RECONSIDERING INSTITUTIONAL COLLAPSE AND SOCIAL TRANSFORMATION AT MOUNDVILLE DURING THE FIFTEENTH CENTURY

by

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ABSTRACT

The collapse of ancient complex societies is a topic that denotes a rapid disruption to traditional ways of life. This research reconsiders models for social collapse from the Mississippian center of Moundville, located in west-central Alabama. Collapse has been recognized at the site as a rupture in mound ceremonialism, nonlocal connections, and representational art. These changes indicate that structural elements were no longer enacted by influential individuals or were reproduced at other locations around communal institutions. This paper evaluates these models through an analysis of stratigraphically excavated ceramic, stone, and ritual paraphernalia from Mound P at Moundville that date from A.D. 1400-1520. Around A.D. 1450, the settlement pattern in the region shifted and some ritual practices were emphasized as others fell out of favor, suggesting there was a change in social organization but continuity in ritual expression. This research demonstrates that mound construction ceased and nonlocal connections were de-emphasized, but that representational art shifted to emphasize a restricted range of imagery in a highly visual manner. The change and continuity of produced and consumed objects during the fifteenth century indicates that there were structural shifts, not collapse, in materiality and monumentality during the fifteenth century in the Black Warrior Valley.

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CHAPTER 1

INTRODUCTION

Interest in the social collapse of ancient complex societies is often discussed as the dramatic end of once great civilizations due to an inherent deficiency in judgement, overwhelming natural disasters or catastrophes, or the invasion of dangerous and pointedly *un*civilized outsiders. It does not take an extensive internet search to unveil the anxiety that modern populations experience related to a perceived social moral decay, paranoia about the end of civilization, and a change to long-held views or standards of life. Variations on the American allegorical locution “to hell in a handbasket,” applied colloquially to describe or lament an undesirable direction (and destination) of social change, encapsulate many of these fears. It can certainly be argued that historical and modern interest in the downfall of Rome and the collapse of the ancient Maya is the result of internalized fears that modern (i.e., Western) civilization and the status quo could be in danger (Anderson 2015:223; Tainter 1988:209-210, 2016:28). The fascination of ancient societal collapse in both secular and religious segments of our own culture manifest in ways that are far from tangential; the fear of social change, outsiders, or catastrophe are factors in the formation and reproduction of national identity, domestic policy and international diplomacy, religious doctrine, and consumption and production patterns. Further, understanding of the collapse of ancient societies can provide insight into the failure or disintegration of modern nation states such as Iraq, Somalia, Sudan, and Haiti (e.g., Rotberg 2002), even if the distinction between success and failure is subjective and culturally-biased

(Tainter 2016). Thus, the understanding of sociopolitical stability and instability in the past is relevant to modern nation states, but how exactly can some of these processes be understood in ancient complex societies? How is "collapse" defined and what, if anything, actually collapses? Does societal collapse occur without variation cross-culturally, or is it historically contingent (e.g., Yoffee 1988:14)? Conversely, what elements or institutions of a society continue to be reproduces through human action and which ones are deemphasized or forgotten? Do societies respond to sociopolitical instability through reorganization, or does it all end with the sudden catastrophic silence of millions of voices?

Social collapse and the search to understand why civilizations supposedly failed (e.g., Diamond 2005) is of interest to the public and an important topic of research for anthropologists, historians, ecologists, political scientists, and scholars in related disciplines. Archaeological interest in the collapse of ancient civilizations has received more attention in recent years and has been aimed at precisely defining which structural elements or institutions of ancient complex societies were reproduced, which ones were deemphasized, and how people responded after sociopolitical systems disintegrated through an analysis of environmental data, changes in craft production, site occupation histories, migration patterns, assemblage diversity, and changes in economic practice (Anderson 1994, 1996, 2015; Beck 2013; Brose et al. 2005; Butzer 2012; Faulseit 2016; Hegman et al. 1998; King 2001; McAnany and Yoffee 2009; Marcus 1993, 1998; Scarry 1996; Schwartz and Nichols 2006; Tainter 1988; Yoffee and Cowgill 1988). Thus, understanding collapse is a practice in precision, since we seek to understand exactly what collapses in a society, and perhaps more importantly, what did not (Eisenstadt 1988:237-238).

Archaeological perspectives on social collapse shift the focus from the broad, monolithic collapse of civilizations to understanding structural transformation, institutional collapse, resilience, and social reorganization in complex societies at the local or micro scale. Some of these explanatory models are summarized in Chapter 2, but many of them are not appropriate to use extensively as a theoretical frame for this research due to the localized nature of the case study.

Herein, I define *collapse* not as the dissolution or destruction of whole civilizations, but rather as a rapid historical process of disintegration where specific social and political institutions were no longer emphasized or supported, while others were adopted or continued to be reproduced by recursive social actors (Eisenstadt 1988; Tainter 1988, 2016; Yoffee 1988). An *institution* is a public secular or religious organizational entity with its own structural logic that facilitates the reproduction and repetition of normal or specialized actions (Searle 2010:10; Sewell 2005:208, 273). Examples of institutions include family, corporations, marriage, private property, sports leagues, trade unions, temples, government, and universities (Searle 2010:91). In the Southeast, institutions can be identified or inferred by the context and use of symbolic art, monumental architecture, and statuary (e.g., Knight 1986), as well as by drawing historic analogies to known ethnographic social organization (Blitz 1999; Knight 1990; Kowalewski 2006).

It is important to elaborate on the complex nature of these ancient societies, since they were, in fact, "complex." The research topic of social collapse is intrinsically tied to the concept of complexity in archaeology because the former implies a failure or decrease of the latter (Tainter 2016). Complexity has been traditionally identified by a distinct link between scale and hierarchy with strong influences from progressivist, evolutionary thinking facilitated by a comparative analysis of the relative complexity of ancient societies to modern, state-level societies (Fried 1960; Kirchhoff 1959; Oberg 1955; Sahlins 1963; Service 1966; Wright 1984).

However, more recent historical perspectives consider scale and hierarchy as separate components of complexity and their evaluation as outlining the multiple ways in which societies exhibit complexity (Alt 2010a, 2010b; Blanton et al. 1996; Blitz 2010; Cobb 2003; Crumley 1995; Drennan 1996; Nelson 1995; O'Shea and Barker 1996; Pauketat 2007; Sassaman 2004; Spielmann 2002; Yoffee 2005). Thus, a consideration of multiple ways that societies can be complex without the burden of progressivist scalar hierarchies includes the relationship between hierarchy and *heterarchy*, the latter being defined as "the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways" (Crumley 1995:3). Thus, collapse should not be understood as the failure of progress, but rather as specific, contingent institutional collapses or transformations while other social elements continued (Tainter 2016:37).

Archaeologists interested in structural transformation have concentrated on contingent and generative structural change (Alt 2001, 2002; Beck 2013; Beck et al. 2007; Bolender 2010a; Cobb and King 2005; Gillispie 2007; Gilmore and O'Donoughue 2015; Joyce 2007; Joyce 2008; King 2001, 2003; Pauketat 1992, 2001a, 2001b; Pauketat and Alt 2003; Sassaman 2004, 2005), a historical approach (e.g., Hodder 1987) that is influenced by structuration theory and historical anthropology (Giddens 1979, 1984; Sahlins 1985; Sewell 1992, 2005). This places the focus of structural transformation at a smaller scale and how social change at a micro or local level affected or was effected by macroscale changes. Structural transformation is possible because of the different characteristics of schemas and resources, features that Sewell (1992:16-19) has identified as five axioms of structural change; societies consist of 1) multiple structures that 2) overlap at the juncture of schemas and resources, the former having 3) the ability to be applied in multiple settings and the latter being 4) unpredictable and 5) having multiple meanings. These characteristics of structural elements can be rearticulated by self-aware social actors in novel ways to meet individual or group-based goals, thereby informing and transforming structures (Sewell 1992, 2005). Schemata are materialized as the built environment and material objects that shape how humans perceive and interpret their surroundings and cultural symbols. Thus, institutional collapse and social transformation in an archaeological context can be observed and recorded as changes in material and monumental practices and relationships (Bradley 1998; Hodder 2011, 2012; Knappett 2012; Meskell 2015; Trigger 1990). The civic-ceremonial centers that dotted the Southeastern United States were the locations of ancient social practices and offer archaeologists an ideal setting in which to address anthropological questions concerned with social change.

