified sample of jade production debitage and ceramic material. Test excavations were imperative for my research project in order to assess the quality, significance and representatives of the surface collections; approximately seven weeks were devoted to test excavations.

Work began at Guaytan 4 (Operatin 1A & 1B), the largest and densest surface debitage scatter at Guaytan, where a 25 m x 30 m grid was imposed in order to provide provenience for a systematic collection of surface archaeological materials, and subsequently for excavation (Fig. 5.10, 5.11, 5.12, 5.13). The grid was oriented to magnetic north, and grid units were organized according to a coordinate system, using an arbitrary datum point located to the southeast of the debitage scatter as the origin. Using the established grid, nine 1 m x 1 m grid units were imposed over the debitage scatter and all archaeological artifacts were collected within each unit (Fig. 5.12). The surface collections in the 1m grid squares served as a direct check against which to compare the subsurface, stratified deposits of lithic materials (Table 5.1).

After the completion of surface collections, two 1m x 1m excavation units (N6E12 and N7E12) were selected because of the high density of surface artifacts and their location along the outside perimeter of two low structure-retaining walls (these excavations are described in section 5.3). Excavations proceeded by arbitrary 10 cm
levels, unless clear depositional layers were observed. All excavated material was screened through 1/8” mesh screens to ensure the collection of all size grades of jadeite debitage and other archaeological material. A 10 cm x 10 cm column was left unexcavated in each unit for the collection of soil samples to be used for microscopic examination of particles of jadeite and possible abrasives used to grind and polish jadeite, such as garnet or quartz; these have not as yet been examined. We had hoped to collect charcoal samples during excavations for C-14 dating, but did not encounter any good samples in the course of excavations.

After the excavations of these units failed to yield stratified *in situ* workshop deposits, a determination was made to change excavation strategies. A program of test pitting using 50 cm x 50 cm units was initiated in two other areas of the Guaytan 4 (Fig. 5.13) containing jadeite surfaces scatters (Op. 1D, 1E and 1F), as well as in the Guaytan 3
Table 5.1 - Artifacts collected in 1m squares at Guaytan 4 prior to excavations (see Fig. 5.12 for location of grid). These artifacts were included in surface collections (presented in Chapter 4) for Guaytan 4.

<table>
<thead>
<tr>
<th>Site</th>
<th>Jade</th>
<th>Broken/partial jade beads</th>
<th>Jade Hollow Drill Cores</th>
<th>Ground jade fragments</th>
<th>Chert drills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A-N5E10</td>
<td>14</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>1A-N5E11</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>1A-N5E12</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1A-N6E10</td>
<td>24</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>1A-N6E11</td>
<td>27</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>1A-N6E12</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1A-N7E10</td>
<td>19</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<tr>
<td>1A-N7E11</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>1A-N7E12</td>
<td>5</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>TOTALS</td>
<td>107</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>11</td>
</tr>
</tbody>
</table>

Site (Op. 1C). Excavations of 50 cm x 50 cm test pits proceeded by arbitrary 20 cm levels after observations from the Op. 1A and 1B excavations revealed that 10 cm levels were too unnecessarily time-consuming for identifying stratified deposits. Nevertheless, when clear depositional layers were encountered (e.g. floors, subfloor fill), these were used to identify stratigraphic layers.

Further reconnaissance at Guaytan identified additional areas containing surface evidence of jade artifact production (Guaytan 5, Guaytan 6, Guaytan 7, and Guaytan 8). We excavated 50 cm x 50 cm test units in each of these areas to determine the nature of these surface concentrations (Fig. 5.11). Test excavations were also made at Magdalena I, and KM 93-I; we were unable to secure permission to excavate from local landowners at the Vargas III site. Where necessary because of the depth of archaeological deposits or because of the density of recovered material, excavation units were expanded horizontally to enable artifact recovery. A total of 32 units were excavated to bedrock or
sterile soil. The results of these excavations are summarized below and detailed descriptions of all excavations are provided in Appendix B.

Figure 5.10 - Map of Guaytan, hatched lines indicate limits of map inset shown in Figure 5.11 (modified from Lopez n.d., in Rámon Ramírez 2006).
Figure 5.11 - Detail of southern portion of Guaytan, indicating location of areas with jade artifact production, identified during archaeological surface survey.
Figure 5.12 - Map showing location of structures, grids established for excavations and looter's trenches at Guayan 4. Op. 1A excavation units are shaded in grey on 3 m x 3 m grid.
5.3  **Summary of excavations at Guaytan 4**

Our most intensive test excavations were carried out at Guaytan 4, a Type II site in the local settlement hierarchy located along the southern portion of Guaytan (Fig. 5.11, 5.12, 5.13). Guaytan 4 is bordered on the west by a small quebrada, and is bordered on
the east by the modern road to Guaytan; the southern edge of the site is defined by the fence that surrounds around the elementary school that was built in the late 1980s. The southern and southwestern perimeters of the Guaytan 4 were the location of the "Area 3" and "Area 4" excavations by Walters (1980a, 1980b, 1989) that were described earlier in this chapter. The construction of the local elementary school has since destroyed a portion of the site (Area 3) (Fig. 5.4, 5.5, 5.7). Although it is located approximately 100 meters from the portion of Guaytan that Walters (1982) identified as being a possible elite residential area (Areas 5 and 8 in Fig. 5.4), Guaytan 4 itself is of modest construction and size.

Guaytan 4 is comprised of two groups of low structures laid out over a series of small platforms built into gently sloping terrain (Fig. 5.12). In the northern portion of the site are four structures, all of which have been extensively looted. Structure 1 is located immediately adjacent to the modern road to San Agustin Acasaguastlan, and is 12m x 8m, oriented roughly north-south. Structure 2 is a 5m x 5m square mound, approximately .5m tall. Structure 3 is located nine meters to the south of Structure 2, and is another 5m x 5m square mound, approximately .5m tall. Structure 4 is located on the western edge of the northern group, and is a small (1m tall) mound, located at the base of a steep slope to the west. A looter's trench dug into the center and sides of the structure revealed the presence of a looted slab-lined tomb. Very little jade evidence of jade artifact production was surface collected in this area.

Approximately 25 meters to the southwest of Structure 4 are the edges of low terrace walls (less than 25 cm) built into the gently sloping terrain (Platforms 1 and 2, Fig. 5.12). In July 2004, archaeological reconnaissance identified dense concentrations of
jadeite debitage this southern portion of Guaytan 4 (Fig. 5.12, 5.14). All surface-collected and excavated evidence of jadeite artifact production was recovered in association with the southwestern corners of Platforms 1 and 2 (Operations 1A and 1B) and the northern and western perimeter of a sunken patio area built in the low point of two slopes (area of Operations 1D, 1E, 1F; see Fig. 5.5 for contour map of southern portion of Guaytan 4). The sunken patio is bounded on the north by Platform 3 and on the west by a similar platform wall identified by Walters (1980b) in his excavations of the area (Fig. 5.6). Because of dense vegetation in the western portion of Guaytan 4, we were unable to define the limits of the western edge of the sunken patio. Structure 6 sits just atop the platform wall, although I could not discern this is the same structure identified and partially excavated by Walters (1980b). As noted above, the southern portion of the sunken patio was destroyed in the process of building the local elementary school, although Walters (1980b) excavated this area, as described earlier in Section 5.1.2). In the center of the sunken patio are the remains of Structure 5, an extensively looted mound built over a slab-lined tomb.

Figure 5.14 - Panoramic view looking south; the southern portion of Guaytan 4 is to the left of the foot path extending from the left foreground of the photo.
Following the completion of surface collection described in Section 5.2.1, two 1m x 1m units located off the southwest corner of Platforms 1 and 2 were selected for excavation (Fig. 5.13). Excavation unit 1A-1 (surface collection unit N6E12) and unit 1A-2 (surface collection unit N7E12) were chosen for excavation because they were believed to provide the best opportunity for recovering *in situ* evidence of jade artifact production. Their selection was also based on the observation that the unit squares located to the west (N6E10 and N6E11) contained the densest concentrations of jadedebitage (Table 5.1), and that this material may have eroded from deposits further upslope, where the two excavated units were located. The two units were excavated simultaneously. Constraining our selection of other excavation units in this area was the fact that IDAEH had explicitly forbidden excavation within standing architecture without prior authorization. The intent at the outset of excavations was to excavate units N6E10 and N6E11 upon completion of the first two excavation units. Unfortunately, time constraints quickly made this unfeasible, as the excavations proved too time consuming for the limited personnel available. Additionally, it was soon apparent that recovery of *in situ* jade artifact production was unlikely in these areas.

Units 1A-1 and 1A-2 uncovered a series of two resurfacings, possibly of a plaza floor. The first floor, located approximately 50 cm below the natural surface, was a burnt plaster floor that had been placed over a subflooring of fine, compacted soil that contained pieces of jadeite debitage and other artifactual material (Fig. 5.15). A second floor was encountered at approximately 80cm below the natural surface, which appears to have been the earliest plaza floor; the natural bedrock was encountered 25 cm below this floor in Unit 1A-2, with few artifacts in the intervening level. Excavation in unit 1A-1
was halted at the level of the second floor upon discovery of a small 30cm x 40 cm x 11cm firepit. Although jade production evidence and other lithic and ceramic artifacts were recovered at every level within both units, no *in situ* evidence was uncovered in either unit. In addition, despite the two floor resurfacings, all excavated levels contained at least some Late Classic period ceramics. Table 5.2 presents a summary count of the artifacts recovered from Units 1A-1 and 1A-2.

![Excavation profile of unit 1A-1.](image)

**Figure 5.15 - Excavation profile of unit 1A-1.**

<table>
<thead>
<tr>
<th>Op. 1A Artifact Types</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>693</td>
</tr>
<tr>
<td>Jade Beads</td>
<td>3</td>
</tr>
<tr>
<td>Jade Bead Preforms</td>
<td>6</td>
</tr>
<tr>
<td>Broken/Partial Jade Beads</td>
<td>4</td>
</tr>
<tr>
<td>Jade Hollow Drill Cores</td>
<td>2</td>
</tr>
<tr>
<td>Cut Jade Fragments</td>
<td>3</td>
</tr>
<tr>
<td>Ground Jade Fragments</td>
<td>21</td>
</tr>
<tr>
<td>Large Jade Flakes</td>
<td>3</td>
</tr>
<tr>
<td>Chert Drills</td>
<td>125</td>
</tr>
<tr>
<td>Worked Shell Fragments</td>
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<tr>
<td>Obsidian Blades</td>
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<td>Obsidian Flakes</td>
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</tr>
<tr>
<td>Obsidian Blade Cores</td>
<td>1</td>
</tr>
<tr>
<td>Non-jade beads</td>
<td>1</td>
</tr>
<tr>
<td>Hammerstones</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.2 - Artifacts recovered in excavation units 1A-1 and 1A-2.
An additional 1m x 1m unit (1B-1) was chosen for excavation inside of the low platform walls located to the northeast of 1A-1/1A-2, in order to determine if the wall visible on the surface was the edge of low platform structure or part of the natural terrain (Fig. 5.13). Excavation of this unit was abandoned soon after a surface of architectural stones was encountered at a depth of 33 cm below the surface, as excavation into standing architecture was prohibited by IDAEH (Fig. 5.16). Few artifacts were recovered from the unit and the majority of excavated ceramics were from the Late Classic period.

![Figure 5.16 - Plan photo of floor in Unit 1B-1, where excavation was terminated.](image)

After completion of these excavations, I decided to switch excavation strategies to enable more rapid test-pitting. For all other excavations, we excavated 50 cm x 50 cm units in order to get a greater number of samples from different contexts. Six units were selected for excavation in an area of heavy jade surface debitage to determine the nature of the surface scatters (1D-1 thru 1D-6). The units were located at the edge of the quebrada that marks the western edge of Guaytan 4 (Fig. 5.13). All units were excavated
to bedrock, which ranged from 40cm to 1m below the natural surface. In two of the excavation units, a level of compact soil was noted that appeared to be the remains of an eroded plaza floor, but this could not be confirmed across all test units. Ceramic material in these units dated to the Early through Late Classic periods, but once again, all levels contained Late Classic period ceramics. Jade production evidence was recovered from all units of Operation 1D (Table 5.3).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Obsidian Blades</th>
<th>Obsidian flakes</th>
<th>Jade Flakes</th>
<th>Jade Bead Preforms</th>
<th>Broken/Partial Jade Beads</th>
<th>Jade Hollow Drill Cores</th>
<th>Ground Jade Fragments</th>
<th>Chert Drills</th>
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<tbody>
<tr>
<td>1D-1</td>
<td>1</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>0</td>
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<td>5</td>
</tr>
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<td>1D-2</td>
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<td>208</td>
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<td>0</td>
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<td>2</td>
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<td>12</td>
</tr>
<tr>
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<td>3</td>
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<td>13</td>
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<tr>
<td>Totals</td>
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<td>22</td>
<td>560</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>82</td>
</tr>
</tbody>
</table>

Table 5.3 - Artifacts recovered from Operation 1D excavations.

Five additional units (Operation 1E and 1F) were excavated from east to west along Platform 3, a long, platform retaining wall that forms the northern edge of the sunken patio in the southern portion of Guaytan 4. Excavation was initiated to obtain a stratified sample of production debitage, based on the presence of high surface concentrations of jadeite debitage located atop and below the platform wall. The area is the northern portion of the group excavated by Walters (1980, 1989), in which he reported finding dense deposits of jadeite debitage. Four of the units (1E-1 thru 1E-4) were placed below (south of) the platform wall. An additional unit (1F-1) was placed on the platform itself, approximately 1 m north of the platform wall. All units were
excavated to bedrock, which ranged from 84 cm (1F-1) to 1.8 m (1E-3) below the natural surface. After excavation, it was observed that units 1E-3 and 1E-4 were both north of the platform retaining wall.

Unfortunately, no in situ evidence of jadeite artifact production was uncovered as part of Operations 1E and 1F. Nevertheless, all excavation units yielded significant amounts of jadeite production evidence, including flake debitage, complete and incomplete beads, sawn jade pieces, jade fragments with evidence of grinding and polishing, and numerous chalcedony drills, typically recovered as part of sub-floor fill (Table 5.4). In addition, Operations 1E and 1F also yielded evidence of the possible production of obsidian blades (Fig. 5.17) and production of shell artifacts (Fig. 5.18). All units yielded Late Classic period ceramics, although Early Classic ceramics were recovered from most units as well. All show evidence of multiple episodes of floor construction, most of which are badly eroded and poorly preserved, the earliest of which were constructed only a few centimeters above the talpetate.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Obsidian blades</th>
<th>Obsidian flakes</th>
<th>Obsidian Blade Cores</th>
<th>Jade Flakes</th>
<th>Jade Beads</th>
<th>Jade Bead Preforms</th>
<th>Jade Hollow Drill Cores</th>
<th>Cut Jade Fragment</th>
<th>Ground Jade Fragment</th>
<th>Chert Drill</th>
<th>Worked Shell</th>
<th>Non-Greenstone Beads</th>
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<tbody>
<tr>
<td>1E-1</td>
<td>42</td>
<td>14</td>
<td>-</td>
<td>83</td>
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<td>1</td>
<td>8</td>
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<td>3</td>
<td>-</td>
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<tr>
<td>1E-2</td>
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<td>248</td>
<td>83</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>1</td>
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<td>3</td>
<td>17</td>
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<td>1E-3</td>
<td>100</td>
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<td>-</td>
<td>855</td>
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<tr>
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<td>3</td>
<td>1</td>
<td>25</td>
<td>42</td>
<td>6</td>
<td>14</td>
<td>23</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 5.4 - Artifact counts from Operation 1E and 1F excavation units.
Especially intriguing was the discovery, in the southwestern corner of unit 1E-2, of a cache of exhausted obsidian blade cores placed at the base of the platform wall (Fig. 5.17). The cache was well-defined (40cm in diameter, 22cm deep) and was covered with a number of large ceramic fragments and unworked stones, placed one on top of the other. 

Figure 5.17 - Cache of obsidian blade cores from excavation at Guaytan4. Right: Definition of cached deposit. Above: Upper level of cache after removal of large ceramic fragments.
without any obvious pattern. The largest ceramic piece was a fragment of a large urn with a raised zoomorphic face; fragments of the border of some comales and unidentified body sherds also covered the cache. The cache was excavated in 5cm levels to ensure careful recovery of its contents. In total, the cache contained a total of 245 obsidian blade cores; an additional three obsidian blade cores were recovered from other levels of the same unit. The only other contents of the cache included a possible jaguar claw (Fig 5.19) and four pieces of jade (two flakes, one drill core and one fragment with evidence of grinding). The placement of the cache along the exterior face of a platform wall is consistent with the placement of similar caches in the southern portion of this group that were excavated by Walters (1980b, 1989) before they were destroyed by the construction of the school that now covers a portion of the group.
5.4 Summary of Guaytan 3 Excavations

The site of Guaytan 3 (Type I site) is located to the north of Guaytan 4 on a narrow bluff at the confluence of two small quebradas; there are no structural remains at the site (Fig. 5.20). The area was chosen for excavation based on the presence of a surface scatter of jadeite debitage, in the hopes that excavation might clarify the nature of this deposit. We excavated three small 50 cm X 50 cm test pits to assess the significance of the surface debitage observed in the area. All excavations terminated at 60cm in depth upon reaching bedrock. Few artifacts (and no ceramic material) were recovered, although limited evidence of jadeite artifact production was collected (Table 5.5). The nature of the surface scatters remains unclear.

![Figure 5.20 - View of Guaytan 3, looking to the north.](image)

<table>
<thead>
<tr>
<th>Op. 1C Artifact Types</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>113</td>
</tr>
<tr>
<td>Ground Jade Fragment</td>
<td>1</td>
</tr>
<tr>
<td>Obsidian Blades</td>
<td>6</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5.5 - Artifacts recovered in Operation 1C excavations at Guaytan 3.
5.5 Summary of Guaytan 5 Excavations

Test excavations at Guaytan 5 (a Type 2 site) were intended to assess the nature of surface scatters of jadeite and obsidian debitage. The site is located across a quebrada to the southwest of Guaytan 4 and across a quebrada to the south of Guaytan 6; the site is comprised of a group of three low platforms (less than 25 cm in height) (Fig. 5.21). Unfortunately, all three of our excavations (Operation 2, Units 2A-1, 2A-2, and 2A-3) were terminated at a maximal depth of 20cm upon reaching bedrock. No subsurface ceramics or evidence of jadeite artifact production was recovered from any of the excavations; two obsidian blades were recovered from one unit.

Figure 5.21 - View of Guaytan 5, looking west by southwest.

5.6 Summary of Guaytan 6 Excavations

Guaytan 6 (a Type V site) is located to the north of Guaytan 5 and to the west of Guaytan 4, separated from both groups by small quebradas. The site was described by Smith and Kidder (1943) and Walters (1982) as a series of elite residential, ritual and ceremonial groups constructed atop a natural hill (Fig. 5.11). The majority of structures
at Guaytan 6 have been extensively destroyed by looting with some structures being reduced to a pile of discarded stones and looters' backdirt; some looter's pits are used as garbage dumps by village residents. Although reports of Guaytan 6 indicate the presence of a ball court, none could be identified from the remaining structures.

One unit (Operation 6, unit 6A-1) was excavated in a surface concentration of jade debitage located on the southeastern perimeter of the site, behind a group of low, masonry substructure platforms immediately adjacent to the edge of the quebrada separating Guaytan 6 from Guaytan 4. Given the surface concentration of jadeite debitage, chalcedony drills, obsidian and ceramics, the unit was excavated in the hope of revealing a dump from the nearby structures. The unit was terminated at a depth of 60 cm upon reaching sterile soil. Only the upper lot yielded ceramics that could be dated; the majority date to the Early Classic period, but include Late Classic ceramics as well. Jadeite production evidence consisted solely of flakes and chalcedony drills (Table 5.6).

<table>
<thead>
<tr>
<th>Op. 6A Artifact Types</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>62</td>
</tr>
<tr>
<td>Chert Drills</td>
<td>23</td>
</tr>
<tr>
<td>Obsidian Blades</td>
<td>3</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 5.6 - Artifacts recovered in Operation 6A excavation at Guaytan 6.

5.7 Summary of Guaytan 7 Excavations

Guaytan 7 is a sector of the southern portion of Guaytan that contains a core of elite residential structures that were studied and excavated by both Smith and Kidder (1943) and Walters (1980) (Fig. 5.11). It is a Type V site in the local site hierarchy. During survey of this sector of the site, a small, widely scattered collection of jadeite debitage was observed in a small plaza on the eastern edge of the site sector, which has
partially destroyed on its western edge by the road to San Agustín Acasaguastlan. Two small 50 cm X 50 cm units (Op. 3A-1 and 3A-2) were excavated to rapidly assess the significance of this surface material. An eroded plaster floor was uncovered at a depth of approximately 50 cm below the surface in the easternmost of the two excavation units (Fig. 5.22); jade debitage was recovered from below this plaster floor. Both units yielded significant amounts of jadeite debitage flakes, but few categories of evidence of other types of jade artifact production (Table 5.7). Ceramics dated to the Classic period generally, with the majority from the Late Classic period. Bedrock was reached at approximately 1.3 m below surface in both units.

![Figure 5.22 - Stratigraphic profile of unit 3A-1 at Guaytan 7. Solid black layer indicates eroded plaster floor. Maximum depth = 1.4 m. North wall of excavation unit is 50 cm wide.]

**Table 5.7 - Artifacts recovered in excavation units 3A-1 and 3A-2.**

<table>
<thead>
<tr>
<th>Op. 3A Artifact Types</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>1051</td>
</tr>
<tr>
<td>Jade (Partial Beads)</td>
<td>1</td>
</tr>
<tr>
<td>Jade (Polished)</td>
<td>3</td>
</tr>
<tr>
<td>Chalcedony Drills</td>
<td>7</td>
</tr>
<tr>
<td>Obsidian Blades</td>
<td>88</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>15</td>
</tr>
</tbody>
</table>
5.8 **Summary of Guaytan 8 Excavations**

Guaytan 8 (a Type IV site) is a sector of the site of Guaytan located at the far southern perimeter of Guaytan Ciudadela, approximately 150 m to the east of Guaytan 4 and 50 m to the south of the Guaytan 7 test excavations (Fig. 5.11). Although no architectural remains are visible on the surface of this sector, it should be noted that the sector lies directly to the south of a heavily looted area of elite residential architecture that sits on a small natural plateau above the field. During survey, 35 pieces of worked jadeite were collected in the field, which had been used for maize cultivation as recently as 2002. After talking with the local landowner and determining that the field had only been plowed by horse-drawn plows, I decided to excavate two small test units to assess the character of deposits located below the plow zone (Operation 4, units 4A-1, 4A-2). Unfortunately, excavations had to be abandoned before completion when the landowner’s sons changed their minds about granting us permission and asked us to leave.

Although recovered from disturbed contexts, the two test units yielded some unusual finds, including two stingray spines, two pieces of drilled obsidian (Fig. 5.23), along with obsidian blades and debitage and evidence of jadeite bead manufacture (predominantly jadeite flakes, but also a jadeite hammerstone) (Table 5.8). Ceramics dated primarily to the Classic period, though Postclassic material was recovered from the upper level in both units. No undisturbed, stratified contexts were encountered in either unit, although fragments of burnt clay, possibly from the exterior of a waddle and daub structure, were recovered in unit 4A-1.
Figure 5.23 - Sting ray spine (left) and drilled obsidian (right) from Guaytan 8 excavations. Units on scale are 1 cm.

<table>
<thead>
<tr>
<th>Op. 4A Artifact Types</th>
<th>( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>588</td>
</tr>
<tr>
<td>Jade (Partial Beads)</td>
<td>1</td>
</tr>
<tr>
<td>Jade Bead Cores</td>
<td>1</td>
</tr>
<tr>
<td>Chalcedony Drills</td>
<td>13</td>
</tr>
<tr>
<td>Worked Shell Fragments</td>
<td>1</td>
</tr>
<tr>
<td>Obsidian Blades</td>
<td>113</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>54</td>
</tr>
<tr>
<td>Hammerstones</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.8 - Artifacts recovered in excavation units 4A-1 and 4A-2.

5.9 Summary of Magdalena I Excavations

The site of Magdalena (located on the edges of the modern village of the same name) occupies a series of river terraces to the east of the Rio Lato (Fig. 4.14); it is a Type V site in the local settlement hierarchy. Walters divided the site into three survey sections, each separated from one another by natural quebradas; Magdalena I is the northernmost sector of the site. In July 2004, we found jadeite debitage scatters in the western and eastern perimeters of the elite ceremonial/residential core of Magdalena I, in direct association with elite residential architecture. Magdalena I has been heavily looted, making it difficult to find undisturbed locations for test-pitting.

Seven test pits (Operation 8) were excavated at Magdalena I: one test pit in the eastern perimeter of the site (8A-1), one test pit in the central plaza area (8A-3), and five
test pits in the western portion of the site (8A-2, 8A-4, 8A-5, 8A-6, and 8A-7) (Fig. 5.24; Table 5.9). None of the excavations reached more than 80cm before terminating in sterile soil or at bedrock. Units 8A-1 and 8A-6, excavated in the eastern and western perimeters of the site respectively, produced the greatest amounts of jadeite production evidence, the vast majority of which were small flakes (Table 4.12). Three units (8A-4, 8A-6, 8A-7) were excavated into concentrations of jadeite debitage located downslope of the eastern group of structures in the hopes of finding a refuse dump, but all units yielded few artifacts below the uppermost levels. All levels of all units yielded Late Classic period ceramics, along with significant amounts of Early Classic period ceramics.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Obsidian Blades</th>
<th>Obsidian Flakes</th>
<th>Jade Flakes</th>
<th>Ground Jade Fragment</th>
<th>Jade Bead Preform</th>
<th>Chert Drills</th>
<th>Worked Shell</th>
<th>Non-greenstone beads</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A-1</td>
<td>5</td>
<td>1</td>
<td>817</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8A-2</td>
<td>5</td>
<td>29</td>
<td>37</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8A-3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8A-4</td>
<td>14</td>
<td>1</td>
<td>67</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8A-5</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>8A-6</td>
<td>10</td>
<td>2</td>
<td>165</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8A-7</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTALS</td>
<td>35</td>
<td>33</td>
<td>1091</td>
<td>3</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.9 - Artifacts from Magdalena I test units.

5.10 Miscellaneous Excavations

One test unit was excavated in each of the following sites: Vargas IIB (Operation 7, Unit (7A-1), KM93-I (Operation 9, Unit 9A-1), and KM 92-III (Operation 10; Unit 10A-1). Each unit was excavated in areas with surface concentrations of jadeite debitage, although none were successful in locating dense, stratified jadeite deposits (Table 5.10). Few ceramics were recovered in each unit, the majority of which dated to the Late Classic period.
5.11 Discussion of Excavation Results

One of the primary goals of this dissertation research was to undertake test excavations to confirm the presence of in situ production evidence in areas with dense surface concentrations of jadeite productiondebitage. Unfortunately, none of the excavations yielded in situ evidence, but the test excavations did recover a great deal of material related to jade artifact production. A total of 5,744 pieces of jade were recovered from all excavations. In addition, tools associated with jade artifact production were also recovered, including 296 chalcedony drills and drill fragments and 2 hammerstones (Table 5.11).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Obsidian Blades</th>
<th>Obsidian Flakes</th>
<th>Jade Flakes</th>
<th>Jade Bead Preforms</th>
<th>Jade Hollow Drill Core</th>
<th>Chert Drills</th>
<th>Worked Shell</th>
<th>Non-greenstone beads</th>
</tr>
</thead>
<tbody>
<tr>
<td>7A-1</td>
<td>45</td>
<td>23</td>
<td>67</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9A-1</td>
<td>15</td>
<td>22</td>
<td>95</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10A-1</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTALS</td>
<td>62</td>
<td>38</td>
<td>167</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.10 - Artifacts from miscellaneous test units.

<table>
<thead>
<tr>
<th>Artifact Types - All Excavations</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade Flakes</td>
<td>5,585</td>
</tr>
<tr>
<td>Complete Jade Beads</td>
<td>6</td>
</tr>
<tr>
<td>Jade Beads Preforms</td>
<td>12</td>
</tr>
<tr>
<td>Broken/Partial Jade Beads</td>
<td>36</td>
</tr>
<tr>
<td>Jade Hollow Drill Cores</td>
<td>48</td>
</tr>
<tr>
<td>Cut Jade Fragments</td>
<td>9</td>
</tr>
<tr>
<td>Jade Fragments with Ground Facet</td>
<td>49</td>
</tr>
<tr>
<td>Chalcedony Drills</td>
<td>296</td>
</tr>
<tr>
<td>Worked Shell Fragments</td>
<td>33</td>
</tr>
<tr>
<td>Obsidian Blade and Blade Fragments</td>
<td>1,223</td>
</tr>
<tr>
<td>Obsidian Flakes</td>
<td>351</td>
</tr>
<tr>
<td>Obsidian Blade Cores</td>
<td>249</td>
</tr>
<tr>
<td>Non-jade beads or bead fragments</td>
<td>7</td>
</tr>
<tr>
<td>Hammerstones</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5.11 - Artifact totals from all excavations at all sites.
Taken together, the results of the test excavations suggest that surface evidence of jade artifact production is a somewhat reliable indicator of the presence of subsurface deposits of jade artifact production at Middle Motagua Valley sites. In 20 of 32 (63%) excavation units, jade artifacts were recovered below the uppermost stratigraphic level, although 12 units yielded jade in only the uppermost level. However, only the excavations at Guaytan 4 and Guaytan 7 yielded evidence of jadeite artifact production in clearly sealed contexts beneath plaza resurfacings. This indicates that surface scatters are indicative of jade production activity in the vicinity of the location of those scatters, but may not be representative of the full range of productive activities present at individual production areas at sites in the Middle Motagua Valley. In addition, all excavation units contained Late Classic ceramics in all excavation levels.

Another primary goal of this dissertation field research was to obtain samples from subsurface deposits to use along with surface collections to understand the technological process of jadeite artifact production in the Middle Motagua Valley. Our excavations recovered evidence of a range of artifacts from different stages of jade beads and other forms of jade artifacts. In Chapter 6, I use the surface collection and excavation data from this field research to reconstruct the technological process of jadeite artifact production in the Middle Motagua Valley.

Data from the excavations and surface collections also suggest that other lapidary goods were produced at some sites with evidence of jade artifact production. Surface collections at Magdalena I, Vargas IIA and Guaytan 4 included beads of stones other than jadeite that were broken during production. Evidence of the production of shell artifacts was recovered from surface collections at Magdalena I and Vargas IIB. These surface
collection data were complimented by excavation data. Excavations at Guaytan 4, Guaytan 7 and Vargas IIB yielded evidence of non-jade stone bead production, while only excavations at Guaytan 4 yielded evidence of shell artifact production. The co-occurrence of these different types of lapidary production are examined in further detail in Chapters 6 and 7.
CHAPTER 6

MAKING THE JADE:
THE TECHNOLOGICAL PROCESS OF JADE ARTIFACT PRODUCTION

A primary goal of this dissertation research is to use archaeological surface collection and excavation data to reconstruct the technological process of Classic period jade artifact production in the Middle Motagua Valley. Understanding the technological processes involved in jade artifact production and their material signatures provides a means for examining the organization of production across time and space, through an examination of the contexts in which evidence is recovered. What we know of the prehispanic process of jade artifact production has come from ethnohistoric sources (Sahagún 1950-1982) or studies of finished artifacts (Kidder, Jennings and Skook 1946: 118-124; Lothrop 1957; Foshag 1957: 44-57; Digby 1964: 14-20; Proskouriakoff 1974: 8-17; Taube 200). Recent studies of jade production debitage (Walters 1982; Kovacevich 2006, 2007; Rochette 2009) have significantly added to our understanding of the processes of jade artifact production.

In this chapter, I provide an overview of the technological processes involved in prehispanic jade artifact production based on ethnohistoric, ethnographic and archaeological data from Mesoamerica and from other jade lapidary traditions around the world. Then I discuss the lithic artifact analyses undertaken as part of this dissertation research and how these analyses are linked to an understanding of the technological process of jade artifact production. Using the result of these analyses, I then present a model for the operational chain for jade artifacts, particularly jade beads, in the Middle Motagua Valley (MMV). In addition, I address the presence of other types of lapidary
production at MMV sites, which suggest that some households may have been involved in *multicrafting* of different lapidary products through the use of overlapping or intersecting technologies.

### 6.1 Previous Studies of Jade Artifact Production

Although jade and jade artifacts were symbolically important and highly valued throughout Mesoamerica since the Early Formative period (Chapter 3), jade use and knowledge of jade sources and production techniques seems to have disappeared rapidly after the Spanish Conquest. Ethnohistoric accounts regarding jade artifact production and the identities of those involved in crafting jade are somewhat vague, but provide a basis for understanding Mesoamerican lapidary production. The only ethnohistoric account of lapidary production techniques comes from Sahagún's (1547-1558) descriptions of Aztec lapidaries:

"The lapidary [is] well reared, well advised; a counselor, informed in his art; an abrader, a polisher; one who works with sand; who glues [mosaic] with thick glue, works with abrasive sand, rubs [stones] with fine cane, makes them shine. He makes them shine.

The good lapidary [is] a creator of works of skill. [He is] adroit, a designer of works of skill, a gluer [of mosaics of stone]. They are glued. He creates, he designs works of skill. He grinds down, he polishes, he applies abrasive sand [to stones]. He rubs them with fine cane; he makes them shine; he glues [mosaics of stone], of turquoise. He cuts [stones], cuts them into pieces, grinds them down, cuts them into triangles, forms designs of them.

The bad lapidary [is] one who scrapes [the stones], who roughens them; who raises a clattering din. [He is] stupid, bird[-like]. He scrapes [the stones]; roughens, shatters, pulverizes, ruins, damages them; raises a clattering din." (Dibble and Anderson 1961: 26)

"The master lapidaries cut rock crystal, and amethysts, and green stones, and emerald-green jade, with abrasive sand, and hard metal. And they scraped them with a worked flint tool. And they drilled them; they bored them with a metal tubular drill. Then they slowly smoothed the surfaces; they polished them; they gave them a metallic luster. And then they finished them off with a piece of wood [and very fine abrasive]. They polished them so that they gleamed, they
sent forth rays of light, they glistened. Or with a piece of fine cane [containing silica] the lapidaries polished, finished, perfected their artifacts."

[Bloodstone] could not be cut with abrasive sand, but could only be broken into pieces, beaten with a stone; and its rough pieces, which were no good, which could not be polished, were cast away." (Dibble and Anderson 1959: 80-81)

"[Ordinary jades] are formed in this manner: they are round, reed-like, like a navel, like a tomato, triangular, cut in triangles, formed into triangles, thin formed into squares. They are polished, ground, worked with abrasive sand, glued with bat excrement, rubbed with a fine cane, made to shine. They glisten, they are transparent; there light appears" (Dibble and Anderson 1963: 223).

Taken together, these passages provide a valuable starting point for reconstructing the prehistoric techniques used in the production of jade and other lapidary goods. Although the descriptions come from central Mexico a few decades after Spanish contact, they are useful, with certain caveats, for understanding techniques used by the ancient Maya, given the continuity of a stone and wood-based technology between Classic Maya and Postclassic Aztec times. Based on the descriptions, two primary technological categories are evident: percussion (shattering and pecking) and abrasion (grinding, sawing, drilling, incising and polishing). In the following sections, I address the various techniques of jade production, and the types of archaeological signatures that each would have produced. In these descriptions, I include information from archaeological, ethnohistoric and ethnographic sources.

6.1.1 Percussion Methods

Percussion techniques include any methods of artifact production that involve striking one body forcefully against another, with the objective of rapidly removing fragments from one of the bodies in contact. Although in the passage cited above the "bad lapidary" is described as one who "shatters" stones, percussion was certainly an important initial step in preparing jade for production into finished artifacts, as Sahagún
notes for lapidaries working with bloodstone, a stone similar to chert. Percussion would have been especially expedient in cases where a nodule or piece of jade suitable for a particular artifact was not available, as it would have been a much quicker means of producing a workable blank than grinding an object into shape. The material correlates of percussion techniques include (1) debitage flakes, (2) pieces of jade with visible, patterned flake scars, and (3) the tools used to achieve the removal of flakes, such as hammerstones, punches and anvils. Percussion can involve one of three techniques: (1) direct percussion, (2) undirected percussion, and (3) pecking.

Direct percussion is performed by “holding the material to be flaked in the unsupported hand and directing the percussion or pressure implement with the other hand to detach flakes or blades,” with blows being direct toward platforms from which the detachment is initiated (Crabtree 1972: 59). Flakes include “any piece of stone removed from a larger mass by the application of force” (Crabtree 1972: 64), and which are typically characterized by a platform (the flat surface upon which a flake was struck) and bulb of percussion (bulbar part on the ventral surface and proximal end of a flake). Flakes may be of any size or dimension, depending on the strength and angle of the force applied to the platform from which it was struck. While direct percussion using hard, forceful blows would produce larger flakes, the irregular fracture patterns of jadeite also result in smaller flakes that follow natural irregularities in jade and are often impeded by the dense crystalline structure of jadeite. In a small replication experiment that I conducted using jade from the Middle Motagua Valley, hard blows using a jadeite hammerstone produced flakes larger and smaller than 5cm (Fig. 6.1).
Figure 6.1 - Jadeite flakes produced by hard-hammer, direct percussion. Note that flakes are larger AND smaller than 5cm in length.

Undirected percussion is performed by resting a core of lithic material on an anvil and striking it with a hammerstone, although blows using this method are not directed at prepared platforms on the core, as they are with direct percussion techniques (c.f. Crabtree 1972: 42). Undirected percussion produces flakes and shatter, the size of which depend on the amount and direction of allied force. In practice, it may be difficult to differentiate between flakes produced by direct versus undirected percussion for fine-grained, dense stones such as jadeite, owing to its crystalline structure, which can cause places to terminate unexpectedly. During the pilot study in the Middle Motagua Valley that I conducted in July 2004, I visited the site locally known as "Cenegal" with Dr. Karl Taube and a local jade prospector, Carlos Gonzalez. It contained a large, 20m wide scatter of early-stage reduction flakes associated with jade celt production (Fig. 6.2). In addition to these flakes, we also found what appeared to be a jade boulder with pock marks on one surface indicating its possible use as an anvil (Fig 6.3); no architecture or ceramics were evident at the site. Unfortunately, the site was destroyed the following year, apparently by jade dealers using a backhoe to look for a jade outcrop. In this
dissertation, no distinction is made between flakes produced from direct versus undirected percussion, as their material signatures and difficult to distinguish.

Pecking is performed to “form overlapping superimposed cones [of percussion], usually with the direction of force being applied to the surface of the material in a perpendicular direction” (Crabtree 1972: 80). Pecking was used as a means of initially shaping round beads, celts, and earflares after a suitable blank had been selected for production. is done to shape an artifact through the gradual reduction of the object. Unlike direct and undirected percussion, pecking does not produce flakes, but instead produces small “dust” or small fragments less than 1 mm in size, which are not readily recoverable from excavations. However, these small percussion scars would have been undesirable and would have been removed though subsequent abrasion. Nevertheless, Taube (2004: 21) notes that a few jadeite celts in the Dumbarton Oaks collection retain evidence of pecking, even after grinding. The term pecking will only be used to refer to cases in which objects show signs of modification consistent with this technique.

Figure 6.2 - (a) Early-stage percussion flakes at Cenegal. (b) Aborted jade celt preforms from surface collections at Cenegal. (Pen used for scale is 14 cm long.)
Percussion reduction of jade artifacts requires the use of hammerstones of sufficient hardness (greater than 6.5 – 7.0 MOHS scale) and density to be effective. Archaeologically-recovered hammerstones associated with jade artifact production include jade hammerstones at Guaytan (Walters 1980b; Rochette 2009) and Cancuen (Kovacevich 2006), as well as quartzite and chert hammerstones (both Mohs 7) at Cancuen.

6.1.2 Grinding/Abrading

Although the term carving is often used, it is, in a strict sense, inappropriate for describing the shaping of jade artifacts. Carving involves the cutting of an object by removing material through the direct use of a tool of some sort. Unlike wood or softer stones which can be cut directly, the hardness of jadeite (Mohs 6.5-7) renders most tools relatively ineffective. As Sahagún notes, prehispanic lapidaries had to rely on the use of abrasives to facilitate the process of shaping jadeite artifacts into desired forms. It is the abrasives that effectively did the work in shaping these artifacts. Therefore, grinding or abrading is a more appropriate term, involving the rubbing of two objects past one
another, typically with the addition of an abrasive, with the goal of mass reduction of the original form or nodule of jade (c.f. Walters 1982: 52). As noted earlier, pecking is typically done to roughly shape an object before it is ground into form.

Grinding can be done through one of two means. One possible method is grinding a jade artifact against a solid abrasive block of materials such as sandstone. Chapman (1891: 500-501) and Desautels (1986: 94) note that Maori adzes were ground into shape with the use of water and slabs or blocks of sandstone or slate (Fig. 6.4). At archaeological sites in Idzumo Province, Japan, West (1963: 11) reports the recovery of broken and unfinished jade beads along with grinding stones of "granite, with parallel grooves and large circular depressions." Stones with such linear or circular impression would likely provide the only easily-identifiable evidence of such production activities at archaeological sites, as the grinding process would produce microscopic dust that would be difficult to discern from a surrounding matrix. In Mesoamerica, grinding stones used for lapidary artifact production have been identified at Tlajinga 33 at Teotihuacan (Widmer 1991), at Otumba (Charlton 1993) and at Cancuen (Kovacevich 2006). Only at Cancuen has evidence of jadeite production been recovered, where the grinding tools included slabs of schist and greenstone (Kovacevich 2006: 167).