Complex Societies of the Prehistoric Southeast

This research seeks to address the nature of institutional collapse and social transformation of Mississippian societies in the prehistoric Southeast. Mississippian societies inhabited the fertile river valleys of the Southeast and (portions of) the Midwest from about A.D. 800 to 1600. The material characteristics that are often used to define these cultures include intensive maize agriculture, wall-trench buildings, a pan-regional exchange system, symbolic art, shell-tempered pottery, a distinct mortuary practice, and the construction and use of earthen platform mounds. Specifically, I seek to understand structural changes at Moundville during the fifteenth century using Mound P as a case study to address this historical and anthropological issue at a time of gradual and rapid change throughout the region.

Moundville

The Moundville site (1Tu500) is located atop a high, flood-free Plio-Pleistocene terrace

Figure 1.1. Location of the Black Warrior Valley in the Southeastern United States.

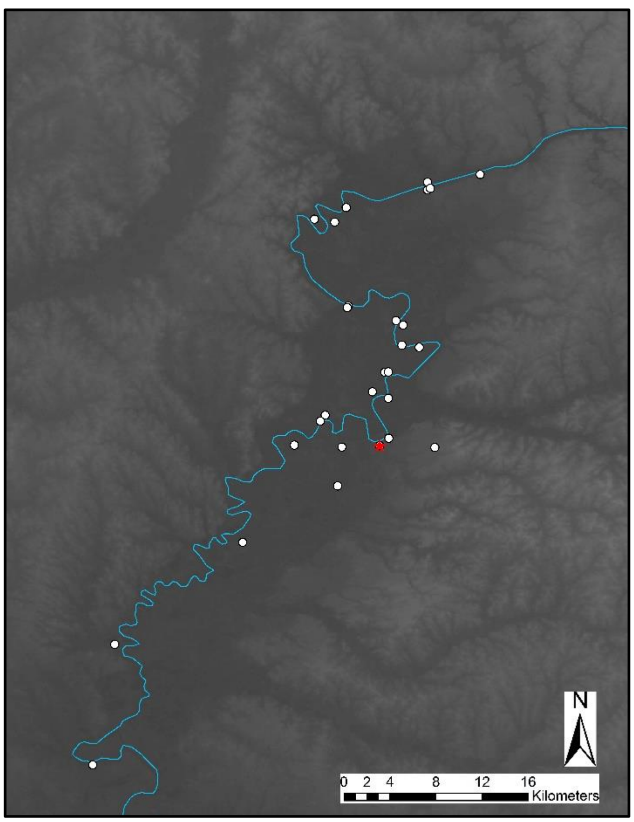

Figure 1.2. Site distribution in the Black Warrior Valley (white dot) and their relation to the Moundville site (red star).

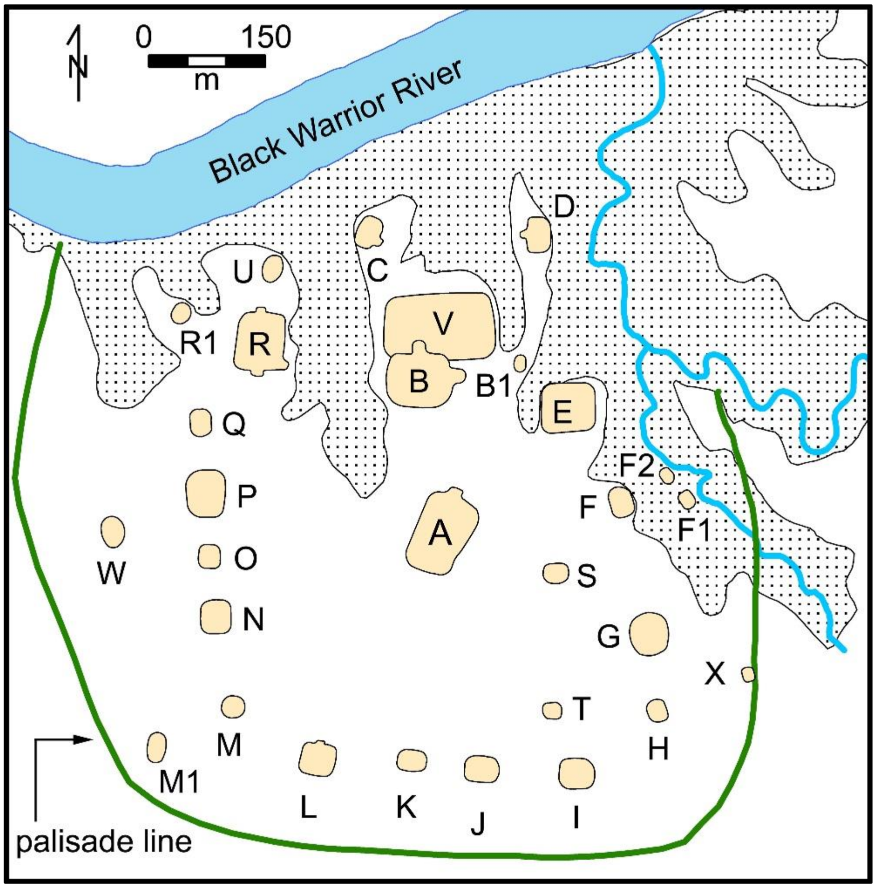

Figure 1.3. Layout of the Moundville site at the Hemphill Bend of the Black Warrior River. (Copyright John H. Blitz 2008, used with permission).

above the Hemphill Bend on the Black Warrior River in west-central Alabama (Figure 1.1). This multiple-mound, civic-ceremonial complex is surrounded by single mound and non-mound sites from the Fall Line near present day Tuscaloosa in the north to the confluence of the Black Warrior and Tombigbee rivers near Demopolis in the south (Figure 1.2). The site is characterized by at least 29 earthen platform mounds, 19 of which define a central, artificially-flattened plaza (Figure 1.3). It is the only multiple-mound Mississippian site in the river valley and it was occupied or used from about A.D. 1120 to 1520, with some intermittent or ephemeral usage of a mound summits and non-mound areas thereafter. Further, the Moundville culture includes

Years Calibrated[a]	Ceramic Phase	Developmental Stage[b]	Residential and Ceremonial History[c]
A.D. 1520-1690	Moundville IV	Collapse and Reorganization	
A.D. 1400-1520	late Moundville III		Outmigration and Necropolis
	early Moundville III	Paramouncy Entrenched	
A.D. 1250-1400	Moundville II		
		Regional Consolidation	Consolidation and Emplacement
A.D. 1120-1250	Moundville I		
		Initial Centralization	

Figure 1.4. Mississippian period phase sequences and chronology for the Black Warrior Valley. A, Years calibrated (after Steponaitis and Scarry 2016). B, Developmental stages (after Knight and Steponaitis 1998). C, Residential and ceremonial history (after Wilson and Marcoux 2010).

culturally-related mound and non-mound sites in the Tombigbee Valley and upper Alabama. Moundville's chronology has been developed through the efforts of multiple researchers, each one building on previous efforts, and consists of two portions, as presented in Figure 1.4: the ceramic phase sequence; and corresponding social developments (Knight 2010; Knight et al. 1999; Knight and Steponaitis 1998; Marcoux and Wilson 2010; Steponaitis 1980, 1983a; Steponaitis and Scarry 2016). Vincas Steponaitis (1980, 1983a) classified and seriated decorated ceramic sherds from stratigraphic excavations and whole vessels from burials to define (from early to late) the Moundville I to III phases, which are then divided into early and late subphases. The Alabama River phase, previously known as the Burial Urn culture, was initially defined for the late Mississippian and Protohistoric period cultures along the Alabama, Coosa, and

Tallapoosa rivers (Cottier 1970; Sheldon 1974), but in the Black Warrior Valley, the corresponding time is defined as the Moundville IV phase (Little and Curren 1995). The Mississippian period ceramic phase chronology developed by these scholars has remained unchanged, with only minor adjustments to the phase and subphase boundaries (e.g., Knight 2010; Scarry 1995; Steponaitis 1992; Steponaitis and Scarry 2016; Welch 1991).

The most up-to-date chronology for the site was recently developed by Steponaitis and C. Margaret Scarry (2016) by utilizing a large set of radiocarbon dates that were originally analyzed using the Gibbs Sampler technique (Knight et al. 1999). The recent analysis was developed through Bayesian modeling using the Markov chain Monte Carlo algorithm in OxCal 4.2 (Bronk Ramsey 2009) and can be defined as follows: Moundville I (A.D. 1120-1250); Moundville II (A.D. 1250-1400); Moundville III (A.D. 1400-1520); and Moundville IV (A.D. 1520-1690) (Steponaitis and Scarry 2016:13). This excludes the Woodland Period Carthage (A.D. 600-1000) and West Jefferson (A.D. 1000-1120) phases that were concurrently defined because they fall too early in the local sequence for this research.

There has been an extensive amount of scholarship concerning the Moundville site and culture, at times as influential on the interpretations of contemporaneous cultures as it has been influenced by current anthropological and archaeological thought. The social chronology of the site has been subject to more revision, but the pattern of occupation and abandonment, as well as the consumption of sumptuary goods and symbolic art, creates the general outline for the site's social history (Blitz 2008; Knight 2010; Knight and Steponaitis 1998; Marcoux and Wilson 2010; Peebles 1974, 1983, 1987; Peebles and Kus 1977; Scarry and Steponaitis 2016; Steponaitis 1992, 1998; Welch 1991, 1996; Wilson 2008). The cultural history of the site and related areas is discussed in detail in Chapter 3, but the widely accepted historical trajectory of the site can be summarized here.

Archaeological research has demonstrated that by the fifteenth century, the social and political fabric of Moundville had been frayed for some time (Knight and Steponaitis 1998:23). The process of disintegration likely began sometime in the thirteenth or fourteenth century (e.g., Marcoux and Wilson 2010:141-144), immediately following the establishment of the site layout and commencement of mound construction (Knight 1998; Steponaitis 1998; Wilson 2008). Residents moved away from the multiple-mound site and settled in the valley around single mound sites, returning to the ceremonial center to bury deceased members of the community in corporate cemeteries and participate in or observe periodic rites of intensification related to platform mound ceremonialism (Knight 1998, 2010; Knight and Steponaitis 1998; Peebles 1974; Peebles and Kus 1977; Steponaitis 1998; Welch 1991, 1998; Wilson et al. 2010). Some of these individuals were buried with socially valued goods (e.g., Spielmann 2002) that were both local and nonlocal in their origin and manufacture, such as nonlocal ceramic vessels, marine shell gorgets, engraved ground stone pendants, and objects of embossed copper or copper-bladed axes (Marcoux 2007; Peebles 1971, 1974; Peebles and Kus 1977; Phillips 2016; Salberg 2013; Steponaitis and Knight 2004; Welch 1991, 1996). Further, the production of symbolic art on ceramic vessels and these socially valued goods depicted a wide-range of representational motifs and compositions that characterize a distinct set of overall themes (Gillies 1998; Knight 2007; Knight and Steponaitis 2011; Lacefield 1995; Phillips 2012, 2016; Schatte 1997; Steponaitis and Knight 2004). It has been suggested that individuals with specialized access to large mound summit buildings were directly involved in the production and acquisition of these display items, with the crafting debris and scrap discarded in flank midden deposits and other off-mound areas (Knight 2010; Marcoux 2007).

In the middle of the fifteenth century, there is an apparent 1) cessation of mound construction, 2) deemphasis of nonlocal exchange, 3) shift in the execution and representation of symbolic art, 4) end of mound-centered crafting, and 5) burial of individuals at cemeteries in the valley (Knight 2010; Knight and Steponaitis 1998; Marcoux 2007; Steponaitis 1983a, 1998; Welch 1991, 1996, 1998). However, some mounds at the site (B, E, P, and V) exhibit signs of occupation or use in the second half of the fifteenth century (Knight 2009, 2010; Porth 2011a), but due to the limited nature of archaeological collections from the site that date to this time, the nature of this later occupation is not well understood. During the subsequent Moundville IV phase, which aligns with the protohistoric in the Black Warrior Valley, social groups were nucleated in villages, individuals exhibit a decline in overall health, artwork became more derivative or abstract, some individuals were cremated and interred in urns, while elaborate mortuary ritual was no longer practiced (Curren 1984; Little and Curren 1995). This signals a shift in structural organization that deemphasized elaborate ritual, individualistic display, and platform mound ceremonialism of the Moundville I-III phases in favor of social and political organization that was more communal during the Moundville IV phase. The difference in (apparent) social organization between the prehistoric and protohistoric is problematic because archaeologists have lacked material remains from the fifteenth century transition between the two, until the present study. To address structural change at Moundville, I use stratigraphic and material data from a single mound as a case study.

Mound P

Mound P, located along the western plaza periphery, is one of the largest platform mounds at the site by volume and is characterized by a terraced summit. The history of archaeological excavations on the mound has demonstrated that it was one of the latest occupied or used mounds at the site, with evidence for a large, razed building on the terminal summit layers and the presence of ceramic types diagnostic of the Moundville III and Moundville IV phases (Knight 2010:234-238; Porth 2011a, 2011b, 2014, 2015; Thompson 2012). This dissertation is the result of the analyses and interpretation of stratigraphy and artifacts recovered during the 2012 Mound P excavations, conducted in tandem between the Alabama Museum of Natural History, Office of Archaeological Research (OAR) and the University of Alabama, Department of Anthropology (UADA) fall field methods class, held on Tuesday and Thursday afternoons.

Archaeologists from OAR, under the direction of Matthew D. Gage and Brandon Thompson, excavated three, 2 x 2 m test units on the western flank of the mound where intrusive foundations for a planned staircase were to be located (Thompson 2012). This staircase was the final portion of the Jones Archaeological Museum's 2009-2010 renovation and now connects a large deck on the east side of the museum to a public viewing area on the summit of Mound P. One of the benefits of the joint OAR-UADA excavations was the opportunity for undergraduate students enrolled in the field school to work alongside professional archaeologists on the western flank units. Since the number of field school students enrolled in the field school exceeded the number that could reasonably work with Thompson on OAR's units, John H. Blitz and I directed the remainder of the students in the excavation of a 2 x 2 m test unit on the north flank, a 1 x 2 m test unit on the northern, lower terrace of the summit, and a 1 x 1 m test unit on the southern, upper terrace of the summit. Further, we directed two field crews on a subsurface bucket auger survey around the flanks of the mound to locate mound flank deposits, a method that has been employed on other Mississippian platform mounds (Smith and Williams 1994).

Research Questions and Outline of the Study

To understand "collapse" is to be specific (Eisenstadt 1988:237-238). Just as the "emergence" of complexity was a process of overlapping, mutually sustaining institutions that were emphasized, favored, reproduced, and forgotten through time, "collapse," or more appropriately disintegration, was an equally messy historical process. Given what we know about the disintegration of Moundville's social order and the apparent communal organization of the protohistoric occupation in the valley, but our incomplete understanding of the fifteenth century at Moundville, the research problem becomes: *what Mississippian institutions collapsed or were reproduced as evidenced by rearticulations in structural elements from mound-related activities on Mound P at Moundville*? Understanding historical changes or continuities in monumentality and materiality within the context of platform mound ceremonialism can be used to rewrite the narrative of the terminal prehistoric Mississippian society at Moundville. These changes will be addressed by answering four research questions, each with their own theoretical and material expectations.

The first research question seeks to address the timing of mound construction on Mound P by asking: *when did monumental construction and the built environment change or continue, as evidenced by mound construction layers and midden deposits on Mound P at Moundville*? Monumental architecture, such as platform mounds, plazas, and earthworks, link a group to a specific place through their permanence, high visibility, and the ceremonial performances associated with them (Blitz and Lorenz 2006:95; Bradley 1998:71-72; DeMarrais et al. 1996:19;

Kidder 2004; Moore 1996:97; Shanks and Tilley 1982; Sherwood and Kidder 2011; Trigger 1990:119-125). Evidence from other mound contexts at Moundville has shown that the practice of enlarging platform mounds through the addition of mound construction layers using human labor and soil (i.e., resources) ceased by the middle of the fifteenth century (Knight 2010). To address the cyclical nature of mound construction episodes on Mound P, I will combine the stratigraphy of the exposed profiles from the west and north flank excavation units with an analysis of the fired clay and daub artifacts deposited on the mound flanks, as presented and discussed in Chapter 4. To address the timing of these deposits, in Chapter 5 I present a detailed seriation of diagnostic ceramic types, modes of decoration, and modes of vessel shape from midden contexts and link this seriation to radiocarbon assays derived from the same contexts. Based on initial observations of diagnostic artifacts during the 2012 excavations and initial laboratory analysis, the diagnostic ceramic attributes from the west flank appear to date earlier than those from the north flank, an observation that is tested through the relative and absolute dating of the mound flank deposits.

If cyclical mound construction continues into the late fifteenth century on Mound P, then it is expected that episodic mound construction layers and periodic flank midden deposits and the deposited remains of razed summit buildings should be associated with late Moundville III phase diagnostic ceramic attributes. A continuation of mound construction would indicate that schemata related to the meaning of platform mound ceremonialism did not change, but persisted. Conversely, if cyclical mound construction did not continue into the late fifteenth century on Mound P, then mound construction layers and evidence for destroyed summit buildings should be absent from later social contexts. It is notable that this expectation leaves open the possibility of mound occupation or use *without* associated mound construction layers in the later portion of the fifteenth century, as observed elsewhere at Moundville (e.g., Knight 2009, 2010), evidenced by periodic midden deposits associated with ceramic attributes diagnostic of the late Moundville III phase. A discontinuation of mound construction would indicate that schemata related to platform mound ceremonialism had shifted or resources were enacted elsewhere.