Figure 6.4 - Artist's rendition of Maori nephrite adze grinding.
(from Desaultes 1986: 101)
Alternatively, shaping of an artifact could also have been achieved by grinding the jadeite artifact with a "flint-like" tool, sometimes called a “rasp” (Adams 2002: 79), rather than applying the jade artifact to an abrasive slab. Foshag (1957: 52) argues that rasping would have been used only for reducing pieces intended for mosaics to an appropriate thickness. In the absence of a tool that can be identified as a rasping tool, in practice, it would be difficult to differentiate between rasping and other forms of grinding. Therefore, in this dissertation, the term grinding will be used to describe techniques that were intended to roughly shape the surface of an artifact through abrasion.

In most cases grinding would have to be performed along with the use of loose abrasives of sufficient hardness to grind jade, as noted in the passages from Sahagún earlier. Possible abrasives available in Mesoamerica include garnet, quartz, and crushed jade. In a possible Early Classic jade-worker's burial (no human remains were found) at Kaminaljuyu, Kidder, Jennings and Shook (1946: 85, 120) report finding unfinished jade artifacts along with abrasives that included pulverized jade fragments (maximum grain size = 3mm) and quartz sand, which would have been the most readily available abrasive in most areas (quartz = 7 MOHs, equal to or greater than jadeite). Foshag (1957: 50) also mentions the possibility of using crushed garnet (Mohs 6.5-7) as an abrasive, but to my knowledge, no garnets have been recovered from archaeological sites in Mesoamerica.

Archaeological identification of locations where grinding took place would require the presence of grinding tools, such as those mentioned above, or abrasives, as the process of grinding itself does not produce readily detectabledebitage. In his work at Tlajinga 33 in Teotihuacan, Widmer (1991) successfully used heavy-fraction flotation to recover microdebitage of greater than 1mm from soil samples to demonstrate the
intensity of lapidary production across the apartment compound. While such recovery methods would certainly aid in identifying particular types of lapidary production that were not recoverable through standard 1/8" inch mesh screening, they would not necessarily result in the identification of abrasives used in lapidary production because of the difficulty of distinguishing anthropogenically generated from natural quartz grains (Widmer 1991: 145). The results of grinding activities may be detected on unfinished or incomplete artifacts that show evidence of linear striations or smoothed facets resulting from the grinding process.

6.1.3 Sawing

Sawing involves cutting jade through the use of an implement moved laterally side to side (c.f. Walters 1982: 52). Although Sahagún (Dibble and Anderson 1959: 80-81) described Aztec lapidaries as cutting jade "with abrasive sand, and hard metal," the use of metal for lapidary tools was likely a Spanish introduction (Foshag 1957: 46). Like grinding, sawing of jadeite could have been done through one of two basic methods: by using a stone of equal or greater hardness than jadeite (with or without the aid of abrasives), or through the use of a saw of softer material along with the application of abrasives of sufficient hardness. In New Zealand, Chapman (1891: 498-499) described the use of slabs of "quartzose slate" and water to saw pieces of nephrite jade from outcrops by the Maori (Fig. 6.5). Artifacts resembling stone saws have not been reported in Mesoamerica.
Examination of jadeite artifacts at some Mesoamerican sites demonstrates that sawing was a widely-used technique for removing blanks from larger jade bodies. At Kaminaljuyu, a large (40cm x 45cm) lump of jadeite was recovered from an Early Classic cache, with numerous scars on one face from the removal of pieces by sawing (Kidder, Jennings and Shook 1946: 119). A series of "wedge-shaped slices" were removed from the boulder by sawing inward from two different directions towards a central point that was never met; instead, the wedges were broken apart when sufficiently close to one another, leaving a septum on the boulder where the detachment took place. Foshag (1957: 52-53) examined three jade plaques from Nebaj, in the Guatemalan highlands, on which the original sawed surface was visible on the back of the plaques. An unfinished earflare from Kaminaljuyu (Kidder, Jennings and Shook 1946: 123-124) also shows evidence of having been cut into shape before grinding or polishing.

Saws of material softer than stone or metal could have included hardwood saws. Foshag (1957: 52) notes that many of the cut marks on the boulder at Kaminaljuyu were either entirely straight, or slightly concave at the bottom of the cut, suggesting that the...
implement used to saw the boulder was of a hard material. Similarly, Taube (2004: 21-22) notes that many Olmec pieces in the Dumbarton Oaks collection suggest that they had been cut using "abrasives with a bladelike solid instrument of wood." In a small replication experiment, Clark (2006) was able to produce a small depression in a slab of Motagua Valley jadeite using a tapered dowel rod of oak and crushed quartz abrasive; his successful use of the hardwood tool suggests that it might have been useful for sawing jadeite as well.

Another possibility was the use of a string saw, which involved the use of some sort of cordage and abrasives to cut jade. Jade carvers in China have been observed to used a large bow saw (Fig. 6.6) in the early 20th century to cut jadeite blocks (Whitlock and Ehrmann 1949: 31). Gump (1962: 205) describes the process of sawing:

"Three men work in sawing the stone. Two work the saw (la-su-tzu), which consists of a single strand of wire, generally notched, and drawn taut in a bamboo frame. With a ladle a third man supplies the wet abrasive mixture which does the actual cutting. After biting into the jade, the abrasive flows down into a bowl set to receive it, since it will be used again and again, until it contains too much jade dust to grip effectively. Weeks, even months, of constant, persistent, backbreaking sawing may be necessary before the stone is cut into desired pieces."

As there is no evidence of the use of metal wire in ancient Mesoamerica, cords or strings of other materials would have been required, such as made from plant fibers, leather (Lothrop 1955: 49), or animal sinew. Although laborious to use, string saws might have offered a number of advantages over hardwood or stone saws for the prehispanic lapidary. Lothrop (1955: 48) notes that string saws would have made it possible to cut curved interior lines within an object, which would not have been possible with flat saws. Taube (2004) notes the probably use of string sawing on a number of Olmec jades in the Dumbarton Oaks collection to define interior features on figurines. Based on
experimental replication studies, Chenault (1986: 64-67) used jute twine coated with lard and abrasive to cut a 1.2cm deep, 4mm wide groove in a piece of Alaskan nephrite, suggesting that such a procedure would have extremely time-consuming.

Because neither hardwood saws nor string saws would survive in the archaeological record, other material signatures are necessary for demonstrating the presence of sawing activity at archaeological sites. One line of evidence would be the recovery of unfinished artifacts, or fragments or pieces of jade showing indications of having been sawn. This would include the recovery of artifacts with visible septa from the removal of fragments through sawing (Fig. 6.7). In addition, fragments with flat surfaces, terminating in "ledges" where a piece was removed would also be present. In my own observations of sawn jadeite artifacts from Middle Motagua Valley sites, another indication of sawing is raised, parallel ridges on the cut, flat surface of an object (Fig. 6.8).
It is difficult, however, to differentiate between the use of string, hardwood and stone saws from archaeological material, although Turner (1957: 52-53) argues that different types of saws would leave distinctive marks on sawed objects. Flat-edged stone slab saws would likely produce cuts that are straight along the length of the termination of the cut, and produce a roughly U-shaped cross section (Chenault 1986: 54). Hardwood saws with a sharpened edge, on the other hand, would produce cuts that are V-shaped in cross-section, although Chenault (1986: 54) notes that stone saws with sharpened edges might produce similar results. String saws would produce cuts with U-shaped cross-sections, as well as long, convex cuts with the "ends cut deeper than the middle, because
of the bend in the string” (Chenault 1986: 56). Kovacevich (2006: 164) argues that the presence of string-saw anchors from jade-working contexts at Cancuen suggests the use of string saws at the site to cut jade (Fig. 6.9).

Another difficulty regarding sawing of jadeite artifacts relates to the identification of the type of artifact that was being produced. Sawing may have been initiated in order to produce a blank that was intended to be worked into a finished object, such as a plaque or mosaic inlay. On the other hand, sawing may have been done to remove a portion of an object during the production of an artifact form from an initial core of material. In this case, sawing could have been used to remove material for the production of earflares, tubular beads or other objects with generally long, flat surfaces. In these cases, it may be difficult to discern whether archaeologically-recovered material with evidence of sawing were by-products of the production of artifacts, or whether they represent blanks intended for further elaboration.

6.1.4 Drilling

In the passages quoted earlier, Sahagún notes that Aztec lapidaries “drilled [jade]; they bored them with a metal tubular drill” (Dibble and Anderson 1959: 80-81). As
already noted, there is scant evidence of the use of metal tools in prehispanic times. Instead, it is likely the prehispanic lapidaries used drills of stone or organic material for drilling jade artifacts. In this dissertation, drilling refers to the use of a tool, through rotary motion, to produce a hole or depression in a body or artifact of jadeite. Drilling of jade artifacts was done for one of two reasons: to produce a hole through which an artifact could be suspended, or to create an interior design on a jade artifact. Drilling was accomplished though two primary means: the use of a solid drill or the use of a hollow drill. It should be noted that drilling could take place at almost any point in the production process of jadeite artifact production. Evidence suggesting the use of both in prehispanic Mesoamerica is described below.

Solid drills or bits seem to have been used frequently for jade artifact and other lapidary production in Mesoamerica. Drilling was not done solely for the purpose of creating suspension holes in jade objects. In addition to complete holes, solid drills were also used to produce designs jade artifacts, such as masks and figurines. Taube (2004: 22) notes that a number of Olmec jade artifacts in the Dumbarton Oaks collections show evidence of drilling using solid drills with bits of various widths for the placement of features on figurines such as eyes and other design elements (Fig. 6.10). From observations of Costa Rican greenstone artifacts, Chenault (1986: 56-58) notes that drilling was also used to create interior designs on artifacts by placing a series of holes in an artifact with overlapping or closely-spaced to one another. Similar use of overlapping drill holes can be seen on a jade headdress ornament recovered at Cancuen (Fig. 6.11).
Solid drills could have been made of a number of materials. As noted earlier, Clark (2006) produced a small, shallow depression in a jadeite fragment using a tapered hardwood dowel and abrasives; the wood drill was turned by hand between the palms. In his replication experiments, Chenault (1986: 72-73) used a wooded dowel rod of ash, 8mm in diameter, with a sharpened end, to drill Alaskan nephrite. Drilling for two hours produced a 1mm deep, 8mm diameter, conical hole, slightly rounded at the bottom. Chenault (1986: 73) also used a rod of solid bamboo to drill the nephrite, with similar
results. Because solid drills of wood or bamboo would not typically be preserved, they are unlikely to be recovered archaeologically.

Nevertheless, evidence of the use of solid drills can be gleaned from observations of the drill holes or depressions on drilled artifacts. As noted above, solid drills of wood or bamboo would likely produce depressions or holes that have rounded, U-shaped cross-sections, as the drill bit would become blunt during the process of drilling. If drilling of a hole was done biconically (i.e. from both sides of an object), the point in the center of the object, at which the hole was completed, would contain ridges that show a similar rounded cross-section, unless drilling continued all the way through to produce a hole with straight interior walls.

Solid drill bits of chert have been recovered from a number of sites in Mesoamerica and would have served well for drilling jadeite, because chert has a Mohs hardness of 7.0, compared to a Mohs hardness of 6.5-7 for jadeite (Fig. 6.12). At the site of Nativitas in Puebla, Mexico, chert microdrills were recovered in association with evidence of jade artifact production (Hirth et al 2009). Similar chert microdrills have also been recovered in the jade workshop at Cancuen (Kovacevich 2006, 2007) and from the Peten Lakes region where they show microwear evidence of having been used to drill a fine grained stone, such as jadeite (Aldenderfer et al. 1989; Aldenderfer 1991). Evidence for the use of chert drills in drilling jadeite could be gleaned from two primary lines of evidence. First, the recovery of expended chert drills in association with jadeite production evidence would suggest their use for drilling jadeite. Second, drilled jadeite artifacts with V-shaped holes or depressions might indicate the use of solid chert drills (Fig. 6.13).
Because of the hardness of chert, it would likely hold a point for a longer period of drilling than would solid drills made from softer materials such as wood. This supposition is supported by experimental replication by Chenault (1986: 73-74) using a chert drill bit that did not erode as rapidly at the point as did the hardwood drill bit. It should be noted however, that chert drills would likely not have been effective for drilling very deep, narrow holes, as the width of drills at the point of hafting would make it difficult to fit within the hole.

In addition to solid drills, hollow tubular drills could be used for drilling jadeite. Although a hollow drill made from jadeite would likely have served well for drilling jadeite, no such drills have been recovered in Mesoamerica. Other possibilities include
hollow drills of bone or of reeds or bamboo, along with abrasives. A hollow bone drill was found in the bore hole of an alabaster plaque (Fig. 6.14) at Ixtapaluco, near Chalco, Mexico (Holmes 1919: 351-352). To my knowledge, no other bone drills have been identified in Mesoamerica, although it is possible that some may have been recovered, but not identified as tools. Tubular drills of bamboo or reed are unlikely to survive archaeologically.

Therefore, the best evidence of the use of hollow drills is the presence of the solid cores that are produced as by-products in the hollow portion of the drill (Fig. 6.15a). Such cores of jadeite have been recovered at Guaytan (Walters 1982) and Kaminaljuyu (Kidder, Jennings and Shook 1946: 120). These cores show evidence of both uniconical and biconical drilling (Fig. 6.15b). Typically, the ends of the cores closest to the exterior of surface where drilling terminated are wider in diameter than are the ends at the fresh break, owing the slight “wobble” during the rotary motion that would continue to wear away material where the hole started.
Some of the cores produced by hollow drills may have been re-used for tubular beads, thereby removing some evidence of hollow drilling from the archaeological record. At Kaminaljuyu, some tubular beads show some tapering at their ends, which Kidder, Jennings and Shook (1946: 120, fig. 151) argue to be evidence that they were produced from cores leftover from drilling other objects. Hollow tubular drills were also used to produce designs on artifacts. This technique can be seen most readily in circular design elements with central columns remaining on the artifact (Fig. 6.16).

Drilling involves a rotary motion with a considerable amount of pressure and speed to produce a depression or hole. The rotary motion could have been achieved
though two primary means, hand-rolling or through the use of a pump drill of some sort. Ethnographic descriptions of Maori lapidary techniques shows that they used chert drill bits hafted onto a wooden rod by rolling the drill back and forth between the palms and by turning it with a cord (Wills 1964). Digby (1964: 16) argues the prehispanic lapidaries would have used pump drills with fly weights for added pressure, as hand rolling of drills would not have produced sufficient pressure or speed (Fig. 6.17). To date, no clearly-identified fly weights have been recovered in association with evidence of jade artifact production.

![Figure 6.17 - Depiction of a pump drill showing flywheel and hafted drilling element (from Digby 1964:16).](image)

### 6.1.5 Incising

In the passages quote earlier, Sahagún notes that Aztec lapidaries "scraped [jade] with a worked flint tool," which Lothrop (1955: 48) suggests is a reference to the lapidary technique of incising. In this dissertation, incising refers to making marks or lines on a surface through the use of a sharp, pointed tool, for the purpose of making or otherwise defining design elements. Included in this category is the process that others (e.g Rands 1965: 574) have called graving or grooving, which was the means by which many bas-
relief artifacts were produced. Incising of jadeite could be accomplished by the use of pointed stone tools with a Mohs hardness equal to, or harder than jadeite (such as chert, quartz or jadeite itself). Kovacevich (2006: 166) suggests that chert tools would have been preferred as they could be more easily shaped at their point by pressure flaking to create points of the desired thickness.

Incising can be performed after initial grinding had created an adequately smooth surface on which to make incised lines. Alternatively, incising could have been done after fine polishing of an object. However, based on replication experiments using a quartz crystal, Taube (2004: 24) argues that incising jadeite is more easily done before final polishing, as the slightly rougher surface allows more direct contact between the jadeite and quartz tip. Thompson (1975: 106) argues that many incised designs on Olmec artifacts were made by their owners well after the objects were finished.

Evidence of incising is difficult to detect archaeologically because the technique does not produce readily-observable by-products. Further complicating the identification of production of incised artifacts is the fact that the tools used for incising lines were probably in the same forms as the chert drills described earlier. Foshag (1957: 57) argues that "sharp-bitted celts of jadeite or chloromelanite" would have been used for some form of incising. Again, a problem lies in distinguishing celts used for jadeite artifact production from those used for other tasks, such as felling trees, wood-working or agricultural work, which can only be done through examination of microwear patterns on the tools themselves. In this regard, Aldenderfer and colleagues (1989; Alderderfer 1991) have noted that some fine chert bifaces from the Peten Lakes region exhibit microwear polish similar to that produced in experiments from working fine-grained stones.
Although it is not possible to determine if this polish was produced by working of jadeite or some other fine-grained stone, it does suggest the possibility that chert bifaces were used by Classic Maya lapidaries for incising. A further complication with identifying incising tools is the fact that jade celts may have been recycled into other artifacts.

Given these problems of tool identification, the only clear evidence of the presence of incising as a production technique undertaken at a location is the recovery of unfinished artifacts with patterned incising. Walters (1982) reports finding evidence of incising at Guaytan, Madgalena II and El Terron, but does not provide illustrations of these materials. No similar unfinished jadeite artifacts showing signs of incising have been reported in association with evidence of jadeite artifact production from elsewhere in Mesoamerica.

### 6.1.6 Polishing

The passages from Sahagún quoted earlier make frequent mention of Aztec lapidaries making jade artifact "shine" or "gleam," referring to the polishing of jadeite artifacts to give them a glossy sheen. Polishing was likely the final step in the process of creating jade artifacts. Sahagún described the use of wood, cane, and fine abrasives for this production step. Fine cane or bamboo would have likely served as good polishing implements, as the silica that they contain would have acted as a good polishing agent (Widmer 1991: 136).

Based on microscopic examination of polished surface of jadeite artifacts, Foshag (1957: 55-56) argues that a hard polisher with a fine abrasive was probably favored for polishing by prehispanic Mesoamerican lapidaries. His conclusion is based on the
observation that high spots are polished, but that lower, "inter-grain" areas on jadeite objects are not polished, suggesting that an object with a hard, flat surface was likely used to polish the objects. Based on these observations as well as limited replication experiments, Foshag (1957: 56) proposed that the broad surface of jadeite celts would have served well for polishing. As noted earlier for incising tools however, it is difficult in practice to determine if a polished surface on a jadeite celt indicates its use as a polishing tool or if the polished surface on a jadeite celt was part of the production process of the celt itself. Polishing may have been accomplished by rubbing a jadeite artifact against a hard surface along with the aid of fine abrasives. At Cancuen, a slab of slate with a central depression (Fig. 6.18a) has been interpreted by Kovacevich (2006: 170) as a polisher for jadeite beads, similar to the slate slabs mentioned above in Japan by West (1963). Also at Cancuen, a limestone block with depressions that fit examples of earflares of all sizes probably served as a jadeite earflare polisher as well (Fig. 6.18b, 6.19).

In the absence of such tools however, identification of polishing of jadeite is difficult to identify. As is the case with incising then, the only other possible line of evidence suggesting the presence of jadeite polishing activity would be recovery of jadeite artifacts broken in the process of production that contain polished surfaces.
Figure 6.18 - (a) Slate slabs possibly used for polishing jadeite beads, recovered from jade workshop. (b) Limestone earflare polisher recovered from fill beneath the floor of elite residential structure (from Kovacevich 2006: fig. 5.23, 5.24).

Figure 6.19 - Limestone earflare polisher recovered from Cancuen, shown with recovered earflares that match depressions in polisher (from Kovacevich 2006: fig. 5.25).

### 6.2 Typology of Jadeite Artifact Production Evidence

A key component of this dissertation research was lithic artifact analysis to obtain information about the technological process of jadeite artifact and other lapidary production at sites in the Middle Motagua Valley. A total of 9,920 jadeite artifacts from surface and excavated contexts were analyzed as part of this dissertation research; an
additional 438 tools associated with jade artifact production were also analyzed (Table 6.1). I examined all lithic artifacts from a technological perspective, examining and measuring artifact attributes that might provide insight into the technological processes involved in their production. All non-flake jadeite artifacts were individually measured and weighed (and many photographed) as part of artifact analysis; jade flakes were measured and weighed in aggregate.

Based on the technological processes described in section 6.1, I created a typology of jadeite artifacts and associated tools recovered from survey and excavation in the Middle Motagua Valley. The typology contains twelve categories: jade cobble or chunk, large jade flake (> 5cm), small jade flake, hammerstone, jade bead perform, broken/unfinished jade bead, jade hollow drill core, complete jade bead, cut jade fragment, jade fragment with ground facet, chert blade fragments, chert drill (Table 6.1). Descriptions of the criteria used to define each type category are presented below, along with descriptions of the analyses and measurements taken. In cases where an artifact had characteristics of more than one category, the artifact was assigned to only one category, but its characteristics were recorded in notes. For example, a hollow drill core that showed evidence of grinding on one or more ends was categorized as a hollow drill core and counted in the category, but noted to have evidence of grinding.

Before continuing, I should note that no systematic determination was made about the mineralogy of greenstone artifacts collected as part of this dissertation (i.e. whether they were all jadeite or some other form of mineral or stone). For this dissertation, I assume that the great majority, if not all, greenstone artifacts recovered
from the Middle Motagua Valley are jadeite. This is a reasonable assumption for two reasons. First, because the region is the only positively identified jadeite source in Mesoamerica, it is reasonable to assume that much of the greenstone being used for artifact production in the Middle Motagua Valley was of locally-available jadeite. Second, few studies in the Maya area make a distinction between jadeite and non-jadeite greenstones, because the majority of greenstone artifacts in the Maya area were used in a similar manner, as wealth or status goods. Therefore, making such a distinction here would be of little utility because few data exist with which to compare such data from the Middle Motagua Valley.

In addition, such distinctions are difficult without the use of specialized equipment, because jadeite and many other greenstones have similar mineralogical characteristics. Examination of seven greenstone artifacts from Middle Motagua Valley sites by Mary Lou Ridinger of Jades S.A. in Antigua, Guatemala showed that all samples

<table>
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<tr>
<th>Jade Typology Category</th>
<th>Number</th>
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<tr>
<td>Jade Cobble or Chunk</td>
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<tr>
<td>Large Jade Flake</td>
<td>54</td>
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<td>Small Jade Flake</td>
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<td>Jade Bead Preform</td>
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<tr>
<td>Broken/Unfinished Jade Bead</td>
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</tr>
<tr>
<td>Jade Hollow Drill Core</td>
<td>62</td>
</tr>
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<td>Complete Jade Bead</td>
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</tr>
<tr>
<td>Cut Jade Fragment</td>
<td>20</td>
</tr>
<tr>
<td>Jade Fragment with Ground Facet</td>
<td>97</td>
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<tr>
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<td>26</td>
</tr>
<tr>
<td>Chert Drill</td>
<td>401</td>
</tr>
</tbody>
</table>

Table 6.1 - List of typological categories for jadeite artifacts used in this dissertation
fell within the range of jadeite for specific gravity and hardness tests (Mary Lou Ridinger 2006, personal communication). Nevertheless, all greenstone artifacts that were significantly different in color, mineral patterning, lustre, or other mineralogical characteristics were noted in comments in our artifact analysis logs.

6.2.1 Jade Cobble or Chunk

Artifacts in this category were identified as pieces of jadeite larger than 5cm, but that do not resemble flakes, either because they were "blocky fragments" with roughly similar length, width and thickness measurements, or because they were unworked nodules of jadeite (Fig. 6.20). The majority (n=21, 72%) of the cobbles or chunks contained one or more flake scars, but were included in the same category as cobbles without flake scars because of the difficulty of differentiating between scars produced by natural fracturing versus those produced by intentional percussion.

![Figure 6.20 - Jade cobble collected from KM91-III. Note scar on upper left surface of cobble. (Scale in 1 cm increments)](image)

6.2.2 Large Jade Flakes

Jade flakes measuring longer than 5 cm in length and containing either a striking platform or ventral bulb of percussion were defined as large jade flakes (n = 54) and were
individually measured, weighed and examined (Fig. 6.21). In addition to the maximum dimensions and weight of each flake, notes were made about the presence of cortex on any portion of the flake, as well as evidence of water-worn surfaces and of the presence of scars from the previous removal of flakes.

**Figure 6.21 - Large flakes from Vargas IV. (Scale in 1 cm increments)**

### 6.2.3 Small Jade Flakes

Small jade flakes are the by-product of direct and undirected percussion techniques and make up the vast majority (96%) of jade production evidence recovered as part of this dissertation research. In this analysis, any angular or irregular piece of jadeite debitage was categorized as a flake if was less than 5cm in length (Fig 6.22). Because jadeite fractures in an irregular and largely unpredictable manner owing to it dense crystalline structure, analysis of individual flakes does not provide reliable information about the reduction sequence used in producing jadeite artifacts. Therefore, all debitage flakes were passed through a series of nested wire screens of 1/2", 1/4" and 1/8" mesh size; flakes from each size grade were then counted and weighed in aggregate. This was done to obtain as much detail about debitage variation as possible, and in the hope that it might provide information about variation in the manufacturing sequence of jadeite artifacts.
6.2.4 Jade Bead Preform

Artifacts assigned to this category (n = 34) were identified as having been roughly shaped by grinding or percussion into the form of one of the bead shapes described above in Section 6.2.8, but upon which drilling had not been attempted (Fig. 6.23). Measurements included diameter, length, width, thickness, and weight of each bead preform. Many bead preforms retained scars from initial shattering, despite initial grinding of some of the bead preforms.
6.2.5 Broken/Unfinished Jade Bead

Artifacts in this category were defined as beads either broken or abandoned during the process of drilling (e.g. Fig. 6.13). Measurements included diameter, length, width, thickness, and weight of each fragmentary bead. If the fragmentary bead was drilled, the maximum interior diameter of the hole was measured; it was also noted whether the fragmentary bead was drilled biconically or uniconically. In addition, it was noted whether the bead was roughly or more finely ground into shape, a subjective determination that was made based on the comparative smoothness of the exterior surfaces of the fragmentary bead. The shape of each fragmentary bead was also noted using the categories described above in Section 6.2.3. The majority (n = 91, 82%) of the broken or unfinished beads were broken during the process of drilling, while only a small portion (n = 11, 10%) were abandoned after only a small depression was made in the bead; in addition, a small number of beads (n = 9, 8%) were broken medially, but with no obvious evidence of drilling.

6.2.6 Jade Hollow Drill Cores

Artifacts included in this category are defined as the by-product of the use of hollow drills to make holes in jadeite artifacts (Fig. 6.24). Measurements of all hollow drill cores included: length, weight, diameter at top of core, diameter at bottom of core; the diameter at the center point of the core was taken for biconical drill cores (Table 6.2). The majority (n = 53, 84%) of hollow drill cores only show evidence of uniconical drilling. In addition, observations were made of the presence of absence of grinding exhibited on both ends of the hollow drill cores.
Table 6.2. Measurements of jade hollow drill cores recovered from surface collections and excavations.

<table>
<thead>
<tr>
<th>Hollow Drill Core Type</th>
<th>Average Length</th>
<th>Average Max Width</th>
<th># Rough Both Ends</th>
<th># Ground One End</th>
<th># Ground Both Ends</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniconical</td>
<td>6.09mm</td>
<td>4.93mm</td>
<td>36</td>
<td>17</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>Biconical</td>
<td>6.97mm</td>
<td>5.80mm</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6.97mm</td>
<td>5.80mm</td>
<td>44</td>
<td>18</td>
<td>1</td>
<td>63</td>
</tr>
</tbody>
</table>

Figure 6.24 - Jade hollow drill cores from Guaytan 4 excavations. (a) Hollow drill cores from uniconical drilling. (b) Hollow drill cores from biconical drilling, with visible central portion where ends did not meet precisely. Note variation of smoothly ground and roughly shaped end of bead cores. (Scale in 1 cm increments)

6.2.7 Complete Jade Bead

Artifacts assigned to this category included only beads that were drilled completely. Measurements for each bead included maximum diameter and thickness of the bead itself, maximum interior diameter of the drilled hole, and weight of the bead. All beads were examined to determine if they were drilled uniconically (n=4) or biconically (n=14). Four types of beads were observed: button, donut, spherical and tubular. Button beads (n=12) are circular, but flat and thin, (Fig 6.25a). Donut beads (n=3) are thicker than button beads, and not completely flat on their ends (Fig. 6.25b). Spherical beads (n=1) were roughly spherical (Fig. 6.25c). Tubular beads (n=2) are cylindrical in shape, and greater thickness than diameter (Fig. 6.25d).
6.2.8 Cut Jade Fragment

Artifacts assigned to this category contain at least one flat surface, representing the surface along which a saw was passed to remove a fragment of jadeite. Identification of cut or sawed fragments was made based on the presence of a lip at one end of the flat (cut) faces of an artifact, which distinguish these artifact types from those that were ground on one surface or facet (Fig. 6.26). All cut jade fragments recovered in this dissertation field research were fragments that were removed from larger artifacts by sawing. Measurements were taken for all dimensions of the artifact itself, as well as for the cut surface(s). Observations about the shape (in cross-section) at the bottom of the cut were also noted.
6.2.9  Jade Fragment with Ground Facet

Artifacts in this category include all jade artifacts that contained at least one ground facet, but did not contain visible signs of having been removed by sawing. Determination of whether a fragment had a ground facet rested on the presence of at least one smoothed surface with visible striations from the grinding process, and not from natural smoothing (Fig. 6.27). In many cases, evidence of grinding is not present on the entirety of the surface of a jade artifact, but restricted only to a portion of the surface. In these cases, the maximal dimensions of the ground, flat surface was recorded; where multiple surfaces showed evidence of grinding, each facet was measured individually and recorded. Some fragments with evidence of grinding looked similar to artifacts assigned to the various bead categories described above, and may have been ground artifacts, such as plaques, that were intentionally smashed in order to produce recycled fragments for bread production. Nevertheless, unless a reasonably clear determination could be made that the ground fragment was intended to be a bead, it was categorized as a Jade Fragment with Ground Facet.

Figure 6.27 - Examples of artifacts classified as ground jade fragments. (Left - from Guaytan 4 excavations; Right - fragments from KM92 III surface collections). (Scale in 1 cm increments)
6.2.10 Hammerstones

Hammerstones (n = 8) are stones used as percussors to remove flakes or fragments through the use of percussion techniques. They were identified based on their roughly spherical shape (created by pecking) and on evidence of battering on their surface (Fig. 6.28). Maximum length, width and thickness of each hammerstone was recorded, along with the weight. All hammerstones were made of jadeite.

![Image of hammerstone]

**Fig. 6.28 - Jadeite hammerstone recovered from Guaytan 8 excavations. Note the battering on the surface near the top of the image. (Scale in 1 cm increments)**

6.2.11 Chert Blade Fragments

Chert blades (n = 26) were defined as long, thin chert artifacts with parallel lateral edges, and flat ventral surfaces and dorsal surfaces with one or more ridges. Hirth et al. (2009) argue that chert blades were worked on their distal and proximal ends for use as drills (see Section 6.2.12). Measurements included maximum length, width, thickness and weight of each blade, as well as note on the number of ridges on the dorsal surface of the fragment. In cases where only the medial section of a chert artifact was recovered, it was categorized as a blade, for lack of evidence of flaking to produce a drill on either end.

6.2.12 Chert Drills

Two separate categories of chert tools were defined in the construction of the current typology: chert drills and chert blades. Chert drills were defined as long, thin
chert artifacts with parallel lateral edges, flat ventral surfaces, dorsal surfaces with one or more ridges and with tapered distal or proximal ends produced by the removal of microflakes (Fig. 6.29). Measurements included the weight and maximum length of the drill, as well as the maximum width and thickness across the medial portion of the drill. In addition, width, length and thickness measurements of the drill bit were taken if the bit was present. Notes were also taken regarding the subjective degree of wear exhibited on the distal portion of the drill (e.g. blunt, sharp, semi-sharp), as well as the number of ridges on the dorsal surface of the drill.

Figure 6.29 - Chert drills recovered from Vargas III. Drill bits are missing from all three examples pictured. (Scale in 1 cm increments)

6.2.13 Other Lithic and Shell Artifact Analyses

In addition to jadeite artifacts and associated production tools, over 3,316 other stone and shell artifacts were analyzed as part of this dissertation research (Table 6.3). These included obsidian artifacts (blades, blade cores, flakes and two drilled obsidian ornament fragments), various non-greenstone artifacts (including beads and a partial earflare), shell artifacts (beads and a partial earflare), greenstone adzes, and fragments of possible stone tools for lapidary artifact production (described below). All obsidian blade and blade fragments were measured and weighed individually. Standard dimensions
(maximum and minimum length, width, and thickness) were recorded along with other physical characteristics.

<table>
<thead>
<tr>
<th>Artifact type</th>
<th>Quantity (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obsidian blade fragment</td>
<td>1,936</td>
</tr>
<tr>
<td>Obsidian prismatic core</td>
<td>251</td>
</tr>
<tr>
<td>Obsidian flake</td>
<td>1,044</td>
</tr>
<tr>
<td>Obsidian, ground</td>
<td>2</td>
</tr>
<tr>
<td>Shell fragment, worked</td>
<td>20</td>
</tr>
<tr>
<td>Shell bead, complete</td>
<td>19</td>
</tr>
<tr>
<td>Stone bead, complete</td>
<td>15</td>
</tr>
<tr>
<td>Stone bead, broken</td>
<td>7</td>
</tr>
<tr>
<td>Adze fragment</td>
<td>8</td>
</tr>
<tr>
<td>Misc. worked stones</td>
<td>6</td>
</tr>
<tr>
<td>Misc. ground stone tools</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 6.3 - Other lithic and shell artifacts recovered from excavations and surface collections.

6.3 Chaîne Opératoire of Jadeite Bead Production in the Middle Motagua Valley

One of the primary goals of this dissertation research is to reconstruct the organization of jadeite artifact production. Based on the results of the artifact analyses, a number of insights and observations can be made about the technological process and organization of jadeite artifact production in the Middle Motagua Valley during the Late Classic period. I focus on the Late Classic period for two reasons. First, all excavated contexts contained Late Classic ceramics, making the associated jade production evidence a reflection of that time period. Second, the Late Classic period is the only temporal period represented in the surface ceramics at all sites examined in this
dissertation research. Therefore, the most parsimonious assumption is that the majority of the evidence reflects the structure of jade production during the Late Classic period.

Jadeite beads were the most common form of jadeite artifact produced in the region; evidence related to bead production was found at every site in the survey area. There is less direct evidence of the production of other forms of jadeite artifacts, such as plaques and earflares. For this reason, I first make some observations about the organization jadeite bead production in the Middle Motagua Valley and then discuss the evidence of production of other forms of jadeite artifacts.

All jadeite used for production must first be obtained from available natural sources. Although jadeite was quarried from local outcrops in the Middle Motagua Valley like those at Manzanal (Walters 1982), cobbles were also collected from local rivers, as well as from the surrounding landscape. Nine large cobbles recovered from MMV sites had visible cortex on at least one surface, suggesting that they were collected from surface jadeite deposits. Today, local jade prospectors collect loose jadeite that has eroded from outcrops throughout the hillsides (Karl Taube 2004, personal communication; Fig 6.30a). In addition, eight jadeite cobbles and large flakes had smooth exterior surfaces consistent with having been water-rolled cobbles (Fig. 6.30b). Although the majority of large jadeite flakes and cobbles (n = 64) had no clearly-identifiable cortex, the data suggest that MMV artisans produced artifacts from a variety of abundantly-available and easily-procured sources of jadeite.

Ethnohistoric comparisons from China indicate that riverine material might have been preferred because of the ease with which it could be obtained, and because river-rolled cobbles could have been more practical for artifact production. The constant
tumbling of jade boulders and cobbles would have helped to remove the softer, unconsolidated (i.e. undesirable) material, leaving the hardest and purest material. In 16th century China, lapidaries preferred riverine boulders of nephrite from Khotan over quarried material, which often had fractures as a result of the extraction process that made working the material more difficult (Hansford 1968: 41). Additionally, quarried or surface-collected material materials would have likely been less desirable because they often contain a thick, orangish "rind" or "skin" of cortex that would need to be removed (Gump 1962: 37).

The great majority (96%) of jadeite artifacts were small percussion flakes measuring less than 5cm in maximum length (Table 6.4). The fact that these are the most abundant type of artifact found at MMV sites suggests that percussion reduction of cobbles and larger fragments was the primary means by which craft producers obtained small fragments suitable for the production of beads. This is supported by the fact that many (n = 15, 40%) bead preforms retained some of the rough angularity of these small
percussion fragments (Fig. 6.31). A total of eight jadeite hammerstones were recovered from both excavations and surface collections, almost all of which are heavily pitted, likely from being used to break apart jadeite cobbles by direct and indirect percussion methods.

<table>
<thead>
<tr>
<th></th>
<th>x &gt; 1/2”</th>
<th>1/2” &gt; x &gt; 1/4”</th>
<th>1/4” &gt; x &gt; 1/8”</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excavations</td>
<td>235</td>
<td>1835</td>
<td>3515</td>
<td>5585</td>
</tr>
<tr>
<td>Surface Collections</td>
<td>1068</td>
<td>2102</td>
<td>740</td>
<td>3910</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1303</td>
<td>3937</td>
<td>4255</td>
<td>9495</td>
</tr>
</tbody>
</table>

Table 6.4 – Size grades of small jade flakes from survey and excavations.

Fig. 6.31 - Jade bead preform from Guaytan 4 excavations. Note the rough angularity the preform retains from initial shattering and the lack of fine grinding or polishing. (Black box from scale below preform in 1 cm wide).

Shattering of jadeite cobbles was likely the most efficient way to produce blanks from which to make beads for a number of reasons. First, sawing or cutting of jadeite without the use of metal tools and diamond-tipped saws is a laborious and time-intensive process. If the goal was the production of beads, it would be more efficient to quickly produce smaller fragments by direct percussion flaking or indirect shattering of larger fragments to produce more manageable pieces with which to work. Second, as I noted in Chapter 3, because jadeite rocks are chemically and physically heterogeneous, they often contain a great deal of internal color variation and physical imperfections (e.g. mica and quartz inclusions). This would have provided a further incentive to efficiently evaluate the quality of jadeite cobbles for producing beads. Shattering jadeite cobbles would have
allowed artisans to quickly identify internal veins of desired colors, as well as portions of larger stones without imperfections which might be more easily worked.

After selecting fragments suitable for beads based on the quality and color of material, MMV artisans made jade bead preforms by grinding fragments into rough spherical, donut, button or tubular shapes, depending on the desired style of bead. It is after this step that there appears to have been some variation in the production process. Examination of hollow drills cores, complete beads and broken beads shows that some beads were (a) entirely smoothed and polished before drilling, (b) some were only ground smooth on one end, while (c) the majority were not ground at all prior to drilling (Table 6.5). It is unclear what influenced artisans to drill holes in some beads prior to fine-grinding or polishing, but not in other beads. It is possible that some beads were drilled first because drilling appears to have often resulted in bead breakage. In fact, 91 jade beads were discarded because they broke during biconical or uniconical drilling. In other cases, beads may have been smoothed or polished first to ensure that final product would be of a color and appearance that the artisan desired.

<table>
<thead>
<tr>
<th></th>
<th>Hollow Drill Cores</th>
<th>Broken or Unfinished Beads</th>
<th>Complete Beads</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rough One End</td>
<td>18</td>
<td>10</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Rough Both Ends</td>
<td>43</td>
<td>76</td>
<td>12</td>
<td>131</td>
</tr>
<tr>
<td>Ground Both Ends</td>
<td>1</td>
<td>17</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>TOTAL</td>
<td>62</td>
<td>103</td>
<td>17</td>
<td>182</td>
</tr>
</tbody>
</table>

Table 6.5 – Hollow drill cores, broken/unfinished beads, and complete beads showing evidence of grinding on one or more surfaces prior to drilling.

Drilling of jadeite beads was accomplished by both solid and hollow drills, possibly done sequentially, or as independent steps. As noted earlier, 26 chert prismatic blades and 401 chert drills were recovered from MMV sites (Fig. 6.32a). In some cases chert drills may have been used only for the initial stages of drilling a hole, possibly to
form a small divot or indent for placing a hollow drill. Visual examination of some jadeite beads broken during drilling suggests the use of chert drills exclusively (Fig. 6.32b). Two additional lines of evidence suggest the use of chert drills for drilling jadeite beads. First, chert drills are hard enough to abrade and drill jadeite. Similar chert drills have been found in association with jadeite production debitage at Cancuen (Kovacevich 2006, 2007) and Nativitas, Tlaxcala, Mexico (Hirth et al. 2009). Second, chert drill tips, when they were intact enough to be measured, overlap with the size of holes in broken and complete jadeite beads (Table 6.6).

<table>
<thead>
<tr>
<th>Diameter of Drill Hole</th>
<th>N</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chert Drill Tip Thickness</td>
<td>14</td>
<td>3.2mm</td>
<td>.80mm</td>
<td>2.2 - 4.9mm</td>
</tr>
</tbody>
</table>

Table 6.6 - Comparison of diameter of jade bead drill holes with thickness of chert drill tips. Tips of many drills were too worn to obtain accurate measurements.

Chert drills were not the only tool used to drill jadeite by MMV lapidaries; a total of 62 hollow drill cores were recovered from both surface collections and excavations. These cores were produced by the use of hollow tubular drills with the aid of an abrasive agent, although no hollow drills were recovered in this dissertation research. Analysis of
the hollow drill cores indicates that MMV lapidaries drilled holes in two different techniques. The majority of bead cores are uniconical (n = 53, 85%), suggesting that drilling of most beads was done from only one direction. In contrast, a few bead cores show evidence of drilling from two different directions (n = 9, 15%). These bead cores have a biconical shape with a septum in the center where drilling was completed; often the septum is not symmetrically aligned. It is unclear why some beads were drilled uniconically, while others were drilled biconically, but this pattern contrasts with that suggested for the Maya area by Kidder, Jennings and Shook (1946: 120), who observed samples in which biconical drilling was the more frequently used technique.