The second research question asks: *how did symbolic art change during the fifteenth century on Mound P*? At Moundville, the motifs and themes of symbolic art were engraved and incised on a wide-range of media, such as ground stone pendants, formal sandstone palettes, shell gorgets, bowls, and bottles (Knight 2007; Marcoux 2007; Phillips 2012, 2016; Steponaitis and Knight 2004). A local art style, characterized by conservative subject matter and execution, has been defined as the Hemphill-style and it is characterized by five themes engraved on a variety of media: winged serpent; crested bird; trophy; raptor; and center symbols and bands (Gillies 1998; Knight 2007; Knight and Steponaitis 2011; Lacefield 1995; Phillips 2012; Schatte 1997; Steponaitis and Knight 2004). While the representational motifs that characterize this theme are often identified on pendants and other stone objects (Phillips 2016), the most common placement of them is on the exterior of bottles and bowls. However, there is a manifestation of representational art that is typically not included within the definition of the Hemphill-style, which is the trophy theme as executed as trailed-incised compositions on bowls (Knight 2007, 2010; Steponaitis 1983a).

Archaeological evidence from burial and mound contexts at Moundville suggests that engraved representational art in the Hemphill-style was no longer produced or consumed after A.D. 1450, but that trailed-incised representational art continued into the protohistoric. It is expected that if Hemphill-style representational art engraved on the exterior of bottles continues to be produced and consumed in the late fifteenth century, then schemata related to social organization and identity remained unchanged. Conversely, if symbolic art changed or shifted focus to key symbols (e.g., Ortner 1973) then schemata materialized to emphasize a limited range of meanings. To address how symbolic art changed through the fifteenth century on Mound P, first I use the seriation of first-order diagnostic types generated in Chapter 5 to assess the relative frequencies of engraved and trailed-incised representational art. Then, in Chapter 8 I generate indices (e.g., Knight 2004, 2010; Markin 1997; Thompson 2011) to standardize the relative presence of engraved and trailed-incised representational art.

The third research question asks: *how did nonlocal resource connections change during the fifteenth century*? To address the nature of nonlocal connections, I will identify and quantify the raw, flaked, and ground nonlocal stone from mound midden contexts, as presented in Chapter 7. Nonlocal connections that mobilized raw materials and finished objects supported claims to power (Helms 1993), were driven by changing economic strategies (Blanton et al. 1996), and ritual-religious devotion (Renfrew 2001). It is expected that overall, stone tools and artifacts will be present in low quantities, matching a pattern from other mound contexts at Moundville. However, it is important to analyze them because these were tools used in materializing structures that supported hierarchical or communal leadership through symbolic objects and icons and can indicate what type of architecture (residential or communal) was on the summit. Second, nonlocal ceramic types are also expected to be in low quantity. However, due to the low frequencies of these types, they are not able to be quantified (see discussion, Chapter 5).

The fourth and final research question asks: *were ritual performances aimed at reproducing individualistic or communal social rules*? This will be answered through an analysis of vessel morphology and size in Chapter 6 to determine the scale of food consumption, as well as the presence or absence of symbolic objects and symbolic themes in associated midden contexts, as well as an analysis of crafting and finished objects in Chapter 7. If the activities were small, and exclusively focused on a limited number of individuals, then it would be expected that there would be a wide-range of vessel shapes and small to medium-sized vessels with elite-centered motifs. Conversely, if the activities on the summit of Mound P were special-purpose in nature, then it is expected that there would be a larger frequency of medium to large-sized vessels exhibiting motifs and decoration displaying motifs oriented to the group. Chapter 9 is a synthesis of the results and a discussion of their social and structural implications for the historical trajectory of Mound P, Moundville and the Black Warrior Valley, as well as terminal prehistoric societies in the Southeast. Further, this chapter identifies some avenues for future research.

The appendices present the data from the 2012 Mound P excavations by OAR and the Department of Anthropology. I analyzed and cataloged all materials from the 2012 Mound P excavations from 2013 to 2017 in the Complex Societies Archaeology Laboratory and the Archaeology Teaching Laboratory on the campus of the University of Alabama. Further, two undergraduate archaeology laboratory methods courses used samples from this collection to learn the basics of artifact analysis, quantification, report writing, and editing, resulting in two edited reports (Belanich 2013; Pratt 2014). The 2012 Mound P collection, under accession numbers 2012.102 and 2012.103, is curated at the Alabama Museum of Natural History, Erskine Ramsey Collections Facility, located within the bounds of Moundville Archaeological Park. Appendix A presents and discusses the results of the mound flank subsurface bucket auger survey. Appendix B briefly describes field observations of two human burials identified at the base of Unit 1, terminating excavations in that unit; both individuals were recorded and immediately recovered in accordance with the research design. Appendix C provides descriptions and absolute quantities of ceramic types, modes of decoration, and modes of vessel shape. Appendix D presents the absolute frequencies of unmodified, flaked, and ground stone, as well as pigments and minerals used for painting. Appendix E concludes the study and presents the absolute frequencies of fired clay and daub objects recovered from Mound P.

CHAPTER 2

ARCHAEOLOGICAL APPROACHES TO INSTITUTIONAL COLLAPSE AND SOCIAL TRANSFORMATION

This research seeks to understand historical structural transformation in Mississippian societies just prior to the arrival of Europeans in the sixteenth century through an analysis and assessment of temporal and spatial disjuncture or durability in the location of ritual practice and material production and consumption on Mound P at Moundville. In this chapter, I discuss two broad approaches, comparative and historical, that have gone a long way towards explaining the processes that lead to cultural change at the regional and local scale. Explicitly, I discuss what has been termed “eventful archaeology,” a historical approach influenced by theoretical developments in sociology, anthropology, and history (Sahlins 1985, 1991; Sewell 1992, 2005) that seeks to understand structural change in ancient societies through an empirical analysis of material patterns that change or continue at different temporalities and in different locations (Beck 2013; Beck et al. 2007; Bolender 2010a; Gilmore and O’Donoughue 2015). However, it should be noted that there is not a singular definition of “event” employed by archaeologists using a historical approach (Hodder 1987; Lucas 2008). In this case study, changes in monumentality and materiality can be investigated through an analysis of archaeological evidence from Mound P at Moundville by framing these changes in a historical, event-based perspective where change and continuity in the character of ritual practice in a mound ceremonial context was the locus of structural rearticulation.

To provide a spatial and symbolic context for these changes, I summarize the ancient Southeastern tradition of mound construction and the materiality of those symbolic objects and nonlocal materials used in mound-summit ceremonies. Mississippian platform mounds were the materialization of human labor enacted through social structures and they were the stages where performers, participants, and observers reproduced and reinterpreted symbolic meaning through individualizing and group-oriented ritual performances. The enactment and preparation for these mound-related activities necessitated the production and consumption of socially-valued goods, regalia, paraphernalia, and tools from local and nonlocal materials and finished objects. These materials, discarded in the flank midden deposits of platform mounds, communicated and reaffirmed cosmology through their symbolic icons and material qualities; they also have the potential to identify the size and composition of the social group.

I will then summarize the historical trajectories of Mississippian polities of different river valleys throughout the Southeast to demonstrate that prehistoric political instability was a widespread phenomenon. Discussions of the collapse of Mississippian lifeways commonly draw a progressive scenario of emergence, fluorescence, and a rapid decline or devolution, generating some conceptual difficulties for the role of agents in so-called “Dark Ages.” The divergent trajectories of these river valleys indicate that these were historically contingent occurrences of consolidation, coalescence, dispersal, and sometimes reoccupation. A historical approach is used throughout this research because regional, comparative approaches are not appropriate for the archaeological case study presented herein. Further, this approach is appropriate because social changes during the terminal occupation of Moundville were related to the broader, panregional historical processes of abandonment, different emphases on nonlocal material acquisition, a change in symbolic art, and potential changes in group composition and social organization.

Understanding these general processes are important, but the proximal or absolute causes that are commonly cited as contributing to institutional collapse and social transformation (i.e., climate change, warfare, politics, resource exhaustion, etc.) were not deterministic and happened at different temporalities across the Southeast. Because of this regional variation, it is important to document the materialization of these large-scale processes at the local scale, specifically by examining them at the level of a single platform mound at a large, multiple mound civic-ceremonial complex.

Regional and Comparative Models of the Collapse of Ancient Societies

Collapse is a difficult concept to define, since the institutions and boundaries that disintegrate are historically contingent and socially particular (Eisenstadt 1988:236-239; Kidder et al. 2016:87; Yoffee 1988:14). Does the civilization collapse in a single, catastrophic event? While events like Pompeii certainly occurred, they were exceedingly rare. Unless it is a rare catastrophe like the volcanic explosion that buried a moment for centuries, people do not vanish. More often, after the collapse of portions of complex societies, their populations reorganized or migrated to continue their lives in a similar way. However, sociopolitical processes in ancient societies did change, as they do in modern societies. In the pre-Columbian Southeast, people abandoned ceremonial centers and whole regions, deemphasized important symbols, deposed leaders or set up competing political units, succeeded or failed to meet agricultural surplus demands, and were adopted by neighbors during times of conflict. However, they also reproduced structural elements, forged peace, transformed or continued ritual performances, blended artistic styles, reinterpreted old meanings, and found sustenance. These processes, the collapse of some institutions and the transformation of others, were historical processes that constituted and created a culture's historicity (Sahlins 1985:x), suggesting that what archaeologists, historians, or the public may lament as the loss of a culture in its prime was possibly the slow unfolding of the daily lives of the people we study.

So, what is collapse? The definition of *collapse* provided in Chapter 1 stated that it was a rapid historical process, where specific social and political institutions were deemphasized, leading to social disintegration (Eisenstadt 1988; Tainter 1988, 2016; Yoffee 1988). Further, those social or political institutions that did not collapse reorganized or transformed in novel ways in the face of change. This definition will suffice throughout the case study, but its utility will be reassessed in Chapter 9. For the remainder of this section, I summarize the comparative explanatory models archaeologists have used to understand the sociopolitical processes of disintegration, resilience, collapse, and transformation. These studies have contributed generously to an understanding of ancient social change and use regional data sets for broad comparative purposes by focusing on the declining marginal returns of production, social systems' integration, institutional resilience, dynamic and cyclical political processes, and the fissioning and fusing of social segments. This section prefaces the following section, where I discuss the application of a historical, event-based perspective that can best frame and account for the change to social institutions using the localized data from Mound P at Moundville.

Declining Marginal Returns

One of the first monographs to address precisely what political institutions collapse in ancient complex societies was Joseph Tainter's *The Collapse of Complex Societies* (1988). He proposed an integrative, economic model that linked increases in levels of social complexity and specialization with increases in a population's energy expenditure, noting that the other factors or causes of collapse that are frequently cited by researchers can all be traced back to the marginal returns of energy investment. Tainter (1988:91-93, 118-123) argued that the overlapping, institutional subsystems that constitute a complex society are a response to specific stresses (resource depletion, intrusions, internal conflict, etc.) that require costly energy expenditure by (non-elite) producers to maintain, eventually becoming ineffective and reaching a point of declining marginal returns. Thus, societies are most vulnerable to collapse when the surplus created and relied upon by producers during periods of stasis is expended by these unexpected stress events (i.e., drought or invasion) or reallocated through hierarchical structures to supporters in an attempt to counter producer resistance (Tainter 1988:120-121). When the marginal returns on energy investment begin to decline, the dissolution or fissioning of the social group is a more attractive option than continued increases in production. This situation places an incentive on the maintenance of low complexity (Anderson 1994:21; Tainter 1988:121, 196). Thus, far from being a social calamity, the dissolution or collapse of social groups is an advantageous and an appropriate response to declining marginal returns (Tainter 1988:198).

According to this model, when societies collapse, they do so in a sudden and isolated fashion. For instance, peer-polities cannot collapse slowly because their entire investment strategy is centered on competition and the maintenance of relative equilibrium with their neighboring peers. Declining marginal returns in peer-polities are often tolerated because to opt-out of the competitive investment spiral would result in the absorption of the whole polity (i.e., influence or force) or segments of the population by more successful neighbors (Tainter 1988:202). Tainter's economic model of declining marginal returns has been very influential as a general, explanatory theory of collapse, but it is too general and economically-driven to inform the historically contingent and specific circumstances of institutional collapse at a microscale.

Systems Theory

Archaeologists studying ancient states have sought to explain collapse through an analysis and synthesis of multiple factors related to the amount of energy and investment expended to support hierarchical cultural systems (Flannery 1968, 1972; Renfrew 1978, 1984). Systems theorists understand culture as a systematic composite of adaptive, interdependent subsystems that rely on the mutual exchange of energy and information between one another. These human ecosystems grow through an adaptive response to stress, thereby creating new information systems that require more energy. There are two ways that a state-level cultural system can adapt to circumstances of socio-environmental stress to maintain stability: specialization and centralization (Flannery 1972:412-414; Renfrew 1984:372-374). It is the amount of specialization and centralization present within a cultural system that defines its complexity. It is possible for systems to respond inappropriately to external socio-environmental stress by inexplicably increasing specialization and centralization, thereby creating a situation where various subsystems are too specialized or there is too much meddling from high-order controls, leading to the instability of a subsystem (Flannery 1972:420). Given the interdependent nature of a culture's subsystems, once one subsystem is unable to respond to stress in an appropriate way, all other subsystems will begin to fail, leading to the collapse of the system. This perspective has been extended to explain and predict discontinuous changes in social systems that invest in charismatic authority (specialists) through the surplus and taxation of the rural population to maintain the status quo (Renfrew 1978, 1984). Increases in charismatic centralized authority or population increases place stress on the rural population to produce more surplus or tribute to fund the system, increasing the marginality of the producers (Renfrew 1984:378-379). Once collapse occurs, marginality decreases because the centralized authority is no longer able to influence the funding of charismatic leadership and specialists are forced out of the system or die because they cannot produce their own food (Renfrew 1984:378-379). However, Norman Yoffee (1988:9-10) argued that general systems theory does not adequately account for social interaction between actors and that the concepts used are too general for applications at the level of the institution, where collapse needs to be understood.

Resilience Theory

Recently, archaeologists (Faulseit 2016b; Mixter 2016; Nelson et al. 2006; Redman 2005) have considered a theoretical model derived from human ecology to explain the collapse of certain social systems and the resilience of others in ancient complex societies as an adaptive, cyclical systemic response (Holling and Gunderson 2002; Holling et al. 2002). Resilience theory (RT) asserts that ecosystems cycle through four phases or sequences at different speeds and with different rates of resilience, a process that is analogous to what happens before, during, and after a forest fire (Holling and Gunderson 2002). These four sequences are: exploitation (r); conservation (K); release (omega, or Ω); and reorganization (alpha, or α). Resilience expands and contracts at different points within the system along these four sequences of the adaptive cycle. This adaptive cycle is not singular or isolated, as ecosystems work on multiple, hierarchical levels and at different speeds. Resilience theory defines these nested adaptive cycles as panarchies that inform one another through two interconnecting processes revolt and remember (Holling et al. 2002). Revolt describes how cycles at multiple levels can impact each other, and remember is part of the process of reorganization. A panarchy collapse occurs when the vulnerability of nested cycles is exploited, especially when sequences of low resilience are aligned throughout the hierarchy. Resilience theory and social memory have been used to explain the collapse and reorganization of Classic Maya polities (Mixter 2016) and the disintegration of the Chaco (Sedig 2016) and Mimbres (Nelson et al. 2006) systems in the Southwest.

Resilience theory shares some of the same language as systems theory and a similar phase-based sequence that other social life-cycle models use, but it is different from these models because it understands stability and transformation as an inherent part of social systems. Further, the pace of collapse following conservation is much more rapid than a traditional rise-peak-decline model (Redman 2005:72). There is the potential for resilience theory to explain how human systems change needs further development and the direct application of the theory in archaeological contexts is problematic (Faulseit 2016a:16; Feinman and Nicholas 2016:45-46; Holling and Gunderson 2002:55, 58-60; Holling et al. 2002:99-101; Redman 2005:72-74). Humans are unlike plants or animals because they are reflexive, goal-oriented, communicative, technological, and managerial species that organize themselves in complex groupings. Nor does it model different temporalities that occur at different scales. Finally, human societies are not closed systems.

Dynamic and Cyclical Models

The dynamics of political stability at a regional scale have led some archaeologists to propose models of political change that focus on the consolidation and dissolution of polities at different levels of integration above a basic or local political unit. In the Maya lowlands, Joyce Marcus (1993, 1998) has asserted that dynamic political change resulted from the ability of political leaders (divine kings) to attract supporters or rebuff obligatory tribute payments, a model she later extended to other ancient states. In the Southeast, David Anderson (1994, 1996) has suggested that Mississippian chiefdom-level societies cycled between different levels of political organization due to an erosion of confidence in a political leader's ability to maintain influence due to insurmountable environmental factors. The dynamic or cyclical model of political change posits that the locus of sociopolitical influence periodically fluctuated between more centralized, consolidated and territorially large political units and more autonomous, spatially diffuse competing smaller political units (Anderson 1994; Marcus 1993). This process takes on the graphic appearance of a rising and falling line, with peaks being times of larger polity size (consolidation) and troughs representing times of smaller polity size (dissolution).