After drilling, beads were ground to eliminate surface irregularities and to smooth the entire surface, and then they were polished to a medium to high luster. Among modern agate bead makers in Khambhat, India, the sequence of drilling and polishing (i.e. which is done first) varies depending on the seasonal availability of bead-drilling specialists who do not engage in bead drilling during the farming season (Kenoyer et al. 1991: 53). Although there is no evidence to suggest that each step in the technological process of jade bead production in the MMV was performed by different individuals, timing of different steps with the farming seasons may also have occurred. For example, grinding a bead into shape is likely to be more compatible with discontinuous or intermittent activity, such that beads could be ground whenever time was available. In contrast, drilling would likely have been more time-consuming, especially if chert drills needed to be replaced or sharpened during the process. In Khambhat, drilling was the most time-consuming part of agate bead production, and could take anywhere between 2 and 10 hours to penetrate 1 cm (Kenoyer et al. 1991: 54). Therefore, drilling was
possibly an activity reserved until the agricultural season was finished so more time could be devoted to it. Final polishing was likely done with reeds, which contain silica that provides a surface sheen. The entire process of jadeite bead production is represented in the diagram below (Fig. 6.33).

Figure 6.33 - Flow chart depicting operational sequence of jadeite bead production in the Middle Motagua Valley.
6.4 Non-Bead Jadeite Artifact Production in the Middle Motagua Valley

While the focus of most of the lapidary work in the MMV was the production of jadeite beads, artisans produced other forms of jadeite artifacts, possibly including plaques. While the evidence of non-bead jade artifact production is too limited to allow for an evaluation of the complete process of their production process, some preliminary observations can be made here.

Large jade flakes (>5 cm in length, n = 54), may have been intended as blanks for the production of plaques. More direct evidence for the possible production of plaques includes 20 pieces of jadeite recovered from surface collections and excavated contexts that show signs of having been cut with a saw of some unknown material. These fragments contain one (n = 12) or more (n = 8) cut faces, from which pieces were removed. The majority of these sawn pieces appear to be by-products from the production of small, thin plaques, although no finished or incomplete plaques were recovered (Fig. 6.34). This is not surprising because larger jadeite plaques would have been unlikely to break during production, and therefore unlikely to be discarded. It is also possible that some of the drill cores from hollow tubular drills were from drilling plaques for suspension, but this is difficult to determine based on the current evidence; this possibility is discussed further in Chapter 7.
Fig. 6.34 - Jadeite artifacts showing evidence of having been cut. (Left) Artifact appears to be a fragment removed from the lateral portion of a partially-finished jadeite plaque. (Right) Artifact contains cortex on all surfaces other than the cut surface, and is a fragment of a core from which a piece was removed for manufacture of a jadeite artifact.

6.5 Other Production Evidence in the Middle Motagua Valley

In addition to jadeite artifacts, limited evidence of lapidary production of stone and shell artifacts were recovered at a number of Middle Motagua Valley sites. A total of seven non-jadeite stone beads that were broken during drilling were recovered from excavations at Guaytan 4 and Magdalena I, as well as from looters' backdirt at Vargas IIA. In addition, excavations at Guaytan 4 yielded evidence of shell artifact production, including a small "button" of shell, shell fragments that had been broken during drilling and an earspool (?) broken during production (Fig. 6.35). The production of shell ornaments and stone beads involved the same technology as that of jadeite artifacts, and thus were craft activities that the lapidary artisans of these sites could easily perform when raw materials were available, or when shell ornaments or stone beads were needed. Thus, it appears that some artisans took advantage of their lapidary skills and tools to engage in multiple types of craft production when necessary or when opportunities presented themselves.
Finally, excavations at Guaytan 4 yielded 920 obsidian blades or blade fragments, 231 flakes and 249 obsidian blade cores. Obsidian blade production is suggested by recovery of both blade cores anddebitage, although it is unclear if there presence is the result of production of obsidian blades for cutting shell or for producing tools needed for the production of craft goods. The supposition that obsidian blade production took place at Guaytan 4 is strengthened by the fact that Walters (1989:255) recovered an additional 5,199 obsidian blade cores in a portion of the patio group that has since been destroyed by the construction of a local school. Taken together, the evidence suggests that obsidian blade production was for both internal and external consumption, as the number of blades that could have been produced would have likely far exceeded internal needs.

### 6.6 Discussion

Based on the evidence presented above, jadeite beads appear to have been the focus of lapidary production in the Middle Motagua Valley during the Late Classic period. Evidence of the production of other styles of jadeite artifacts using other production techniques, such as sawing, were recovered at a few sites, and indicate that
artisans at some sites were also involved in the production of objects other than beads. Nevertheless, survey and excavation did not recover evidence of the production of elaborately carved and incised artifacts at any sites in the valley, though Walters (1982) reported finding artifacts with simple incised lines at Guaytan. The presence of multiple craft industries at some Middle Motagua Valley sites is an example of what Hirth (2005, 2009a) and Shimada (2007) have called *multicrafting* using overlapping technologies, where technical knowledge for the successful execution of one craft can be extended for use in the practice of different, but related crafts.

In the next chapter (Chapter 7), I discuss Middle Motagua Valley craft production activities in their sociopolitical contexts. The evidence presented thus far demonstrate that during the Late Classic Period in the Middle Motagua Valley, jadeite wealth goods were being produced by households and persons who, according to standard models of craft production in general and of ancient Maya craft production in particular, should not have been producing jadeite artifacts.
CHAPTER 7

ORGANIZATION OF JADE ARTIFACT PRODUCTION IN THE MIDDLE MOTAGUA VALLEY

As I noted in Chapter 1, a central debate among Mayanists has been about the nature of Classic Maya political organization and how it articulated with economic systems within and between polities. Although scholars have proposed a variety of models of Classic Maya political and economic organization, they have consistently argued that elites controlled the production and distribution of wealth goods and used this control to enhance or otherwise validate their position within society (Foias 2002, 2007; Rice 1987; but see Graham 2002 for problems with positing "control"). In particular, scholars note that because of their high value and their symbolic content, controlling the production and distribution of wealth goods would have been essential for the maintenance of power by Classic Maya elites (Aoyama 1995; Demarest 2004; Emery and Aoyama 2007: 164; Foias 2002, 2007; Inomata 2001, 2007; Joyce 2000). Based on this line of reasoning, they suggest that the production of such goods would have taken place in or near the residences of elites, and may have been undertaken by elites themselves (Inomata 2001, 2007; Emery and Aoyama 2007; Widmer 2009).

Archaeological data from this dissertation field research and from other recent studies (Kovacevich 2006, 2007) suggest that this was not always the case and requires a reassessment of current models of prehispanic Maya wealth goods production. In this chapter, I compare current models of Classic Maya wealth goods production to the evidence presented in Chapters 4-6 to demonstrate that jadeite wealth goods were being produced within households and likely by persons who, according to these models, should not have been producing jadeite artifacts. In particular, I argue that our ability to
understand this system of jadeite artifact production is hindered if we view *all* jadeite artifacts as wealth goods that were used in the same manner, or had the same "value" (see discussion in Chapter 3).

I begin by summarizing the evidence that is often used to characterize wealth goods production in the Maya area, including artifacts of jadeite, pyrite, shell, and painted polychrome pottery. I then evaluate the data from this dissertation field research in light of these models, particularly with reference to possible differences in the organization of production of different wealth goods. I argue that researchers have paid insufficient attention to variation in both the form and content of many wealth goods, which has obscured our ability to understand Classic Maya political and economic organization. Finally, I present two alternative possibilities to explain observed organization of jadeite artifact production in the Late Classic Middle Motagua Valley: one based on a domestic economy and one based on a political economy model.

### 7.1 Ancient Maya Wealth Goods Production

That a variety of items of personal adornment and other finely crafted wealth goods were a central part of elite regalia and accoutrement, and likely served as markers of Classic Maya elite identity, is obvious from the many depictions on painted polychrome vessels, murals, and carved monuments. Items identified as wealth, prestige or status goods by Mayanists include objects and ornaments of jadeite, shell and other stone, chert and obsidian eccentrics, pyrite mirrors, fine textiles, and painted polychrome pottery. What is still unclear however, is who produced these objects and where they were produced. Scholars often argue that because elites appear to have consumed wealth
goods more often than non-elites, they directly controlled the production of these goods either by sponsoring their production (which suggests the presence of independent specialists that can be “sponsored”) or by producing these items themselves. While this may certainly have been true for the most elaborate and finely crafted wealth goods, it fails to capture the role that "independent" specialists may have played in wealth goods production.

Many arguments concerning Classic Maya economic organization posit that the production of wealth goods was organized in a different manner than the production of subsistence or utilitarian goods (e.g. McAnany 1993; King and Potter 1994; Potter and King 1995; Inomata 2001). Classic Maya wealth goods production is viewed as: (1) highly skilled, involving production methods that are difficult to master (Reents-Budet 1998: 73), (2) often involving the use of exotic (non-local) raw materials, and (3) requiring a mastery of esoteric knowledge about aesthetic and moral values (Inomata 2007: 135-136). Scholars have generally relied on one of three lines of evidence to characterize the organization of Classic Maya wealth goods production: (1) depictions or references from pictorial or epigraphic sources; (2) indirect evidence from stylistic and compositional studies of painted polychrome pottery; and (3) direct evidence, including the presence of production debitage, tools, and broken or unfinished wealth goods. Here, I summarize the evidence often presented about the production of items considered "wealth" goods by Maya scholars.

Maya inscriptions are generally mute regarding economic organization. Nevertheless, some scholars point to elite participation in wealth goods production based on iconography and hieroglyphic texts on painted ceramics. Some texts on painted
ceramics contain the names of the artists who produced them, some of whom appear to have been elites themselves (Reents-Budet 1994: 55, 89, 132; Stuart 1987, 1989). For example, one painter, Ah Maxam of Naranjo, signed himself its’aat, son of ruler K’ahk’ Ukalaw Chan Chaak and Lady Shell Star (Reents-Budet 1998: 74; Martin and Grube 2000: 80, 81). Some vessels depict scribes or artisans performing artistic work in courtly settings, suggesting that they may have engaged in other forms of crafting (such as mask carving), in addition to painting hieroglyphic texts (Coe 1973; Coe and Kerr 1997).

Finally, some individuals in court scenes are depicted with scribal attire such as paintbrushes, leading some to suggest that they are either scribes, or are linked to the creation of these vessels themselves (Coe and Kerr 1997: 71-110; Reents-Budet 1994: 36-67).

Despite the frequent depictions of scribes on these vessels, identifying more direct evidence for the loci of painted polychrome ceramics production has proven much more difficult. Based on a stylistic analysis, Reents-Budet (1994; 1998) argues that Late Classic painted polychrome ceramics can be classified into a number of recognizable styles that suggest they were produced by a limited number of artisans working in so-called "palace school" contexts. Trace element analysis of painted polychromes from the site of Buenavista, Belize and surrounding sites sorted into seven groups, each of which included finely painted polychromes and more simply decorated, less well-made vessels (Reents-Budet et al. 2000: 111, 116). The results of these compositional analyses led Reents-Budet et al. (2000: 111, 117) to call these compositional groups the products of seven separate specialized "workshops" that served a wide-range of consumers and produced goods according to the needs of their consumers, which "most probably was
associated with the ruling elite of Buenavista." They support their argument for a palace workshop with a Late Classic secondary refuse deposit recovered in association with a palace building at Buenavista that contained "literally dozens of whole but broken" painted polychrome vessels, elite domestic trash (Ball 1993: 250), and "fragments of ceramic levigation vats for a calcareous white slip, a variety of modeling, smoothing, scraping, and burnishing tools, and several small paint-pots holding traces of red, yellow, and Maya-blue pigments" (Reents-Budet et al. 2000: 111n13). Based on the proximity of this evidence to the royal palace at Buenavista, Ball (1993: 250) argues that the building was the site of a "palace-sited polychrome production" location.

Regardless of the problems of inferring "workshops" from chemical composition groupings (Rice 2009: 133), it is not surprising that painted polychrome ceramics were created by highly-trained specialists. As Michael Coe (1973) and others have observed, proper execution of these vessels required that the artisan be literate and intimately familiar with Maya cosmology and history, which would have likely required lengthy training (Reents-Budet 1998: 73). The same erudition would have been required for scribes who crafted the elaborately incised jade, bone and shell artifacts found as elite burial furniture (Coe and Kerr 1997).

Nevertheless, to date the only direct archaeological evidence suggesting that such production took place in palaces comes from the rapidly abandoned site of Aguateca (Inomata and Triadan 2000; Inomata 2001, 2007; Emery and Aoyama 2007; Aoyama 2007). At Structure M8-10 (the "House of the Scribe"), a Late Classic sub-royal elite residence, excavations of the structure and associated middens recovered mortars and pestles believed to have been used to grind pigments as well as halved shells like those
depicted with scribes in ceramic paintings that are argued to have served as paint pots (Inomata 2001: 326). In addition, numerous chert crafting tools with microwear patterns associated with bone and shell working were recovered along with small amounts of bone and shell-working debitage (Emery and Aoyama 2007: 81). Based on the recovery of domestic artifacts in these excavations (including grinding stones, storage jars and cooking vessels), Inomata (2001: 327) argues that it was the residence of an elite scribe who likely produced wealth goods both for personal use as well as for use by the royal elite residing in the Aguateca palace (Inomata 2001: 331). Additionally, the Aguateca data point to the practice of multiple crafts (i.e. *multicrafting* c.f. Hirth 2006; Shimada 2007) by elite or attached specialists, a subject I address later in this chapter (Inomata 2007).

Further evidence for the participation of elites or attached specialists as producers of wealth goods comes from excavations at the Late/Terminal Classic sub-royal elite compound 9N-8 at Copan (Webster 1989). Excavation of Structure 9N-82 revealed a carved hieroglyphic bench and associated sculptures of scribes and a scribal god, suggesting that the head of the compound was an elite scribe (Fash 1989). In addition, excavations uncovered evidence of the production of shell and lapidary objects (including highly crafted elite regalia) in both public ("secular") and private ("sacred") areas at Structure 110 and Patio H (Webster, Evans and Sanders 1993: 282-287; Widmer 2009). Many of the materials worked were of non-local origin, including marine shell, greenstone, schist and pyrite. Based on the amount of debitage and exhausted tools (mostly heavily worn obsidian blades used for shell and wood working), Widmer (n.d.: 46-51) argues that production was for both internal consumption and for exchange.
(possibly as gifted items or tribute) to other, possibly more highly-ranked elites. Based on the domestic nature of the contexts of recovery of some of the artifacts, Widmer (n.d.: 47) argues that this production was likely carried out by the elite residents of the compound. Taken together, the data from 9N-8 lends further support to the role of elites in the production of highly crafted wealth goods. As was the case at Aguateca, identification of this production was aided by a catastrophic event (likely an earthquake) that sealed much of the evidence in situ.

Aside from these two well-defined examples, Classic period contexts of production debris of non-ceramic wealth goods elsewhere in the Maya area are more varied and equivocal. For example, despite the fact that shell ornaments are often included among lists of wealth goods by Mayanists, few instances of shell ornament production have been reported for the Classic period. Aoyama (1995) suggests that a midden containing chert and obsidian tools with microtrace evidence of shell working was the by-product of marine shell working at the site center of Copan. His conclusion is doubtful given the presence of only finished artifacts and freshwater jute shells in the midden, unlike the assemblage of partially worked, unworked and broken shell debris recovered from a shell-working household at Ejutla in Oaxaca (Feinman 1999). Evidence of shell artifact production has also been reported for two structures in the elite acropolis at Calakmul (Domínguez Carrasco and Folan 1999; Folan et al. 2001), but it is difficult to evaluate this evidence, as details of thedebitage have not been reported. In contrast to the elite production loci noted above, evidence of Late Classic period shell working at Caracol was found more often in non-elite, rural households than in elite contexts (Cobos 1994; Pope 1994; Chase and Chase 2001: 132), leading Chase and Chase
(1994: 10) to conclude that the producers "were not attached specialists". Parallelly these findings, cut marine shell fragments, possibly from the production of ornaments, were found in a Late Classic context at a rural non-elite plazuela group in the San Lorenzo settlement cluster in the Xunantunich hinterland (Yaeger and Robin 2004: 154).

The most extensive evidence of Late Classic period wealth goods production comes from recent research at Cancuen (Kovacevich et al. 2001; Kovacevich 2003, 2006, 2007). Excavation in structures M10-4 and M10-7 yielded over 3,250 pieces of jade, including about one kilogram of microdebitage embedded in earthen patio floors (Kovacevich 2007: 76-77). While the great majority of jade pieces were percussion debitage (91%), cut jade fragments, as well as eight jade beads (one a possible earflare blank in the process of being drilled) were also recovered (Kovacevich 2007: 78). In addition to jade debitage, tools associated with jade production (e.g. chert drills, hammerstones, polishing stones, see Chapter 6 for details) were recovered from the structures and associated middens. The structures are part of small mound group located 500 m north of the royal palace; both structures are ranked in the next to lowest tier of the structure typology for Cancuen (Kovacevich 2007: 76).

Despite the amount of production evidence from these two structures, only two jade artifacts were recovered from the ten excavated burials within the group (Kovacevich 2007: 78). Excavations in elite architecture elsewhere at the site revealed higher rates of consumption of finished artifacts, as well as possible evidence for the final-stages of jade artifact production in the form of a sandstone earflare polisher cached in an elite structure, although no other associated production evidence was recovered from elite contexts (Kovacevich 2007: 80). Nevertheless, jade beads were found in all
structure types at Cancuen, though they were significantly larger in elite structures, while earflares and plaques were found only in elite contexts. Kovacevich (2007: 82-86) concludes that jade artifact production at Cancuen was segmented, with nonelites performing simple, but laborious, tasks (shattering, pecking, sawing) in nonelite domestic structures, while the final stages of production were performed either by elites themselves or by attached specialists in elite contexts.

The current evidence, though limited, provides a general picture of the organization of Classic Maya wealth goods production. Scholars have emphasized the high degree of artistic and technological skill that was required to produce most items used as wealth goods, particularly for painted polychrome vessels and elaborately-crafted jade and shell ornaments (Reents-Budet 1998; Inomata 2001; Rice 2009). In doing so, they have emphasized the highly symbolic aspects of wealth goods, arguing that appropriate production of these goods would have required either well-trained, highly-skilled producers supported by patrons, or elites producing goods themselves. Nevertheless, the tools required for this production in general do not seem to have been highly specialized, and in some cases particular tools or even expedient flakes were used to craft objects of different raw materials (Aldenderfer et al. 1989; Aldenderfer 1991; Emery and Aoyama 2007; Aoyama 1995, 2007). Evidence of large scale, specialized production units seems to generally be absent, and most crafting of wealth goods appears to have taken place in or near residential, domestic architecture. In the following sections, I examine the evidence for jade artifact production collected as part of this dissertation research, in light of these characterizations of wealth goods production. In doing do, I propose some ways in which models of Classic Maya wealth goods production might be
fruitfully modified in light of these data to arrive at a more complete understanding of Classic Maya political and domestic economy.

7.2 Middle Motagua Valley Wealth Goods Production in Context

In Chapter 2, I described four aspects of craft production variability that are germane to this dissertation research: (1) production methods and technology, (2) scale and structure of production units, (3) the nature of the goods produced, and (4) sociopolitical context of production. Models of ancient Maya wealth goods production often expect co-variation among these dimensions, which has led to a number of inappropriate expectations of particular forms or systems of craft production (c.f. Feinman 1999; Hirth 2006, 2009b). In order to facilitate discussion and evaluation of the evidence from this dissertation field research, I deal with each of these topics separately, before moving to a more general discussion.

7.2.1 Production Methods and Technology in the Middle Motagua Valley

In Chapter 6, I summarized the technology of jadeite artifact production in the Middle Motagua Valley, including descriptions of production tools and by-products of the production process. Given the characterization of Classic Maya wealth goods production discussed above, we should expect to find evidence of more complex production techniques at more highly ranked sites in the local site hierarchy, with evidence of less sophisticated or skillful production evidence at lower-ranked, nonelite sites. Evidence along these lines might include the presence of different tools, or
differences in technological steps (e.g. percussion vs. sawing) at higher versus lower ranked sites (c.f. Kovacevich 2007).

Chert microdrills are one formal tool category associated with drilling of jadeite and shell. During the Late Classic period in the Peten Lakes region, Aldenderfer (1991: 210; Aldenderfer et al 1989) reports recovery of similar chert microdrills with microtrace evidence for the drilling of shell and fine-grained stones at the largest site in the survey area (Yaxha), and in association with "scraps of broken and cut jadestone." Elsewhere in Mesoamerica however, similar chert microdrills have been recovered in association with jade bead production in a Late Formative rural non-elite household at Nativitas in Puebla, Mexico (Hirth 2005; Hirth et al. 2009), and with Late Classic period marine shell ornament production at a non-elite household in Ejutla in the Valley of Oaxaca (Feinman 1999; Feinman and Nichols 2000, 2004).

Chert microdrills were recovered in surface collections at all but nine sites in the survey area (Table 7.1). Although they may have been used to drill materials other than jade (e.g. shell or other stone), their presence at most sites suggests that these tools were widely available. Examining the frequency of surface collected chert microdrills by site type further underscores this point, and shows that the technology was not restricted to the most highly ranked sites in the Middle Motagua Valley (Fig. 7.1). Overall, the majority of chert drills from surface collections (65 %, n=68) were recovered from sites in the three lowest tiers of the MMV site hierarchy.

In addition, chert blades were recovered from surface collections (although rarely, n=12) from sites in all tiers of the site hierarchy. Prismatic chert blades likely served as blanks for microdrills, a reduction sequence documented in the Peten Lakes region.
(Aldenderfer 1991b), Nativitas (Hirth et al. 2009), as well as the Channel Islands in California (Arnold 1987). Although the sample is small and inconclusive, the recovery of chert blades at all tiers of the site hierarchy suggests that the material, technology and skill necessary for producing chert microdrills was widespread, and not restricted to skilled craftsmen working at elite sites.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Hierarchy Type</th>
<th>Chert Drills</th>
<th>Chert Blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaytan 4</td>
<td>II</td>
<td>31</td>
<td>3</td>
</tr>
<tr>
<td>Guaytan 5</td>
<td>II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 6</td>
<td>V</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 7</td>
<td>V</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 8</td>
<td>IV</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Puente Hato</td>
<td>IV</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Vargas I</td>
<td>V</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IIA</td>
<td>V</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IIB</td>
<td>III</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Vargas III</td>
<td>III</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Vargas IIIA</td>
<td>II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IV</td>
<td>IV</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Magdalena I</td>
<td>V</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Magdalena II</td>
<td>III</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>El Terron N.</td>
<td>V</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>El Terron S.</td>
<td>IV</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>KM 91-2</td>
<td>IV</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>KM 91-3</td>
<td>III</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>KM 91-4</td>
<td>III</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>KM 92-1</td>
<td>III</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>KM 92-2</td>
<td>II</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>KM 92-3</td>
<td>III?</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>KM 93-1</td>
<td>II</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>KM 93-3</td>
<td>I</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>KM 93-4</td>
<td>III?</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Los Chaguites 1</td>
<td>II</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Los Chaguites 2</td>
<td>III</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>105</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 7.1 - Chert drills and blades from surface collections.
Turning to the test excavation data, chert drills were recovered from six of nine sites (Table 7.2). In order to control for differences in the total volume of excavations at different sites, I calculated the number of drills recovered per cubic meter of soil at each site (Fig. 7.2). Based on this measure, rates of chert drills recovered at Guaytan 4 (Type II), Guaytan 6 (Type V) and Magdalena I (Type V) were generally similar, and far above the rate of drills recovered from the three remaining sites. Examining the average number of chert drills recovered per cubic meter for each hierarchical site types, shows that the highest number were recovered from Type II and Type V sites (Fig. 7.3); The low rate of recovery at Type III sites is partially attributable to the few test pits that we were able to excavate at these sites. Nevertheless, the data show that chert drills were recovered in similar quantities in association with both nonelite (Type II) and elite (Type V) sites, contrary to expectations that technological differences would exist between them.
Table 7.2 - Chert drills and blades recovered from test excavations. The totals for Guaytan 4 represent the sum of all suboperations at the site.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Hierarchy Type</th>
<th>Chert Drills</th>
<th>Chert Blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaytan 4</td>
<td>II</td>
<td>235</td>
<td>10</td>
</tr>
<tr>
<td>Guaytan 5</td>
<td>II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>KM 93-1</td>
<td>II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IIB</td>
<td>III</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>KM 92-3</td>
<td>III</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 8</td>
<td>IV</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Guaytan 6</td>
<td>V</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 7</td>
<td>V</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Magdalena I</td>
<td>V</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>296</td>
<td>14</td>
</tr>
</tbody>
</table>

Figure 7.2 - Chert drills per cubic meter from excavations. Excavation units at Guaytan 5, KM93-1 and KM92-3 did not yield any drills.

Figure 7.3 - Chert drills per cubic meter from excavations, averaged per site rank.
More direct evidence for the diffuse character of drilling of jadeite among MMV sites comes from an examination of beads broken or abandoned during the process of drilling. A total of 59 jade beads broken during drilling were recovered from surface collections and screening of looter's backdirt at twelve sites (Table 7.3). The majority of these (76%) were button beads of a mica-rich jadeite collected from looter's backdirt behind the largest structure at Vargas IIA; broken beads were recovered from only one other Type V site (Guaytan 7). Comparing the quantities of broken or abandoned drilled beads by site type demonstrates that drilling of jadeite beads took place at all site types, although the majority of evidence was recovered from Type V sites (Fig. 7.4). Finally, while evidence of the use of hollow drills (i.e. hollow drill cores) from surface collections was rare, they were collected at all site types (Fig. 7.5), further underscoring the fact that hollow tubular drilling was a widespread activity, and not one limited to higher level, presumably elite site types because of constraints of technology or skill.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Hierarchy Type</th>
<th>Beads Broken During Drilling</th>
<th>Beads Abandoned During Drilling</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM 93-III</td>
<td>I</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Guaytan 4</td>
<td>II</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Guaytan 5</td>
<td>II</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>KM 93-I</td>
<td>II</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Vargas IIB</td>
<td>III</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Vargas III</td>
<td>III</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>KM 91-IV</td>
<td>III</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Los Chaguites 02</td>
<td>III</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>KM 92-III</td>
<td>III?</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Guaytan 8</td>
<td>IV</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IV</td>
<td>IV</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>KM 91-II</td>
<td>IV</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Guaytan 7</td>
<td>V</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Vargas IIA</td>
<td>V</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>59</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 7.3 - Sites at which beads broken or abandoned during the process of drilling were recovered from surface collections.
Walters (1982) argued that early stages of jade artifact production (i.e. percussion) were carried out at lower-level (nonelite) sites, while final stages (i.e. sawing, drilling, polishing and incising) were carried out at elite sites. While Kovacevich (2006; 2007) proposed a similar segmented production system for Cancuen, she argues that nonelites undertook the production of stylistically simple forms of jadeite artifacts, such as beads.
and earflares. Comparisons of different technological categories of jade artifact production across the local site hierarchy can help to evaluate these propositions for the Middle Motagua Valley.

As noted in Chapter 6, jadeite percussion debitage was by far the most frequently recovered technological artifact category in surface collections and excavations. Comparing the quantity of small jade flakes from surface collections, there is evidence of percussion production at all site types, with the highest totals from Type II, III and V sites (Fig. 7.6). Examining the average quantity of small jade flakes recovered per site within each site type reveals the same basic pattern (Fig. 7.7). The important point is that percussion flakes were found at all levels of the site hierarchy.

![Figure 7.6 – Small jade flute surface collections by site type. Note that flakes were recovered from all site types.](image-url)
Figure 7.7 - Average quantity of small jade flakes recovered from surface collections per site in each site type.

Jade flakes recovered from excavations provide a slightly different picture of jade percussion activity when examining the frequency of jade flakes recovered per cubic meter of soil (Fig. 7.8). The frequency of jade flakes was calculated by dividing the total amount of flakes recovered in each excavation unit by the volume of soil excavated in each excavation unit. The frequency of jade flakes per site type was then calculated by averaging the frequencies of jade flakes of excavation units at each site type. The highest frequencies are found at Type II and Type V sites, which is a reflection of the location of excavations into dense surface scatters of jade artifacts at Guaytan 4 and Magdalena I. In fact, the Type V frequency is greatly inflated by the extremely dense debitage deposit in unit 8A-1, where 817 jade flakes were recovered in only 0.4 m³ of soil.
Considered together, the evidence from excavation and surface collections indicates that the technology and skills necessary for drilling jade artifacts were largely redundant across different site types in the Middle Motagua Valley. Furthermore, drilling and percussion reduction was performed at sites throughout the local hierarchy. If the site hierarchy reflects differences in the social status, then there is no evidence from the current data to suggest that different tasks associated with jade artifact production were carried out at sites occupied by elites versus those occupied by non-elites. It should be noted however, that no evidence of the production elaborately carved jade artifacts was recovered at any of the MMV sites, nor was any evidence of incising encountered. Nevertheless, these data still run counter to expectations regarding the organization of wealth goods production in general, and particularly to many models of Classic Maya wealth goods production discussed earlier.
7.2.2 Scale and Structure of Production Units

In Chapters 4 and 5 and in Appendix A, I described the archaeological sites surveyed and excavated as part of this dissertation research. Determining exact loci of production (i.e. in or near where craft production actually occurred) based on surface remains is difficult, especially given the transformation processes that have affected archaeological sites in the Middle Motagua Valley. Many sites have been heavily looted or are located on land that is currently under cultivation, used for cattle pasture, or disturbed by modern buildings. Nevertheless, evidence of jade artifact production was found at every site in the survey region. These ranged in composition from non-mounded sites consisting only of surface concentrations of artifacts (e.g. KM 93-3), to those consisting of multiple structures or structure groups. While structures at some sites served non-domestic functions (e.g. vaulted funerary monuments, ball courts), it is likely that many of the structures at MMV sites are the remains of domestic structures or structure groups. Therefore, the most parsimonious explanation for the ubiquity of jade production evidence at MMV sites is that jade artifact production was not concentrated at only a few sites, but was instead a widespread activity that was often carried out within or near domestic households (represented by structure groups).

We can explore this possibility a bit further by examining contexts where jade production evidence was clearly associated with particular portions of sites. Although jade production evidence was recovered at all MMV sites, in most instances it was not concentrated in particular portions of sites, but was instead found distributed sporadically throughout many areas at many sites. At only a few sites can we infer thatdebitage was associated with particular structures or structure groups. Where this was possible, the
current data suggest that the physical scale and structure of production units varied significantly. At Magdalena I, a dense concentration of jadeite debitage was recovered from test excavations and surface collections on the eastern perimeter of the site, in association with a structure group that included Structure 3, a large, multi-roomed structure with 2 m high walls. The fact that Structure 3 contained multiple rooms suggests that it possibly served a dormitory function. Production evidence was also collected in association with cut-stone wall superstructures on the western edge of Magdalena I, located near a series of low mounds and the large Structure 7. Although the vessel forms for many ceramics could not be identified, excavation units in both areas yielded fragments of *comals* and storage jars, further suggesting that domestic functions were carried out in or near these structures. Together, the association of production evidence at Magdalena I (a Type V site) suggests the production of jade artifacts in association with elite (possibly residential) structures.

At Vargas IIA (a Type V site), jade production evidence in the northern part of the site was concentrated approximately 15 m to the north of Structure 1, a large mound of unknown function that has been heavily looted. The next-closest structure is 25 m to the east. Structure 1 occupies part of a possible a large civic-ceremonial group, as it is located 30 m across a flat plaza area from another large mound, which we were unable to examine closely because it was on the property of another landowner. While it is unclear why production evidence was concentrated in this area, it is notable that it was found closest to elite architecture. Nevertheless, it appears that the structure served some domestic purpose, because *comal* fragments were recovered near the structure, as was a fragment of a basalt *metate*, both of which suggest probable domestic activity.
In contrast, jade production evidence at Vargas III was found most densely concentrated in association with the smallest platform structures at the site, a small group of four low structures in the southeastern portion of the site, located 20 m away from the nearest structure group. However, as was the case with Magdalena I and Vargas IIA, a possible domestic function of the group is suggested by the presence of fragments of cooking and storage vessels, as well as a broken metate fragment. As described in Chapter 6, jadeite production evidence at Guaytan 4 was also associated with a humble structure group, and included evidence of domestic ceramic vessel forms. In addition, jade production evidence was recovered at KM93-1, Los Chaguites 01 and Los Chaguites 02, each of which is a small structure group. Nevertheless, production evidence was not clearly associated with particular structures at any of these three sites.

While the data do not provide conclusive evidence of the structure and scale of production units, they do suggest that wealth goods production took place predominantly within or near domestic structures in the Middle Motagua Valley. Many of these structures or structure groups likely represent the physical remains of ancient households. That evidence of craft production was located within or near domestic households is not surprising, as households were the primary loci of craft production throughout prehispanic Mesoamerica, a point to which I will return later in this chapter.

### 7.2.3 Nature of the Goods Produced

As I discussed in Chapter 2, archaeological studies of wealth goods production have often paid insufficient attention to the possible gradations of value of the goods being produced, often characterizing wealth goods as a monolithic category of non-
utilitarian goods. However, in recent studies of Classic Maya wealth goods production, some scholars have suggested that nonelites may have been involved in the production of wealth goods in general (McAnany 1989) or in the production of blank vases upon which painted polychromes were executed (Ball 1993). For jade artifact production, some scholars argue that nonelite participation was limited to the production of less “valuable” artifacts such as beads (Kovacevich 2007) or that they have only in particularly laborious or unskilled stages of production such as percussion (Walters 1982) or grinding and polishing (Moholy-Nagy 1997). Although the present data cannot fully address these propositions (particularly in the case of unique, highly-crafted or incised artifacts), they do allow for some tentative observations to be made about possible differences in jade crafting between elite and nonelite sites in the MMV.

Almost all sites (n=21, 75%) in the survey area contained evidence linked to jade bead production, either in the form of complete beads (along with the presence of jadedebitage), beads broken or abandoned during drilling, perform beads or the presence of chert drills (Table 7.4). More importantly, evidence of jade bead production in one form or another was found at all levels of the site hierarchy. As expected by the models described earlier, this suggests that stylistically simple (i.e. “less valuable”) wealth goods like beads were being produced by non-elites and elites alike.

The distribution of evidence of non-bead jade artifact production shows a number of interesting patterns. While evidence of sawing is found infrequently, it is found at every level of the local site hierarchy, indicating that it was not a production step limited solely to elite site types (Fig. 7.9). Because it was a laborious task, craft producers would have been unlikely to saw jadeite in the process of producing beads. Instead, sawing was
more frequently involved in the production of artifact forms such as plaques and earflares (Digby 1964; Proskouriakoff 1974). While jade beads are found (albeit in small numbers) in nonelite contexts at Classic period Maya sites (Palka 1997; Zeleznik 2002; Guderjan 2007), the distribution of plaques and earflares is more restricted, indicating that these objects may have had more “value” (see Chapter 2). Therefore, it is possible that nonelites were involved in the production of some of these more valuable goods, contrary to expectations of some models of Classic Maya wealth goods production.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Hierarchy Type</th>
<th>Jade Beads</th>
<th>Broken/Abandoned Jade Beads</th>
<th>Jade Bead Preforms</th>
<th>Hollow Drill Cores</th>
<th>Chert Drills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaytan 3</td>
<td>I</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guaytan 4</td>
<td>II</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Guaytan 5</td>
<td>II</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guaytan 6</td>
<td>V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guaytan 7</td>
<td>V</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guaytan 8</td>
<td>IV</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Puente Hato</td>
<td>IV</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>Vargas I</td>
<td>V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Vargas IIIA</td>
<td>V</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Vargas IIIB</td>
<td>III</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>Vargas III</td>
<td>III</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Vargas IIIIA</td>
<td>II</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Vargas IV</td>
<td>IV</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Magdalena I</td>
<td>V</td>
<td>X</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Magdalena II</td>
<td>III</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>El Terron N.</td>
<td>V</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>El Terron S.</td>
<td>IV</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>KM 91-2</td>
<td>IV</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>KM 91-3</td>
<td>III</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>KM 91-4</td>
<td>III</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>KM 92-1</td>
<td>III</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>X</td>
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<td>KM 92-2</td>
<td>II</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>KM 92-3</td>
<td>III?</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>KM 93-1</td>
<td>II</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>KM 93-3</td>
<td>I</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>KM 93-4</td>
<td>III?</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Los Chaguites 1</td>
<td>II</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>Los Chaguites 2</td>
<td>III</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Table 7.4 – Jade bead production evidence from excavations and surface collections.
Representing the final stages of jadeite bead and non-bead artifact production, evidence of grinding and polishing tasks (in the form of fragments with ground or polished facets) show a similarly widespread distribution among different site types (Fig. 7.10). The activity was not carried out solely in elite or nonelite sites types, but seems to have been a crafting activity carried out at sites of varying status. Many of these fragments were likely from the production of non-bead artifacts as well, and thus add further support to the argument that nonelites in the Middle Motagua Valley were not just producing “low value” jade beads, but were also producing other artifact forms as well.

Drilling was not a technological step performed solely for the production of jade beads, but was also done to create suspension holes for other artifact forms, such as plaques, earflares and pendants. If holes in these items were created by the use of a hollow drill, the resulting hollow drill cores would likely have different morphological characteristics than those produced from drilling beads. For example, the ends of hollow drill cores from the perforation of plaques would be flat from the grinding of polishing of
the plaque prior to drilling. This is likely the case for two of the cores recovered from the Guaytan 4 excavations, which appear to have been the by-products of plaque and earflare perforations (Fig. 7.11). If this is indeed the case, then their presence at a Type II site would lend further support to the notion that nonelites in the MMV were producing both “low” and “high value” jade artifacts, in contrast to the expectations of previous models of Classic Maya wealth goods production.

Figure 7.11 - Hollow drill cores recovered from Guaytan 4 excavations. (a) Likely from drilling of a plaque, as the core was removed from a thin, flat object. (b) Possibly from the production of an earflare, as one end of core is finely ground flat, while other end is only roughly pecked and rounded.
Finally, comparing the interior diameters of holes drilled into broken, aborted and complete beads with the diameters of hollow drill cores provides another possible line of evidence that production at many sites in the MMV was geared toward producing jade artifact forms in addition to small beads. Table 7.5 summarizes these measurements, with but does not include the two hollow drill cores noted above. Because the hollow drill cores taper toward one or both ends (and are larger in diameter at the septum for biconical drill cores), the diameter listed for the hollow drill cores in Table 7.5 is the average of those measurements. The diameter listed for the broken, abandoned and complete beads is the maximum diameter of the hole in each artifact. Therefore, the table provides a conservative comparison. Comparing these measurements shows that the diameters of the hollow drill cores are larger on average than the hole diameters of the beads, although there is some overlap between them. Because it is difficult to say what type of artifact was being drilled from many of the hollow drill cores, it is unclear what this difference reflects in terms of artifact production. Nevertheless, the data suggest that some of the hollow drill cores were likely the by-product of the production of artifacts other than the types of beads and bead fragments that were recovered in the MMV.

<table>
<thead>
<tr>
<th>Measurement (mm)</th>
<th>Complete, Broken or Abandoned Drilled Beads (n=107)</th>
<th>Hollow Drill Cores (n=60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Diameter</td>
<td>1.86</td>
<td>4.25</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.86</td>
<td>1.13</td>
</tr>
<tr>
<td>Maximum Diameter</td>
<td>5.80</td>
<td>8.81</td>
</tr>
<tr>
<td>Minimum Diameter</td>
<td>0.57</td>
<td>2.99</td>
</tr>
</tbody>
</table>

Table 7.5 – Comparison of average diameter of holes in complete, broken and abandoned beads with the diameters of hollow drill cores.
If it is the case that the differences observed between the average diameters of beads holes and the hollow drill cores represent the production of different types of artifacts, we can take the analysis a step further and compare these measurements across different site types. Table 7.6 presents the diameter measurements of the bead holes and hollow drill cores by hierarchical site type. Once again, the drill holes consistently have a smaller average diameter than the hollow drill cores for every site type although no comparison could be made for the Type III sites. This suggests that at these site types, some of the hollow drill cores were from the production on non-bead artifacts. Nevertheless, there is some overlap in the ranges of the diameters, suggesting that some of the hollow drill cores may have been from the production of jadeite beads. However, there is no clear trend toward larger diameter bead holes or hollow drill cores in association with higher order sites, which suggests that low-ranked sites produced a similar range of jade artifact forms as more highly-ranked sites.

<table>
<thead>
<tr>
<th></th>
<th>Type I</th>
<th>Type II</th>
<th>Type III</th>
<th>Type IV</th>
<th>Type V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holes (n=2)</td>
<td>Cores (n=0)</td>
<td>Holes (n=45)</td>
<td>Cores (n=54)</td>
<td>Holes (n=11)</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>1.46 n/a</td>
<td>1.92 4.13</td>
<td>2.13 7.12</td>
<td>1.53 5.04</td>
<td>1.77 5.01</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>0.40 n/a</td>
<td>0.98 1.09</td>
<td>1.27 n/a</td>
<td>0.31 0.81</td>
<td>0.63 0.71</td>
</tr>
<tr>
<td><strong>Max (mm)</strong></td>
<td>1.74 n/a</td>
<td>5.80 7.68</td>
<td>5.25 n/a</td>
<td>1.84 5.61</td>
<td>3.84 5.84</td>
</tr>
<tr>
<td><strong>Min (mm)</strong></td>
<td>1.18 n/a</td>
<td>0.71 2.53</td>
<td>0.99 n/a</td>
<td>1.23 4.47</td>
<td>0.57 4.58</td>
</tr>
</tbody>
</table>

Table 7.6 – Comparison of diameters of interior holes of broken, abandoned and complete drilled beads (“Holes”) and hollow drill cores (“Cores”), by site type.
The general redundancy of sawing, grinding, and possible non-bead production evidence across the local site hierarchy provide multiple lines of evidence to suggest that the types of goods being produced at lower-ranked (non-elite) were the same as those being produced at more highly-ranked (elite) sites. These data contradict models of Classic Maya wealth goods production in two ways. First, contrary to the expectations of these models (e.g. Walters 1982; Moholy-Nagy 1997), non-elites were not simply performing the early stages of jade artifact production, but appear to have engaged in the same types of production activities as those carried out at elite sites. Second, non-elites were producing items that Mayanists would consider more valuable than small jade beads (e.g. Ball 1993), such as plaques, earflares or large beads, and were therefore more fully involved in the production of wealth goods than previously believed.