During periods of consolidation into regional states (Maya) or complex chiefdoms (Mississippian), social groups voluntarily created confederations. Leaders had the ability to attract or coerce followers, effectively minimizing competition and amassing the labor necessary for integrative, public labor projects. However, these regional political units also had inherent conflict. In the Maya lowlands, previously autonomous and stable provinces would transform into secondary administrative centers that were beholden to the capital through tribute, but once an unsatisfied or self-aggrandizing regional administrator reneged on their obligation to pay tribute and opted out of the hierarchical system, the necessary condition for the dissolution of the integrated regional state would be in place (Marcus 1993:134-135). In Southeastern river valleys, political competition was also inherent in kin-based leadership structures. While influential leaders supported rivals for important positions, they simultaneously attempted to suppress competing efforts to undermine their influence through nonlocal networks and competitive ritual (Anderson 1994:329-330). In both cases, site or regional abandonment was not a singular event of social collapse, but the result of the dynamic (or cyclical) political processes of consolidation or autonomy of one political unit at the expense of the consolidation or autonomy of another (Marcus 1993:167). These dynamic and cyclical models have been influential and have important implications for the transformation of political units residing in the Black Warrior

Valley, but the data needed for the application of such a study is regional in scale and relies upon the detailed understanding of site occupational histories.

Fission-Fusion Process

It has been argued that the foundation and abandonment of single and multiple Mississippian mound centers throughout the Southeast was the result of the fusion of two or more ranked mound-political units for mutual security and the fissioning of those consolidated units into smaller, more autonomous units (Blitz 1999; Blitz and Lorenz 2006). The chiefly cycling model uses idealized simple-complex chiefdom types to explain oscillating political influence and the occupation history of mound centers (Anderson 1994), but more variation in Southeastern political organization can be explained in the archaeological record by considering the temporal and spatial changes in mound-political units. The *mound-political unit* is defined as a unilineal descent group with an influential leader or chief and a certain number of followers that sponsor or have exclusive rights to a platform mound as their symbolic representation or civic-ceremonial facility (Blitz 1999; Blitz and Lorenz 2006:17-19). In this model, the mound-political unit was the foundational piece of Mississippian social organization at various levels. This model explains the growth and decline of Mississippian social systems by linking these processes to agricultural surplus, ideology, factionalism, polity interaction, and environmental change (Blitz and Lorenz 2006:130-132).

This model is based on an analogy to historic period social organization of the *okla* (Choctaw) and *talwa* (Muskogee), a unit of sociopolitical organization above the level of the household (Blitz 1993a, 1999; Knight 1990; Muller 1997). While this organizational concept has been loosely translated as “town,” it should be noted that they are not the geographically-based, medium-sized municipalities with administrative boundaries and a certain population density as defined in Western culture (e.g., Blitz 1999:584; Lankford 2008:76). Rather, *okla-talwa* civic organization was an autonomous civic unit materialized as a civic-ceremonial or square ground and comprised of geographically dispersed individuals and multiple kin groups and under the leadership of a head chief, or *miko*, and a decision-making council (Blitz 1993a:10-13; 1999:583-584; Knight 1994:375, 385-387; Lankford 2008:76; Muller 1997:194).

The formation or dissolution of *okla-talwas* occurred through a fission-fusion process, where "small and large chiefdoms formed by the aggregation and dispersal of minimal or basic political units" (Blitz 1999:583). Autonomous political units, or twin towns, would fuse into a single political unit while maintaining separate civic-ceremonial facilities, possibly at the same or different locations (Blitz 1999:584-585). In this process, the formation of paired-mound or multiple mound centers was the result of the fused composition of at least two constituent mound-political units with a junior-senior ranked relationship. This social ranking is materialized as the size of different platform mounds at multiple mound centers, where the higher ranked (senior) political unit benefits from the labor of the entire polity, while lower ranked (junior) political units provide their own labor for smaller mounds (Blitz 1999:586). The fissioning of a political unit occurred when internal stress (e.g., contested lineage succession) became untenable and resulted in the formation of two geographically separate towns or political units that maintained a junior-senior relationship that was often accompanied by the adoption of red-white symbolism (Blitz 1999:584-585; Lankford 2008:86).

Red-white symbolism is a pervasive element in Southeastern social and religious organization, affecting not only visible ritual paraphernalia by the color of pigment or material used during production, but also existing as an inherently tense, gendered (male) dualistic metaphor that contrasted war, youth, action, emotion, the earth, and meritocracy (red) with peace, maturity, ascribed status, order, the sky, and ritual (white) (Lankford 2008:73-97). In a process similar to fissioned towns, the displaced or new town would adopt a subordinate (red) position while the host or old town would adopt a senior (white) position.

Whereas a simple-complex chiefdom model, or a site-size hierarchy would interpret secondary single mound centers as the contemporaneous administrative centers of a multiple mound center, the fission-fusion process allows for these single mound centers to be autonomous mound-political units that once composed the multiple mound center, cycling not between levels of complexity, but aggregates of political units (Blitz 1999:587). Thus, the abandonment of mound centers in this model was likely a result of political aggregations in paired or multiple mound centers and diffuse settlement patterns as autonomous single mound centers without being hierarchical political organizations (Blitz 1999:589). This is roughly analogous to the observed variation in occupation spans among single and paired mound sites in the Oconee River Valley, located in central Georgia (Williams and Shapiro 1990, 1996).

The fusion or coalescence of multiple political units in the same location would have resulted in civic-ceremonial centers with multiple mounds while the fissioning of social groups would result in the establishment or reoccupation of older civic-ceremonial centers and the potential development of regional competition (Blitz 2010:15). The fission-fusion process that resulted in politically decentralized settlement pattern of multiple, single mound-political units could explain the Mississippian settlement pattern in the Black Warrior Valley (Blitz 2008:67-68), but it has not yet been directly applied here (e.g., Knight 2016:29). The model has been used to explain how multiple mound centers formed and dissolved in the lower Chattahoochee valley (Blitz and Lorenz 2006), but like the cyclical and dynamic models of regional occupation sequences, it has been applied at the scale of regional settlement analysis. Since this research considers the materials discarded from the summit of a single mound at a multiple mound civic-ceremonial center and does not include a regional data set, it will require a historically-based approach to explain changes in the monumentality and materiality associated with the corporate group with access and rights to Mound P.

Historical and Eventful Models of Change in of Ancient Societies

Historical models of culture change consider the relationship between structure and event to be at the center of social transformation and archaeological inquiry. A historical approach is more than just the detailed accounting of social actions in the past through a fine-grained chronology and the comparison of cultural changes across space-time; this is the very core of archaeology. What characterizes the historical nature of this approach is the understanding that cultural schemes have their own internal logic: they are contingent (Hodder 1987:1-2). This approach considers social change to be the result of a dialectical relationship between social rules and human action within a cultural scheme and results in an inductive and, rather than general or comparative, description of continuity and change (Hodder 1987). Theoretically this approach has been influenced by anthropological, historical, and sociological theorists (Bourdieu 1977; Braudel 1973; Foucault 1977; Giddens 1979, 1984; Sahlins 1985, 1991; Sewell 1992, 2005). Methodologically, a historical approach places an emphasis on material patterns of consumption and production and considers how material orientations are the medium through which cultural change and continuity can be understood (Bolender 2010b:10; Hodder 1987:8; Meskell 2005).