7.2.4  Sociopolitical Context of Production

The sociopolitical context of production refers to the location of production in social space (c.f. Costin 2001: 297), including the social rank or status or artisans, and the relationship of producers to consumers. While it is difficult to demonstrate “attachment” from production evidence alone, we can evaluate the implications of the data from this dissertation research against the expectations of attached production models of wealth goods.

If the site hierarchy reflects to some degree the social status of residents at those sites, then the data seem to run contrary to the expectations of these models. Evidence of jade artifact production is found at higher-ranking (Type IV and V) sites, which follows the expectations of previous models. Although the sociopolitical status of the individual
 artisans cannot typically be discerned solely from the location of production debris (but see Inomata 2001), it is possible that non-elites may have worked as “attached specialists” in the traditional sense, as residents supported by patrons at elite sites in the MMV. As described earlier however, jade production evidence was recovered at all sites in the MMV, including at low-ranking site types (Types I, II and III). I argue that it is unlikely that elites would have directly supervised wealth goods production at these sites, but rather that non-elites were engaged in this production as independent producers. This runs contrary to one of the central assumptions of models of wealth goods production, which argue that attached production of these goods would be located within or near elite residences or sites. Nevertheless, it is possible that non-elite households engaged in attached production arrangements by producing jadeite wealth goods on command for elite patrons or as part of local tribute demands. I explore these possibilities in more detail below.

7.2.5 Middle Motagua Valley Wealth Goods Production - Summary

Data gathered as part of this dissertation field research run contrary to expectations derived from previous models of the organization of wealth goods production. During the Late Classic period in the Middle Motagua Valley, wealth goods production was a widespread activity undertaken at all levels of the local site hierarchy, indicating that it was not an activity undertaken only at elite sites. Likewise, there is no evidence to support the notion that production at elite sites was either more skilled or required different technologies or tools than craft production at non-elite sites. The artifact forms produced at high-ranking and low-ranking sites were similar, suggesting
that production of more valuable artifacts was not a task restricted to more highly-ranked sites. Finally, the evidence suggests that wealth goods production was an activity that frequently occurred within the context of domestic structures or households, regardless of the sociopolitical status of the site. Thus, the data suggest a system in which wealth goods production was an activity carried out by all levels of society, geared towards the production of a variety of artifact forms and involving broadly similar technologies and skills. The question then, is why the data from the Middle Motagua Valley during the Late Classic period appears to be so anomalous and fail to match expectations of current models of the organization of wealth goods production.

### 7.3 Alternative Models of MMV Wealth Goods Production

As I noted earlier, production is only one component of economy, along with distribution and consumption. Unfortunately, the data presently available only allow me to address production, because few contexts linked to the consumption of jadeite wealth goods were encountered as part of my excavations. There is limited evidence from previous investigations (Smith and Kidder 1943), however, that can help in addressing patterns of consumption in the Middle Motagua Valley. Together, these data can provide a means to evaluate two tentative models of the organization of wealth goods production in the Middle Motagua Valley during the Late Classic period, one informed by political economy approaches, and the other by domestic economy approaches. Although the present data are insufficient for determining which model is a better fit for the situation in the MMV during the Late Classic, both have explanatory power, but ascribe the motivation or impetus for jade artifact production to elites (political economy perspective).
or to the economic strategies of households, regardless of their sociopolitical composition (domestic economy). In the sections that follow, I begin by examining the data from a domestic economy perspective, before moving on to evaluating the data from a political economy perspective.

7.3.1 Domestic Economy Model

As discussed in Chapter 1, the domestic economy refers to the ways households diversify production strategies to meet their physical and social needs (c.f. Hirth 2009b: 1). Because the household was the fundamental unit of adaptation in all preindustrial agrarian societies (c.f. Wilk 1989; Hirth 1993), the domestic economy focuses attention on how households fit craft production within their overall production strategies. Therefore, it directs interpretations of archaeological evidence of craft production toward the perspective of the household members doing the work, taking a “bottom-up,” rather than “top-down” view of the household-level production of wealth goods.

Although traditional models stress that elites seek to control the production of wealth goods to enhance their social position (c.f. Brumfiel and Earle 1987; Blanton et al. 1996), Hirth (2009b: 12) notes that "there is nothing to keep non-elite households from making wealth goods if the resources are available to do so." As noted earlier, the raw materials, technology and skills necessary for jadeite artifact production were widespread in the Middle Motagua Valley. Just as it is today, raw jadeite was an abundantly available local resource that could be easily obtained as river float in the many tributaries of the Motagua River flowing from the surrounding mountains (also see Chapter 3). Therefore, the available data suggest that elite and non-elite households alike engaged in
production of goods from abundantly-available raw materials, using skills aided by relatively simple technologies.

The presence of *multicrafting* (see Chapter 6) in addition to jade artifact production at the Type II site of Guaytan 4 (shell beads and other artifacts and stone beads) and the Type III site of Vargas IIB (stone beads) fits well with what would be expected from a domestic economy model in which households used whatever resources were available to them. The production of shell and stone artifacts involved the use of the same technology and skills as jade artifact production, and constituted “intersecting technologies” (c.f. Hirth 2009b) because lapidary production techniques related to jade artifacts could be extended to shell and other stones. I find such multicrafting inconsistent with a political economy model in which production activity was controlled by elites, because when found in non-elite households, it fits more readily within a domestic economy model in which households diversify by whatever means available to meet their needs. In fact, evidence of multicrafting of “non-utilitarian” goods has been found in an urban household compounds at Teotihuacan (Widmer 1991) and in a household at a rural village site at Ejutla in Classic period Oaxaca (Feinman 1999; Feinman and Nichols 2000, 2004), neither of which appear to have been controlled by elites in any discernable way.

In a domestic economy model, the involvement of non-elite households in the production of jadeite wealth goods must be explained in terms of how it fit into overall production strategies. There are two ways to explain this production in the Middle Motagua Valley from a domestic economy perspective. First, wealth goods production may have been a way of mitigating subsistence risk, by providing households with a
means to meet their needs through the exchange of valuable goods for subsistence products. Today, the Middle Motagua Valley receives an average annual rainfall of 550mm, an amount at the margin of what is needed to support rainfall-based maize agriculture. This could have made it difficult for households with access to less productive agricultural land outside of the Lower Lato River Valley to consistently meet their subsistence needs. The exchange of wealth goods for subsistence products is one possible way that craft production may have complemented agricultural activity among non-elite households to meet the overall subsistence needs of the household. However, as Bayman (1999: 271) notes, agricultural productivity and access to resources must be demonstrated, and not simply assumed. At this point, this is a speculation that cannot be evaluated with the current evidence.

A second possibility is that MMV households exchanged jadeite wealth goods for utilitarian goods (e.g. obsidian or obsidian tools, utilitarian ceramics) or other wealth goods. Although households are depicted as independent, self-sustaining entities (c.f. Sahlins 1972), they always relied on extra-household sources for the goods that they did not possess the means or resources to produce themselves (Wolf 1966). During the Late Classic period, distribution mechanisms were certainly in place that moved goods over significant distances. While the presence of a true “market economy” during the Late Classic is a highly debated topic, it is likely that periodic markets existed where households could exchange goods that they produced with one another and for goods from outside of the local region.

Obsidian is one possible material that Middle Motagua Valley households may have acquired in exchange for jade wealth goods. Although sourcing of obsidian artifacts
recovered from surface collections and excavations was not undertaken as part of this dissertation research, the closest large obsidian sources is El Chayal, located over 50km southwest of the Middle Motagua Valley. Unlike many other parts of the Maya lowlands, obsidian was the predominant tool material used in the Middle Motagua Valley; other than one chert biface, all other formal tools were made of obsidian, and no large chert flakes were recovered. I find it unlikely that individual households travelled to El Chayal to obtain their own obsidian, which leaves open the possibility that they many have acquired it in exchange for jade goods they produced in their own households. At Ceren, Sheets (2000b) argues that most households were engaged in the production of various goods for extra-household exchange, including for the acquisition of exotic items such as obsidian tools and polychrome serving vessels. If this is indeed the case, it would be equally likely that Middle Motagua Valley households exchanged their wealth goods for exotic utilitarian goods imported from elsewhere.

One difficulty of applying a domestic economy model to the existing data is that the goods produced by MMV households were wealth goods that served as markers of status and prestige throughout the Maya lowlands and elsewhere in Mesoamerica. I feel that the difficulty in conceptualizing independent, domestic production of wealth goods stems from two misconceptions. First, is the misconception that all wealth goods had the same “value” or meaning and end use. Elaborate, highly crafted and unique jadeite artifacts with iconographic imagery were certainly items that were restricted in their distribution to elites, and may even have been crafted as part of sponsored production arrangements by elites. Nevertheless, the types of jadeite artifacts (particularly beads) produced in the Middle Motagua Valley appear to have predominantly been “simple,”
“low-value” artifacts that were used in bulk by elites to signify their status, but which are also recovered in non-elite contexts in the Maya lowlands (e.g. Zeleznik 2002). Therefore, we should not assume that all jadeite artifacts would have been produced by elites or within elite contexts, but rather that their contexts of production may have varied in the same manner as their value.

Second is the misconception that jade artifacts had the same value and meaning in the Middle Motagua Valley as they did in other parts of the Maya lowlands, where jade was an exotic and rare raw material. One problem with evaluating this proposition is the lack of consumption contexts for jadeite artifacts. The majority of evidence recovered speaks to the production of jade artifacts, but provides very little evidence of the consumption of finished artifacts. Therefore, it is not known whether production was geared toward internal consumption at all households, or whether only particular households were consuming the finished artifacts. As discussed in Chapter 3, jade artifacts were primarily wealth goods that were displayed as ornamentation, and are often found included in burials and special purpose contexts, such as caches and termination rituals. These types of contexts were not uncovered as part of the current dissertation research.

7.3.2 Political Economy Model

Political economy refers to the ways in which political elites manipulate aspects of the economy (production, distribution or consumption) to their advantage. In a political economy model, production is seen as being driven by the requirements of elites for wealth goods that they use to build and extend social relationships with other elites
and for amassing durable wealth (Hirth 1996: 214). Although many models stress the role of elites in directly controlling production of wealth goods during the Late Classic period as a means of maintaining exclusive access to them, they need not directly exercise control over the entire production process. Instead, elites may have exercised less direct control over the production of these goods, and instead relied on mobilization strategies such as tribute payments to obtain wealth goods from MMV households.

Hieroglyphic texts indicate the role of tribute for mobilizing luxury goods at a number of Late Classic sites, including cacao at Bonampak (Houston 1997; 2000; Miller 1997), and possibly of cotton mantles at Motul de San Jose (Foias 2002: 237). Ethnohistoric accounts from 16th century Yucatan likewise refer to the role of tribute in supporting political elites at various levels, including regional rulers (*halach uinic*) and local lords (*batabs*), and include references to luxury or wealth items, such as feathers and cacao (Roys 1943: 61). Receiving finished or partially finished jadeite wealth goods as tribute from non-elites is one possible way by which elites might have influenced the organization of wealth goods production in the Middle Motagua Valley.

The production of wealth goods by non-elites for use in the political economy by political elites in contexts that were not directly supervised by elites is demonstrated in the ethnohistoric or archaeological record in Mesoamerica (Otis Charlton et al. 1993; Berdan 1994; Nichols 1994; Otis Charlton 1994) and elsewhere (Wattenmaker 1994, 1998; Sinopoli 1998; 2003). In many of these instances, the items mobilized as tribute were goods that were either locally available, or that utilized skills already produced by those paying tribute. During the Postclassic period, Aztec tribute lists included wealth goods (including jade, feathers, and fine textiles) that were sometimes produced within
non-elite contexts and mobilized to elites at Tenochtitlan (Berdan 1992; Gasco 2003). In the Middle Motagua Valley, jadeite was abundant and the types of goods manufactured likely did not require a great deal of skill to produce. Thus, it is possible that evidence of non-elite domestic production of jadeite wealth goods was a response to elite demands.

7.3.3 Discussion of Domestic and Political Economy Models

The two models discussed above view the same phenomena (domestic jadeite artifact production) from two different perspectives: one bottom-up and one top-down. Unfortunately, the present data are insufficient for fully evaluating which model better fits the situation in the Middle Motagua Valley. In particular, we would need better data regarding the consumption of jadeite artifacts in the Middle Motagua Valley, and no consumption contexts were recovered during this dissertation field research. Thus, it is unclear how much jadeite artifact production was geared toward internal use and consumption by elite and non-elite households.

Further, we might expect differences in household assemblages of foreign imports within households between the two alternative production systems discussed above. If jadeite wealth goods were exchanged by non-elites through independent exchange or trade, we might expect to see high frequencies of imports in non-elite consumption contexts. Alternatively, if jadeite wealth goods were transferred through tribute mechanisms to local elites, we might expect to see significant differences in imported wealth goods between households elite and non-elite households. Without data on consumption, these corresponding differences in household artifact assemblages cannot be properly evaluated.
Of course, the two models need not be mutually exclusive, and jadeite wealth goods may have been produced as part of the domestic and the political economy. With such abundantly available raw material, households could have produced some goods independently for exchange, yet still have been required to provide some goods as tribute to local or regional elites. The most critical element in bead manufacture would have then been sufficient time to grind, drill and polish beads, which were laborious tasks. In the context of both extended and nuclear family households however, sufficient labor for these tasks could have been harnessed within the household. During the agricultural season, children and household members too old to work in the fields could have helped produce beads (Hagstrum 2001). Additionally, during the agricultural off-season, all household members could have devoted some time to these activities (Kenoyer et al. 1991).

It is in the context of these activities that Hirth’s (2009b) concept of intermittent crafting proves useful for characterizing and understanding the ways in which Motagua Valley domestic households could have fit jade artifact production into their agricultural cycles. If we view the production of jadeite artifacts in this manner, it provides a better explanation for the existing data than the traditional dichotomies of full/part-time and attached/independent specialization. Non-elite households could have fit craft activities within their normal production cycles by practicing these crafts when there was time available to do so. If they could exchange or otherwise transfer their finished or semi-finished products to elites or others for agricultural produce that they could not produce (domestic economy), the production of jade artifacts may have been one way to mitigate risk in the eventuality that their own agricultural production failed. This is a hypothesis
that will require a great deal of further research, but provides intriguing possibilities for explaining the unique system of wealth-goods production in the Middle Motagua Valley.

It is also possible that control of production was not the key node through which jadeite wealth goods were controlled. Discussing the production of utilitarian goods, Foias (2002: 236) suggests that it would have been difficult for elites to control production if it was dispersed outside of major centers. Based on the evidence from this dissertation research, I suggest that a similar difficulty would apply to the control of jade artifact production in the Middle Motagua Valley, which was widely dispersed among different site types in the survey area. Nevertheless, the dispersal of production loci does not preclude the possibility that elites controlled the distribution of wealth goods that were produced independently by households. Arnold and Munns (1994) argue that in the Channel Islands in California, production of shell beads used as both units of value (i.e. currency) and display goods was performed by non-elite, independent producers using locally available resources (e.g. chert for microdrills and marine shell). While the production of these wealth goods was unlikely to have been directly controlled, elites still exercised control over the distribution of shell goods through their ownership of canoes necessary for bringing them to the California mainland, where they could be exchanged for other goods. Although the present data are insufficient for determining the mechanisms of distribution of jadeite wealth goods during the Late Classic period, it is possible that non-elites produced goods independently, but did not control the ultimate distribution of these goods. Despite the fact that elites could have controlled the distribution of jadeite wealth goods beyond the local system in this scenario, the motivation for production still fits within a domestic economy model because households
would have acted *independently* in producing jadeite artifacts that benefited them in some way, even if the benefit that they derived cannot be discerned at this point.

Recently, Wells (2006) and others (Wells and Davis-Salazar 2007a) have introduced the concept of "ritual economy" (c.f. Spielman 1998, 2002) as an avenue to examine and understand the economic consequences of ritual activity in Mesoamerica. They argue that many craft activities in Mesoamerican societies were geared toward the production of goods needed for ritual and social purposes. In particular, they stress the way that the need for these items drove craft production, often in domestic households. I believe that framing the production of jadeite wealth goods in the Middle Motagua Valley in terms of ritual economy provides insight for understanding the structure of this production system. As I noted in Chapter 3, jadeite wealth goods served a variety of purposes for Classic Maya elites and non-elites alike. Goods that symbolically and ideologically legitimated the authority and status of elites, such as large necklaces, bracelets and skirts of jade beads, would have created an impetus for the production of these goods (see Foias 2007 for a similar argument regarding ceramic vessels).

Additionally, the use of jadeite beads in non-elite, household level ritual activity (e.g. household termination rituals or the placement of jadeite beads in the mouths of buried individuals) would have further increased the demand for the goods. This recognition allows us to better identify and understand the role that non-elites played in ancient Maya political economies, although it does not help in differentiating between the models presented above.
7.4 Conclusion

In this chapter, I presented a summary of previous evidence of Late Classic wealth goods production in the Maya area. Previous models have argued that wealth goods production was controlled by elites, involved difficult to master skills or technologies, would have taken place within or near elite architecture, and involved attached specialists. In contrast, the evidence collected as part of this dissertation field research suggests that jadeite wealth goods production in the Middle Motagua Valley was a widespread activity, involving widely available technologies and skills, and was performed in both elite and non-elite sites throughout the survey area. In recognition of the evidence, I suggested two possible interpretations of this data. A domestic economy model focused on the motivations of all households seeking to take advantage of local economic opportunities, and engaging in jadeite wealth goods production as a means of meeting their own subsistence needs. Alternatively, a political economy views wealth goods production as an elite-directed activity in which non-elite households were forced to produce jadeite wealth goods for elite use. Although the current data are insufficient for differentiating between these two alternatives, I argue that it is likely that both the domestic and political economy influenced the production of jadeite wealth goods in the Middle Motagua Valley in the Late Classic period.
CHAPTER 8
CONCLUSIONS

The data presented in this dissertation research are important for several reasons. First, the material from surface collections and test excavations represents the largest collection of jadeite production evidence recovered in Mesoamerica to date. Second, the data set of 9,920 jadeite artifacts and 435 associated tools provided the opportunity for a detailed analysis of the technological process of jadeite artifact production. To date, this technological analysis represents the most comprehensive and detailed analysis of jade artifact production in Mesoamerica. Third, the jadeite production evidence were recovered from a range of elite and non-elite sites, allowing for an evaluation of current models of Classic period Maya wealth goods production that is unavailable at other sites. Moreover, it constitutes the most extensive evidence of wealth-goods production in the Maya area. In this chapter, I summarize the major findings of this dissertation research, and the implications of these data for understanding Classic Maya economic organization. In doing so, I also discuss the limitations of the current data and suggest directions for future research in the Middle Motagua Valley and beyond.

8.1 Technology

One of the primary goals of this dissertation research was a reconstruction of the technological processes of jadeite artifact production. Although a number of scholars have discussed the techniques, skills and processes involved in the production of jadeite artifacts (Kidder, Jennings and Shook 1946; Foshag 1957; Digby 1964; Proskouriakoff 1974; Walters 1982; Kovacevich 2006, 2007), these studies have been incomplete in two
respects. First, many were based on the examination of finished artifacts, rather than on productiondebitage. Second, these studies have failed to examine jade artifact production in technological terms and have not moved beyond a typological description of productiondebitage. The data presented in this dissertation addresses both of these issues.

Although some scholars emphasize the skill necessary to produce finely-crafted jade objects, they have often been overly impressed with the finished products, and not considered the technological processes and steps involved before the final stages of their production. As I noted in Chapter 6, many of the early stages of jadeite artifact production are time-consuming, but do not require much specific skill to execute. Gathering of raw material for production would have been easy, given the abundance of jadeite available in the Middle Motagua Valley. Initial shattering involved little more than the knocking of two jade rocks together to produce debitage suitable for the production of beads. Production of other artifact forms (such as plaques and earflare blanks) could have been carried out by relatively “unskilled” craftspersons, so long as sufficient raw jade, abrasives and tools were available. Based on the current evidence, these materials appear to have been available to all households. However, the fact that evidence of the final stages of elaboration of more finely-crafted jadeite objects such as incised artifacts was not found in the Middle Motagua Valley is significant. Their absence from surface collections and excavations suggests that some elaborate jadeite artifact forms were also crafted at sites outside of the region, possibly from blank pieces manufactured in the Middle Motagua Valley, an implication to which I return in a moment.
The technological analysis presented in this dissertation included examination of over 9,495 jadeite flakes from percussion shattering. I examined each flake individually after sorting them by size-grades, and discovered that some of these “flakes” showed evidence of grinding, sawing, drilling and preforming for beads. This detailed analysis of percussion debitage and the identification of evidence of other technological process in the nominal category of “flakes” led me to two important conclusions. Previous analyses have viewed jadeite debitage primarily as a waste product created during the process of producing artifacts. For example, Kovacevich (2006: 160) concludes that the large quantity of jade debitage recovered at Cancuen “results from the fact that so much material must be removed to acquire the perfect piece of jade to create an artifact.” Based on my analyses, I argue that jadeite debitage was often intentionally produced in order to provide material for the production of jade beads. While a seemingly wasteful use of a valuable raw material (c.f. Hirth et al. 2009), percussion shattering is efficient for the production of jade beads because: a) it allows a craftsperson to identify fragments of the highest quality in terms of color and lack of inclusions, and b) sawing would have been overly time-consuming, considering the fact that jadeite often contains internal flaws not visible on the surface. In future analyses of jade or other lapidary production, it will be necessary to consider debitage as both a waste product from percussion to remove material, as well as intended raw material for the production of small artifacts, including beads and blanks for mosaic inlays.

Second, and following from the above point, percussion shattering for the production of jadeite beads may also have been an efficient technological process for distribution of jadeite beyond the Middle Motagua Valley. I see this as potentially
working in two ways. Lapidary artisans in the Middle Motagua Valley may have exchanged near-complete or complete jadeite beads that could be easily transported. Beads are the most frequently-encountered jadeite artifact form in the Maya area. For example, of the almost 19,000 jadeite artifacts recovered from the Cenote of Sacrifice, the great majority were beads. Prouskouriakoff (1974: 18) notes that matched bead assemblages are rare at Maya sites, suggesting that they often circulated singly or in limited quantities and not always manufactured for a specific use. I argue that one explanation for this was that production of jade beads in the Middle Motagua Valley was for distribution to sites throughout the Maya area. Alternatively, some percussion debitage flakes suitable in quality and color could have been exchanged prior to pre-forming, with the finishing of these beads taking place at sites to which they were finally distributed. In either case, the constraints of transporting dense, bulky and heavy boulders or cobbles of jadeite would have encouraged the production of some stylistically-simple artifacts such as beads by Middle Motagua Valley households. These transportation constraints could also have encouraged artisans to produce simple plaques and earflares as blanks that could be easily transported and elaborated in their final destinations.

The technological analyses presented in this dissertation also demonstrate the need to consider the role of multicrafting with different raw materials through the use of intersecting technologies at ancient Maya sites. Previous studies of wealth goods production have often considered the production of artifacts from different materials as analytically distinct, rather than examining how some of these crafts may be linked technologically (c.f. Shimada 2007: 3). In contrast, although the current evidence is
limited, lapidaries at some sites in the Middle Motagua Valley worked other stone and shell, in addition to jadeite. Elsewhere in Mesoamerica, Feinman and colleagues (Feinman et al. 1993; Feinman 1999) note the lapidary production of shell, onyx and greenstone ornaments and ceramic figurines within the same household in Classic period Ejutla, Oaxaca, all of which were done using the same technology. Future research in the Middle Motagua Valley will need to examine the extent of multicrafting evidence at sites like Vargas IIA, Magdalena I, and Guaytan 4.

Although the technological analysis of jade artifact production provided a number of new insights, it also produced a number of new research questions and areas that future research will need to clarify. One potentially illuminating avenue for future research is use-wear analysis of chert drills from the Middle Motagua Valley. Although formal chert microdrills are often used to infer the presence of shell-working (Yerkes 1983, 1991; Arnold 1987; Arnold and Munns 1994; Feinman 1999), use-wear analysis by Aldenderfer et al. (1989) suggest the use of some chert microdrills in the Peten Lakes region for drilling fine-grained stone such as jade, a point that is made in this dissertation research. Use-wear analyses of chert microdrills from the Middle Motagua Valley may provide another direct line of evidence of the working of shell or jadeite at particular sites.

Future research will also need to include experimental replication studies to better elucidate the technological process of jadeite artifact production in the Middle Motagua Valley. Replication studies could provide information about the time needed for various technological production processes, such as grinding, sawing, and drilling, thus providing a means for evaluating the intensity (a measure of the time devoted to or required for a particular process) of artifact production. Experimental replication could also aid in the
identification of diagnostic types of jadeite fragments associated with the production of particular artifact forms and stages of artifact production (e.g. direct vs. undirected percussion).

8.2 Organization of Jadeite Artifact Production

A second major goal of this dissertation research was to reconstruct the organization of jadeite artifact production in the Middle Motagua Valley and use these data to evaluate current models of wealth goods production. Following traditional models of craft production (e.g. Brumfiel and Earle 1987), a number of scholars have proposed a fundamental dichotomy between the organization of utilitarian and wealth goods for the Classic Maya. In these models, elites did not control the production of goods such as utilitarian ceramics (Rice 1987; Ball 1993; West 2002) and chert tools (King and Potter 1994; Potter and King 1995), but instead controlled and administered the production of wealth goods such as fine polychrome ceramics (Foias 2002, 2007) and items of adornment (Inomata 2001). In doing so, Mayanists have generally characterized wealth goods production as highly-skilled, involving difficult production methods, using exotic (non-local) raw materials, requiring a mastery of esoteric knowledge about aesthetic and moral values, and as being located in or near elite residences.

The evidence from this dissertation field research does not match these characterizations of wealth goods production in a number of respects. First, jade artifact production was focused on relatively simple artifact forms, such as beads, earflare blanks and plaques, rather than elaborately carved plaques, beads and other ornaments. Second, production did not involve difficult to master technologies or highly specialized tools.
Third, production evidence was widespread and found at all levels of the local site hierarchy, suggesting that elites did not directly control or supervise the production of jadeite artifacts in the Middle Motagua Valley. Thus, while the control of wealth goods production may have been a strategy for the maintenance of elite authority elsewhere in the Maya area, such a strategy does not appear to have been part of the political economy in the Middle Motagua Valley. This finding is congruent with recent research that has sought to characterize the diversity of political economies in the Maya area (Masson and Friedel 2002). Future research will be directed toward elucidating the political economic structure of the Middle Motagua Valley, including examination of the distribution of jadeite and other wealth goods.

This characterization of diffuse wealth goods production is supported by archaeological research outside of Mesoamerica as well. In the American Bottom, Milner (1990; see also Muller 1987, 1997: 342-346) points out that chert microdrills used in the production of wealth goods such as shell beads are found predominantly in association with domestic contexts. Importantly, although there are slightly higher concentrations of drills at elite sites, the drills are found at all levels of the site hierarchy. Based on this evidence, they conclude that the production of shell beads was an activity in which households at all levels of Mississippian society were involved, and was not an elite-dominated or elite-directed activity. Bayman (2002) argues for a similarly diffuse system production of various marine shell ornaments among the Hohokam in the American Southwest.

This research has also shown that jadeite artifact production was an activity that took place within domestic contexts. Regardless of whether the distribution of jade
artifacts was controlled by the households themselves or by local elites, this suggests that wealth goods production was an activity that fit within the normal domestic cycle of Middle Motagua Valley households, as it was elsewhere in Mesoamerica (Feinman 1999; Feinman and Nichols 2000). The household was the primary unit of craft production throughout prehispanic Mesoamerica. As Hirth (2009) argues, the position of craft production as a supplemental and intermittent activity within diversified household economic strategies needs more attention in future analyses of prehispanic Mesoamerican economic systems. This is doubly so for the role of the production of non-utilitarian goods within the Maya area, where evidence of production of such goods in non-elite domestic contexts is often left unexplained.

A related implication of this dissertation research is that not all jade wealth goods were “valued” equally. A major obstacle to understanding the prehispanic organization of wealth goods production in the Maya area is the implicit assumption that all wealth goods served the same purposes, and therefore, their patterns of production, distribution and consumption were similar. As I discussed in Chapter 3, jadeite wealth goods were crafted into a variety of artifact forms, and although they are found predominantly in elite contexts during the Late Classic period, jadeite artifacts are sometimes recovered in non-elite contexts. As Zeleznik (2002: 18) notes for Late Classic period Copan, “many individuals were buried with one jade bead, but it was the rare individual who was found with an entire jade necklace.” Thus, as Chase and Chase (1992) note, there is a need to distinguish between jade artifacts that served as wealth goods more generally available to most member of society (i.e. single or small numbers of beads) and those that more limited to elites. Therefore, scholars should be careful when discussing wealth goods as a
single, monolithic analytic category (see Bayman 2002 for a similar argument at
Hohokam sites).

Another, related implication of this dissertation research is that scholars need to
consider the role that independent specialists played in the production of wealth goods in
the Maya area. Discussions of the production of wealth goods have often focused on the
role of “palace artisans” that were attached to the royal courts at Maya centers (Ball 1993;
McAnany 2004). While such highly-skilled artisans certainly performed a central role in
the production of the elaborate regalia of high-ranking elites, I argue that they were
unlikely to have been able to meet all of the needs of elites (both royal and sub-royal) in
Classic Maya polities. This is especially the case if, as Inomata (2001) argues, some
artisans were elites. Consider, for example, the observation made by Zeleznik noted
above; if a high-ranking elite required a long strand of jade beads, would these have been
produced by a limited cadre of palace artisans? The time required for grinding, drilling
and polishing beads would likely have been burdensome if palace artisans were needed to
produce both for internal elite consumption and for distribution to non-elites as well.
Moreover, necklaces of jade beads are rarely consist of matched sets; instead the beads
usually vary in quality and craftsmanship. Such diverse sets of jadeite beads indicate that
multiple artisans produced such items, and they exhibited varying degrees of
“attachment” to Classic Maya elites. Therefore, I argue that future models of Classic
Maya economic organization should not discount the possible role of independent
craftspersons in the production of wealth goods.
As Hirth (1996) notes, elites use whatever mix of strategies available to them to maintain and expand their position within society. This dissertation research demonstrates that scholars need to identify the particular mix of strategies that elites employed at particular Classic Maya sites, which likely varied with available resources. However, even in light of this variation, we need to recognize that not all production or distribution was likely to have been under the control of elites. During the Colonial period, Spanish conquistadors used a variety of tribute and exchange networks to mobilize resources in the Maya area and throughout Mesoamerica, many of which were built off pre-existing institutions (Feldman 1971). For example, in the Yucatan, Maya communities paid taxes to the Spanish in the form of woven cotton *mantas*, which were produced within households by women (Restall 1997: 184-188).

It is likely that Classic period elites also used multiple exchange and distribution networks to meet their needs, as did other prehispanic Mesoamerican elites. For example, Aztec officials met their needs for a variety of wealth and utilitarian goods through service and mobilization strategies (Berdan and Anawalt 1992) and through manipulation of markets throughout the empire (Hassig 1985). Conquered provinces were made to pay tribute in the form of locally-available products, including woven textiles, which suggest that systems for extraction of these goods was already in place before the imposition of tribute demands (Smith 1994: 334-336; Berdan 1996: 124-129). Encouraging craft production at the household and community level could have benefitted prehispanic elites in a number of ways. It enabled them to more easily extract a surplus of the goods that specialized households were already producing. Further, by requiring production within the household, rather than sponsoring it directly, the costs of production were shifted.
from elite and onto the household itself (Hassig 1985: 226-227). Understanding the variety of ways resources were mobilized is crucial if we are to accurately reconstruct Classic Maya systems of craft production, political and domestic economy. This dissertation research demonstrates that traditional models of Classic Maya craft production are incomplete and have paid insufficient attention to the role of non-elite, independent households in the organization of wealth goods production.
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This appendix contains descriptions of sites identified as part of this dissertation research. The sites are listed here from east to west for ease of comparison between the descriptions and the location of the sites in Figure A.1.
**Los Chaguites 02** (Type III)

The site consists of four structures around a small plaza on the edge of a terrace overlooking the Motagua River, which is located to the south. Structure 1 is a long, two-level structure measuring 16m X 7m, and is approximately 1m tall. A looter's trench has penetrated and cleared a tomb on the western end of the structure; there are three other looter's holes in the top of the structure, one of which may also have penetrated a tomb. Str.1 appears to have contained two or three superstructure rooms. To the west/southwest of Str. 1 is Structure 2, another structure measuring 14m X 4m and approximately 1.0m in height. A looter's trench into the western end of Str. 2 also penetrated a tomb; there are two other small looter's holes in the top of the superstructure. Str. 2 appears to have been topped by two rooms. To the southeast of Str. 2 is Structure 3, a small rectangular structure (approximately 4m X 3m) about 0.50m in height. There is a large looter's hole in the structure. To the southeast of Str. 3 is Structure 4, a small rectangular structure oriented to magnetic north, measures 5m X 3m, and is approximately 1m in height. Str. 4 has three different small looter's holes, none of which exposed any superstructure. Collections of jade artifacts were made to the

**Los Chaguites 01** (Type II)

Los Chaguites 01 is a small site located to the west/southwest of LC02. The site consists of three structures on the northern end of a terrace overlooking the Motagua River. Structure 1 is approximately 1m tall and measures 5m X 5m. To the south of Structure 1, the river terrace juts out to form a large, flat area that is approximately 60m x 75m, where we surface collected a large amount of jade workshop debitage, obsidian artifacts and ceramic sherds. Approximately 10 meters to the north of Structure 1 are Structures 2 and 3, both small (height ≈ 0.50m) platforms of 3m X 3m each. Every structure at the site has at least one looter's trench.

**KM93 IV** (Type III?)

We were only able to visit site KM93 IV briefly before we were asked to leave by the land owner. KM93 IV is located between KM93 III and LC01, and is separated from both sites by quebradas. The site consists of four structures oriented around a small plaza. The site is along a terrace overlooking the Motagua River. Two structures in the northern part of the group are vaulted funerary monuments measuring two meters in height; one of the structures contains a looted tomb. The southern side of the group is bounded by a long, multi-roomed structure, about 1m in height. Surface collections at this site were made from the level extension of the river terrace to the south of the multi-roomed structure. The group is bounded on the eastern side by a small, 1m tall platform structure.

**KM93 III** (Type I)

Site KM93 III is located to the east of KM93 II, separated by a wide quebrada. The site spreads out across a wide part of the river terrace overlooking the Motagua River and is accessed by a narrow part of the terrace from the north. KM93 III is a non-mounded site.
with no surface evidence of platforms or mounds; surface collections included jade flakes and other production debris, obsidian, ceramics and chert drills.

**KM93 II (Type II)**

Site KM93 II is separated from KM93 III to the west and KM93 II to the east by small quebradas and is located on a narrow river terrace overlooking the Motagua. Only the remains of two small mounds of less than 0.30m in height are still in evidence at the site. The site is under the same intensive sabila cultivation as KM93 I and it appears that many of the structures that were part of this site were destroyed in the process of preparing the field for cultivation. Small collections of jade debitage and ceramics were made at the site, but were not included in the current analysis because the bags containing these collections were lost during the course of the field season.

**KM93 I “Terzuola Site” (Type II)**

Site KM93 I is bisected by the CA-9 highway, and contains structures to the north and south of the highway. The site was first described by Feldman, et al. (1975) and named the Terzuola site. Currently, the site is under intense sabila cultivation, making surface collections and accurate mapping very difficult. Furthermore, many of the structures in the area of the site located to the south of the CA-9 were completely destroyed when the area was leveled for cultivation and when a house and pool were built on the southern edge of the site. Currently, there are only three mounds still visible on the southern sector of the site and two mounds north of the CA-9. Two of the mounds in the southern sector are 1m tall mounds that are approximately 7m X 7m.

Despite limited ground visibility, intensive surface collections were made across the entire southern sector of the site, although not in association with any structures. Materials collected included a large number of jade artifacts, obsidian flakes and blades, and ceramics. The majority of material was collected from the southern and western edges of the terrace on which the site is located. Although Walters (1982) mentioned the presence of a jade workshop in the northeastern part of the southern sector of the site, we found no surface evidence of this workshop during our survey.

**KM92 III (Type III?)**

Walters (1982) described site KM92 III as the most thoroughly destroyed site that he encountered in the Middle Motagua Valley survey zone and this assessment is unfortunately correct. Located on a river terrace to the west of site KM93 I (the two are separated by a wide quebrada), the entire eastern sector of the site was destroyed when stone and soil from the site were removed to build the roadbed for the CA-9. Only two structures remain at the site: part of a basal platform (6m X 1m) at the southern edge of the borrow pit, and a small, low platform structure (2.5m X 4m, orientation: 185°) to the east of the borrow pit. The eastern structure may contain a looted tomb chamber, but this was covered with collapsed rubble and thick vegetation. Surface collections were made from the areas to the east, south and southeast of the borrow pit.
Approximately twenty meters to the west/northwest of the western edge of the borrow pit, is a small platform mound (height = 1.5m; area = 5m X 3m), with possible superstructure walls. The structure has two large looters' trenches. Dense vegetation and disturbance made surface collection difficult, but we did collect some obsidian and jade flakes to the immediate south of the structure.

Another twenty meters to the west is a group of five structures, loosely grouped together, situated close to the edge of a terrace overlooking the Motagua River to the south, 20m below. Structure 1 is a vaulted funerary monument, measuring 5.5m X 4m, with 1.5m tall standing walls. The western and southern walls of the structure have been exposed by looters' trenches. The looter's trench on the southern face structure has exposed two tomb chambers, while a looter's trench atop the center of the structure also appears to have penetrated a tomb chamber. Looter's trenches are also evident on the eastern and northern faces of the mound. To the south/southwest of Str. 1 is Structure 2, a large structure that was so overgrown as to be impossible to fully examine. Structure 2 is approximately 10m X 10m and 2m in height, and has been penetrated by multiple looters' trenches. To the west of Str. 2 is Structure 3, a small looted platform (less than 1m high), measuring approximately 3m X 4m. To the southwest of Str. 3 is Structure 4, a multi-roomed structure oriented to magnetic north. Structure 4 is approximately 8m X 6m. A looter's trench has exposed an east-facing entry to one of the rooms that measures approximately 0.90m in width. Structure 5 is located immediately east of Str. 2. It is a long, linear multi-roomed structure measuring 10m X 5m, with its long axis oriented towards magnetic north. Multiple looters' trenches show the structure to have low walls (approximately 0.50m tall) that likely supported a perishable superstructure.

Surface collections were taken across the entire site, though the greatest concentrations of material occurred along the southern and eastern perimeters of the site.

**KM92 II (Type II)**

Site KM92 II may correspond to Walters' (1982) KM92 II, but it is difficult to tell because of the vague description of the site. The site is located to the west of KM92 III; the two sites are separated by a small quebrada. The site consists of a group of 3 structures arranged around a small open area. All of the mounds are small platforms, less than 0.50m tall and all measuring less than 3m X 3m in area. Each structure had a large, shallow looter's hole in the middle. Very little cultural material was observed in association with these structures.

Immediately south of this group, the natural river terrace extends approximately 50 to the south. On this terrace we made collections of jade debitage, ceramics and obsidian across the whole area. A number of looter's trenches in the southeast portion of the natural terrace revealed buried architecture not visible on the surface, including low walls (about 0.30m high).
**KM92 I (Type III)**

Site KM 92 I is located to the west of KM 92-I. The two sites are separated by a small quebrada. The site includes a number of small residential terrace platforms running east-west along the slopes overlooking the Motagua River. We encountered four structures, none taller than 2m; all of these structures have been severely looted. Heavy disturbance by looters, thick vegetation and the use of part of the site as a local garbage dump prevented us from making adequate surface collections from this site. Nevertheless, one of the structures appears to have multiple internal superstructure walls that have been partially destroyed, which is the reason for designating it as a Type III site.

**KM91 IV (Type III)**

Site KM91 IV is located a 150 meters south of the CA-9, along the edge of the river terrace overlooking the Motagua River and is to the west of KM 92-I. The two sites are separated by a wide quebrada. The area north of the site between the site and the CA-9 has been completely leveled for tobacco cultivation and any structures have long since been destroyed.

Site KM91 IV consists of nine structures arranged in two groups. The eastern group, Group 1, contains three structures: two structures on the north and one on the south. It is possible that these structures were grouped around a central plaza area, but the area between the northern and southern structures has been leveled by bulldozer for cultivation, so this cannot be said with confidence. Structure 1 is a 6m X 9m structure, about 2m in height. Looter's trenches into the core and sides of the mound reveal that Str. 1 is oriented North-South and contained low walls. Structure 2, located immediately to the west of Str. 1 is a small 6m X 5m rectangular structure, about 1m in height, which also supported low walls which appear to have divided the superstructure into two rooms. The long axis of Str. 2 is oriented East-West, and it is possible that Structures 1 and 2 both rest on a long, linear platform substructure, though the destruction from the field leveling make this possibility difficult to assess from the surface remains. Approximately 17 meters to the south of Str. 1 is Structure 3, which is a 5m X 4m multiple-roomed structure, about 2m in height. On the southern face of the structure, one of the multiple looters' trenches into the structure appears to have penetrated a tomb chamber.