Anthony Giddens's structuration theory (1979, 1984) has been highly influential in this approach because of his concern with the dialectical relationship between structure and agency. *Structuration* is the generative duality of structure, where human agency is enacted and constrained by structural properties and in turn, those properties are actualized and reproduced by the unintended consequences of human action (Giddens 1979:69-73). *Agency* is the reflexive ability of people to practice and enact a range of causal factors that are constrained by rules and resources but can have unintended consequences (Giddens 1984:9). Practice is the embodiment of dispositions, or *habitus*, that are guided by doxic referents and evident in both mundane activities, production and consumption, and large-scale public events. Dispositions are taken for granted because they reproduce the natural order of society and may only be questioned during a crisis when arbitrary elements of orthodoxy are exposed (Bourdieu 1977:164-70). Practices, informed by structure, are located at the convergence of rules and resources (Giddens 1979:82). Once the differences are exposed, they can be recursively acted upon by social agents as a resource for change through a process of structuration (Giddens 1979:70-1). Thus, human actors are understood to be constrained by cultural rules, but those acts are also contingent because human action has a range of circumstantial options that are culturally appropriate and historically informed. Social continuity and change occurs through practice, when the culturally derived meanings that inform agency and the meaning of objects are creatively reconsidered through situational action, thereby informing and changing the meaning of cultural schemes (Sahlins 1985:vii, 138). It is notable that in Sahlins's (1985:138, 153) description of culture change he equates social transformation with social reproduction, where culturally specific structured actions inform and enact actualized structures. In short, separate cultures have separate histories (Sahlins 1985:x). Two related yet separate approaches have been applied to the archaeological record to understand change and continuity in ancient cultures that challenge progressivist trajectories and comparative, cultural ecology models: historical processualism and eventful archaeology.

Historical Processual Approach

A historical processual approach can account for the small- and large-scale changes that rely on practice as the mechanism of change and seeks answers to how homologous practices and traditions were created, negotiated, and maintained (Alt 2001, 2002; Pauketat 2001a, 2001b, 2003). Practices are constituted through the unintentional changes to traditional practices once they are enacted, changes that occur over a long period and that may go unnoticed, or may otherwise be subject to rapid change and made explicit (Alt 2001:144; Pauketat 2001a:79, 2003:42). For example, the resilience in ceramic production practices in Cahokia's hinterland has indicated resistance to a widespread process of political centralization and an emphasis on traditional, localized modes of production (Alt 2001, 2002; Pauketat 2001a, 2003; Pauketat and Alt 2003). The process of Mississippianization, typically understood as a sweeping transformation or displacement of localized Woodland groups (e.g., Pauketat 2007), takes on new meaning when a fine-scaled comparison of new styles of premound architecture and initial platform mound stages were adopted or constructed by small and large groups of Mississippian people in the eleventh century (Cobb 2015). Historical approaches have been successful in demonstrating localized social transformation in North America (Cobb and King 2005; Emerson and Hedman 2016; King 2001) and Mesoamerica (Gillespie 2007; Joyce 2007; Joyce 2008). Understanding the institutional collapse and social transformation of the Moundville culture through a historical, event-based model using archaeological evidence from Mound P is applied in this research. It has the potential to reveal changes and continuities in structural elements by considering shifts in monumentality and materiality.

Eventful Archaeology

The application of this variant of the historical approach has resulted in what some scholars have called “eventful” archaeology (Beck 2013; Beck et al. 2007; Bolender 2010a; Gilmore and O’Donoughue 2015; Kidder et al. 2016; Lucas 2008), a perspective that has been developed by archaeologists from the social and historical theory popularized by William H. Sewell, Jr. (1992, 2005) and the different temporalities of Fernand Braudel (1973). Event-based archaeological approaches to understanding change have taken two trajectories. Some authors have attempted to explicitly apply Sewell’s theoretical concepts to issues of cultural transformation (Beck 2013; Beck et al. 2007) while others have considered cultural change and what constitutes an “event” more broadly, as Braudel does (Bolender 2010a; Gilmore and O’Donoughue 2015; Lucas 2008).

Sewell rearticulated some of the foundational theoretical aspects proposed by Sahlins, Giddens, and Bourdieu and asserted that *structure* should be defined as “sets of mutually sustaining schemas and resources that empower and constrain social action and that tend to be reproduced by that social action” (Sewell 1992:19). There are five transformational aspects of structures that generate structural change, or five axioms (Sewell 1992:16). First, structures are plural, meaning that different institutions, operating at different temporalities and scales, have their own internal logic (Sewell 1992:17, 2005:211). Therefore, social actors are aware of the heterogeneity of structures and can apply different structures in different situations. Second, *schemas* are virtual, transposable social rules that are affected by resources (Sewell 1992:8). Once they are learned and understood by social actors, schemas can be generalized and applied creatively outside of their original structural context to a wide-range of contingent circumstances

(Sewell 1992:17-18). For schemas to reproduce they need to be actualized by the contingent resources they are enacting (Sewell 1992:13).

The third axiom of structural transformation states that resources, their utilization and accumulation, are unpredictable. *Resources*, the effect of schemas, are both human and nonhuman (i.e., they are actual) and are "anything that can serve as a source of power in social interactions" (Sewell 1992:9) that are used by social actors to reify or establish power (Giddens 1984:15-16). Schemas are exposed to modification or transformation because their effect on resources cannot be predicted and they rely on (unpredictable) resource accumulation or control for validation (Sewell 1992:18). Nonhuman resources have the most obvious application to the study of social transformation in ancient cultures, which includes raw and exotic materials, arable land, and the built environment. Human resources include physical labor as well as charisma, knowledge, and other physical, mental, or emotional abilities that can be used to consolidate or gain power over other resources. Resources become unpredictable, malleable, or scarce when multiple structures are expanded or schemas are generalized through creative applications, a risky endeavor for actors since resources can become unstable (Sewell 1992:18-19). In addition, since resources are material, they can be subject to natural laws that are outside of the schemas that inform their meaning and use (Sewell 2005:216-217).

Human and nonhuman resources have multiple meanings that can be reinterpreted by reflexive agents in novel ways through different schemas to gain and maintain power over differentially distributed resources to meet their own goals (Sewell 1992:10, 17-19), an ability and action that Eric Wolf (1999:5) defines as structural power. Thus, the fourth axiom states that structural transformation is possible through the polysemy of resources. Factories, a nonhuman resource, institutes the capitalist mode of production and concepts of private property but it also supports collective production, which in turn undermines the concept of private property the factory institutes (Sewell 1992:19). The fifth and final element of structural transformation is that structures intersect at the schema-resource juncture, allowing for resources to be interpreted, applied, and claimed by social actors with knowledge of different schematic logics (Sewell 1992:19).

Social transformation is made possible through the ability of agents to negotiate and manipulate multiple, overlapping structures, transposable schemas, and unpredictable, polysemic resources. Sewell (2005:227) argues that the gradual accumulation of small happenings can eventually lead to structural transformation; the structural change that is most evident are “sequences of occurrences that result in transformations of structures” due to a rupture that cannot be absorbed by existing structures. These sequences of occurrences that transform culture are defined as an *event*. Sewell’s event is different from routine happenings. It occurs when a series of ruptures at interrelated, structural-spatial locations cannot be repaired or absorbed by existing structures, allowing for novel rearticulation and the transformation of structures (Sewell 2005:227-228). Thus, Sewell’s event is a specific and rapid occurrence of structural transformation through the rearticulation of material resources and abstract schemas in a very short duration (Lucas 2008:61).

This theory was developed for the social sciences and history and its application to archaeological contexts has been a recent development. It’s application to archaeology needs to consider the materiality of resources and their relationship with structure (Bolender 2010b:5). One of the first archaeological applications of Sewell’s event-based perspective was the comparative study of the built environment in Iceland, Denmark, Bolivia, and at Cahokia (Beck et al. 2007). The built environment is not just the product of landscape or monument construction, but the totality of meanings and interpretations that are generated through social interactions of people with places (Sewell 2005:362). In Langholt, Iceland, the introduction of Christian schemas through religious conversion was an event accompanied by a shift in ritual practice (burials and church location) and a change in settlement patterns and landlord-tenant relationships (Beck et al. 2007:836-837). In Thy, Denmark there was a shift from communal monuments and an open landscape, supported by schemas of access and community, to family barrows, the enclosure of space, and a piece of the bronze trade, supported by schemas of privilege and prestige (Beck et al. 2007:838-840). In Chiripa, Bolivia, an eventful drought led to rearticulations in schemas (property, water, fertility, sanctity, etc.) that could no longer mobilize resources after the drought and an increase in agricultural land use and a shift in sanctified authority (Beck et al. 2007:841). Finally, at Cahokia, United States, the quick adoption or emplacement of new practices and intensive maize agriculture that archaeologists define as "Mississippian" disrupted Late Woodland collective schemas and resources and led to a shift in political and religious organization (Beck et al. 2007:842-843). Thus, the construction of European barrows and the enclosure of communal space at Thy, Denmark, changes in ritual practice and settlement hierarchies at Langholt, Iceland, a drought-induced shift to agricultural techniques at Chiripa, Bolivia, and the rapid transformation of Mississippian culture at Cahokia in response to a stress on human resources are considered novel rearticulations of schemas enacted by agents through their use of resources (Beck et al. 2007).