To the west/southwest of Group 1 is Group 2, a group of six structures (2 to the south, 4 to the north) oriented around what may have been a central plaza. Whether a plaza existed is difficult to determine because of the use a bulldozer to level the central area for cultivation. Structure 4 and Structure 6 are located on the southern side of the group. Structure 4 appears to be a small, vaulted funerary monument. Str. 4 is 7m X 5m and is approximately 2m tall. The structure has been heavily looted. Tomb chambers on the southern and western faces of the structure have been penetrated by looters. Structure 6 is located to the west/southwest of Str. 4 and is a low platform mound, about 0.50m in height. To the north of Str. 4 is Structure 5, a low (0.50m) 5m X 3m rectangular platform structure. To the north/northwest of Str. 5 is Structure 7, a large, multi-roomed
structure, about 1m in height. Str. 7 has been extensively looted, but portions of the low walls of the superstructure are still evident. To the west of Str. 7 is Structure 8, a low (0.50m tall) 7m X 3m rectangular platform. To the southwest of Str. 8 is Structure 9, which has been very badly looted. Str. 9 appears to have been a rectangular structure, likely 2m in height, measuring approximately 6m X 6m in area.

A number of looter's trenches into the surface of the terrace to the south of Group 2 have uncovered remnants of buried architecture that are not evident on the surface. Therefore, none of this area could be mapped other than to note the presence of buried architecture. Surface collections were made across the whole site and included jadeitedebitage, ceramics, and obsidian.

**KM91 III (Type III)**

Site KM91 III was by the same leveling for tobacco cultivation that was described for KM91 IV. The site is located on the southern edge of the river terrace overlooking the Motagua, to the south of the large leveled field. The site is divided into three sectors, each separated by leveling associated with field preparation.

The easternmost portion of KM91 III consists solely of a large scatter of cultural material on the ground surface 30 meters to the east of group of structures at the site. This moundless part of the site is separated from the central portion of the site by a 5 m wide section of earth 0.50 cm deeper that was created when the area was leveled for cultivation. No artifacts were observed in this deeper section.

The central portion of site is a small group of structures that have been very extensively looted. The site consists of seven structures in two parallel rows, running roughly east to west. The central portion of the site has a number of deep furrows that were likely excavated by the landowners for installing water pipes. The western periphery of the central portion of the site was destroyed to construct a feed corral for cattle. On the eastern end of the central group is a low (0.50m tall) rectangular structure, measuring about 2m X 3m. A looters trench into this structure has penetrated a tomb chamber. The largest structure in the group is the central structure on the northern side of the group. The structure is a 2 m tall structure with walls constructed of schist slabs. One of the numerous looters' trenches in this structure penetrated a tomb chamber on the western side of the structure. The entire central portion of the structure has been destroyed by a 1m wide looter's trench. The other four structures all appear to be low platforms mounds.

Still further to the west is the western group of the site, located approximately 70 km to the west of the central portion of Site KM91 III; despite this distance, jade, obsidian and ceramic collections were made continuously between the two portions of the site and thus it was designated as being part of KM91 III. Currently, the western group site is being used for grazing goats and a number of small ditches have been excavated throughout the site for the installation of water pipes. The western group consist of five structures have been heavily looted. Two 1m tall vaulted funerary structures contain looter's trenches.
that have penetrated tomb chambers. Surface collections including jade debitage, obsidian and ceramics were made across the site.

**KM91 II (Type IV)**

Site KM91 II is separated from KM91 III by a small quebrada, and is located to the south of a soccer field; part of the site was destroyed to construct the soccer field. The site has been heavily looted and disturbed by trash dumping. There are a total of 15 structures in all. Almost all of the structures are platforms of less that 1m in height. There is one large mound on the southern perimeter of the site that is over 4m tall and contains a looted tomb at the base of its western side. Three tomb chambers were observed in some of the looters' trenches in the other structures. Looter's trenches in the level area of the terrace to the south of the surface architecture revealed the presence of some deeply-buried architecture that was not visible on the surface. Surface collections of jade, ceramics and obsidian were taken across the entire site.

**Vargas I (Type V)**

The site of Vargas I consists of two structure groups and a ballcourt. The western structure group has been badly destroyed by looting and coconut cultivation; because of this destruction we could not take measurements of the structures. In all, it appears that there were three structures in the group. The eastern group is located just to the south of the road-cut for the CA-9 and much of the site was likely destroyed during the construction of the highway. Small collections of ceramics, jade debitage and obsidian were made at the site.

To the east of the western structure group is a ballcourt, oriented North-South; due to the dense vegetation in the area, no precise measurements of the ballcourt were taken.

Approximately one hundred meters to the east of the ballcourt is another structure group that is located on the flood plain of the Rio Lato. The group consists of three structures, all over 2m tall. All have been heavily destroyed by looters and appear to have been multi-roomed structures. The partial remains of a number of structures destroyed by cultivation were noted between the eastern and western groups. No surface collections from the western group or the intervening area were taken because of poor visibility from the recent cultivation.

**Vargas IIA (Type V)**

Vargas IIA is located on a series of river terraces over-looking the Rio Lato to the east and the Rio Motagua to the south/southeast. Because of the extensive looting and destruction of the site, it is hard to estimate its size or the number of structures. Nevertheless, the site appears to consists of at least two structure groups, one northern and one southern.
The northern group consists of a large structure on the southern side of the group that is built into the naturally sloping terrain, as well as a low platform mound (0.10m in height) on a possible artificial terrace to the north. The large southern structure has been almost completely destroyed by looters, who have excavated a large L-shaped trench into the structure that is approximately 12m long X 7m wide X 6m deep. Overall, the structure is approximately 17m X 10m and is oriented to magnetic north. We observed possible stepped terrace retaining walls on the eastern slope of the cerro on which the terrace behind the structure sits. Surface collections from the northern group consisted of a great deal of jadedebitage (including finished and unfinished jade beads), obsidian, and ceramics.

To the south of this group is a small level area that was likely a central plaza onto which the northern structure faced. Approximately 50m south of the northern group is a 2m tall mound which has been heavily looted and partially destroyed by river action and construction. The remainder of the southern group has been so thoroughly destroyed by looting and construction activity that structure counts and measurements were impossible to make; much of the damage appears to have been done by bulldozers and backhoes. Nevertheless, we did observe the stratigraphic profile of a partially destroyed platform that showed at least four reconstruction episodes. Artifact collections were made from throughout the site, mainly from looter's trenches and backdirt.

**Vargas IIB (Type III)**

Vargas IIB consists of twelve structures loosely organized into two groups along the eastern slopes of a cerro overlooking the Motagua River to the south and the Rio Lato to the east. Group 1 consists of six structures located on a natural terrace that juts out 40º east and is bounded by steep slopes to the north and to the southeast. Structures 1 thru 4 are low (less than 0.50m tall), small square platform structures organized around a small central patio. All of the structures are of approximately equal size (5m X 5m) and have been badly disturbed by multiple looters' pits. Structure 1 is on the west side of group, Structure 2 is on the north, Structure 3 is on the east and Structure 4 is on the south. Only Str. 2 shows any evidence in the looter's trenches of having contained low walls. Approximately ten meters to the south of Str. 4 is Structure 5, a 0.50m high square (5m X 5m) platform structure with a large looter's hole. Structure 6 is located to the twenty meters to the south of Str. 5 and appears to be a rectangular (10m X 5m) structure. Str. 6 has been heavily looted and is currently covered by a large tree which has fallen directly over the structure. Collections of jade debitage, obsidian and ceramics were made from across the group and down the eastern slopes of Group 1.

Group II consists of a series of 6 platform structures along a roughly north-south line, all built into the eastern slopes of the cerro. All of the structures have been looted and thoroughly destroyed. All of the structures except one appear to have contained tomb chambers that were looted. The two southernmost structures contain tombs that appear to have been looted within the last year.
**Vargas III (Type III)**

The site of Vargas III (Fig. 4.7) contains two groups of structures. In the northern portion of the site, 12 structures run generally east-west along gentle slopes; only one group of five structures formed part of a typical Maya plaza group. The majority of the structures in the northern sector are 1m-tall platform terraces built into gently-sloping terrain; there are also two vaulted funerary monuments less than 2m tall (both with looted tombs). Three additional groups of low platform structures (two to three structures per group, nine structures in all) are located 20 meters further southwest, closer to the river; no map was made of the site because of time constraints.

Little jadeite production evidence was found within the central portion or northern perimeter of the northern portion of the site. The majority of production debitage and associated production tools (i.e. chert drills) were found scattered around the smallest platform structures at the site. These structures are located on the western and southwestern perimeter of the northern portion of the site; their function is difficult to assess currently, but the structures form a small patio group of four structures located 20m away from the nearest structure group.

**Vargas IIIA (Type II)**

Vargas IIIA is located to the southwest of Vargas III; the two sites are separated by a small quebrada. The site consists of three small, low (less than 0.50m tall) square platform structures. Small amounts of jade, obsidian and ceramics were collected at the site.

**Vargas IV (Type IV)**

Vargas IV is located to the south/southwest of Vargas IIIA; the sites are separated by a small quebrada. The eastern portion of Vargas IV consists of a group of four structures organized around a small patio, situated on a small bluff between two small quebradas. All four structures in the group have been looted. The eastern structure in the group, a small (less than 1m tall) square structure contains a looted tomb chamber. The remaining three structures are small square platform mounds. Extending to west of this eastern group are series of about 20 structures organized into four to five groups. The majority of the mounds at the site are low mounds, but there are at least four larger, 2m-tall mounds. Very little cultural material was evident across the site, and the majority of jade debitage was collected from areas that were not in direct association with mounds, especially along the western edge of the site.

**Magdalena I (Type V)**

The site of Magdalena I is the northernmost group of elite structures that form part of the site of Magdalena. Walters (1982) described three portions of the Magdalena site: Magdalena III (south), Magdalena II (central) and Magdalena I
Magdalena III has been destroyed as the town of Magdalena has expanded; the other two sites are still relatively intact.

Magdalena I is located to the west of the Magdalena-San Agustín Acasaguastlán road, on a natural bluff 10 meters above the road surface. Overall, the site consists of more than 25 structures situated between the road and the Río Lato, bounded to the south by a small quebrada. All of the structures have been heavily looted, some as recently as the last two years according to local residents and land owners. We were unable to explore the entire site in depth because it is located on the property of more than one landowner. The eastern portion of the site consists of eight structures, some of which are situated on a large artificial platform built into the naturally sloping terrain.

Structure 1 is a low platform structure, measuring 5m x 4m, oriented E-W. Structure 2, to the south of Str. 1 is another low, small (3m x 3m) platform structure. A looter's trench into the center of Str. 2 revealed what appears to be a narrow, cut-stone lined chultún. Directly behind and to the west of Str. 2 is Structure 3, the largest structure in the eastern group, is a 2m-tall, rectangular (8m x 6m) multi-roomed structure with 1.5m-tall standing walls revealed by looters' trenches. To the northeast of Str. 3 is Structure 4, a heavily-looted rectangular structure, approximately 4m x 6m. Structure 5 is located 11m to the south and down-slope of Str. 2. Structure 5 is a low (less than 1m tall) square (5m x 5m) structure which a looter's trench has revealed contained a slab-lined tomb chamber. Immediately to the southwest of Str. 5 is Structure 6, a rectangular (5m x 7m) structure which a looter's trench has revealed to contain curving interior walls.

Concentrations of jade debitage were found in association with Structures 1, 2 and 3. To the northwest of Structure 4 is a series of low platform structures organized into small two-to-three structure groups. The largest structure in this area of the site is a 2 m tall vaulted funerary monument, measuring 9m x 8m. The mound has been very badly looted. As part of Operation 5D, we screened ten buckets of backdirt from the looters' trenches; the material included human teeth exhibiting dental mutilation and jade inlays, indicating that the looters had likely penetrated a tomb within the structure. To the west of the eastern area of the site is an open plaza bounded to the west and east by two long multi-roomed structures.

Further to the west of these structures is a small group of two to three structures, all heavily looted. The westernmost structure in this group, which is situated at the edge of the natural river terrace, contains a looter's trench which revealed that it is constructed of cut stone blocks, with approximately 0.90m-tall walls. Heavy concentrations of jade debitage and associated tools were found associated with the western portion of this group and further down slope. A number of other structure groups were observed during a brief spot-check around the rest of the site, including two groups that contained 2m-tall vaulted funerary monuments; these structures were in areas that were not given permission to enter.

Magdalena II (Type III)

Magdalena II is located to the south of Magdalena I; the two sites are separated by a quebrada. Like Magdalena I, Magdalena II is situated between the Magdalena-San Agustín Acasaguastlán road on the east and the Río Lato to the west. The southernmost portion of the site has been destroyed by recent construction.
Magdalena II consists of low, multi-roomed structures, vaulted funerary monuments less than 2m tall and a number of 1m tall mounds. In all, there are approximately 15 structures at Magdalena II, although this may be an underestimate because we were not allowed onto the land that contains the southernmost part of the site. The structures are arranged in small formal groups, though looting throughout the site makes it difficult to determine the dimensions and orientations of many of the structures. Walters (1982) noted the presence of a jade workshop on the western perimeter of the site. A thorough examination of this area yielded very little jade production debitage; it is likely that this evidence was either located in a since-destroyed part of the site or was not as abundant as Walters noted.

**El Terron South (Type IV)**

The site of El Terron is effectively divided into northern and southern sectors by a deep quebrada that separates them. El Terron South is situated on both the eastern and western sides of the Magdalena-San Agustín Acasaguastlán road. To the east of the road are approximately ten low platform structures that stretch from the road to the base of a tall, steep-sloped cerro to the east. All of the structures in this area appear to have been low residential mounds and have been thoroughly looted. The modern village of Las Vueltas covers much of the western portion of El Terron South. All of the structures, scattered throughout the village, have been thoroughly looted. Structure types include vaulted funerary monuments, multi-roomed structures, and low platform structures. Surface collections from the western portion of the site included jade debitage, obsidian and ceramics.

**El Terron North (Type V)**

El Terron North is a very large elite residential and ceremonial site that is situated on a series of river terraces overlooking the Río Lato, to the west of the Magdalena-San Agustín Acasaguastlán road. The site stretches out for almost a half kilometer from south to north and consists of over 60 mounds. Many of the structures are organized into small, tight plaza groups. Structure types at the site include vaulted funerary monuments (some as tall as four meters), a ballcourt, multi-roomed structures, low platforms structures, terrace platforms and platforms supporting thin superstructure walls.

Surface collection was made difficult across the site because of sábila cultivation in some areas and thick foliage throughout the rest of the site. Nevertheless, we did locate two areas with concentrations of jade debitage. One concentration was located in an open space between two small structure groups and consisted almost entirely of small jade flakes. A piece of cut jade and some small flakes were also found in association with a small structure that bounds the southern end of the ballcourt. All structures at the site appear to have been looted; some of these looters’ trenches have penetrated tomb chambers.
Puente Hato (Type IV)

Puente Hato is located to the northwest of the intersection of the Río Lato and the CAH9 on the river terraces overlooking the Río Lato. The site is heavily damaged by cultivation and construction and much of the site is under dense vegetation. Overall, there are over 20 structures, some grouped into small plaza groups. Some of the structures appear to be small vaulted funerary monuments (some over 2m tall); other structure types include multi-roomed platform structures, a number of low platforms and mounds less than 2m tall. The only surface collections we were able to make at the site were from a barranca to the north of the site.

Guaytan 3 (Type I)

The site of Guaytan 3 is located to the north of Guaytan 4 on a narrow bluff at the confluence of two small quebradas; there are no structural remains at the site. The area is defined by an isolated surface scatter of jadeite debitage.

Guaytan 4 (Type IV)

Guaytan 4 is comprised of two groups of low structures laid out over a series of small platforms built into gently sloping terrain. In the northern portion of the site are four structures, all of which have been extensively looted. Structure 1 is located immediately adjacent to the modern road to San Agustin Acasaguastlan, and is 12m x 8m, oriented roughly north-south. Structure 2 is a 5m x 5m square mound, approximately .5m tall. Structure 3 is located nine meters to the south of Structure 2, and is another 5m x 5m square mound, approximately .5m tall. Structure 4 is located on the western edge of the northern group, and is a small (1m tall) mound, located at the base of a steep slope to the west. A looter's trench dug into the center and sides of the structure revealed the presence of a looted slab-lined tomb. Very little jade evidence of jade artifact production was surface collected in this area. Approximately 25 meters to the southwest of Structure 4 are the edges of low terrace walls (less than 25 cm) built into the gently sloping terrain (Platforms 1 and 2, Fig. 5.12).

In July 2004, archaeological reconnaissance identified dense concentrations of jadeite debitage this southern portion of Guaytan 4 (Fig. 5.12, 5.14). All surface-collected and excavated evidence of jadeite artifact production was recovered in association with the southwestern corners of Platforms 1 and 2 (Operations 1A and 1B) and the northern and western perimeter of a sunken patio area built in the low point of two slopes (area of Operations 1D, 1E, 1F; see Fig. 5.5 for contour map of southern portion of Guaytan 4). The sunken patio is bounded on the north by Platform 3 and on the west by a similar platform wall identified by Walters (1980b) in his excavations of the area (Fig. 5.6). Because of dense vegetation in the western portion of Guaytan 4, we were unable to define the limits of the western edge of the sunken patio. Structure 6 sits just atop the platform wall, although I am could not discern this is the same structure identified and partially excavated by Walters (1980b). As noted above, the southern portion of the sunken patio was destroyed in the process of building the local elementary school, although Walters (1980b) excavated this area, as described earlier in Section.
5.1.2). In the center of the sunken patio are the remains of Structure 5, an extensively looted mound built over a slab-lined tomb.

**Guaytan 5 (Type II)**

Guaytan 5 is located across a quebrada to the southwest of Guaytan 4 and across a quebrada to the south of Guaytan 6; the site is comprised of a group of three low platforms (less than 25 cm in height).

**Guaytan 6 (Type V)**

Guaytan 6 is separated by quebradas from Guaytan 4 to the east and Guaytan 5 to the south. The site was described by Smith and Kidder (1943) and Walters (1982) as being an elite civic-ceremonial site. The site, as it currently stands, was an elite site of some sort that included a ball court, but much of the site has been thoroughly looted and disturbed. Overall, the site contains a series of platforms (some of which are over 3m tall), funerary structures and monuments, and multi-roomed structures.

**Guaytan 7 (Type V)**

Guaytan 7 is to the east of the road to the village of Guaytan and south of a quebrada. This area was designated by Walters (1980) as "Area 8", however it is defined as Guaytan 7 based on the order by which we encountered these sites. The group is made up of approximately 15 structures, consisting of low platforms, small funerary structures and possible multi-residential structures which have been heavily disturbed by looting, construction and agriculture. The area includes Mound 24, excavated in 1930 by Smith and Kidder (1943) and described in Chapter 5 of this dissertation.

**Guaytan 8 (Type IV)**

Guaytan 8 is east of the road to the village and south of Guaytan 7 versus Guaytan 4, equivalent to the "Area 5" Walters (1980). This is an area with low platforms that run from east to west, along a high natural terrace, bounded on the south by several small structures that were leveled; because of the amount of site disturbance, it was not possible to make structure counts. Nevertheless, some of the structures likely served as funerary monuments and some as multi-roomed structures, based on small portions of structures that were still in evidence.
Appendix B
PJ05 Excavation Descriptions

A critical part of this dissertation research involved excavation in areas identified in July 2004 as possible jadeite workshops based on the presence of high concentrations of surfacedebitage. The goals of these excavations were twofold: (1) to determine whether the surface evidence was indicative of in situ jadeite workshops; and (2) to collect evidence regarding the social context of this jadeite artifact production (i.e. specialized vs. domestic contexts). Nine operations of test excavation were undertaken as part of this dissertation research, with a total of 35 excavation units (Table B.1).

Excavations began on October 17, 2005 and focused on three of these previously identified areas: Guaytan 3, Guaytan 4 and Magdalena I. In addition, eight test pits were excavated at Guaytan 5 (3 test pits), Guaytan 7 (2 test pits), Guaytan 8 (2 test pits) and KM 93-I (1 test pit). Excavation methods were described in Chapter 5. This appendix presents summary information about these units.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Guaytan 4</td>
</tr>
<tr>
<td>2</td>
<td>Guaytan 5</td>
</tr>
<tr>
<td>3</td>
<td>Guaytan 7</td>
</tr>
<tr>
<td>4</td>
<td>Guaytan 8</td>
</tr>
<tr>
<td>6</td>
<td>Guaytan 6</td>
</tr>
<tr>
<td>7</td>
<td>Vargas IIB</td>
</tr>
<tr>
<td>8</td>
<td>Magdalena I</td>
</tr>
<tr>
<td>9</td>
<td>KM 93-I</td>
</tr>
<tr>
<td>10</td>
<td>KM 92-III</td>
</tr>
</tbody>
</table>

Table B.1 - Excavation operations and corresponding sites from 2005 field season.
Operation 1

Operation 1 consisted of 5 suboperations in Guaytan 4 (1A, 1B, 1D, 1E, and 1F) and one suboperation in Guaytan 3 (1C) (Figure B.1).

![Figure B.1](image)

Figure B.1. Southern portion of Guaytan 4, showing location of excavation units.

Operation 1A

Unit 1A-1

Unit 1A-1 was located in square N6/E12 of the site grid established at Guaytan 4. The unit was 1.00m x 1.00m square and was excavated in 10cm arbitrary levels, save for three artificial levels defined by packed earth floors, and was excavated to a depth of 0.80m (Figure B.2).
<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 – 0.10m</td>
<td>Soil texture: fine and looseлим Color: 5/3 10YR - Brown</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 – 0.20m</td>
<td>Soil texture: fine and looseлим Color: 5/3 10YR - Brown</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0 – 0.30m</td>
<td>Soil texture: fine, somewhat compactedylim Color: 3/2 10YR - Brown</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>0.0 – 0.44m</td>
<td>Soil texture: fine and looseylim Color: 3/2 10YR - Brown</td>
<td></td>
</tr>
<tr>
<td>005</td>
<td>0.0 – 0.53m</td>
<td>Soil texture: fine with compact zonesylim Color: 6/2 YR Description: Eroded portions of compact burned clay floor.</td>
<td></td>
</tr>
<tr>
<td>006</td>
<td>0.0 – 0.65m</td>
<td>Soil texture: fine and looseylim Color: 3/2 10YR - Brown</td>
<td></td>
</tr>
<tr>
<td>007</td>
<td>0.0 – 0.72m</td>
<td>Soil texture: fine, somewhat compactedylim Color: 6/3 10YR - brown Description: This level was stopped at 7cm depth when the top of a red, burned clay floor was encountered.</td>
<td></td>
</tr>
<tr>
<td>008</td>
<td>0.0 – 0.83m</td>
<td>Soil texture: Loose and sandyylim Color of burned clar floor: 5/4 7.5YRylim Color of fill of firepit: 6/3 10YR This level only involved excavation of the contents of the firepit (30cm wide X 40cm long &amp; approx. 11cm in depth). See Figures B.3, B.4</td>
<td></td>
</tr>
</tbody>
</table>

![Figure B.2 - Excavation profile of unit 1A-1.](image)
Unit 1A-2

Unit 1A-2 is located in grid square N7/E12 of the Guaytan 4 site grid. Almost all of the levels were 10cm arbitrary levels. Two levels are possible floors that match those found in unit 1A-1, which is immediately to the south of 1A-2 (Figure B.5).

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
</tr>
</thead>
</table>
| 001   | 0.0 - 0.20m | Soil texture: fine, smooth and loose  
              Color: 5/3 10 YR – Brown.  
              Description: Some large stones, possibly from structure to north. |
| 002   | 0.0 - 0.30m | Soil texture: fine, smooth and loose  
              Color: 5/3 10 YR – Brown. |
<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth (m)</th>
<th>Soil Texture</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
</table>
| 003  | 0.0 - 0.40m | Fine, smooth and loose | 5/3 10 YR – Brown | Soil texture: fine, smooth and loose  
Color: 5/3 10 YR – Brown  
Description: Compact floor at the bottom of level. |
| 004  | 0.0 - 0.50m | Fine, smooth and loose | 5/3 10 YR – Brown | Soil texture: fine, smooth and loose  
Color: 5/3 10 YR – Brown  
Description: Same floor as encountered in Unit 1A-1. |
| 005  | 0.0 - 0.60m | A little clayey, smooth and fine | 5/3 10 YR – Brown | Soil texture: A little clayey, smooth and fine  
Color: 5/3 10 YR – Brown  
Description: Same floor as encountered in Unit 1A-1. |
| 006  | 0.0 - 0.70m | Smooth and fine | 5/3 10 YR – Brown | Soil texture: smooth and fine  
Color: 5/3 10 YR – Brown |
| 007  | 0.0 - 0.80m | Smooth and fine | 6/3 10 YR – pale brown | Soil texture: smooth and fine  
Color: 6/3 10 YR – pale brown |
| 008  | 0.0 - 0.90m | Clayey, smooth and Sandy | 6/6 2.5 YR – olive yellow | Soil texture: Clayey, smooth and Sandy  
Color: 6/6 2.5 YR – olive yellow  
Description: Dark in various patches, and exhibiting some eroded portions of a red clay floor. |
| 009  | 0.0 - 1.00m | Sandy, loose and fine | 7/3 10 YR – very pale brown | Soil texture: Sandy, loose and fine  
Color: 7/3 10 YR very pale brown; .95m-1m: 6/4 10 YR light reddish brown  
Description: Soil was compact in some places, with evidence of a burnt clay floor, though this was not continuous throughout the unit. |
| 010  | 0.0 - 1.15m | Sandy and fine | 8/2 10 YR – white | Soil texture: Sandy and fine  
Color: 8/2 10 YR – white  
Description: bedrock with no cultural material |

Figure B.5 - Profile of PJ05-1A-2

PJ05 1B

Operation 1B was initiated to the northeast of 1A, on the same grid, with the intention of excavating a test unit immeately adjacent to the low platforms of Guaytan 4. One unit was excavated, but terminated before reaching bedrock because we did not have permission to excavate through architectural features, which became apparent after a depth of 0.28m below the surface.
PJ05 1B-1

Unit 1B-1 was located in grid square N9/E19 and measured 1.00m X 1.00m.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 – 0.10m</td>
<td>Soil texture: fina and semicompact</td>
<td>Color: 4/3 10YR – Dark Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 – 0.18m</td>
<td>Soil texture: clayish, semicompact</td>
<td>Color: 4/3 10YR – Dark Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0 – 0.28m</td>
<td>Soil texture: clayey, compact</td>
<td>Color: 5/3 10YR – brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description: Many flat river stones appearing along with eroded remains of floor.</td>
</tr>
<tr>
<td>004</td>
<td>0.0 – 0.40m</td>
<td>Soil texture: compact</td>
<td>Color: 5/3 10YR – brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description: Hard and compact soil with abundant, vertically-placed stones</td>
</tr>
<tr>
<td>005</td>
<td>0.0 – 0.50m</td>
<td>Soil texture: clayey, compact</td>
<td>Color: 5/3 10YR – brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description: Cleaning in southwestern area of unit to avoid architecture (Fig. B.6)</td>
</tr>
<tr>
<td>006</td>
<td>0.0 – 0.64m</td>
<td>Soil texture: clayey and compact</td>
<td>Color: 6/3 10YR – pale brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Description: Small extension of previous level before ending so as not to penetrate architecture.</td>
</tr>
</tbody>
</table>

Figure B.6. Plan photo of 1B-1-005.

PJ05 1C

Operation 1C was carried out in Guaytan 3 to examine the nature of surface jade debitage. Three 0.50m X 0.50m units were excavated to bedrock. None of the excavations turned up much information.
PJ05 1C-1

Unit 1C-1 was on the northern periphery of the hill that defined Guaytan 3. The unit contained 2 levels of 20cm in depth.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 – 0.20m</td>
<td>Soil texture: sandy and fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/2 10YR</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 – 0.40m</td>
<td>Soil texture: fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 8/2 10YR</td>
<td></td>
</tr>
</tbody>
</table>

PJ05 1C-2

Unit 1C-2 was located to the southeast of Unit 1C-1 and was terminated at 60cm upon meeting bedrock.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 – 0.20m</td>
<td>Soil texture: sandy and fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/2 10YR</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 – 0.40m</td>
<td>Soil texture: fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/2 10YR</td>
<td></td>
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<tr>
<td>003</td>
<td>0.0 – 0.60m</td>
<td>Soil texture: fine</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Color: 6/2 10YR</td>
<td></td>
</tr>
</tbody>
</table>

PJ05 1C-3

Unit 1C-3 was located to the west of 1C-2 and was terminated at 60cm upon meeting bedrock.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 – 0.20m</td>
<td>Soil texture: sandy and fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/2 10YR</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 – 0.40m</td>
<td>Soil texture: fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/2 10YR</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0 – 0.60m</td>
<td>Soil texture: fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 8/3 5YR</td>
<td></td>
</tr>
</tbody>
</table>

PJ05 1D

Operation 1D consists of six units were selected for excavation in an area of heavy jade surface debitage to determine the nature of the surface scatters (1D-1 thru 1D-6). The units were located at the edge of the quebrada that marks the western edge of Guaytan 4 (Fig. 5.13, B.6a). All units were excavated to bedrock, which ranged from 40cm to 1m below the natural surface. In two of the excavation units, a level of compact soil was noted that appeared to be the remains of an eroded plaza floor, but this could not be confirmed across all test units.
Figure B.6a. Schematic diagram of Units 1D-1 to 1D-4 (Drawing by Erika Gomez).

**PJ05 1D-1**

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0 – 0.20m | Soil texture: sandy and fine  
Color: 6/3 10YR – pale brown          |                                |
| 002   | 0.0 – 0.40m | Soil texture: fine  
Color: 6/3 10YR – pale brown |                                |

**PJ05 1D-2**

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0 - 0.20m | Soil texture: loose and semi clay  
Color: 5/4 10 YR – yellowish brown  
Description: Soil more compact at bottom of level. |                                                                            |
| 002   | 0.0 - 0.40m | Soil texture: compact, like a packed earth floor  
Color: 5/4 10 YR – yellowish brown |                                                                            |
| 003   | 0.0 - 0.60m | Soil texture: sandy but compact in places  
Color: 5/4 10 YR – yellowish brown  
Compact areas: 6/4 10YR |                                                                            |

**PJ05-1D- 3 (Fig. B.7)**

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0 - 0.20m | Soil texture: smooth, compact and un tanto sandy  
Color: 5/3 10 YR – brown- |                                                                            |
| 002   | 0.0 - 0.40m | Soil texture: generally smooth, but with compact portions  
Color: 6/3 10 YR – pale brown- |                                                                            |
| 003   | 0.0 - 0.45m | Soil texture: loose, clayley and fina  
Color: 6/4 10 YR – light yellowish brown- |                                                                            |
| 004   | 0.0 - 0.80m | Soil texture: muy compact.  
Color: 5/4 10 YR – yellowish brown- |                                                                            |
| 005   | 0.0 -1.00 m | Soil texture: sandy and fina  
Color: 7/4 10 YR – very pale brown- |                                                                            |
Figure B.7 - Profile de unidad PJ05-1D-3

PJ05 1D-4 (Fig. B.8)

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0 - 0.20m | Soil texture: smooth and sandy  
Color: 5/3 10 YR –brown |                                                                                        |
| 002   | 0.0 - 0.40m | Soil texture: smooth pero que se vuelve un poco más compact al fin del Level  
Color: 5/4 10 YR |                                                                                        |
| 003   | 0.0 - 0.60m | Soil texture: loose  
Color: 5/3 10 YR  
Bottom of level is compact, possibly from a floor. |                                                                                        |
| 004   | 0.0 - 0.80m | Soil texture: compact in some places, loose in others  
Color: Loose soil: 10 YR 5/3 brown  
Compact soil: 5/4 10 YR –yellowish brown- |                                                                                        |
| 005   | 0.0 -0.87m | Soil texture: Compact & fine in places, sandy in others  
Color: Compact soil: 5/3 10YR - Brown  
Sand: 7/1 10YR - Light Gray  
Talpetate 5/6 10YR - Yellowish Brown  
Sterile talpetate appears at bottom of level. |                                                                                        |

Figure B.8 - Profile of PJ05-1D-04.
## PJ05 1D-05 (Fig. B.9)

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 - 0.20m</td>
<td>Soil texture: semi compact and sandy</td>
<td>Color: 10 YR 6/4 - Yellowish Brown</td>
</tr>
<tr>
<td>002</td>
<td>0.0 - 0.40m</td>
<td>Soil texture: Semi compact</td>
<td>Color: 10 YR 5/4, Yellowish Brown</td>
</tr>
<tr>
<td>003</td>
<td>0.0 - 0.60m</td>
<td>Soil texture: semi compact</td>
<td>Color: 10 YR 5/3, Brown</td>
</tr>
<tr>
<td>004</td>
<td>0.0 - 0.80m</td>
<td>Soil texture: Smooth</td>
<td>Color: 10YR 5/4, Yellowish Brown; 10YR 6/4, Light Yellowish Brown</td>
</tr>
<tr>
<td>005</td>
<td>0.0 - 1.00m</td>
<td>Soil texture: loose and sandy</td>
<td>Color: 10 YR 6/4, Light Yellowish Brown</td>
</tr>
</tbody>
</table>

Figure B.9 – Profile de Unidad 1D-05

## PJ05 1D-6 (Fig. B.9a)

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0 - 0.20m</td>
<td>Soil texture: loose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 10 YR –Brown</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0 - 0.40m</td>
<td>Soil texture: loose</td>
<td>Color: 5/3 10 YR - Brown</td>
</tr>
<tr>
<td>003</td>
<td>0.0 - 0.55m</td>
<td>Soil texture: loose, with semi compact areas</td>
<td>Color: 6/4 10 YR - Light Yellowish Brown</td>
</tr>
<tr>
<td>004</td>
<td>0.0 - 0.75m</td>
<td>Soil texture: hard &amp; compact, containing some fine, loose soil</td>
<td>Color: 5/4 10YR - Yellowish Brown</td>
</tr>
<tr>
<td>005</td>
<td>0.0 - 0.95m</td>
<td>Soil texture: fine and sandy</td>
<td>Color: 7/3 10YR – Very Pale Brown</td>
</tr>
</tbody>
</table>
PJ05 1E and 1F

Five units (Operation 1E and 1F) were excavated from east to west along Platform 3, a long, platform retaining wall that forms the northern edge of the sunken patio in the southern portion of Guaytan 4. Excavation was initiated to obtain a stratified sample of production debitage, based on the presence of high surface concentrations of jadeite debitage located atop and below the platform wall. The area is the northern portion of the group excavated by Walters (1980, 1989), in which he reported finding dense deposits of jadeite debitage. Four of the units (1E-1 thru 1E-4) were placed below (south of) the platform wall, An additional unit (1F-1) was placed on the platform itself, approximately 1 m north of the platform wall. All units were excavated to bedrock, which ranged from 84 cm (1F-1) to 1.8 m (1E-3) below the natural surface. After excavation, it was observed that units 1E-3 and 1E-4 were both north of the platform retaining wall.

PJ05 1E-1 (Fig. B.10)

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.23m</td>
<td>Soil texture: smooth, loose, slightly sandy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/4 2.5 Y – light olive brown</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.43m</td>
<td>Soil texture: smooth and loose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/4 2.5 Y – light olive brown</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: A small area of hardened soil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>was encountered</td>
<td></td>
</tr>
<tr>
<td>Depth (m)</td>
<td>Text Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.33m</td>
<td>at .33m, which was yellowish brown (5/5 10 YR).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.63m</td>
<td>Soil texture: 1) compact, probably an eroded floor; 2) loose and fine; 3) compact. Color: 1) 6/5 10 YR –brownish yellow; 2) 5/5 10 YR –yellowish brown; 3) 6/4 2.5 Y –light yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.83m</td>
<td>Soil texture: smooth and loose, compact in some areas. Color: 5/5 10 YR –yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.23m</td>
<td>Soil texture: 1) loose and sandy; 2) compact. Color: 1) 5/4 2.5 Y –light olive brown; 2) 6/4 2.5 Y –light yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.43m</td>
<td>Soil texture: smooth, loose, somewhat sandy. Color: 5/4 2.5 Y –light olive brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.63m</td>
<td>Soil texture: 1) loose and smooth; 2) clayey. Color: 1) 5/5 10 YR –yellowish brown; 2) 6/4 2.5 Y –light yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.83m</td>
<td>Soil texture: 1) smooth &amp; loose; 2) clayey &amp; compact. Color: 1) 5/5 10 YR –yellowish brown; 2) 6/4 2.5 Y –light yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.89m</td>
<td>Soil texture: fine and loose, with various clayey and compact spots. Color: 5/5 10 YR –yellowish brown.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-0.93m</td>
<td>Soil texture: powdery. Color: 6/5 10 YR –brownish yellow. Description: Thin, eroded portion of floor (5cm thick) appears in northeast sector of unit (7/4 10 YR –very pale brown).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0-1.03m</td>
<td>Soil texture: smooth and loose under floor. Color: 6/5 10 YR –brownish yellow. Description: Thin portion of floor (5cm thick) appears in northeast sector of unit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure B.10 – Profile of PJ05-1E-1**
<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: compact&lt;br&gt;Color: 10 YR 4/3, Dark Brown/Brown</td>
<td></td>
</tr>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: compact&lt;br&gt;Color: 10 YR 4/3, Dark Brown/Brown</td>
<td>Southern extension of unit 2</td>
</tr>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: compact&lt;br&gt;Color: 10 YR 5/3, Brown</td>
<td>Extension 2b - Southern extension of unit 2a</td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: Semi compact&lt;br&gt;Color: 10 YR 5/3, Brown</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: Semi compact&lt;br&gt;Color: 10 YR 5/3, Brown&lt;br&gt;Description: In this level was encountered the beginning of the obsidian blade core cache</td>
<td>Southern extension of unit</td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: Semi compact&lt;br&gt;Color: 10 YR 5/3, Brown</td>
<td>Extension 2b - Southern extension of unit 2a</td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.50m</td>
<td>Soil texture: semi compact&lt;br&gt;Color: 10 YR 5/4, Yellowish Brown</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.48m</td>
<td>Soil texture: semi compact&lt;br&gt;Color: 10 YR 5/4, Yellowish Brown.</td>
<td>Southern extension of unit</td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.60m</td>
<td>Soil texture: semi compact&lt;br&gt;Color: 10 YR 5/3, Brown</td>
<td>Extension 2b - Southern extension of unit 2a</td>
</tr>
<tr>
<td>004</td>
<td>0.0-0.70m</td>
<td>Soil texture: loose&lt;br&gt;Color: 5/4 10 YR –yellowish brown-</td>
<td></td>
</tr>
<tr>
<td>005</td>
<td>0.0-0.80m</td>
<td>Soil texture: semi compact&lt;br&gt;Color: 10YR 5/4, Yellowish Brown and 10YR 5/3, Brown</td>
<td></td>
</tr>
<tr>
<td>006</td>
<td>0.0-1.00m</td>
<td>Soil texture: smooth and semi compact&lt;br&gt;Color: 10 YR 5/4, Yellowish Brown and 10 YR 5/3, Brown</td>
<td></td>
</tr>
<tr>
<td>007</td>
<td>0.0-1.20m</td>
<td>Soil texture: compact&lt;br&gt;Color: 10YR 5/4, Yellowish Brown</td>
<td></td>
</tr>
<tr>
<td>008</td>
<td>0.0-1.30m</td>
<td>Soil texture: semi compact&lt;br&gt;Color: sand 10YR 7/3, Very Pale Brown&lt;br&gt;Tierra café 10YR 5/4, Yellowish Brown</td>
<td></td>
</tr>
</tbody>
</table>
PJ05 1E-3 (Fig. B.12)

This unit was initiated as a 50 cm x 50 cm unit, but was eventually expanded to 1m x 1m to enable excavation to streile deposits.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0-0.20m | Soil texture: compact  
Color: 10YR 5/3 - Brown | Extension 3a - eastern extension of unit 1E-3. |
| 001   | 0.0-0.20m | Soil texture: compact  
Color: 10YR 5/3 - Brown | Extension 3b - southern 1m x .5m extension of unit 1E-3a. |
| 002   | 0.0-0.31m máximo | Soil texture: semi clayish and compact  
Color: 10YR 5/3 - Brown | |
<table>
<thead>
<tr>
<th>Depth</th>
<th>Texture</th>
<th>Color</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>002</td>
<td>0.0-0.28m máximo</td>
<td>Soil texture: semi compact and fino</td>
<td>Color: 10YR 6/4 – Light Yellowish Brown</td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.28m máximo</td>
<td>Soil texture: Semi compact</td>
<td>Color: 10YR 5/3 - Brown</td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.50m</td>
<td>Soil texture: compact</td>
<td>Color: 10YR 5/4 - Yellowish Brown</td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.50m</td>
<td>Soil texture: semi compact</td>
<td>Color: 10 YR 5/4, Yellowish Brown</td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.50m</td>
<td>Soil texture: semi compact</td>
<td>Color: 10 YR 5/3 - Brown</td>
</tr>
<tr>
<td>004</td>
<td>0.0-0.70m</td>
<td>Soil texture: loose</td>
<td>Color: 5/4 10YR – yellowish brown -</td>
</tr>
<tr>
<td>005</td>
<td>0.0-0.90m</td>
<td>Soil texture: loose</td>
<td>Color: 10YR 5/3 – Brown and 10YR 5/4 - Yellowish Brown</td>
</tr>
<tr>
<td>006</td>
<td>0.0-1.10m</td>
<td>Soil texture: smooth and loose</td>
<td>Color: 10YR 5/4 - Yellowish Brown</td>
</tr>
<tr>
<td>007</td>
<td>0.0-1.30m</td>
<td>Soil texture: loose and sandy</td>
<td>Color: 10YR 5/3 and 10YR 5/4 – Brown and Yellowish Brown</td>
</tr>
<tr>
<td>008</td>
<td>0.0-1.50m</td>
<td>Soil texture: fine</td>
<td>Color: sand 10YR 7/3-Very Pale Brown and 10YR 7/1 - Light Gray</td>
</tr>
<tr>
<td>009</td>
<td>0.0-1.70m</td>
<td>Soil texture: semi compact and fine</td>
<td>Color: 10YR 7/1, Light Gray</td>
</tr>
<tr>
<td>010</td>
<td>0.0-1.80m</td>
<td>Soil texture: fine</td>
<td>Color: 10YR 7/3, Very Pale Brown</td>
</tr>
</tbody>
</table>
Figure B.12 – Profiles of PJ05-1E-3

PJ05 1E-4 (B.13)

<table>
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<tr>
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<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0-0.20m | Soil texture: 1) loose and slightly sandy; 2) loose and sandy  
|       |        | Color: 1) 6/2 7.5 YR –pinkish gray; 2) 6/3 10 YR –pale brown |                   |
| 002   | 0.0-0.40m | Soil texture: clayley and compact  
|       |        | Color: 6/4 10 YR –light yellowish brown- |                   |
| 003   | 0.0-0.60m | Soil texture: clayley compact  
|       |        | Color: 6/4 10 YR –light yellowish brown- |                   |
| 004   | 0.0-0.80m | Soil texture: clayley and compact  
|       |        | Color: 6/4 10 YR –light yellowish brown- |                   |
| 001a  | 0.0-0.20m | Soil texture: 1) loose & slightly sandy; 2) loose & sandy  
|       |        | Color: 1) 6/2 7.5 YR –pinkish gray; 2) 6/3 10 YR –pale brown- | Northern extension. |
| 002a  | 0.0-0.40m | Soil texture: a little compact | Northern extension. |
**Figure B.13 – Profile de PJ05-1E-4**

**PJ05 1F-1**

Unite 1F-1 is located approximately 5 meters to the northeast of unit 1E-3.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: sandy and fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/3 10 YR –Pale Brown</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.25m</td>
<td>Soil texture: loose and fine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 6/3 10 YR - Pale Brown</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.31m</td>
<td>Soil texture: compact</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 10 YR (Brown) and with dark areas: 4/6 7.5 YR (Strong Brown) and 3/1 5 YR (Very Dark Grey)</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>0.0-0.41m</td>
<td>Soil texture: loose</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>Depth</td>
<td>Context</td>
<td>Comments</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>--------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>005</td>
<td>0.0-0.48m</td>
<td>Soil texture: fine and smooth</td>
<td>Color: 5/4 10 YR –Yellowish Brown-</td>
</tr>
<tr>
<td>006</td>
<td>0.0-0.60m</td>
<td>Soil texture: fine</td>
<td>Color: 5/4 10 YR –Yellowish Brown-</td>
</tr>
<tr>
<td>007</td>
<td>0.0-0.74m</td>
<td>Soil texture: compact</td>
<td>Color: 5/4 10 YR –Yellowish Brown-</td>
</tr>
<tr>
<td>008</td>
<td>0.0-0.84m</td>
<td>Soil texture: fine</td>
<td>Color: Three soil colors appear in this level, but they could not be defined because of the fine texture of the soil: 10 YR 5/4 (café amarillento); 7.5 YR N 8/0 (blanco); 10 YR 6/3 (café claro).</td>
</tr>
</tbody>
</table>

### Operation 2

Test excavations at Guaytan 5 (a Type 2 site) were intended to assess the nature of surface scatters of jadeite and obsidiandebitage. The site is located across a quebrada to the southwest of Guaytan 4 and across a quebrada to the south of Guaytan 6; the site is comprised of a group of three low platforms (less than 25 cm in height) (Fig. 5.21). Unfortunately, all three of our excavations (Operation 2, Units 2A-1, 2A-2, and 2A-3) were terminated at a maximal depth of 20cm upon reaching bedrock. No subsurface ceramics or evidence of jadeite artifact production was recovered from any of the excavations; two obsidian blades were recovered from one unit.

**PJ05 2-1**

Unit 2A-1 was located in the western portion of the site.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.10m</td>
<td>Soil texture: clayley, compact and hard</td>
<td>7.5 YR 3/3 .</td>
</tr>
</tbody>
</table>

**PJ05 2-2**

Unit 2A-2 was located in the southern portion of the site.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: clayley, compact and hard</td>
<td>3/3 7.5 YR</td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.25m</td>
<td>Soil texture: clayley, compact and hard</td>
<td>3/3 7.5 YR</td>
</tr>
</tbody>
</table>

**PJ05 2-3**

Unit 2A-2 was located south Unit 2A-2.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: clayley, compact and hard</td>
<td>3/3 7.5 YR</td>
</tr>
</tbody>
</table>

### Operation 3

Guaytan 7 is a sector of the southern portion of Guaytan that contains a core of elite residential structures that were studied and excavated by both Smith and Kidder (1943) and Walters (1980) (Fig. 5.11); it is a Type V site in the local site hierarchy..
During survey of this sector of the site, a small, widely scattered collection of jadeite debitage was observed in a small plaza on the eastern edge of the site sector, which has partially destroyed on its western edge by the road to San Agustin Acasaguastlan. Two small 50 cm X 50 cm units (Op. 3A-1 and 3A-2) were excavated to rapidly assess the significance of this surface material. An eroded plaster floor was uncovered at a depth of approximately 50 cm below the surface in the easternmost of the two excavation units; jade debitage was recovered from below this plaster floor. Both units yielded significant amounts of jadeite debitage flakes, but few categories of evidence of other types of jade artifact production. Ceramics dated to the Classic period generally, with the majority from the Late Classic period. Bedrock was reached at approximately 1.3 meters below surface in both units.

PJ05 3A-1 (Fig. B.14)

Unit located in the southwestern part of Guaytán 7, initiated as a 0.50m X 0.50m unit and subsequently extended to the east by 0.50m. Unit was excavated in 20cm arbitrary levels, except when floors were clearly encountered.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: smooth and loose</td>
<td>Abundant ceramics and jade flakes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 2.5 Y –light olive brown-</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: smooth and loose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 2.5 Y –light olive brown-</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.60m</td>
<td>Soil texture: 1)smooth; 2) clayley; 3)compact</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 5/3 2.5 Y –light olive brown-; 2) 5/5 2.5 Y –yellowish brown-; 3) 6/2 10 YR –light brownish gray-</td>
<td>Description: possible eroded portions of an uneven floor.</td>
</tr>
<tr>
<td>004</td>
<td>0.0-0.70m</td>
<td>Soil texture: 1) compact; 2) slightly sandy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/2 10 YR –light brownish gray-; 2) 7/3 10 YR –very pale brown-</td>
<td>Description: Near 70 cm, soil becomes begins notably more compact, like a floor.</td>
</tr>
<tr>
<td>001a</td>
<td>0.0-0.20m</td>
<td>Soil texture: compact</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 2.5 Y –light olive brown-</td>
<td></td>
</tr>
<tr>
<td>002a</td>
<td>0.0-0.40m</td>
<td>Soil texture: 1) smooth and loose; 2) compact</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 5/3 2.5 Y –light olive brown-; 2) 6/2 10 YR –light brownish gray-</td>
<td></td>
</tr>
<tr>
<td>003a</td>
<td>0.0-0.60m</td>
<td>Soil texture: 1)smooth; 2) clayley; 3) compact</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 5/3 2.5 Y –light olive brown-; 2) 5/5 2.5 Y –yellowish brown-; 3) 6/2 10 YR –light brownish gray-</td>
<td>Description: large rocks (10-20cm long) were encountered in this layer.</td>
</tr>
<tr>
<td>004a</td>
<td>0.0-0.70m</td>
<td>Soil texture: slightly sandy</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 7/3 10 YR –very pale brown-</td>
<td>Description: large quantity of small rocks.</td>
</tr>
<tr>
<td>005</td>
<td>0.0-0.74m</td>
<td>Soil texture: slightly sandy, loose and fine</td>
<td>This lot conversion only the material from .70-.74m.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/4 10 YR –light yellowish brown-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: Soil is sandy to 74 cm in depth, whereas the floor begins to appear in this extension of the unit.</td>
<td>Characteristics of the floor (Fig. B.15): compact clay (color 7/2 10 YR –light gray), with small stones (3mm to 1cm) inclusions.</td>
</tr>
</tbody>
</table>
The surface is coarse and eroded, the approximate thickness is 3-6 cm. The floor is made uneven, since in the western portion it is found to 68-70 cm in depth, while in the extreme it is 80 cm.

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
</table>
| 0.0-0.90m | Soil texture: 1) slightly sandy; 2) sandy; 3) floor (described above)  
Color: 1) 7/3 10 YR –very pale brown--; 2) 7/2 10 YR –light gray-  
Description: In the east extension of the unit there is slightly sandy yellowish soil slightly and in the western half under the floor there is a very loose yellowish sand. |
| 0.0-1.10m | Soil texture: 1) sandy and fine; 2) sandy  
Color: 1) 7/2 7.5 YR –pinkish gray--; 2) 8/1 10 YR –white- |
| 0.0-1.30m | Soil texture: sandy, sand fina 1/16-1/8 mm  
Color: 8/1 10 YR –white- |
| 0.0-1.40m | Soil texture: sandy  
Color: 8/1 10 YR –white-  
Description: White sand with no cultural material. |

The floor ends at a depth maximum of 86 cm.

B.14 - North and east profiles of 3A-1 (Drawn by Erika Gomez).
The unit was located 5.0m to the east of the unit 3A-1, and was initially a .50 x .50m unit, but was subsequently extended by .50m to the east. We expected finding the same floor as in Unit 3A-1, but we did not find it in the excavation.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: 1) loose and smooth; 2) loose</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 4/4 2.5 Y – olive brown; 2) 3/2 2.5 Y – very dark grayish brown-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: some large rocks were encountered in this level.</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: 1) smooth and loose; 2) compact</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 3/2 2.5 Y – very dark grayish brown-; 2) 6/3 2.5 Y – light yellowish brown-</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.60m</td>
<td>Soil texture: 1) smooth and loose, slightly compact; 2) smooth and loose.</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/3 2.5 Y – light yellowish brown-; 2) 5/2 10 YR – dark grayish brown-</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>0.0-0.80m</td>
<td>Soil texture: 1) smooth and loose; 2) smooth</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/3 2.5 Y – light yellowish brown-; 2) 4/2 10 YR – dark grayish brown-</td>
<td></td>
</tr>
<tr>
<td>001a</td>
<td>0.0-0.20m</td>
<td>Soil texture: 1) loose and smooth; 2) loose</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 4/4 2.5 Y – olive brown-; 2) 3/2 2.5 Y – very dark grayish brown-</td>
<td></td>
</tr>
<tr>
<td>002a</td>
<td>0.0-0.40m</td>
<td>Soil texture: 1) smooth and loose; 2) compact</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 3/2 2.5 Y – very dark grayish brown-; 2) 6/3 2.5 Y – light yellowish brown-</td>
<td></td>
</tr>
<tr>
<td>003a</td>
<td>0.0-0.60m</td>
<td>Soil texture: 1) smooth and loose, slightly compact; 2) smooth and loose.</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/3 2.5 Y – light yellowish brown-; 2) 5/2 10 YR – dark grayish brown-</td>
<td></td>
</tr>
<tr>
<td>004a</td>
<td>0.0-0.80m</td>
<td>Soil texture: 1) smooth and loose; 2) smooth</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/3 2.5 Y – light yellowish brown-; 2) 4/2 10 YR – dark grayish brown</td>
<td></td>
</tr>
<tr>
<td>005</td>
<td>0.0-1.00m</td>
<td>Soil texture: 1) compact; 2) slightly sandy and loose; 3) smooth and loose</td>
<td>Eastern extension of unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 6/3 2.5 Y – light yellowish brown-; 2) 6/4 2.5 Y – light yellowish brown-; 5/3 10 YR – brown</td>
<td></td>
</tr>
</tbody>
</table>
Operation 4

Guaytan 8 (a Type IV site) is a sector of the site of Guaytan located at the far southern perimeter of Guaytan Ciudadela, approximately 150 meters to the east of Guaytan 4 and 50 meters to the south of the Guaytan 7 test excavations (Fig. 5.11). Although no architectural remains are visible on the surface of this sector, it should be noted that the sector lies directly to the south of a heavily looted area of elite residential architecture that sits on a small natural plateau above the field. During survey, 35 pieces of worked jadeite were collected in the field, which had been used for maize cultivation as recently as 2002. After talking with the local landowner and determining that the field had only been plowed by horse-drawn plows, I decided to excavate two small test units to assess the character of deposits located below the plow zone (Operation 4, units 4A-1, 4A-2). Unfortunately, excavations had to be abandoned before completion when the landowner’s sons changed their minds about granting us permission and asked us to leave. No undisturbed, stratified contexts were encountered in either unit, although fragments of burnt clay, possibly from the exterior of a wattle and daub structure, were recovered in unit 4A-1.

**Table:**

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Soil Texture</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0-1.20</td>
<td>Sandy and loose</td>
<td>7/3 2.5 Y – pale yellow; 8/2 2.5 Y – white</td>
<td>Beginnings of the white sand that lies above the natural talpetae were encountered at the bottom of the level.</td>
</tr>
<tr>
<td>0.0-1.30</td>
<td>Sandy</td>
<td>8/2 2.5 Y – white</td>
<td>White sand wth not cultural material.</td>
</tr>
</tbody>
</table>

**Figure B.16 - Eastern and northern profiles of 3A-2 (Drawn by Erika Gomez).**
**PJ05 4A-01 (Fig. B.17)**

Unit located in Guaytan 8, measuring 1.00m x 0.50m. Excavation was carried out in 20cm arbitrary levels to a depth of 1.80.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0-0.20m | Soil texture: compact  
Color: 10 YR 5/3, Brown  
Description: Primer Compact humic layer with rocks and highly disturbed cultural material. | |
| 002   | 0.0-0.40m | Soil texture: loose and semicompact  
Color: 10 YR 5/3, Brown  
Description: This level was similar level 1 in the first few centimeters. A number of burned red clay fragments (2.5 YR 4/8, Red) were noted. In the last centimeters the soil began to appear a different color: 10 YR 6/4, Light Yellowish Brown. | |
| 003   | 0.0-0.60m | Soil texture: loose and semicompact  
Color: 6/4 10YR – light yellowish brown and 10 YR 7/1, Light Gray  
Description: It conformed at first by clear yellowish coffee color land loose, then began to appear sand color very clear coffee in the side This of the well and subsequently to the West to 0,52 m of Depth, with tiny black particles as inclusions, the same one was a very thin layer.  
Among the 0,50 m and the 0,52 m another change in the land was given, the same one was more loose and slightly more clear, nevertheless in the Southwestern corner, land was found yellowish coffee (10 YR 5/4, Yellowish Brown), semi-compact of which some pots were obtained. To a Depth of 0,55 m a last change in this Level was given, was observed sand clear coffee (10 YR 6/5, Very Even Brown). Inside the Level pumice was found also. | |
| 004   | 0.0-0.80m | Soil texture: semi compact and fine  
Color: 10 YR 6/4, Light Yellowish Brown  
Description: Level composed by land yellowish coffee in almost all the excavation. In the Southwestern corner was presented of different way, since was more brilliant (by the quantity of mica that contained), besides was not loose but in lumps and with some fragments of coal. In her a hammer of jade to 0.69 was found m of Depth. In the Northeastern corner, the land was semi-compact and of color yellowish coffee. Subsequently, in the Southwestern corner, coffee color land was observed (10 YR 5/3, Brown), surrounded by land clear coffee (10 YR 6/3, Even Brown) and land clear yellowish coffee (10 YR 6/4, Light Yellowish Brown). Already in the end of lot, almost all was land fine, always with fragments of coal and small stones. | |
| 005   | 0.0-1.00m | Soil texture: smooth and loose  
Color: 10 YR 6/4, Light Yellowish Brown  
Description: Level conformed by land yellowish coffee space, smooth and loose that occupies all the lot. To 0.95 m darker land was found (10 YR 6/2, Light Brownish Gray), probably by burns, that continued to the end. Also it contained a series of rocks, that presented signs of to have been burned, therefore its color was almost black and some they were black completely. Had besides some pots, enlarging the quantity of ceramics recovered of this Level in comparison with the previous one. | |
<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Soil Texture</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>006</td>
<td>0.0-1.20m</td>
<td>Loose and sandy</td>
<td>10 YR 6/4, Light Yellowish Brown</td>
<td>Level in which land was found yellowish clear coffee, loose and of consistency sandy. Approximately to 1.10m of Depth, a cross stripe of land was found semi-compact that went of the Northeastern corner to the Southwest. It was of the same color of the previously mentioned and upon extracting it returned loose, gave the only thick impression of being. In the Northwest corners and Southeastern, land was found loose coffee (10 YR 5/3, Brown), that in the end dominated in the lot.</td>
</tr>
<tr>
<td>007</td>
<td>0.0-1.40m</td>
<td>Loose and sandy</td>
<td>10 YR 5/3, Brown</td>
<td>This it conformed by land coffee loose and sandy, that in some parts (Northeastern corners and Southeastern) were presented in lumps and even showed some fragments of coal and small stones as inclusions. In general, its profilees are more compacts than the center of the lot, while in the end of the Level, the land was a little clearer.</td>
</tr>
<tr>
<td>008</td>
<td>0.0-1.60m</td>
<td>Loose and compact en sectores</td>
<td>10 YR 5/3, Brown</td>
<td>Level land comprising coffee, loose 0.10m in the first, changing to a lighter shade in the last centimeters (10 YR 6 / 4 Light yellowish Brown). Between 1.50m and 1.55m, changes its texture, being more compact and in lumps. At the end of the lot appeared very fine sand, whose size was greater than 1 / 16 mm. Whole batch was small rocks as inclusions.</td>
</tr>
<tr>
<td>009</td>
<td>0.0-1.80m</td>
<td>Sandy</td>
<td>10 YR 6/4, Light Yellowish Brown</td>
<td>This level was a test of the western half of the unit to exclude the presence of more cultural material, as the level above which little was recovered. Was composed of loose sand smooth and clear, yellowish brown, which later changed to light gray (10 YR 7 / 2, Light Gray). Inclusions was quite small stones or grit.</td>
</tr>
</tbody>
</table>
PJ05 4A-2 (Fig. B.18)

The unit was 1.00mx 1.00m and at the same characteristics were slightly different from the wells described so far. At the higher levels were inclusions of talpetate clods and rocks red light that had been poorly presented in other operations, which were frequent from the second to the fourth level. It also found "cascahuín" which is a material used today as degreasing, in the clay that is used for the manufacture of pottery in San Agustín Acasaguastlán. It is possible that the evidence of this material in the industry, was associated with its use for similar purposes.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.20m</td>
<td>Soil texture: compact</td>
<td>Soil texture: compact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/4 2.5 Y –light olive brown-</td>
<td>Light olive brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: Earth as a compact clods who</td>
<td>presented</td>
</tr>
<tr>
<td></td>
<td></td>
<td>presented regular quantity of pottery.</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.00-0.40m</td>
<td>Soil texture: 1) compact; 2) clayley; 3)</td>
<td>Soil texture: 1) compact; 2) clayley; 3) talpetate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>talpetate</td>
<td>talpetate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 5/4 2.5 Y –light olive brown-; 2)</td>
<td>Color: 1) 5/4 2.5 Y –light olive brown-; 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6/4 2.5 Y –light yellowish brown-; 3) 5/3</td>
<td>6/4 2.5 Y –light yellowish brown-; 3) 5/3 2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5 Y –light olive brown-</td>
<td>2.5 Y –light olive brown-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: This level also compact the</td>
<td>Description: This level also compact the soil,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soil, is abundant and few lumps of gravel</td>
<td>is abundant and few lumps of gravel talpetate,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>talpetate, as well as areas with land</td>
<td>as well as areas with land clayley yellowish,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clayley yellowish. Apart from this,</td>
<td>Apart from this,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>presented some reddish lumps cafes very</td>
<td>presented some reddish lumps cafes very light</td>
</tr>
<tr>
<td></td>
<td></td>
<td>light weight, similar to the pumice, which</td>
<td>weight, similar to the pumice, which were</td>
</tr>
<tr>
<td></td>
<td></td>
<td>were small and medium-sized (about 10cm).</td>
<td>small and medium-sized (about 10cm).</td>
</tr>
<tr>
<td>003</td>
<td>0.00-0.60m</td>
<td>Soil texture: 1) compact; 2) clayley; 3)</td>
<td>Cascahuín is material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>talpetate</td>
<td></td>
</tr>
</tbody>
</table>
Color: 1) 5/4 2.5 Y –light olive brown; 2) 6/4 2.5 Y –light yellowish brown; 3) 5/3 2.5 Y –light olive brown.
Description: Level to continue to talpate and clods of earth compact clayey sectors. Interspersed with abundant pebbles and small lumps of stone and reddish light brown above. It was also observed with relative abundance of small stones "cascahuín", among which are some complete and some areas where it looks like reddish material disintegrated.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth Range</th>
<th>Soil Texture</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>004</td>
<td>0.00-0.80m</td>
<td>compact and loose en algunos sectores</td>
<td>6/4 10 YR –light yellowish brown</td>
<td>The first 12cm of soil had Level clayey compact and then starts to become loose while the color is the same. The pottery is relatively abundant</td>
</tr>
<tr>
<td>005</td>
<td>0.00-1.00m</td>
<td>slightly sandy; sandy</td>
<td>6/4 10 YR –light yellowish brown; 8/2 7.5 YR –pinkish white</td>
<td>The first few centimeters of soil had a little sandy, then appears completely intermingled with sandy soil.</td>
</tr>
<tr>
<td>006</td>
<td>0.00-1.20m</td>
<td>sandy</td>
<td>8/1 5 YR –white</td>
<td>Presents yellowish sandy soil interspersed with sand whiter.</td>
</tr>
<tr>
<td>007</td>
<td>0.00-1.30m</td>
<td>sandy</td>
<td>8/1 5 YR –white</td>
<td>White sand in which there was no cultural material.</td>
</tr>
</tbody>
</table>

Figure B.18- North and south profiles of 4A-2 (Drawn by Erika Gomez).
Operation 6

Operation 6 was located in the area known as Guaytan 6. The only unit, 6A-1, was located between a small, level platform, and the quebrada that separates Guaytan 6 from Guaytan 4. leveling platform bordering a creek to the east, while west of it are several structures.

PJ05 6A-1 (Fig. B.19)

The unit was 1.00mx 1.00m and was placed in an area where chert drills and jade debitage were evident on the surface. We hoped to encounter a midden, as the area was located behind the nearest structure, but did not encounter any midden deposits in the area.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: compact&lt;br&gt;Color: 6/3 10 YR –pale brown-&lt;br&gt;Description: Many stone inclusions 5 cm in length and smaller.</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.0-0.40m</td>
<td>Soil texture: compact and clayey&lt;br&gt;Color: 5/5 2.5 Y –light olive brown-&lt;br&gt;Description: soil continues to be compact and begins to be slightly clayey with similar small stone inclusions to previous level.</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>0.0-0.60m</td>
<td>Soil texture: compact&lt;br&gt;Color: 5/5 2.5 –light olive brown-&lt;br&gt;Description: excavation ended with this level because of the appearance of many larger rocks, (3-6cm in size, which may be from fill for an artificial platform.</td>
<td>No cultural material was recovered any of this lot so we decided to complete the excavation of this pit.</td>
</tr>
</tbody>
</table>

Figure B.19 - North and east profiles of 6A-1. Drawn by Erika Gomez.
Operation 7

Operation 7 was located at the site of Vargas IIB, on the eastern face east hill upon which the site rests.

PJ05 7A-01 (Fig. B.20)

Unit 7A-01 was located on the east side of one of the looted structures that is part of the series that runs north-south along the eastern face of the hill. The unit dimensions were 0.50m x 1.00m and the unit was excavated in arbitrary levels of 0.20m each, to a maximum depth of 0.70m. Almost all the material encountered was from the for the looting and collapse of the structure (Fig. 40).

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0-0.20m | Soil texture: fine  
Color: 10YR 5/3 - Brown  
Description: dark humus layer with schist, boulders, roots, and small stone inclusions.  
Halfway through the level was observed a soil color change to a darker brown (10 YR 4 / 2, Dark Grayish Brown), which is perhaps the natural humus. | |
| 002   | 0.0-0.40m | Soil texture: fine  
Color: 10YR 4/2 - Dark Grayish Brown  
Description: loose dark brown soil, with boulders, shale, stones and a small bit of roots as inclusions. | |
| 003   | 0.0-0.60m | Soil texture: loose  
Color: 10YR 4/2 - Dark Grayish Brown  
Description: loose dark brown soil with large roots (which hampered the work of excavation), boulders, small stones and shale inclusions. | |
| 004   | 0.0-0.70m | Soil texture: loose  
Color: 10YR 4/2 - Dark Grayish Brown  
Description: same color, dark brown with fine and large roots, shale, pebbles and small stones as previous, but with very little artifacts, so excavation was abandoned. | |
Figure B.20- West profile of 7A-1.

Operation 8

Operation 8 was carried out at Magdalena I (Fig. B.21). Seven test pits were excavated: one test pit in the eastern perimeter of the site (8A-1), one test pit in the central plaza area (8A-3), and five test pits in the western portion of the site (8A-2, 8A-4, 8A-5, 8A-6, and 8A-7). 8A-1 located at the southeast end of the site, just where it ends elevation was divided by the road to San Agustín Acasaguastlán. 8A-2 was located at the northwest corner of the site, a few meters from the Rio Lato. 8A-3 unit is located in the center of a small open square, while 8A-4 is located southeast of the western group of structures. 8A-5 unit is located west of the group, at about 1.50m from the wall visible from a looter’s pit into a structure that flanks this site and directly adjacent to the area overlooking the Rio Lato. 8A-6 unit is located to the west of unit 5 at a lower end and the nearest river. 8A-7 is located just behind the looted structure on the western edge of the site, in the hopes of finding undisturbed material adjacent to the structure.
**PJ05 8A-1 (Fig. B.22)**

Unit was placed between two structures: a rectangular structure and another structure in which a centrally-located possible xultun was located. The unit was 1.00m long x 0.50m wide and dug in 0.20m arbitrary levels, to a depth of 0.80m.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 001   | 0.0-0.30m| Soil texture: compact  
Color: 10YR 5/3 - Brown  
Description: compact and very muddy. Halfway in depth through the level were gray spots throughout the level and especially in the west, and also included were several rocks of schist which hampered the work of excavation, so the level had a thickness of 0.30m. Between the 0.20m and 0.30m, was recovered a large amount of pottery and jade flakes mixed with soil and small carbonized piece; the final 10cm possibly included an eroded floor and subfloor. |                                                                 |
| 002   | 0.0-0.40m| Soil texture: semi compact  
Color: 10YR 5/3 – Brown and 10YR 5/4 - Yellowish Brown  
Description: started out with the same semi-compact soil as level one, then changed to a more yellowish brown, smoother soil; the two soil colors were mixed between 0.35m and 0.40m. |                                                                 |
| 003   | 0.0-0.60m| Soil texture: semi compact and compact  
Color: 10YR 5/4 - Yellowish Brown and 10YR 6/4 - Light |                                                                 |
Yellowish Brown
Description: yellowish brown, semi-compact and micaceous soil at the beginning of layer, but soil became more compacted at about 0.45m in depth, with more roots. A lighter soil color with brown micaceous appearance was encountered beginning at 0.50m in depth.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Soil texture: smooth and sandy</th>
</tr>
</thead>
<tbody>
<tr>
<td>004</td>
<td>0.0-0.80m</td>
<td>Color: 10YR 5/4 - Yellowish Brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: after a few centimeters, the soil that was found was a slightly darker brown tone, which was contained brown spots (10 YR 5/3, Brown). Only one ceramic fragment was recovered in the upper portion of this level.</td>
</tr>
</tbody>
</table>

**Figure B.22- North and east profile of 8A-1.**

**PJ05 8A-2 (Fig B.23)**

The unit is located towards the northwest edge of site, in an area near modern quartz and shale quarrying, a few meters from the Rio Lato, which was near and west of this sector. The unit is 1.00m long x 0.50m wide, and lies between two structures, which flank the north patio.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Soil texture: 1) compact; 2) clayley, loose, slightly compact</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.20m</td>
<td>Color: 1) 5/3 10 YR – brown; 2) 5/5 10 YR – yellowish brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: compact at the beginning, but then more loose and fine. Approximately 13cm in depth in the east portion of the unit, the soil begins to appear more yellow and clayley.</td>
</tr>
<tr>
<td>002</td>
<td>0.00-0.40m</td>
<td>Soil texture: compact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/5 10 YR – yellowish brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: A bit compact, clayley and yellowish.</td>
</tr>
<tr>
<td>003</td>
<td>0.00-0.60m</td>
<td>Soil texture: slightly compact, clayley, slightly sandy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/5 10 YR – yellowish brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: Yellowish soil with small rock inclusions.</td>
</tr>
<tr>
<td>004</td>
<td>0.00-0.80m</td>
<td>Soil texture: compact, slightly sandy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/5 10 YR – yellowish brown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: yellow soil with only two very small fragments of pottery</td>
</tr>
</tbody>
</table>
PJ05-8A-3 (Fig. B.24)

The unit was placed on a platform with a small square at the center in the eastern Magdalena I. Unit was 1.00mx 0.50m and excavated in 0.20cm natural levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.20m</td>
<td>Soil texture: muy compact</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 5/3 10 YR –brown-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: Compact soil with few artifacts.</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.00-0.40m</td>
<td>Soil texture: 1) compact; 2) compact, clayey</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 1) 5/3 10 YR –brown-; 2) 6/4 10 YR –light yellowish brown</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: level began as a fairly compact lumps. Thereafter the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soil is more yellowish, smooth and somewhat pasty, like wet clay.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>with few small fragments of pottery.</td>
<td></td>
</tr>
</tbody>
</table>

PJ05 8A-04 (Fig. B.25)

Unit located southeast Structure 7, measuring 1.00m long x 0.50m wide, excavated to a depth of 0.40m in arbitrary levels of 0.20m each.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.20m</td>
<td>Soil texture: compact</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Color: 10YR 4/2 - Dark Grayish Brown and 10YR 5/3 - Brown</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Description: level is mostly humus and wall collapse material. A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>piece of greenstone ax was recovered in the collapse in the north</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>portion of the unit. Below 0.07m, humic soil gave way to lighter</td>
<td></td>
</tr>
</tbody>
</table>
brown, compact soil horizon.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>002</td>
<td>0.00-0.40m</td>
<td>Soil texture: semi compact Color: 5/3 10YR – brown and 6/4 10YR – light yellowish brown- Description: semi-compact with rocks and roots inclusions. In half of the lot, the land changed to a lighter brown texture, more smooth and sandy, but with fewer stones with enough roots.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.39m</td>
<td>Soil texture: 1) compact café; 2) compact amarillenta Color: 1) 6/4 10 YR – light yellowish brown-; 2) 5/4 10 YR – yellowish brown- Description: soil with abundant pebbles. After a few centimeters, a series of larger stones were encountered, probably from collapse of the stone wall behind Structure 7. When these rocks were removed, other rocks continued, densely packed and without apparent order and excavation was halted.</td>
<td></td>
</tr>
</tbody>
</table>

**Figure B.25 - North and east profiles of 8A-4.**

**PJ05 8A-5 (Fig. B.26)**

Unit was located to the west and downslope of Structure 7. The unit was 1.00m long x 0.50m wide.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.39m</td>
<td>Soil texture: 1) compact café; 2) compact amarillenta Color: 1) 6/4 10 YR – light yellowish brown-; 2) 5/4 10 YR – yellowish brown- Description: soil with abundant pebbles. After a few centimeters, a series of larger stones were encountered, probably from collapse of the stone wall behind Structure 7. When these rocks were removed, other rocks continued, densely packed and without apparent order and excavation was halted.</td>
<td></td>
</tr>
</tbody>
</table>

**Figure B.26 - North and east profiles of 8A-5 (Drawn by Erika Gomez).**

**PJ05 8A-6 (Fig. B.27)**

The unit is located a few meters west and downslope of unit 8A-5. Its dimensions were 1.00m long x 0.50m wide and was excavated in 0.20m arbitrary levels.
<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.20m</td>
<td>Soil texture: 1) smooth and loose; 2) compact&lt;br&gt;Color: 1) 5/3 10 YR –brown–; 2) 7/4 10 YR –very pale brown–&lt;br&gt;Description: brown soil with pebbles, and schist inclusions. Approximately 6cm in depth, there was a yellowish soil (talpetate).</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>0.00-0.40m</td>
<td>Soil texture: 1) compact; 2) smooth and loose&lt;br&gt;Color: 1) 7/4 10 YR –very pale brown–; 2) 5/3 10 YR –brown–&lt;br&gt;Description: Most of the level was talpetate, but also contained brown soil in sectors.</td>
<td></td>
</tr>
</tbody>
</table>

**Figure B.27 - Profiles of 8A-6 (Drawn by Erika Gomez).**

**PJ05 8A-07**
Unit located west of the West of Magdalena Group I, specifically to a looting of 0.30m in one of its structures.
This is a well borehole 0.50m wide x 1.00m long, with a Depth of about 0.08m.

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.00-0.08m</td>
<td>Soil texture: compact and semi compact&lt;br&gt;Color: 10 YR 6/3 - Pale Brown&lt;br&gt;Description: Level Ground color light brown, compact at first and then semi-compact. As inclusions had small stones and roots. After 0.05M, was a series of slabs neatly placed, that might be part of the wall exposed by the looting. The land that was possibly covered with the mixture which joined.</td>
<td></td>
</tr>
</tbody>
</table>

**Operation 9**
The operation is located southwest of the site called Terzuola on the 93 km route of the CA-9, in the area called KM93 I. We conducted a single unit called 9A-1 of 1.00m long x 0.50m wide, but the surface showed fragments of worked stone and some green flakes, excavations did not provide much material, however, it is possible that the eastern Excavation is a structure destroyed by sowing enough aloe in the sector.

**PJ05 9A-1 (Fig. B.28)**
The unit was located SW of the site and a few meters north of a small modern building. On the surface of the area chosen for excavation were slices of green stone, a green stone work, and other materials. The unit was 1.00mx 0.50m and presented evidence of a possible structure to the east of the well, but too destroyed. There was very little material associated with the work of jade.
Levell Depth Context Comments
1 0.0-0.20m Soil texture: 1) tierra compact café; 2) tierra compact amarillenta Color: 1) 4/3 10 YR –dark brown-; 6/4 2.5 Y –light yellowish brown- Description: in this lot there was considerable amount of pottery. There were several slices of green stone and a small portion in the form of a truncated cone, also recovered fragments of obsidian.

2 0.0-0.40m Soil texture: compact Color: 6/4 2.5 Y –light yellowish brown- Description: there were some small stones and earth clods in leaves, but can be undone. The first 10cm no evidenció any material, while the rest of the lot were only 4 small pots and any other material.

![Figure B.28](image)

**Figure B.28 - North and east profiles of 9A-1 (Drawn by Erika Gomez).**

**Operation 10**

The operation is located southwest of the area known as KM III 92, immediately west of Terzuola. We performed only one, 10a-1, just in a sector which presented a concentration of chips, but apparently there is no structure in it. The X unit was 1.00m and 0.50m with the exception of the surface does not present further evidence of green stone.

**PJ05 10A-1 (Fig. B.29)**

It is located in the area identified as SO KM92 III, located immediately west of Terzuola. The unit was excavated to 1.00m long x 0.50m wide. This well made little material associated with the work of jade and other cultural material Figure 49).

<table>
<thead>
<tr>
<th>Level</th>
<th>Depth</th>
<th>Context</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0-0.20m</td>
<td>Soil texture: 1) smooth; 2) talpetaete Color: 1) 5/4 10 YR –yellowish brown-; 2) 5/4 2.5 Y –light olive brown- Description: in this sector was seen talpetaete, which spread to the surface, to reach the 20cm depth. The cultural material was very low and there was little slices of green stone, and a few fragments of pottery, obsidian and quartz.</td>
<td></td>
</tr>
</tbody>
</table>
Figure B.29 - North and east profiles of 10A-1.
This appendix provides details of the types of measurements taken as part of the lithic artifact analyses undertaken as part of this dissertation research. In the sections that follow, I provide summary descriptions of the artifact categories examined as part of this dissertation. The raw data derived from these lithic analyses are available upon request from the author at erick.rochette@gmail.com.

C.1 Jade Cobble or Chunk (n=29)
Artifacts in this category were identified as pieces of jadeite larger than 5cm, but that do not resemble flakes, either because they were "blocky fragments" with roughly similar length, width and thickness measurements, or because they were unworked nodules of jadeite. Measurements included maximum length, width, and thickness, as well as weight. Other characteristics noted were the presence of cortex from natural weathering, indications that the cobble was water-worn (indicated by smoothed exterior surfaces that were not flat or the result from grinding), and the number of possible flake removal scars present on the cobble or chunk. The majority (n=21, 72%) of the cobbles or chunks contained one or more flake scars, but were included in the same category as cobbles without flake scars because of the difficulty of differentiating between scars produced by natural fracturing versus those produced by intentional percussion.

C.2 Large Jade Flakes (n=54)
Jade flakes measuring longer than 5 cm in length and containing either a striking platform or ventral bulb of percussion were defined as large jade flakes and were individually measured, weighed and examined. In addition to the maximum dimensions and weight of each flake, notes were made about the presence of cortex on any portion of the flake, as well as evidence of water-worn surfaces and of the presence of scars from the previous removal of flakes.

C.3 Small Jade Flakes
In this analysis, any angular or irregular piece of jadeite debitage was categorized as a small flake if was less than 5cm in length. Because jadeite fractures in an irregular and largely unpredictable manner owing to its dense crystalline structure, analysis of individual flakes does not provide reliable information about the reduction sequence used in producing jadeite artifacts. Therefore, all debitage flakes were passed through a series of nested wire screens of 1/2", 1/4" and 1/8" mesh size; flakes from each size grade were then counted and weighed in aggregate. This was done to obtain as much detail about debitage variation as possible, and in the hope that it might provide information about variation in the manufacturing sequence of jadeite artifacts.

C.4 Hammerstones (n=8)
Hammerstones are stones used as percussors to remove flakes or fragments through the use of percussion techniques. They were identified based on their roughly spherical shape (created by pecking) and on evidence of battering on their surface. Maximum length, width and thickness of each hammerstone was recorded, along with the
weight. All hammerstones were made of jadeite. Detailed data for two of the hammerstones are missing because of a corrupt file in which the original information had been entered.

**C.5 Jade Bead Preform (n=34)**

Jade bead preforms were identified as having been roughly shaped by grinding or percussion into the form of one of the bead shapes described above in Section 6.2.8, but upon which drilling had not been attempted. Measurements included diameter, length, width, thickness, and weight of each bead preform. Many bead preforms retained scars from initial shattering, despite initial grinding of some of the bead preforms, and this was noted as well.

**C.6 Broken/Unfinished Jade Bead (n=111)**

Artifacts in this category were defined as beads either broken or abandoned during the process of drilling. Measurements included diameter, length, width, thickness, and weight of each fragmentary bead; if the bead was roughly circular, only diameter was measured, because the length and width measurements would have been similar, if not identical. If the fragmentary bead was drilled, the maximum interior diameter of the hole was measured; it was also noted whether the fragmentary bead was drilled biconically or uniconically. In addition, it was noted whether the bead was roughly or more finely ground into shape on one or more sides of the bead, a subjective determination that was made based on the comparative smoothness of the exterior surfaces of the fragmentary bead. A side was defined as simply the surface on which drilling was initiated, which enabled the other “side” to be identified as the surface opposite which drilling began. The shape of each fragmentary bead was also noted using the categories described in Section 6.2.8.

**C.7 Jade Hollow Drill Cores (n=62)**

Artifacts included in this category are defined as the by-product of the use of hollow drills to make holes in jadeite artifacts. Measurements of all hollow drill cores included: maximum length, diameter at top of core, diameter at bottom of core, weight; the diameter at the center point of the core was taken for biconical drill cores. In addition, observations were made of the presence of absence of grinding exhibited on both ends of the hollow drill cores, which was identified based on the presence of a flat surface on the end of the hollow drill core.

**C.8 Complete Jade Bead (n=18)**

Artifacts assigned to this category included only beads that were drilled completely. Measurements for each bead included maximum diameter and thickness of the bead itself, maximum interior diameter of the drilled hole, and weight of the bead. All beads were examined to determine if they were drilled uniconically or biconically. Four types of beads were observed: button, donut, spherical and tubular. Button beads are circular, but flat and thin. Donut beads are thicker than button beads, and not completely flat on their ends. Spherical beads were roughly spherical. Tubular beads are cylindrical in shape, and greater thickness than diameter.
C.9 Cut Jade Fragment (n=20)
Artifacts assigned to this category contain at least one flat surface, representing the surface along which a saw was passed to remove a fragment of jadeite. Identification of cut or sawed fragments was made based on the presence of a lip at one end of the flat (cut) faces of an artifact, which distinguish these artifact types from those that were ground on one surface or facet. All cut jade fragments recovered in this dissertation field research were fragments that were removed from larger artifacts by sawing. Measurements included the maximum length, width and thickness, and the weight of the artifact. Measurements were taken for all dimensions of the artifact itself, as well as for the cut surface(s) (listed in the Comments column). Observations about the shape (in cross-section) at the bottom of the cut were also noted where possible. Additional observations about the artifact are noted in the comments.

C.10 Jade Fragment with Ground Facet (n=97)
Artifacts in this category include all jade artifacts that contained at least one ground facet, but did not contain visible signs of having been removed by sawing. Determination of whether a fragment had a ground facet rested on the presence of at least one smoothed surface with visible striations from the grinding process, and not from natural smoothing. In many cases, evidence of grinding is not present on all surfaces of the artifact, but restricted only to a portion of the surface. In these cases, the maximal dimensions of the ground, flat surface was recorded; where multiple surfaces showed evidence of grinding, each facet was measured individually and recorded. Some fragments with evidence of grinding looked similar to artifacts assigned to the various bead categories described above, and may have been ground artifacts, such as plaques, that were intentionally smashed in order to produce recycled fragments for bread production. Nevertheless, unless a reasonably clear determination could be made that the ground fragment was intended to be a bead, it was categorized as a Jade Fragment with Ground Facet.

C.11 Chert Blade Fragments (n=26)
Chert blades were defined as long, thin chert artifacts with parallel lateral edges, and flat ventral surfaces and dorsal surfaces with one or more ridges. Measurements included maximum length, width, thickness and weight of each blade, as well as notes on the number of ridges on the dorsal surface of the fragment. In cases where only the medial section of a chert artifact was recovered, it was categorized as a blade, for lack of evidence of flaking to produce a drill on either end.

C.12 Chert Drills (n=401)
Chert drills were defined as long, thin chert artifacts with parallel lateral edges, flat ventral surfaces, dorsal surfaces with one or more ridges and with tapered distal or proximal ends produced by the removal of microflakes. Measurements included the weight and maximum length of the drill, as well as the maximum width and thickness across the medial portion of the drill. In addition, width, length and thickness measurements of the drill bit were taken if the bit was present. Notes were also taken regarding the subjective degree of wear exhibited on the distal portion of the drill (e.g. blunt, sharp, semi-sharp), as well as the number of ridges on the dorsal surface of the drill.
C.13 Worked Shell (n=39)  
All worked shell artifacts are included in this general category. Measurements for all artifacts included weight, maximum length, width and thickness. Observations about the form of particular shell artifacts are noted in the “Comments” column.

C.14 Non-jade Stone Beads (n=22)  
This category includes all non-jade stone beads, regardless of whether they were complete or broken; all beads were drilled either completely or partially. Measurements included weight, maximum length, minimum and maximum diameters, maximum diameter of drill hole. Comments included the color and type of stone (when identifiable), and other observations.

C.15 Obsidian Blades and Blade Fragments (n=1936)  
Measurements on obsidian blade and blade fragments included weight, maximum length, maximum width, maximum thickness and number of rides on the dorsal surface of the blade (Fig. C.1). All blades were observed regarding the type of fragment: whole, proximal, medial or distal. The shape in cross-section of all blades was also note: triangular (only one ridge on dorsal surface), trapezoidal (2 or more ridges on dorsal surface), or multiple (fragments with sections of dorsal surface with one ridge, and other sections with 2 or more ridges). For proximal and whole blade fragments, the width, depth (thickness) and angle of the platform and the width and depth of the bulb of percussion below the platform were measured where possible. The subjective degree of “nicking” on the lateral edges of blades was noted as well: none, light, some, and heavy. Finally, the morphology of the termination of distal blade fragments was noted.

Figure C.1 -  
Diagram showing obsidian blade measurements taken as part of the analyses (drawing by Peter Kelterbone). Measurements taken are circled (parentheses indicate column heading in database):  
\( L \) (Length);  
\( Wm \) (Width);  
\( D \) (Thickness);  
\( W \) (Platform Width);  
\( Wp \) (Proximal Width);  
\( \sim Wp \) (Proximal Depth);  
\( \alpha \) (Platform Angle);  
Platform Thickness not shown, but is perpendicular to “\( W \)” on drawing.
C.16 Obsidian Flakes (n=1044)

No systematic effort was made to identify obsidian flakes according to technological categories. Instead, all flakes were categorized according to size, by placing them in circles with diameters of .5cm, 1cm, 2cm, 3cm, 4cm, 5cm, 6cm and 7cm. Flakes were assigned to each category when the entirety of the flake fit within the circle. Flakes in each size category were then counted and weighed in aggregate.

C.17 Obsidian Blade Cores (n=251)

Obsidian blade cores are artifacts from which obsidian blades have been removed through the application of pressure detachment. Because of the unique character of the obsidian blade core cache (n=245) from Guaytan 4 excavation unit 1E-2, an extensive number of measurements were taken for all cores in the cache; these are presented in the “Obsidian Core Cache” tab of the “NonJadeArtifactData.xls”. All other obsidian blade cores were fragmentary, and only basic measurements and observation were taken on these artifacts; these are presented in the “Miscellaneous Artifacts” tab. Measurements taken on the cores from the cache are noted in Figure C.2.

Figure C.2 - Drawing (Source: Peter Kelterborne) of obsidian blade core, indicating where measurements listed in column headings in “Obsidian Core Cache” database were taken on each core. Descriptions of the measurements and a key of abbreviations used are also found in the same database worksheet.
C.18 Miscellaneous Artifacts (n=12)
All artifacts that did not fit in one of the categories noted above are listed in this category; observations about the type of artifact are noted in the “Comments” column. Measurements included maximum length, width and thickness, and weight.
APPENDIX D

Middle Motagua Valley Ceramics

(written by Erick Rochette, Selket Callejas and Mónica Pellecer)

This appendix presents descriptions of the ceramic analyses performed by Lic. Selket Callejas as part of this dissertation field research. Lic. Callejas has worked as a ceramicist in the Middle Motagua Valley with various projects directed by Lic. Hector Paredes and Lic. Luis Romero. Below is the chapter about the ceramics submitted to IDAEH as part of the PJ05 informe.

Como parte de las investigaciones realizadas por el Proyecto de Investigación sobre la Producción de Jade en el área del Río Lato, se realizó el análisis preliminar de los materiales cerámicos recuperados de las excavaciones con dos objetivos principales:

a) Determinar secuencias cronológicas
b) Seleccionar el material diagnóstico y desechar el material no diagnóstico (depositándolo debidamente identificado nuevamente en algunas áreas de excavación)

La metodología aplicada para la realización de dicho análisis incluyó el lavado y marcado del material, la clasificación y toma de muestras, dibujo, fotografía y por último la descripción por vajillas. En la muestra se incluyeron tanto los materiales recuperados mediante la recolección de superficie, como el de las excavaciones llevadas a cabo durante la temporada de campo realizada de octubre a diciembre.

La clasificación cerámica se realizó conforme a la tipología definida previamente para la región del Motagua por José Héctor Paredes y Luis Alberto Romero, aplicando el Sistema de Análisis del Atributo Consistente, una combinación de los Sistemas Tipo-Variedad y Vajilla (planteados por…), que se basa en la rigurosidad el sistema Vajilla, pero que agrupa tipos, que se clasifican según la variabilidad de la decoración, pasta, forma o acabado de superficie, mediante características que permanecen -atributo consistente- y que nos permiten identificar los materiales de cada vajilla (Martínez, 2005 citando a Paredes 2004; Martínez 2005).

Procedencia de los materiales

Los materiales proceden de excavaciones controladas, limpieza de saqueos y recolección de superficie de diferentes Grupos de los sitios de Guaytan, Vargas, Magdalena, Terzuola y Los Chagüites. Las operaciones de las cuales proceden los materiales son las siguientes:
Descripción de los materiales

La descripción de los materiales recuperados en la recolección de superficie, limpieza de saqueos y excavaciones controladas se clasificó por vajillas las cuales son descritas a continuación tomando como atributos fundamentales: la pasta, la forma, la decoración y el acabado de superficie.

VAJILLA JÍCARO-INCISO
Fase: Huisajo a Magdalena

Pasta
El color de la pasta es cafet-naranja (5YR 6/8), de textura media, más o menos porosa y de fractura irregular. El desgrasante está formado por pequeños fragmentos de piedra pómez molida. La mayor parte de la muestra presenta mala cocción o una cocción no uniforme ya que se observa una franja grisácea al centro de la fractura.

Forma
La forma más característica son los cuencos, pero también se observan cántaros pequeños y vasijas de boca restringida. Los bordes son generalmente redondos, algunos ligeramente biselados en el exterior, otros ligeramente planos. Las paredes de los cuencos pueden ser curvas, ligeramente recto-divergentes, ligeramente curvo-divergentes. En la muestra se observó un fragmento de cántaro de cuerpo ligeramente comprimido. Las bases por lo general son cóncavas. No hay ejemplares que indiquen la presencia de soportes, asas o cualquier otro aditamento en las vasijas de la vajilla de Jícaro-Inciso para el Clásico Temprano. Otra característica de ésta vajilla es que para la fase Huisajo, existe mayor diversidad de formas que para la misma vajilla durante la Fase Magdalena. Las dimensiones de las vasijas son por lo general pequeñas, con un grosor de borde que va de los 3 a los 8 mm.

Decoración
La decoración característica es el inciso, éste puede ser fino, medio y algunas veces muy fino. Los diseños son exclusivamente geométricos, desde simples líneas concéntricas en la parte media de toda la pared externa de la vasija, hasta diseños de petatillos, espirales o grecas. Por lo general los diseños son simétricos sobre toda la banda incisa que se ubica en la parte media de la pared exterior. Además del inciso, ésta vajilla presenta como atributo consistente una banda de pintura roja ya sea únicamente en el borde o extendida medio o un centímetro sobre la pared externa e interna.

Acabado de superficie:
Otro atributo de la vajilla Jícaro-Inciso, que permite su clara identificación es el engobe naranja que se observa perfectamente en los ejemplares de la Fase Huisajo. El engobe cubre toda la pieza y generalmente va alisado y en bajo pulido, aunque algunos tienen un pulido mayor.

Temporalidad
Las vasijas de la vajilla se diferencian en temporalidad por varios atributos, siendo el más importante el determinado por la banda de color rojo que se ubica en el borde. Para la fase Huisajo, esta es simplemente de color rojo y generalmente se localiza únicamente en el labio y en mínima extensión sobre la pared, mientras que para la fase Magdalena se utilizó el color rojo hematita especular y la banda se extiende desde el borde hasta uno o dos centímetros tanto en la pared interna como externa. Otro atributo que puede ayudar a identificar la temporalidad son las formas de las vasijas, que para la fase Huisajo son más variadas, mientras que para Magdalena, se reduce casi exclusivamente a cuencos. El engobe también constituye elemento diagnóstico importante, debido a que en la fase Huisajo, el color de esté es de un naranja más intenso que recubre toda la pieza y para la fase Magdalena, el área cubierta por engobe se va reduciendo en la pared externa. Mientras más tardío es el material, algunos ejemplares ya no conservan el engobe naranja, sino que presentan una superficie más burda.

VAJILLA CARRIZO-INCISO
Fase: Huisajo a Magdalena

Pasta
La pasta es de color café-naranja (7.5YR 6/6), puede variar también dependiendo de la cocción a la que haya sido sometida, de café claro a una tonalidad rosa (7.5YR 7/4, 7.5YR). El color de la pasta en cuanto a la cocción es regular, algunos con un color uniforme, otros con una franja grisácea que se observa al centro de la fractura. La textura es más o menos fina, de fractura regular y un poco compacta. Como antiplástico contiene cristales de cuarzo muy pequeño y fino.

Forma
En la muestra de material cerámico del Proyecto de Jade 2005, sólo se observaron fragmentos de cuencos, que es la forma más general, pero pueden encontrarse -aunque muy escasamente- cántaros pequeños y posiblemente otras formas básicas. Los bordes son redondos o ligeramente biselados en el exterior. Las paredes por lo general son curvo-divergentes, pero pueden ser también curvo-convergentes y las bases son cóncavas. Las dimensiones son básicamente de cuencos pequeños con bordes cuyo grosor varía entre los 4 y los 7mm.

Decoración
La decoración es el inciso por lo general medio y grueso. Los diseños son geométricos con líneas entrelazadas o formando rectángulos, líneas inclinadas, líneas en forma de Z o lazos. Este inciso también se ubica en una banda que generalmente ocupa la parte media de la pared externa del cuenco o incluso puede extenderse hasta la parte proximal de la base, dependiendo generalmente de la forma de la vasija. Otro atributo importante de la vajilla es la banda roja que se ubica en el labio y borde de las vasijas. Esta puede encontrarse sólo sobre el labio o puede extenderse uno o dos centímetros hacia la pared interna y externa de la pieza.

Acabado de superficie
El acabado de superficie es muy importante para identificar esta vajilla, pues constituye uno de sus principales atributos y consiste en un baño de pintura crema que cubre toda la vasija. Esta característica permite diferenciarlo de otras vajillas incisas como el Jicaro-Inciso. Por lo general la pieza presenta un alisado y bajo pulido.

Temporalidad
Al igual que en la vajilla Jicaro-Inciso, el atributo más importante para identificar la temporalidad es la banda roja en el borde, que para el Clásico Tardío se presenta en rojo hematita especular.
VAJILLA MAPACHE-ESTRIADO

Fase: Huisajo

Pasta
La pasta es de color café-naranja (7.5YR 6/6), la textura es media, más o menos porosa que se rompe con cierta facilidad lo cual quiere decir que se tiene una pasta relativamente suave o frágil y no dura como en otras vajillas, además fractura es bastante irregular. El desgrasante está compuesto de piedra pómez y en menor escala por fragmentos de cristales de cuarzo, posiblemente arena de río. La cocción en gran parte de la muestra es buena, por la uniformidad en el color de la pasta, en otras ocasiones se observa en la fractura una tonalidad grisácea. Esta uniformidad en el color de la pasta posiblemente se deba a que la pasta no es muy compacta, lo que permite que el calor se distribuya uniformemente por todas las secciones de la pieza, a pesar de existir zonas bastante gruesas como los bordes engrosados y el gollete.

Forma
La forma básica son los cántaros grandes y no se localizó en la muestra otro tipo de forma. Los bordes son redondos y evertidos o divergentes, generalmente engrosados en el interior. Los cuellos son curvo-divergentes, los cuerpos probablemente subglobulares o achatados y las bases por lo general son cóncavas. Ninguno de los ejemplares presenta asas o soportes ni alguno otro aditamento. Cómo se mencionó al inicio de éste párrafo, los cántaros son grandes con un diámetro aproximado de la boca de la vasija que va de los 25 a los 40 centímetros. El grosor de los bordes es de aproximadamente de 10 mm. y por lo general va engrosándose hasta llegar al cuello.

Decoración
El elemento más importante para la identificación de la vajilla Mapache-Estriado es su decoración de un estriado grueso que puede encontrarse en el cuello y cuerpo del cántaro. Por lo general la vasija está decorada de la siguiente forma: En el borde presenta pintura roja o naranja que se extiende hasta unos dos centímetros aproximadamente por la parte interna del borde de la vasija -esto dependiendo del tamaño del cántaro-, posteriormente en el cuello puede llevar una combinación de diseños y de decoración, tal y como el punzonado grueso que por lo general forma líneas inclinadas en el cuello, luego a la par del punzonado un inciso medio que forma líneas cruzadas o una decoración de petatillo, y también puede encontrarse en el cuello el estriado en líneas verticales. La parte del cuerpo por lo general está totalmente estriado con líneas horizontales e inclinadas que llegan hasta la parte en la cual da inicio la base de la vasija.

Acabado de superficie:
Algunas muestras presentan restos de engobe naranja en el cuello, por lo que el engobe podría ser zonal. El resto presenta únicamente un burdo alisado en el cuello y cuerpo y un bajo pulido aproximadamente a partir de la base.
VAJILLA HUITE-INCISO
Fase: Huisajo a Magdalena

Pasta
La pasta es de color cañé-naranja (5YR 6/6), su textura media, ya que presenta algunos poros y no es muy homogénea, la fractura es más o menos regular. El desgrasante constituyente de la pasta son fragmentos de piedra pómez molida que se observan en abundancia y no se detecta otro tipo de antiplástico. En cuanto a la cocción, la mayoría de ejemplares presenta la tonalidad grisácea al centro de la fractura, por lo que la uniformidad en el color de la pasta sólo se observa en algunas secciones.

Forma
La forma más común son los cuencos aunque posiblemente también vasos pequeños. Los bordes en toda la muestra son redondos, la paredes de los cuencos pueden ser curvos o ligeramente curvo-divergentes aunque en menor escala. Las bases pueden ser cóncavas o planas y no presentan ningún aditamiento como soportes, asas, entre otros. El diámetro aproximado de los cuencos va de los 14 a los 24 centímetros, siendo más comunes los de menores dimensiones. El grosor del borde va de los 4 a los 6 mm., el grosor de pared varía de los 5 a los 7mm.

Decoración
La decoración principal en ésta vajilla es el inciso que por lo general es medio y los diseños son muy simples: líneas concéntricas a ¾ de la pared externa y proximal del borde. También se observan en las paredes externas incisos de líneas verticales y curvas. Algunas vasijas no llevan inciso y constituyen una variedad de la vajilla. Otro elemento
de la decoración que pueden o no llevar las vasijas de la vajilla Huité-Inciso es una banda roja en el borde, que a diferencia del Jícaro-Inciso, el Carrizo-Inciso y otras vajillas, es casi siempre muy pequeña, es decir que no se extiende más allá del borde o labio de la vasija.

**Acabado de superficie**
El acabado de superficie de la vajilla Huité-Inciso constituye también el principal atributo que permite su rápida identificación, el cual consiste en un baño de pintura crema sobre la superficie externa y sólo se encuentra alisada y no pulida. El interior de la vasija por lo general lleva un engobe de color naranja pálido que si se encuentra alisado y pulido.

**Temporalidad**
Como en las vajillas Jícaro y Carrizo-Inciso, el elemento diagnóstico más importante es la banda roja hematita specular para la fase Magdalena. Sin embargo, en ésta vajilla es mucho más difícil de establecer la temporalidad, debido a que muchas vasijas no presentan la decoración de la banda roja en el borde.

**VAJILLA CANTORAL**
**Fase:** Huisajo

**Pasta**
El color de la pasta es café-naranja (5YR 6/6), la textura es media bastante uniforme y homogénea de fractura más o menos regular. El principal elemento no plástico de la pasta...
es la piedra pómez molida muy fina que se observa en alto porcentaje. La cocción es regular al igual que la mayoría de las vajillas de la región, pues se observa la tonalidad grisácea al centro de la fractura, aunque para la vajilla Cantoral es mínima, por lo general sólo en las zonas engrosadas de la pieza.

**Forma**
En esta vajilla se incluyen exclusivamente los platos, cuyos bordes son redondos, la mayoría ligeramente engrosados en el interior. Las paredes son recto divergentes, y en muy pocos casos muy ligeramente curvo-divergentes, ya que esto constituye un atributo consistente de la vajilla Cantoral. Las bases son comúnmente planas. Los platos pueden ser de diferentes tamaños, aunque por lo general son de un tamaño regular. El grosor de los bordes va de los 6 a los 8 mm. y el de las paredes de los 5 a los 10 mm. Estos platos pueden o no llevar soportes cónicos o soporte anular, cuando son cónicos los platos son tetrápodes.

**Decoración**
La única decoración que presentan los platos de la vajilla Cantoral es la pintura roja que va en la pared externa desde el borde o labio hasta donde exactamente comienza la base y constituye el atributo consistente de la vajilla.

**Acabado de superficie**
La parte interior de los platos lleva casi siempre un engobe café-negro, aunque puede ser también de color naranja, éste se encuentra alisado y pulido. La parte externa lleva la pintura roja que lleva un pulido medio pues no es demasiado brillante.
VAJILLA GUAYABAL ROJO

Fase: Huisajo

**Pasta**
El color de la pasta es café-naranja (5YR 6/6), su textura es fina, bastante compacta, de fractura más o menos regular. El desgrasante está compuesto por finos fragmentos de piedra pómex molida y el color en la fractura es regularmente uniforme a excepción de algunas zonas en donde se observa una tonalidad grisácea. Por lo general las partes más delgadas presentan mayor uniformidad y mejor cocción, mientras que las zonas más gruesas como el borde y el gollete presentan la tonalidad gris al centro de la fractura.

**Forma**
La forma característica de esta vajilla son los cántaros y no se ha encontrado otra forma básica. Entre los bordes predominan los redondos y solamente se observaron algunos ligeramente planos, otros ligeramente agudos y en menor cantidad engrosados en el interior. El cuello es comúnmente de medio a alto y siempre curvo-divergente, el cuerpo posiblemente es semiglobular y las bases pueden ser planas y cóncavas. Éste tipo de cántaros no llevan asa, soportes, vertedera ni algún otro aditamento. Los cántaros son de un tamaño intermedio, con un diámetro aproximado del cuello de los 12 a los 18 cm. El grosor del borde varía de los 5 a los 15 mm. dependiendo del tamaño del cántaro, el grosor de las paredes del cuello va de los 7 a los 13 mm. y el grosor de las paredes del cuerpo de los 3 a los 6 mm.

**Decoración**
Esta vajilla tiene dos tipos de decoración característica: La pintura roja y la decoración aplicada. La pintura roja es casi siempre zonal y se localiza comúnmente en una banda roja en el borde, en el cuello, casi siempre sólo en secciones verticales -aunque puede cubrir la totalidad del borde- y en el hombro. Las aplicaciones forman caras antropomorfas, algunas veces más prominentes que otras y por lo general forman ojos, nariz y boca. En algunas ocasiones la aplicación sólo tiene forma de espiga y se aplican muy escasamente (1 ó 2 espigas en todo el cántaro), éstas también pueden estar punzonadas. Se observó en la muestra que la pintura roja recubre la aplicación. Otro tipo de decoración que llevan algunos cántaros del Guayabal-Rojo es una especie de impresión con la uña en el borde.

**Acabado de superficie**
La superficie de los cántaros se encuentra en la parte del cuello únicamente con un burdo alisado, sólo la sección que va pintada tiene un pulido mayor. El cuerpo de los cántaros se encuentra cubierto con un engobe café-naranja que se encuentra alisado y pulido, y al igual que en el cuello la parte del hombro que lleva pintura presenta un mayor pulimento.
VAJILLA FLAMBOYAN
Fase: Huisajo

Pasta
La pasta es de color café-naranja (5YR 6/6), la textura es media, la fractura es más o menos regular y es regularmente compacta. El elemento no plástico de la pasta son los fragmentos de piedra pómez molida, generalmente muy pequeños. Todos los ejemplares presentan una tonalidad no uniforme, principalmente los platos grandes.

Forma
Las formas más comunes son los platos y cuencos con bordes redondos, bordes compuestos que llevan una o dos aplanaduras en la parte interna y los bordes planos. Las paredes de los platos son su mayoría curvo-divergentes, silueta compuesta o curvadas. Entre los cuencos existe mayor variedad, encontrándose cuencos de paredes curvas, de pared ligeramente curva, de paredes recto- divergentes y de paredes curvo convergentes. Las bases de los platos y cuencos son generalmente planas o ligeramente cóncavas. Los platos pueden llevar soportes y por lo general son tetrapodos. Los soportes suelen ser redondos y vaciados, algunos con sonaja, éstos también pueden estar decorados con una simple forma zoomorfa. Otro tipo de soportes en los platos son los soportes cónicos pero un tanto curvos que también se encuentran vaciados con agujeros para la circulación del
oxígeno. Entre los cuencos los soportes más comunes son los anulares, especialmente los pequeños cuencos con paredes curvas.

Las dimensiones de los platos de pared curvo-divergente van de los 26 a los 28 cm. Entre los cuencos la muestra indica que el diámetro aproximado va de los 16 a los 24 cm., mientras que en los cuencos de paredes curvas es de 13 y 14 cm. Sólo se detectó un plato que no presenta paredes y cuyo diámetro aproximado es de 33 cm. El grosor de los bordes depende de la forma y varía de los 5 a los 10 mm. y el grosor de las paredes va de los 3 a los 10 mm. La altura aproximada de los cuencos de pared curva es de 5 y 5.5 cm.

Decoración
La decoración que constituye el atributo consistente de esta vajilla es la pintura roja sobre el engobe naranja que se ubica dentro o fuera de la vasija. Los diseños pintados son simples, generalmente bandas rojas que se extienden desde el borde hasta 1 ó 2 centímetros sobre la pared interna o externa, círculos de pintura roja en la pared externa, puntos, manchas, manchas onduladas, líneas onduladas, o simplemente secciones verticales que llevan pintura roja.

Acabado de superficie
Uno de los atributos más importantes en la identificación de los materiales de la vajilla Flamboyan es el acabado de superficie que está constituido por un engobe naranja que comúnmente recubre la vasija por dentro y por fuera, aunque este puede ser zonal, sobre todo en la pared exterior. El engobe se encuentra alisado y pulido medio y sobre éste se aplica la decoración de pintura roja.

Fig. 13 - V. Flamboyan

Fig. 14 - V. Flamboyan
VAJILLA TRIUNFO ESTRIADO
Fase: Huisajo

Pasta
La pasta es de un color café-naranja (7.5YR 6/6), casi siempre de textura media y de fractura irregular y un poco porosa. El elemento no plástico de la pasta es la piedra pómez, que se observa en un alto porcentaje, los fragmentos no son muy finos y varían en tamaño de menos de 1 mm. a los 3 y mm. Esto indica que presentan fragmentos bastante grandes que indican la textura de la pasta. En algunas ocasiones se observan cristales de cuarzo y en menor cantidad partículas de mica. La cocción en gran parte de la muestra es buena, indicando una uniformidad a la exposición del calor y sólo en algunas secciones se presenta la tonalidad grisácea.

Forma
La forma básica de la vajilla son los cuencos de grandes dimensiones y en la muestra se observaron muy pocos bordes de cántaros. Los bordes de los cuencos suelen ser redondos, algunos ligeramente planos, otros planos en el labio y engrosados en el interior, otros redondos engrosados también en el interior. En el caso de los bordes de cántaros éstos son redondos y uno de ellos engrosado en el interior. Los cuellos son curvo-divergentes en los cántaros y las paredes de los cuencos son curvo-convergentes o simplemente curvadas. En los cántaros es difícil de establecer el tipo de cuerpos, pero posiblemente sean subglobulares. Las bases en ambas formas parecen ser cóncavas. Ninguna de las formas que componen esta vajilla presenta asas o alguna otra añadidura. No se encontró este material en el material cerámico del Proyecto de Jade 2005.

Decoración
Más que una decoración el estriado en esta vajilla constituye el acabado de superficie, debido a que éste es mínimo. Por lo tanto, única decoración que puede o no presentarse es la pintura roja o naranja sobre el labio o borde, principalmente en los cuencos.

Acabado de superficie
Las vasijas de la vajilla Triunfo-Estriado no presentan engobe y únicamente el estriado fino que no altera en gran medida la superficie. El estriado pudo realizarse con un instrumento sencillo, tal vez una tuza, un fragmento de tela u otro objeto que no alterara en gran medida la superficie de la pieza.

VAJILLA PETÓN
Fase: Huisajo

Pasta
La pasta es café-naranja (5YR 6/6), de textura fina, compacta y de fractura regular. El principal desgrasante es la piedra pómez, en muy finos fragmentos. La cocción que se observa es buena en algunas zonas, pero de tonalidad variada en otras.
Forma
La forma característica son los cántaros de borde plano o redondo, de cuello ligeramente divergente o curvo-divergente. Los cuerpos posiblemente son globulares, achatados o subglobulares. Las bases seguramente son planas o ligeramente cóncavas.

Decoración
Estos cántaros no presentan alguna decoración específica aunque es muy difícil de determinar debido a la casi total ausencia de bordes de ésta vajilla.

Acabado de superficie
Los materiales pueden presentar dos tipos de acabado de superficie, un engobe café o un engobe corinto o rojizo. Este por lo general se encuentra alisado y pulido medio y estos permiten identificar a la vajilla Petón que puede ser café o rojizo.

VAJILLA GUARANJA
Fase: Manzanal y Magdalena

Pasta
La pasta es siempre café-naranja (5YR 6/6), de textura media, un poco porosa y de fractura irregular. El desgrasante se compone durante la fase Manzanal de fragmentos de piedra pómez y a partir de la fase Magdalena predomina el uso de mica que va aumentando en cantidad conforme llega a la fase Palmilla. Éstas vasijas también presentan una uniformidad en el color de las pastas, casi siempre naranja.

Forma
Las formas más comunes son los cántaros pero pueden observarse también algunos cuencos grandes. Los bordes son redondos, engrosados en el interior, algunos divergentes y en menor medida planos, generalmente en los cuencos. Los cuerpo de los cántaros son globulares y en los cuencos las paredes son curvadas o ligeramente curvo-convergentes. Las bases por lo general son cóncavas o planas. Estos cántaros pueden o no presentar asas de gran tamaño.
Decoración
No presentan mayor decoración más que pintura roja o naranja en el borde y la aplicación característica que consiste en una especie de tres agujeros impresos con los dedos que va generalmente en el cuerpo de los cántaros y que es muy común entre los materiales de otros sitios de la región. En ésta muestra sólo se obtuvo un fragmento con ésta aplicación.

Acabado de superficie:
La superficie no presenta engobe y únicamente se encuentra alisada burdamente, tanto en los cántaros como en los cuencos.

![Fig. 16 - V. Guaranja](image1)

![Fig. 17 - V. Guaranja](image2)

VAJILLA MAIZAL
Fase: Manzanal

Pasta
De color cafè-naranja (5YR 6/6 y 7.5YR 6/6), la pasta posee una textura media, muy homogénea y más o menos compacta y de fractura regular. El desgrasante está compuesto de fragmentos muy finos de piedra pómez en muy poca cantidad y la pasta además presenta una buena cocción por la uniformidad en el color.
Forma
Únicamente se han incluido en la vajilla cuencos de gran tamaño, cuyos bordes constituyen uno de los atributos consistentes, por ser divergente de labio redondo y de bisel plano interior. Las paredes de los cuencos son ligeramente curvo-convergentes y las bases son cóncavas o planas. Por lo general, estos cuencos presentan asas redondas y horizontales.

Decoración
La única decoración que podemos observar en los cuencos de la vajilla Maizal es que el borde debe llevar pintura roja, constituyendo otro de los atributos de la vajilla.

Acabado de superficie
Generalmente el único acabado que se observa en la superficie de la pared externa es un alisado de burdo a medio, mientras que en interior se observa un alisado medio y un bajo pulido, siendo también una característica importante para su identificación.

Fig. 18 - V. Maizal

Fig. 19 - V. Maizal

VAJILLA YAJE-INCISO
Fase: Manzanal

Pasta
El color de la pasta es café-naranja (5YR 3/2, 5YR 6/6), la textura es va de media a fina, de fractura generalmente irregular, muy poco porosa pero no extremadamente compacta.
El desgrasante está compuesto por piedra pómez molida muy fina y en muy pocos casos se presenta la mica como elemento antiplástico, aunque cuando se presenta es en muy poca cantidad. En algunos ejemplares de la muestra se observan pequeños cristales de cuarzo que también pueden actuar como elementos antiplásticos de la pasta. La cocción que presentan es muy poco uniforme, debido a que se observa claramente en la fractura el contraste de las tonalidades café-naranja de la pasta con una tonalidad grisácea. Muy pocos tiestos tienen una coloración uniforme.

**Forma**
La forma básica son los cuencos pequeños, aunque en materiales de otros sitios de la región también se localizan cántaros pequeños. Los bordes son redondos, las paredes ligeramente curvadas o ligeramente convergentes, las bases por lo general son planas o ligeramente cóncavas. Las dimensiones de los cuencos son básicamente pequeños de entre 10 y 15 cm. de diámetro y el grosor de los bordes varía de los 4 a los 7 mm.

**Decoración**
Uno de los atributos consistentes de la vajilla es el inciso, que casi siempre es fino y a veces muy fino. Los diseños son geométricos, por lo general simples líneas concéntricas en la parte media de la pared, también suelen encontrarse decoraciones de patatillo o algunas grecas pero muy simples, esto también en una banda en la parte media de la pared externa. Otro tipo de diseño son las líneas son las onduladas y mientras el diseño es más complicado, el inciso es más fino.

**Acabado de superficie**
El siguiente atributo importante de la vajilla es el acabado de superficie que consiste en el engobe negro que cubre la pieza. Este se presenta un alisado y pulido alto en la parte externa de la vasija, mientras que en el interior puede presentar un alisado y pulido medio o bajo.

*Fig. 20 - V. Yaje Inciso*
VAJILLA ENCINAL-NEGRO
Fase: Manzanal

Pasta
La pasta presenta un color café-naranja (5YR 6/6), la textura es media, un tanto porosa y de fractura irregular. El componente antiplástico más importante y abundante es la piedra pómez, pero también se observan algunos cristales finos de cuarzo semilechoso. En la fractura se observa diferencia en el color de la pasta debido seguramente, a la poca uniformidad de la temperatura a la que fue expuesto y a las diferencias en el grosor de la pieza, ya que en las zonas más gruesas se observa una tonalidad de gris a negra.

Forma
La forma más característica son los platos, pero también se localizan cuencos y algunos cántaros. Los platos son casi siempre de paredes curvo-divergentes y los cuencos de paredes curvas o ligeramente curvo-convergentes. Las bases en los platos son planas debido comúnmente a que llevan soportes, y en los cuencos pueden ser ligeramente cóncavas o planas. Los soportes en los platos pueden ser de tablero, que pueden estar decorados, algunos son calados, es decir, con una especie de punzonado grueso; otros soportes son redondos y vaciados de base plana, aunque posiblemente también lleven soportes cónicos algo curvados. Las dimensiones en las vasijas de esta vajilla pueden variar aunque por lo general los platos son grandes, mientras que los cuencos y los cántaros son pequeños. El diámetro aproximado entre los platos varía de los 22 a los 35 cm., el grosor de los bordes en estos va de los 5 a los 10 mm. y el grosor de las paredes
de los 4 a los 9 mm. Entre los cuencos el diámetro aproximado va de los 10 a los 16 cm. y el grosor de los bordes de los 3 a los 6 mm., el grosor de las paredes puede variar de los 5 a los 9 mm. En los cántaros el grosor del borde es aproximadamente de 4 mm. y el grosor de paredes es de 5 y 6 mm.

Decoración
La vajilla Encinal-Negro puede tener por decoración algunas aplicaciones de caras antropomorfas, pequeñas aplicaciones de bandas colocadas en posición vertical y en muy pocas ocasiones decoración de pastillaje. Todas éstas aplicaciones se ubican en la parte proximal de la base, en la pared exterior. Otro elemento que puede tomarse como decoración se observa en el borde de los platos, el cual puede ser ondulado.

Acabado de Superficie
Cómo en otras vajillas de la región, el acabado de superficie constituye uno de los atributos consistentes más importantes. La vajilla presenta un engobe que presenta un acabado en alisado y pulido alto, generalmente en la parte exterior, aunque también el interior de la vasija puede presentar éstas características.

Fig. 22 - V. Encinal-Negro
VAJILLA NARANJAL-MANCHADO  
**Fase:** Manzanal

**Pasta**
La pasta es de textura media, un tanto porosa y de fractura irregular en las más gruesas y de mayor regularidad en las zonas más finas o delgadas. El color es café-naranja (5YR 6/6) y el componente no plástico más abundante es la piedra pómez molida muy fina, aunque se observan algunos fragmentos que pueden llegar a los 3 mm. de diámetro. Otras inclusiones que puede contener la pasta -aunque en menor cantidad- están formadas por finos cristales de cuarzo semilechoso. Por lo general la muestra presenta una buena cocción y sólo en las zonas más gruesas se observa poca uniformidad en el color de la pasta.

**Forma**
Las formas son variadas, pero la más característica son los platos grandes, aunque también se observan algunos cuencos y cántaros pequeños. Los bordes en los platos son generalmente redondos en el labio y compuestos con una o dos acanaladuras. Otras formas presentan bordes planos o ligeramente biselados en el exterior. Las paredes de los platos son casi siempre de silueta compuesta o bastante curvo-divergentes, en los cuencos éstas pueden ser curvadas, ligeramente recto-divergentes, curvo-divergentes y ligeramente curvo-convergentes. Las bases son casi siempre planas o ligeramente cóncavas. Los platos de silueta compuesta o de paredes curvo-divergentes en la mayoría de los casos son tetrápodes, con soportes redondos de base plana o amorfios, siempre vaciados pero con agujeros por donde corre el oxígeno, otros son cónicos pero curvados. Las dimensiones de los platos son de aproximadamente de los 20 a los 38 cm. de diámetro, con un grosor de borde que va de los 4 a los 7 mm. y un grosor de paredes que varía también de los 4 a los 7 mm. Los cuencos que son mucho más pequeños que los platos, pueden tener una antigua de entre 4.5 cm. , 5.5 cm. y más, un grosor de bordes de entre 4 y 7 mm. aproximadamente y un grosor de paredes de 4 a 7 mm. El grosor de las paredes en un ejemplar cuya forma es un cántaro, es de 6 mm. aproximadamente.

**Decoración**
La decoración no constituye un atributo consistente de la vajilla, ya que ésta puede presentar distintos tipos de decoración o simplemente no presentar ninguna. Algunas de las observadas en la muestra son los incisos, generalmente en los cántaros, algunas aplicaciones, acanaladuras, punzonados, etc. Es decir, no existe un tipo de decoración específica que identifique a la vajilla Naranjal-Manchado.

**Acabado de superficie**
Por otra parte, el acabado de superficie si constituye un atributo consistente de la vajilla, ya que el engobe café-naranja que recubre en la mayoría de los casos la totalidad de la vasija, si constituye un elemento práctico para su identificación. En los platos el engobe puede estar sólo en el exterior aunque por lo general también presenta el mismo engobe en el interior. En los cántaros sólo se observa en la parte externa y algunas veces en las paredes internas del cuello. Entre los cuencos puede estar también en el interior y exterior o ser zonal, pues algunas veces sólo cubre la mitad o una sección más pequeña de la
pared externa. El engobe generalmente presenta un alisado y pulido que va de medio a alto.

![Fig 23 - V. Naranjal Manchado](image)

**VAJILLA FLORIPIN-ACANALADO**

**Fase:** Manzanal

**Pasta**

El color de la pasta es café-naranja (7.5YR 6/6), de textura media a fina, bastante compacta y uniforme y de fractura regular. El único componente antiplástico observado es la piedra pómez molida muy fina y en muy poca cantidad. Se observa muy poca uniformidad en la tonalidad de la pasta, y predomina la tonalidad grisácea al centro de la fractura.

**Forma**

Las formas más características a pesar de una gran ausencia de bordes son los vasos y cuencos no muy grandes. Los bordes son redondos, las paredes rectas o muy ligeramente curvas y las bases son planas o ligeramente cóncavas. La casi total ausencia de bordes
impide determinar un diámetro aproximado de las vasijas, pero se considera no mayores 16 cm. de diámetro.

**Decoración**
La decoración constituye uno de los dos atributos más importantes de la vajilla y consiste en la decoración acanalada que puede ser suave, media o profunda. Por lo general el acanalado es vertical, aunque también hay acanalados en posición horizontal generalmente ubicado en la parte proximal al borde de la pared externa. Cuando el acanalado es vertical, casi siempre cubre toda la vasija, mientras que cuando es horizontal, sólo se observan una o dos acanaladuras. También se incluyó en la muestra un tipo de decoración que forma una especie de impresiones en la pared externa, ya que ésta decoración no daña la superficie, seguramente porque era realizada antes del secado y cocción de la pieza. Este tipo de acanaladuras son circulares. En cuanto al tamaño, las acanaladuras pueden ser finas, medias o gruesas.

**Acabado de superficie**
Otro elemento importante que constituye un atributo consistente en la vajilla es el engobe cafè-naranja que cubre la pieza. Este por lo general presenta un alisado y pulido de medio a alto, casi siempre sólo en el exterior de los vasos, mientras que en los cuencos puede encontrarse con éstas características interna y externamente.

**VAJILLA PUJÓN-ACANALADO**
**Fase:** Manzanal

**Pasta**
La pasta es de color cafè-naranja (7.5YR 6/6, 7.5YR 3/2), la textura es media, muy homogénea y regularmente compacta, la fractura es regular. El desgrasante está compuesto de fragmentos muy finos de piedra pómez y algunos cristales de cuarzo muy finos. El color de la pasta en la fractura se observa muy uniforme.

**Forma**
Las formas más comunes son los cuencos y platos, aunque también hay vasos y cántaros pequeños. Los bordes son redondos, unos más gruesos que otros dependiendo de la forma. Las paredes de los platos por lo general son curvo-divergentes o de silueta compuesta, en los cuencos pueden ligeramente curvo-divergentes o de silueta compuesta. Los vasos tienen paredes rectas o ligeramente curvas. Las bases son casi siempre planas en los platos, vasos y cántaros y planas y ligeramente cóncavas en los cuencos. Los platos pueden o no llevar soportes, redondos, amorfós o cónicos. Los platos por lo general son grandes, los cuencos y cántaros y cántaros son más pequeños. Los bordes pueden tener un grosor que va de los 5 a los 8 mm. y las paredes de los 6 a los 9 mm., dependiendo de la forma de la vasija y del tamaño de la misma.

**Decoración**
Una de las características más importantes de la vajilla es la decoración acanalada, ya sea en las paredes externas o cerca del borde interno. Las acanaladuras externas son más características en los vasos, cántaros y cuencos, mientras que las localizadas cerca del borde corresponden más con los platos. Las acanaladuras también pueden ser verticales y encontrarse en la parte proximal de la base en los platos. Otro elemento decorativo en los platos puede ser el borde ondulado que algunos presentan. Otro tipo de decoración que algunos ejemplares presentan son las aplicaciones de caras antropomorfas o pastillage.

**Decoración**

El otro atributo consistente lo constituye el engobe negro pulido que cubre la pieza. En los platos y cuencos se localiza alisado y pulido alto tanto externa como internamente, en los vasos puede ir también al interior pero no con la misma calidad de pulimento y en los cántaros se encuentra sólo en la parte externa.

![Fig. 24 - V. Pujón-Acanalado](image)

**VAJILLA CHILANGA**

**Fase:** Manzanal y Magalena

**Pasta**

El color de la pasta varía de blanco, crema y rosado (7.5YR 7/4, 10YR 8/2), predominando en la muestra fragmentos de pasta color crema. La textura es porosa, aunque es una pasta bastante homogénea, compacta y de fractura regular. El desgrasante principal son los cristales muy finos de cuarzo que no son muy abundantes. Presentan una excelente uniformidad en el color de la pasta.
**Forma**
Las formas más comunes son los cuencos cuyos bordes son comúnmente redondos, aunque también se observan algunos planos o ligeramente biselados y agudos. Las paredes son curvo-divergentes, curvadas, recto-divergentes o de silueta compuesta. Las bases por lo general son cóncavas o planas con algún tipo de soporte. El grosor de los bordes no varía demasiado, teniendo los mismos entre 3 y 5 mm. Las paredes tienen un grosor que va de los 4 a los 7 mm, y el diámetro aproximado de las vasijas va de los 15 a los 25 cm, aunque éstas dimensiones pueden variar.

**Decoración**
La decoración constituye el principal atributo de la vajilla Chilanga y consiste en el engobe Usulután sobre el cual se aplica la pintura roja (Martínez and Monterroso, 2005). Los diseños observados en la muestra son geométricos especialmente bandas rojas en la parte proximal al borde en la pared exterior al igual que en la parte proximal a la base. También se ubican dentro de éstas bandas puntos rojos o una especie de rombos y otras decoraciones. También son muy comunes las decoraciones de figuras zoomorfas.

**Acabado de superficie**
Como se mencionó antes, el engobe Usulután es uno de los atributos consistentes en esta vajilla, cuya superficie se presenta generalmente con un alisado y pulido alto, lo que le da un brillo especial a la pieza como sucede en las vajillas Copador y Gualpopa.

![Image](Fig. 25 - V. Chilanga)
VAJILLA GUALPOPA

Fase: Manzanal

Pasta
El color de la pasta es beige (10YR 8/2), la textura fina, homogénea y compacta y de fractura regular. Los elementos antiplásticos que componen la pasta son pequeños fragmentos muy finos de pómex y cristales de cuarzo, aunque en muy poca cantidad, además éstos componentes son difíciles de observar por el color de la arcilla. El color es uniforme y no se observan cambios tan bruscos en la tonalidad que se observa en la fractura de los fragmentos de otras vajillas con pastas café-naranja.

Forma
Las formas más comunes son los cuencos, aunque también forman parte de la vajilla los vasos y en mucha menor escala los cántaros. Los bordes son por lo general redondos, aunque también hay bordes ligeramente planos, otros de redondos de bisel interior. Por lo general de paredes curvadas, paredes curvo-convergentes, paredes divergentes y curvo-divergentes. Las bases pueden ser cóncavas, redondas y planas. Las dimensiones varían según las formas, pero el diámetro aproximado de los cuencos va de los 15 a los 25 cm. aunque estas dimensiones pueden ser mayores o menores. El grosor de los bordes en la muestra va de los 4 a los 6 mm. El grosor de las paredes puede variar dependiendo de la forma de la vasija aunque un grosor aproximado varía de los 4 a los 7 mm.

Decoración
La decoración en esta vajilla es variada predominando el uso de los colores naranja, rojo y negro. Los diseños por lo general son geométricos, aunque también hay decoraciones de zoomorfas y pseudoglifos. Por lo general las vasijas llevan algunas bandas de color rojo o negro y las figuras zoomorfas están delineadas en color negro alternando con otros diseños en color rojo. Entre las figuras zoomorfas predominan los monos y las aves. La vajilla Gualpopa puede presentar únicamente diseños geométricos elaborados con pintura roja que se aplica sobre el engobe naranja. La decoración puede ir tanto en el exterior como en el interior de la vasija o solamente en el exterior.

Acabado de superficie
Constituye un atributo consistente y se trata de un engobe crema-naranja que recubre en su mayoría la totalidad de la pieza. Este se encuentra alisado y pulido alto, lo que le da un brillo muy alto a la vasija. La decoración de pintura roja o negra se aplica sobre el engobe.
VAJILLA JUMUZNAL ROJO
Fase: Manzanal y Magdalena

Pasta
El color de la pasta es cafénaranja (5YR 6/6), de textura que va de media a fina y bastante compacta, muy poco porosa y de fractura más o menos regular. Los elementos no plásticos son los fragmentos de piedra pómex bastante fina. El color que se observa en a la fractura de algunos fragmentos no es muy uniforme, ya que presenta la tonalidad grisácea al centro de la misma, en otro casos si se observa cierta uniformidad.

Forma
La forma básica son los platos, aunque se pueden encontrar también cuencos con características similares. Los bordes son redondos y menor cantidad ligeramente de bisel redondo en el interior. Las paredes constituyen uno de los atributos consistentes ya que en los platos son ligeramente curvo-convergentes, mientras que en los cuencos pueden ser solamente curvadas, por tanto no existe en esta vajilla otro tipo de paredes. Las bases por lo general son planas o cóncavas y casi siempre llevan soporte anular. Algunos fragmentos son difíciles de ubicar, ya que tienden a confundirse con la vajilla Cantoral, esto según Romero (comunicación personal, 2005) debido a que los platos de la vajilla Jumuznal Rojo evolucionan para finales del Clásico Temprano e inicios del Clásico Medio de la vajilla Cantoral, siendo esos materiales un excelente indicador tanto de la temporalidad como de la continuidad, cambios e importancia de la cerámica como indicador para el estudio de una sociedad. En cuanto a las dimensiones de las vasijas, éstas tienen un grosor de borde de aproximadamente entre 4 y 9 mm., un grosor de paredes de 5 a 9 mm. que tiende a ser más grueso en la parte proximal el borde y más delgada conforme llega a la base. El diâmetro aproximado en los cuencos es de 13 a 24
cm. mientras que en los platos es de 22 a 30 cm. La altura aproximada de un plato con todo y soporte anular es de 5 cm.

**Decoración**
La única característica decorativa que presenta esta vajilla es la banda de pintura roja que va desde el borde hasta uno o dos centímetros de la pared externa. En algunos casos puede la banda roja ser un poco más extensa y también en algunos casos ésta puede extenderse sobre la pared interna.

**Acabado de superficie**
En el exterior, las vasijas presentan únicamente un alisado y pulido medio sin presentar engobe. En el interior generalmente llevan engobe café-negro que va alisado y pulido de medio a alto. En otras ocasiones el engobe interior es café-naranja que también se presenta alisado y pulido. La base sólo se presenta con un burdo alisado.

**Fig. 28 - V. Jumuznal Rojo**

**VAJILLA COPADOR**
**Fase:** Magdalena

**Pasta**
La pasta es de color beige (10YR 8/2), la textura es fina, homogénea, dura y compacta y la fractura es regular. El elemento antiplástico de la pasta son los cristales de cuarzo muy muy finos, que no son muy abundantes. En la fractura se observa una excelente cocción,
pues se observa una uniformidad en el color. Las variantes de pasta café-naranja se ha justificado como una producción local, imitando las variedades de copador elaboradas en Honduras y El Salvador (Martínez and Monterroso, 2005).

**Forma**
Las formas básicas son los cuencos y vasos, con bordes redondos, ligeramente de bisel redondo en el interior o bordes planos. Las paredes en los cuencos pueden ser curvo-divergentes, de silueta compuesta paredes curvadas. En los vasos por lo general las paredes son rectas o ligeramente recto-divergentes. Las bases son comúnmente planas o cóncavas. Las dimensiones son variadas, desde cuencos pequeños a otros de mayor diámetro. El grosor de los bordes va de los 5 a los 7 mm. y las paredes tienen aproximadamente la misma dimensión.

**Decoración**
La decoración de la vajilla es policroma, con predominio de los colores negro y rojo, aunque también se encuentran decoraciones en naranja, blanco y rojo hematita especular. Los motivos decorativos son variados, desde diseños geométricos hasta figuras antropomorfas, zoomorfas, pseudoglifos, entre otros. Los cuencos pueden presentar decoración tanto en las paredes externas como externas de la vasija, mientras que los vasos únicamente están decorados en el exterior. El atributo principal para definir las distintas variedades de Copador es la decoración.

**Acabado de superficie**
Otra característica de la vajilla es el engobe que presentan las piezas, que generalmente va del color crema al naranja. Generalmente este se presenta con un pulido alto, aunque tampoco son extrañas las superficies mates (Martínez and Monterroso, 2005; citando a Viel, 1993).

**VAJILLA JARAL-ROJO**
**Fase:** Magdalena

**Pasta**
La pasta es café-naranja (5YR 6/6), de textura media a fina, bastante homogénea y compacta, de fractura muy regular. El desgrasante está compuesto de piedra pómez molida muy fina, y en algunos casos algunas partículas de mica y finos cristales de cuarzo. La piedra pómez es el elemento antiplástico más importante en la pasta, aunque no es muy abundante como en otras vajillas. La cocción que presentan los ejemplares de la muestra es bastante uniforme, aunque con tendencia al color café que se observa en la fractura.

**Forma**
La forma básica de la vajilla son los platos grandes, aunque en esta muestra se han incluido algunos cuencos que presentan características similares. Los bordes son
redondos, algunos compuestos, especialmente en los platos, otros ligeramente planos en el labio y en menor cantidad de bisel plano en el interior. Las paredes de los platos constituyen uno de los atributos consistentes más importantes de la vajilla -aunque los cuencos que se incluyeron en esta vajilla no presentan ésta característica-, y consiste en paredes curvo-divergentes o de silueta compuesta, lo que lo diferencia de los platos de las vajillas Cantoral y Jumuznal Rojo. en los cuencos se pueden encontrar paredes recto-divergentes, pero también curvo divergentes. Las bases son por lo general planas o ligeramente cóncavas. Los platos casi siempre son tetrápodes, con soportes redondos, amorfos o cónicos pero siempre vaciados. En los platos las dimensiones de los bordes varían de los 5 a los 9 mm., el grosor de las paredes de los 5 a los 5 mm. y el diámetro aproximado es de 17 a 30 cm.

Decoración
La decoración principal que presenta la vajilla es la pintura roja que constituye otro de los atributos consistentes. Dicha pintura se ubica por lo general sólo en las paredes externas de los cuencos y platos. Los platos pueden llevar también aplicaciones, generalmente de caras antropomórficas o pequeñas bandas aplicadas en forma vertical ubicados generalmente en la parte próxima a la base.

Acabado de superficie
La superficie externa de las paredes está cubierta con pintura roja casi siempre sólo presenta bajo pulido. La parte interna comúnmente presenta un engobe café-negro o puede encontrarse únicamente con un alisado y bajo pulido.

Fig. 29 - V. Jaral Rojo
VAJILLA ESPUMUY APLICADO
Fase: Magdalena

**Pasta**
La pasta es café-naranja (5YR 6/6), la textura es media un poco porosa, homogénea y compacta y de fractura más o menos regular. El elemento no plástico es la piedra pómez muy fina, con algunos fragmentos de mayor tamaño. Sin embargo la cantidad de pómez no es muy abundante y en algunos casos se observan también algunos cristales de cuarzo muy finos y en otros, mayor abundancia de mica. A diferencia de otras vajillas, la vajilla Espumuy Aplicado si presenta una uniformidad casi total en el color de la pasta, indicando posiblemente una exposición controlada y uniforme durante la cocción de las piezas.

**Forma**
La forma que caracteriza ésta vajilla son los incensarios bicónicos. Los bordes del cuenco superior son redondos y los bordes del soporte de pedestal por lo general son de labio plano. Las paredes del cuenco superior suelen ser curvo-divergentes o ligeramente curvo-divergentes. Las bases entre el cuenco y el soporte de pedestal es plana. El soporte que sostiene al cuenco es siempre de pedestal de una altura aproximada a los 8 cm. En cuanto a las dimensiones, generalmente el cuenco superior tiene aproximadamente las mismas dimensiones que el diámetro del soporte de pedestal. El grosor de los bordes del cuenco varía de los 5 a los 8 mm. y la pared un grosor aproximado de entre 6 y 11 mm. El soporte tiene un grosor que va de los 5 y los 10 mm. y las paredes del soporte de entre 6 y 12 mm. El diámetro aproximado del cuenco superior es de entre 26 a 32 cm. El soporte posee tiene entre 18 y 25 cm. de diámetro.

**Decoración**
La decoración que se observa en los incensarios son las aplicaciones de espiga, elemento que además de la forma, también constituye el atributo consistente de la vajilla. Las espigas pueden ir colocadas en línea vertical y encontrarse en solos en uno de los lados de la pared externa del cuenco superior. En otros casos puede llevar las aplicaciones alrededor de toda la pared externa y el tamaño y cantidad de las mismas varía en cada muestra. El soporte generalmente no lleva ninguna decoración, salvo en algunos casos donde presentan restos de pintura blanca, posiblemente fugitiva, sobre la pared externa del soporte de pedestal.

**Acabado de superficie**
Tanto la superficie del cuenco como del pedestal, únicamente presentan un burdo alisado y no presentan engobe o algún grado de pulimento.
VAJILLA ZACATAL-ALISADO
Fase: Magdalena

Pasta
La pasta es café-naranja (5YR 6/6), de textura media, de fractura irregular. El desgrasante predominante es la piedra pómez en fragmentos finos, aunque algunos de mayor tamaño. Otro elemento que aparece en algunos ejemplares es la mica, que se combina con fragmentos de piedra pómez. El color que se observa en la pasta es regularmente uniforme en las zonas más delgadas y con la franja grisácea al centro.

Forma
Esta vajilla está compuesta exclusivamente por cántaros de gran tamaño, cuyos bordes son totalmente evertidos y de labio redondo. El cuello es por lo general curvo-divergente y el cuerpo seguramente es globular o subglobular. Las bases pueden ser cóncavas o ligeramente planas. No presentan asas o vertedera.

Decoración
Estos cántaros carecen de decoración alguna.

Acabado de superficie
Además del borde evertido, el siguiente atributo consistente es la superficie alisada media que presentan, sin la presencia de engobe o pintura.

VAJILLA PAJARAL
Fase: Magdalena

Pasta
El color de la pasta es café-naranja (5YR 6/6), la textura es media, de fractura irregular con algunos poros, pero bastante homogénea. El componente antiplástico predominante es la piedra pómez en fragmentos muy finos, aunque algunos de mayor tamaño miden entre 0.1 y 0.3 milímetros de diámetro. En gran parte de la muestra se observó abundante mica como elemento antiplástico. Es posible que sea esta vajilla la que más presenta fragmentos de mica como desgrasante. Además la pasta presenta una buena cocción con uniformidad en el color de la pasta.

Forma
Las formas características de la vajilla Pajaral son formas especiales, entre ellas los comales y los sahumerios, aunque también se han incluido dentro de ésta muestra fragmentos de otras vasijas especiales como urnas. Los bordes en los comales son redondos, algunos engrosados en ambas lados, otros redondos engrosados en el interior. En los sahumerios los bordes también son redondos, algunos ligeramente planos. Las paredes de los comales pueden ser recto divergentes, de silueta compuesta, rectas, curvadas o sin pared. En los sahumerios son generalmente curvadas o ligeramente curvo-divergentes. Las bases por lo general son planas en los comales y ligeramente cóncavas.
en los sahumerios y éstos últimos llevan mangos que pueden variar de forma. Las dimensiones de los comales varían el grosor de los bordes, que van desde los 8 a los 18 mm. el grosor de las paredes de 11 a 17 mm. y un diámetro aproximado de más de 40 cm. Los sahumerios tienen un grosor de bordes de entre 6 y 11 mm. un grosor de pared que va de los 7 a los 13 mm. y un diámetro de 14 a 16 cm. aproximadamente.

Decoración
En los comales la decoración principal es la pintura roja, ya sea únicamente sobre el borde, paredes e incluso en la superficie del comal. Algunas paredes externas de los comales también presentan decoración con pintura roja. Algunos sahumerios también presentan pintura roja o naranja, especialmente sobre el mango. Además, la principal característica en la decoración de los sahumerios son las figurillas zoomorfas que se encuentran por lo general en la parte superior del mango, que por lo general son aves, lagartos, perros, monos, jaguares, entre otros.

Acabado de superficie
Generalmente, los sahumerios solamente presentan un alisado burdo y no llevan engobe y tampoco se encuentran pulidos. Los comales solamente están alisados en la parte superior, y algunos presentan una especie de engobe rojo muy fino, casi siempre con abundante mica.

VAJILLA ARIPÍN-INCISO
Fase: Magdalena

Pasta
La pasta es de color café-naranja (7.5YR 6/6), de textura media, con algunos poros aunque a veces bastante fina y de fractura más o menos regular. El desgrasante principal es la piedra pómez molida y bastante fina, algunos fragmentos de mica, pero no a gran escala- y algunos cristales de cuarzo. La cocción que se observa en la fractura es bastante buena, aunque algunos fragmentos presentan dos tonalidades en el color.

Forma
Las formas básicas son los vasos y los cuencos pequeños. Predominan los bordes redondos, otros son ligeramente agudos y también hay algunos planos. Las paredes de los vasos son por lo general rectas y ligeramente curvas en los cuencos. Las bases son planas o ligeramente cóncavas. Los cuencos al igual que los vasos tienen bordes que varían entre los 4 y los 7 mm.

Decoración
Los incisos son variados, desde simples líneas onduladas u horizontales, más o menos ubicadas en la parte media de la pared, hasta otros más elaborados que presentan grecas, posibles pseudoglifos y bolutas. También se pueden observar abundantes diseños geométricos, líneas, petatillos, triángulos, círculos, etc.
Acabado de superficie
Uno de los atributos más importantes de la vajilla, además del inciso es el engobe café-naranja que posee. Este puede fácilmente confundirse con la vajilla Pinal-Inciso que lleva un engobe café-negro, con la vajilla Jicaro-Inciso que posee un engobe naranja. Sin embargo, la vajilla Aripín-Inciso no presenta la banda roja en el borde y los incisos son más finos y diversos. El engobe café-naranja por lo general presenta un alisado y pulido que va de medio a alto.

Fig. 30 - V. Aripín Inciso

VAJILLA CHISPAN-ROJO
Fase: Magdalena

Pasta
Este material no es muy abundante en la muestra y comúnmente presenta una pasta café-naranja (5YR 6/6) y sólo un fragmento que se incluyó en este grupo por sus características posee una pasta roja (2.5YR 4/6). La textura es media, poco irregular en la fractura y más o menos compacta y no muy homogénea. El desgrasante en las pastas café-naranja es una mezcla de cristales de cuarzo lechoso con fragmentos de piedra pómez molida, mientras que en la pasta roja se observan cristales de cuarzo y posiblemente ferruginosos. Otro fragmento posiblemente posee arena de río como elemento no plástico de la pasta. En cuanto a la cocción, una parte de la muestra presenta uniformidad en el color, mientras que en el resto se observa una tonalidad grisácea.

Forma
La escasez de la muestra presenta únicamente fragmentos de cuencos pequeños y posiblemente vasos. Los bordes en general son redondos y sólo uno es plano. Las paredes son curvas o ligeramente curvo-divergentes. No hay muestra de bases, pero se seguramente sean planas y cóncavas como en la mayoría de vajillas. Los cuencos posiblemente tienen un diámetro aproximado de 12 cm. y el grosor de los bordes de la muestra va de los 5 a los 8 mm. muy similar al de las paredes que varía muy poco, entre los 4 a los 8 mm.
Decoración
La característica más importante es la pintura roja hematita especular que cubre la pieza, aunque también pueden presentar acanaladuras o incisos que no constituyen un atributo fundamental para su identificación.

Acabado de superficie
La pintura rojo especular que cubre la pieza debe tomarse como el principal acabado de superficie, ya que por lo general es total y cuando es parcial sólo el interior puede presentar algún tipo de engobe oscuro o uno de color crema, o también presentar rojo especular en el interior. Esta pintura le da una brillantez excepcional a las vasijas que conforman esta vajilla.

VAJILLA CASACA-ESTRIADO
Fase: Magdalena

Pasta
El color de la pasta es café-naranja (5YR 6/6), la textura es media, en algunos casos se fractura con cierta facilidad, también es un poco porosa. La piedra pómez es el desgrasante más importante en la composición de la pasta, aunque algunos fragmentos también contengan arena de río. La cocción es regular, ya que algunas muestras presentan en la fractura la tonalidad grisácea, especialmente en las zonas gruesas como los bordes y el gollete.

Forma
Predominan los cuencos, aunque también hay cántaros grandes. Los bordes son redondos, en los cántaros engrosados en el interior, en los cuencos son también redondos, redondos engrosados en el exterior, planos engrosados en el exterior y planos de bisel interior. Los cuellos de los cántaros son curvo-divergentes y el cuerpo posiblemente subglobular. En los cuencos las paredes son ligeramente curvo-convergentes y las bases cóncavas. No presentan asas, vertedoras o soportes. El grosor de los bordes en los cántaros va de los 6 a los 10 mm., en los cuencos de los 5 a los 13 mm. El diámetro aproximado en los cántaros varía de los 28 a los 42 cm., entre los cuencos varía de los 17 a los 42 cm.

Decoración
Generalmente poseen una banda roja o naranja en el borde, los cántaros extendida aproximadamente dos centímetros hacia el interior; en los cuencos, sólo en el borde o labio. La decoración es el estriado medio, generalmente orientado horizontalmente sobre el cuerpo de los cuencos y cántaros. La orientación prácticamente no varía y salvo en los cuellos de los cántaros, donde la decoración puede ser una combinación del estriado con punzonado al igual que en la vajilla Mapache-Estriado.
Acabado de superficie
El acabado de superficie previo a efectuar el estriado seguramente fue únicamente un burdo alisado, ya que ni los cántaros ni los cuencos presentan engobe. En el caso de los cuencos la parte interna se encuentra también solamente en una alisado burdo o medio.

Fig. 31 - V. Casaca-Estriado

VAJILLA ENCANTO-ESTRIADO
Fase: Magdalena

Pasta
De color café-naranja (5YR 6/6), la textura es media, en algunos casos un poco porosa y en otros más compacta, la fractura es irregular. El desgrasante es la piedra pómez aunque en algunos casos también se observa arena de río. Otro elemento utilizado en algunos ejemplares de la vajilla son los fragmentos de mica. Como en la mayoría de vajillas, algunos fragmentos presentan una uniformidad en el color de la pasta, mientras que otros no.

Forma
La vajilla se compone casi exclusivamente de cuencos, aunque también existen algunos bordes de cántaros y en menor cantidad aún de vasijas con boca restringida. En los cántaros los bordes son en su mayoría redondos, algunos engrosados en el interior y generalmente son bordes evertidos o divergentes. Entre los cuencos hay bordes redondos y planos, predominiando los primeros que se encuentran levemente engrosados en el interior, mientras que los planos pueden estar engrosados en el exterior o ser ligeramente biselados. El cuello de los cántaros es curvo-divergente, de cuerpo subglobular y de base cóncava. Los cuencos tienen paredes ligeramente curvo-divergentes o curvas, no presentan asas ni algún otro aditamento. El grosor de los borde de los cántaros varía de los 7 a los 12 mm., con un diámetro aproximado de 24 a 30 cm. Entre los cuencos el grosor del borde va de 10 a 16 mm., el de las paredes de 5 a 12 mm. con un diámetro aproximado de 27 a 38 cm.
Decoración
La decoración es casi nula, ya que algunos sólo presentan una banda roja en el borde y el estriado más que decoración parece ser el acabado de superficie, pues no presentan un diseño o patrón específico. Tampoco se observa una decoración distinta para los cuellos de los cántaros como en las vajillas Casaca y Mapache-Estriado.

Acabado de superficie
No presentan engobe, y el estriado puede constituir el acabado de la superficie ya que es muy fino y sin un patrón específico. El interior puede presentar un alisado burdo o medio entre los cuencos.

Fig. 32 - Encanto Estriado

VAJILLA COCAL LISO
Fase: Magdalena

Pasta
La pasta es también café-naranja (5YR 6/6), de textura media, fractura regular y bastante homogénea y compacta. El principal elemento no plástico al igual que en el resto de las vajillas de la región del Motagua está compuesto por piedra pómez molida, aunque en este caso también se observa abundantes fragmentos de mica que va sustituyendo cada vez más a la piedra pómez como desgrasante. La tonalidad que se observa en la fractura es bastante uniforme, lo que indicaría una cocción bastante buena.

Forma
La vajilla se caracteriza por estar compuesta únicamente de vasijas con boca restringida, la mayoría de ellos con borde redondo, algunos de ellos engrosados en el interior, otros ligeramente planos. El atributo consistente de la vajilla está en las paredes que son curvo convergentes, pero retorcidas a causa de la forma de la vasija. No presentan asa o algún
otro aditamento y las bases seguramente son planas o ligeramente cóncavas. El grosor de los bordes varía de los 6 a los 10 mm. y las paredes de los 5 a los 12 mm.

**Decoración**
Estas vasijas por lo general no presentan ningún tipo de decoración.

**Acabado de superficie**
Otro elemento importante pero no muy exaltado para identificar las vasijas cocal liso, es precisamente el alisado burdo que éstas presentan en la pared exterior, ya que no presentan ningún tipo de engobe o pintura.

**VAJILLA YAJAL-ROJO**
**Fase:** Magdalena

**Pasta**
La pasta es de color café-naranja (7.5YR 6/6), la textura es de media a gruesa, de composición más bien heterogénea y de fractura irregular, la pasta también posee algunos poros. La composición heterogénea de la pasta se debe a que contiene una mezcla de elementos no plásticos, con predominio de la piedra pómez y posiblemente arena de río, mezclada con cristales de cuarzo. Los fragmentos de piedra pómez que son los más abundantes y fáciles de observar se presentan desde partículas muy finas hasta fragmentos que oscilan entre 0.1 y 0.4 mm. de diámetro. Casi todos los fragmentos presentan la característica tonalidad grisácea al centro de la fractura.

**Forma**
La muestra se compone exclusivamente de cántaros cuyos bordes por lo general son evertidos o divergentes, aunque algunos son mucho más directos que otros. Éstos son casi siempre redondos engrosados en el exterior. Los cuellos son curvo-divergentes, algunos más altos que otros. La parte del cuerpo es muy difícil de establecer con exactitud la forma, pero posiblemente por el tamaño sean subglobulares o globulares. Las bases seguramente son planas o cóncavas. Como en otras vajillas de cántaros, éstos no presentan asas, soportes, vertederas ni algún otro aditamento. El grosor de los bordes va de los 7 a los 14 mm. y el diámetro aproximado de los 29 a un poco más de 40 cm.

**Decoración**
La única decoración que presentan es la banda rojo-naranja en el borde y en algunos casos se observan también líneas muy escasas y dispersas en el cuello.

**Acabado de superficie**
El acabado de superficie constituye posiblemente el principal atributo consistente y se trata de un baño -posiblemente de pintura- crema que lo diferencia del resto de cántaros. La superficie no presenta engobe y únicamente se tiene un alisado medio a burdo.
VAJILLA PIÑAL-ACANALADO
Fase: Manzanal

Pasta
La pasta tiene un color café-naranja (7.5YR 6/6), de textura fina, más o menos compacta y de fractura regular. El desgrasante está compuesto de piedra pómez y en algunos casos se mezcla con finos cristales de cuarzo. La pasta también puede contener en menor cantidad fragmentos de mica. Se observa la tonalidad grisácea en la fractura de algunos de los ejemplares.

Forma
Existen en la vajilla platos que son los más comunes, pero también hay cuencos o vasos. En la muestra del Proyecto de Jade 2005, esta vajilla es poco representativa. Los bordes son redondos o compuestos -éstos últimos por lo general en los platos-, las paredes pueden ser curvo-divergentes en platos, ligeramente curvas en cuencos y rectas en los vasos. Los platos son bastante abiertos con bordes evertidos. Las bases son generalmente planas y los platos pueden llevar algún tipo de soporte. Sin embargo esto no se detectó en la muestra.

Decoración
La decoración característica el acanalado, que en los platos se ubica generalmente en la pared interna o externa y en los cuencos y vasos en la parte media de la pared. No se ha observado otro tipo de decoración, a excepción de que los platos pueden tener un borde ondulado.

Acabado de superficie
Otro de los atributos consistentes es el engobe rojo que deben presentar las vasijas de la vajilla Piñal-Acanalado, el cual se presenta casi siempre con un alto pulido y comúnmente cubre la parte interna y externa de la vasija.

VAJILLA ARENAL-INCISO
Fase: Manzanal

Pasta
La pasta tiene un color café-naranja (5YR 6/6, 10YR 8/3), la textura es fina, compacta de fractura regular. Los componentes no plásticos son variados, pero en muy pocas cantidades, observándose algunos cristales muy finos de cuarzo, fragmentos muy finos de pómez moliá y fragmentos de mica. Se en esta vajilla una uniformidad en la cocción, posiblemente por la fineza y delgadez de las paredes.

Forma
Por lo general las formas básica son los cuencos y vasos con bordes redondos, de paredes curvadas, ligeramente curvo-divergentes o rectas. Las bases son planas o ligeramente cóncavas. Las dimensiones de las vasijas son pequeñas, con un grosor de bordes que va de los 3 a los 5 mm.
Decoración
Uno de los atributos de la vajilla es el inciso, generalmente fino, sobre las paredes externas de los cuencos y vasos, Los motivos pueden variar, pero comúnmente son geométricos, con líneas finas, petatillos, o figuras simples de rostros, espirales, grecas, cuadros, triángulos, u otras formas.

Acabado de superficie
Este es uno de los atributos consistentes importantes dentro de la rama de los incisos, ya que el Arenal-Inciso debe llevar un engobe que va de blanco a crema, casi siempre interna y externamente, aunque en el interior pude llevar un engobe color naranja. La superficie por lo general lleva alisado y pulido alto.

VAJILLA ZARZAL
Fase: Magdalena

Pasta
La pasta es de color café-naranja, de textura media a fina, de fractura regular. Presenta el desgrasante de pómex aunque también se observan en algunos casos fragmentos de mica y cristales de cuarzo. La cocción es bastante uniforme aunque se observa en algunos fragmentos cambios en la tonalidad.

Forma
Las formas más comunes son los cuencos con bordes redondos, de paredes recto-divergentes o ligeramente curvadas o curvo-convergentes. Las dimensiones no son muy grandes y la muestra es muy escasa para determinar todas sus características.

Decoración
La decoración es el inciso medio y grueso formando algunos diseños muy complejos y no tan simples como el resto de la muestra que conforman los incisos. Además puede presentar la banda roja, aunque esto no se observó en la muestra por la escasez de bordes. Algunos presentan a personajes y otras formas más complejas.

Acabado de superficie
La superficie presenta una baño de pintura blanca y en las áreas que no están incisas un alisado medio.

Resultados preliminares e interpretación
En el anexo No. 1 se pueden observar la cantidad de materiales por operaciones y por vajillas, para tener una visión rápida de la temporalidad por operación y
VAJILLA GUARANJA-ROJO
Fase: Magdalena a Palmilla

Pasta
El color de la pasta es cafénaranja (7.5YR 6/6 y 5YR 6/6), de textura media, fractura irregular. El principal desgrasante es la mica, lo cual lo diferencia de algunos ejemplares con desgrasante de pómez. El color que se observa en la fractura de los tiestos es muy regular.

Forma
Los cántaros grandes y las tapaderas son las formas más comunes, pero también existan algunos cuencos. Los bordes redondos o ligeramente planos, casi siempre engrosados en el exterior. Los cuerpos posiblemente sean globulares o subglobulares con bases cóncavas. Los cuencos poseen paredes ligeramente curvo-convergentes. Los cántaros e incluso los cuencos pueden presentar asas grandes. Las dimensiones son de cántaros muy grandes, con un diámetro que incluso rebasa los 40 cm.

Decoración
La decoración más importante es la pintura roja que puede encontrarse en el borde, cuello, cuerpo y asas, con diseños no muy variados, algunas veces puntos rojos, líneas, manchas círculos, entre otros. Las tapaderas que presentan asa, llevan por lo general pintura roja formando círculos.

Acabado de superficie
Solamente presentan un burdo alisado que a veces puede llegar a medio. No presentan engobe ni pulimento.

Otras Vajillas
Por su presencia en menor escala, su nueva introducción a la tipología propuesta para la región del Motagua o su producción foránea, se describen brevemente a continuación otras vajillas presentes en la muestra del Proyecto de Jade 2005:

VAJILLA PLOMIZO
Fase: Palmilla

La vajilla Plomizo presenta una pasta de color crema (2.5Y 8/3, 8/4), la textura es muy fina y compacta y dura, de fractura regular. No se ha podido identificar el tipo de desgrasante, por ser la pasta demasiado fina. La fractura presenta la franja gris al centro. Las formas son difíciles de determinar por la ausencia de bordes, pero los cuerpos posiblemente indican vasos y cántaros. El único borde que se presenta en la muestra es redondo y una de las bases es plana. Las dimensiones indican que son vasijas pequeñas, con un grosor de borde de 6 mm. y el resto de cuerpo tienen un grosor de pared de entre los 3 y los 5 mm. La única decoración que se observa es el acanalado vertical. En cuanto
al acabado de superficie, éste constituye el atributo principal porque presenta un engobe naranja que fue cubierto con una capa de plomo que le da un brillo característico.

**VAJILLA TIQUISATE**
**Fase:** Magdalena

La muestra cuenta solamente con dos posibles fragmentos, uno de engobe naranja y el otro crema, por lo que es difícil describir todas sus características.

**VAJILLA MANDARINDAL-INCISO**
**Fase:** Magdalena

Los materiales de este grupo conforman una nueva vajilla en la tipología de la región del Motagua Medio. El color de las pasta en ésta vajilla es por lo general cafénaranja (7.5YR 6/6, 5YR 5/6, 5YR 5/8, 7.5YR5/8), la textura de es fina, compacta y de fractura regular. El desgrasante se compone de inclusiones de pómez muy fina, además de pequeños cristales de cuarzo lechoso, también muy finos. La cocción que presenta es muy buena por la uniformidad en el color de la pasta.

Entre las formas observadas se encuentran los cuencos y talvez vasos, los bordes son redondos o ligeramente de bisel plano en el interior. Las paredes son ligeramente curvo-divergentes, ligeramente curvadas y rectas y las bases son planas. Las dimensiones de los cuencos son pequeñas y el grosor de los bordes va de los 4 a los 5 mm. La decoración es el inciso fino, generalmente sólo líneas horizontales, verticales o inclinadas, sin presentar algún patrón específico. El acabado de superficie constituye también un atributo consistente al igual que la decoración de inciso fino, pues la superficie presenta engobe naranja interna y externamente. Otros presentan en el interior un engobe de color distinto, a veces beige o naranja pálido.

**VAJILLA MANZANOTAL**
**Fase:** Magdalena ?

La pasta es cafénaranja, las formas son básicamente cuencos de paredes curvadas o ligeramente curvo-convergentes, presentan la característica de que en la parte externa de la pared poseen un alisado y un pulido medio, mientras que la parte interior llevan pintura roja. Los bordes también son característicos, pues siempre son engrosados en el interior. Pueden o no llevar asas verticales, y la muestra en este material era muy pequeña.
VAJILLA TUNAL
Fase: Magdalena ?

Se incluyó en este grupo casi sólo cuerpos de algunas vasijas que presentan una banda impresa como elemento decorativo, pero no se pudo establecer a que vasija pertenecían, es decir no se cuenta con bordes que nos ayuden a identificar las formas, aunque por lo general parecen ser cuerpos de cántaros. La pasta es café-naranja, la mayoría con abundante mica como elemento desgrasante de la pasta.

VAJILLA TERRONAL
Fase: Magdalena a Palmilla

El color de la pasta es café-naranja (5YR 6/6), de textura burda en su mayoría, de fractura irregular muy porosa y heterogénea. Como desgrasante presenta abundante mica, en algunos casos fragmentos de piedra, talvez esquisto o greenstone, pero en fragmentos de gran tamaño entre 2 y 3 mm. En algunos casos la pasta también contiene fragmentos de pómez y cristales de cuarzo. La cocción se presenta uniforme. En cuanto a las formas, predominan los cántaros de cuello pequeño y los cuencos. Los bordes por lo general son muy redondos, engrosados generalmente en el exterior y otros en el interior. Los cuerpos son posiblemente semiglobulares y los cuencos con paredes ligeramente curvo-divergentes. Las bases seguramente eran planas o cóncavas. Las dimensiones de las vasijas, especialmente en los cántaros, los bordes llegan hasta los 20 mm, y las paredes de los 4 a los 15 mm. La vajilla no presenta ningún tipo de decoración y el acabado de superficie es muy burdo, posiblemente sólo un burdo alisado. Los cántaros pueden llevar asas verticales.

VAJILLA PAPAYAL
Fase:  ?

Esta vajilla se ha clasificado como nueva, por carecer en la tipología un grupo que contenga materiales con un engobe naranja pálido como el que se incluyó en la vajilla Papayal. Las pastas son café-naranja, no presentan mayor decoración, aunque uno de los fragmentos –al parecer un vaso- lleva decoración acanalada. El atributo consistente en este caso fue el engobe naranja pálido, y las formas que se observaron fueron cuencos, cántaros y vasos. En cuanto a la temporalidad muy difícil de determinar, debido a la muestra tan pequeña, pero varios de los ejemplares proceden de los niveles más tempranos.
VAJILLA JOCOTAL
Se formó esta vajilla con fragmentos de lo que parecen ser tapaderas con distintos engobes pero con características similares tales como agujeros en la parte superior, decoración punzonada y pequeñas aplicaciones como de botón donde se encuentran los agujeros. Las tapaderas o forma especial son de color rojo y café.

VAJILLA USULUTÁN
Fase: Motagua

El color de la pasta va de blanco a crema (10YR 8/2, 2.5Y 8/3, 8/4), aunque también se incluyeron aquí posibles Falso Usulután, sobre todo porque en algunas decoraciones negativas también hay pastas café-naranja (5YR 6/6), que seguramente son locales. La textura es muy fina, siendo difícil de observar el componente antiplástico de la pasta. Se observa en el borde o área más gruesa la tonalidad grisácea, pero el resto presentan una buena cocción. Entre las formas que se observaron en la muestra se encuentran los platos y los cuencos de bordes redondos, planos con acanaladura, redondos engrosados en el interior y algunos ligeramente agudos. Las paredes son curvo-divergentes o de silueta compuesta, paredes curvas, entre otras. Las bases son planas o convexas. El grosor de los bordes varía de los 6 a los 12 mm. y el de las paredes de los 5 a los 7 mm.

La decoración es negativa con colores crema y marrón o café-corinto, y el resto en colores crema y naranja, algunas en rojo. Por lo general son bandas o líneas y el plato lleva la decoración más característica e impresionante en la muestra de la decoración usulután. Algunos llevan el negativo sólo al interior, mientras que otros en todo el cuerpo. El acabado de superficie es de un alto pulido por el brillo que presentan los fragmentos.

CERÁMICA POLICROMA
Fase: ?

Las pastas son de color rojo y beige (2.5YR 6/8, 2.5Y 6/3, 2.5Y 7/4), la textura es fina, compacta y homogénea en los tres ejemplares, donde es difícil observar los elementos no plásticos. Uno de los tiestos posee desgaseante de pómex muy fina, otro de los tiestos posee fragmentos ferruginosos rojizos, otro presenta fragmentos ferruginosos negros y pómex. Todos presentan uniformidad de color en la fractura y por tanto una excelente cocción.

Las formas son de un plato con pestaña basal, y dos cuencos. Los bordes son redondos y planos. Las paredes del plato son curvo-divergentes, y de los cuencos son recto-divergentes y del otro rectas o ligeramente curvas. El grosor de los bordes es de aprox. 4 y 5 mm. La decoración es policroma, en el plato la parte interior de las paredes tiene pintados los pies y piernas lo que podrían ser algunos personajes; en las paredes externas presenta una decoración con motivos geométricos, al igual que la base que también está decorada junto con el fondo del plato. Uno de los cuencos posee líneas negras, blancas y
una banda roja, grecas y también la base está decorada. El otro cuenco o vaso, presenta en pintura roja lo que parece ser un tocado con plumas, además de otros colores como el crema, naranja y negro. Los cuencos tienen acabado de superficie que se encuentra alisado y pulido fino por el brillo que presenta, mientras que el plato un alisado y pulido medio.

**CERÁMICA PRECLÁSICA**

**Fase:** Motagua ¿?

En este grupo se integraron varios materiales recuperados mediante la recolección de superficie, que presentaban características preclásicas como grandes pestañas labiales y mediales, monocromía, bordes engrosados, bordes con acanaladuras, entre otras características, por la falta de una tipología para dicho período en la región.

**CERÁMICA ESTUCADA**

**Fase:** Magdalena

Aquí se incluyeron los siete fragmentos de cerámica estucada que se recuperaron en excavaciones controladas, algunos con colores celestes, verdes, rojo entre otros. Esta cerámica corresponde al período Clásico Tardío.

![Fig. 33 - Cerámica Estucada](image)

**CERÁMICA COLONIAL**

Únicamente se encontraron dos fragmentos de posible cerámica colonial, pero éstos son muy pequeños y proceden de recolecciones de superficie.
MISCELANEOS 1
En el presente grupo se incluyó el material que por distintos motivos no pudo ser clasificado en ninguna de las vajillas establecidas, algunas veces porque sólo se presentó un ejemplar y éste no correspondía a las características de ninguno de los grupos creados durante la clasificación de los materiales cerámicos.

MISCELANEOS 2
En este grupo se incluyeron todas aquellas formas especiales como pelotitas de cerámica, fragmentos de figurilla, fragmentos de silbatos, sellos y otras formas especiales que son dignas de un estudio aparte porque nos permiten indagar acerca de las actividades de sociedades antiguas.

TIESTOS REUTILIZADOS
En este grupo se incluyó a todos aquellos fragmentos de cerámica que presentaban rasgos de haber sido reutilizados para diversas formas, posiblemente para utilizarlos como adornos o como instrumentos para ciertas actividades, juegos, pesca, entre otras; después de sufrir una serie de transformaciones. Aquí se pueden encontrar círculos perforados, tiestos de distintas formas: triángulos, rombos, óvalos, círculos, etc. y que en su mayoría presentan evidencia de haber sido limados para darles la forma deseada.
VITA

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PUBLICATIONS