The adoption of Sewell's event-based theoretical concepts to explain shifts in the built environment in these four case studies was potentially problematic because of the relationship between long-term process and event, temporal control, and the exclusion of migrating populations as being influential in structural transformation (Johnson 2007; Joyce 2007; Lucas

2008; Sassaman 2007; Whittle et al. 2007). Further, Sewell's concept of an event, developed with text-based disciplines in mind (Sewell 2007:852), may not be an ideal fit for a materially-based discipline like archaeology because the archaeological record is a palimpsest of the residues of events at different scales and temporalities, not particular moments of social interaction (Lucas 2008:61) and theoretically it has the potential to deny the dual, active role that material objects and places play in social change (Joyce 2007:850). In short, it has been argued that the concept of an event that sociologists and historians use is not the same concept of the event used in archaeology (Lucas 2008).

Robin Beck (2013) developed Sewell's concept of the event further in his discussion of the formation of Protohistoric chieftaincies in the absence of the tributary economies that funded and drove Mississippian chiefdoms. Traditional authority structures during the Late Mississippian were based upon a tributary economy and staple finance that supported hereditary leaders through its own contingent schemas (e.g., prestige, lineage) and resources (e.g., labor, charisma, arable land, nonlocal materials). However, once commodity exchange and wealth finance were introduced to the Carolina Piedmont by the English, introducing new schemas (capitalism) warriors used different human and nonhuman resources (i.e., slaves and hides) to achieve previously unattainable goals of social status through traditional prestige schemas (Beck 2013:156-157). Warriors undermining the tribute economy by adopting commodity economy allowed for the social transformation from chiefdoms, to chieftaincies, to nations (Beck 2013:237). Beck evaluated the schemas and resources that were utilized by agents operating within a staple finance economy and how those actors used the resources necessary for wealth finance to achieve previously unattainable goals by rearticulating traditional schemas.

Sewell's concept of the event as a rapid and discrete transformation of structures is different from the concept of an event as formulated by other scholars seeking to understand different temporal processes. Fernand Braudel (1973) described three scales of temporalities that consider structure and event in a different way than Sewell: long-term temporalities that are constant and slow moving; structural or social history that follows general trends; and short-term temporalities and events that are brief, ephemeral, and the histories of individuals. Social transformation can be observed when continuities are identified, there is a transition from one set of practices to another, and in the residues of transitional temporalities (Bolender 2010b:8-9). A recent compilation of papers (Bolender 2010a) addressed events in the archaeological record and multiple authors stressed the need to consider the event in archaeological terms with better temporal controls and a focus on material changes. During the Paleolithic in Europe, changes in the steps of hunting tool production and subsequent hunting strategies corresponded to changes in settlement patterns and rapid changes in the environment (Audouze and Valentin 2010). Thus, structural change was observed at multiple scales and revealed through the *chaîne opératoire* method of analyzing changes in production that represent norms in a society (Audouze and Valentin 2010:35-36).

Whittle et al. (2010) discuss the use of Bayesian statistical analysis to understand short-term temporalities in the early Neolithic in southern Britain. Since Sewell's short-term event difficulty considering various temporalities, dating methods have prohibited the recognition of discrete or rapid material changes. Bayesian modelling allows for a more precise interpretation of radiocarbon dates that can begin to generate a historical understanding of structural changes in the built environment (Whittle et al. 2007:853-854; Whittle et al. 2010:79). In southern Britain, the built environment rapidly changed through the construction of causeways at multiple sites, which has been interpreted as a ramified sequence of change (Whittle et al. 2010:79). However, I agree with Johnson (2007:849) that the terminology used in some of these studies mirrors traditional archaeological terms, such as horizon and tradition, and that a historical approach to the archaeological record needs to integrate these concepts in a more effective way. For instance, during the Mesolithic-Neolithic transition in Iberia, the rapid adoption of different domesticates, a new settlement pattern, and the production of new ceramic vessels were influenced by a wave of migrants to the area (Diaz-del-Rio 2010). Using more traditional archaeological terminology, these would be recognized as a horizon marker that distinguishes between two different groups of people. However, the difference with a historical approach is that these changes are structural and contingent, not a punctuation between temporal periods or different cultures (Diaz-del-Rio 2010:90).

Contributions in a recent edited volume (Gilmore and O'Donoughue 2015) addressed the eventful nature of cultural change and continuity in the Southeastern United States using a historical approach without Sewell's influence. These chapters explore how different temporalities are defined for archaeology, and like some of the contributions in Bolender's (2010a) volume discussed above, it draws more heavily from Sahlins (1985) and Hodder's (1987) recalibration of Braudel's (1973) concepts to consider the dialectic of the long- and short-term. Here, events are defined as distinct (not discrete) occurrences or happenings and it is the relationship between change and continuity in materiality that is important to analyze archaeologically.

In a case study that has important implications for the research presented in this dissertation, S. Margaret Spivey and her coauthors (2015) argue that it was the human practice of pilgrimage that was eventful in the past. Following Renfrew (2001), they argue that Poverty

Point, a Late Archaic civic-ceremonial complex in Louisiana was primarily a place that attracted pilgrims from throughout the Mississippi Valley. This was a place of high devotional expression where ritual practices were directed towards the supernatural, there was the conspicuous consumption of socially valued goods, and where monumental architecture was constructed by pilgrims and nonlocal populations (Renfrew 2001:17-19). A plurality of overlapping economic strategies (sacred, political, subsistence) supported the various residents, retainers, and ritual specialists, as well as the pilgrims they hosted. Pilgrims would engage in the sacred economic aspect of these places and bring a nonlocal resource or finished object with them as an obligation to a deity or tribute to the residents, retainers, or specialists living at the site (Renfrew 2001:23). Upon their return home, it is possible that they would take a nonutilitarian object with them, which would gain inalienable meaning (e.g., Mills 2004). Thus, the material expectation for a place of pilgrimage is a pattern of overlapping sacred, political, and subsistence economic strategies, nonlocal materials or finished objects used as a tithe or tribute, and some nonutilitarian or symbolic objects at a pilgrim's provenance (Renfrew 2001:23). At Poverty Point, there is a temporal shift in the catchment area of nonlocal objects. The earliest deposits at the site have a limited catchment area, but this changes later in time as the catchment expands. Spivey et al. (2015:155, 158) argue that this shift at Poverty Point, signified an increase in the diversity of individuals traveling to the site for religious and ritual reasons. By approaching these data from an event perspective, they argue that the way to understand Poverty Point is to consider that it ritual was the primary driver of nonlocal resource acquisition. Thus, the earthen monuments, steatite bowls, nonutilitarian artifacts, and nonlocal chipped stone tools had histories that were associated with hunter-gatherer practices (Spivey et al. 2015:158).

Transformative events are observed archaeologically through a sequence of material changes that are linked to changes in practice. The examples of structural transformation summarized above provide an insight into how structures (comprised of schemas and resources) and events (sudden transformative happenings) can be seen archaeologically. These are observed empirically through changes to the built environment, a shift in economic strategies, changes in tool production, a shift in settlement patterns, and patterns of nonlocal materials in association with important places. The goal of the historical, event-based perspective is not to identify events, but rather to understand the structural processes that underlie the events and non-events that transform structures (Beck 2013:10; Bolender 2010b:10; Kidder et al. 2016:73; Wolf 1999:8), a point Sewell hints at when he discusses the multiplicity of structures (Sewell 2005:210-211). Beck's issue with Sewell's structure-event model however is that although structural transformation is eventful and occurs when schemas and resources are rearticulated in novel ways, it does not account for the non-events that are absorbed by existing structures that subtly transform structure through everyday practice (Beck 2015:210; Kidder et al. 2016:75-76). Nonetheless, by using the language and framework of Sewell's theory of structure to consider changes in the materiality of schemas and resources in a monumental and ritual context and the novel ways agents may have rearticulated and reinterpreted meaning, the model should allow us to identify larger historical processes of institutional collapse and social continuity at a smaller scale. Hence, an eventful approach can contribute an understanding of how materiality relates to virtual schemas by identifying new patterns of practice (Bolender 2010b:10).

Mississippian Monumentality and Materiality

Mississippian earthen platform mounds were the materialization of resources that were enabled by schemas and the location of the presentation of symbolic objects in ceremonial performances that were displayed to audiences by ritual practitioners to achieve certain goals. Materialization is the process by which ideas, values, and myths transform into a physical reality using resources controlled by agents and informed by schemas (DeMarrais et al. 1996). Agency is actualized through the ability of social actors to control various interconnected structures, which gives them power and reproduces those structures (DeMarrais et al. 1996:15; Wolf 1999:8). However, materiality is the dual relationship between materials and humans and how the built environment, symbols, and objects shape human experience through daily interaction and practice (Knappett 2010; Meskell 2005:3). It seeks to move beyond functional-symbolic content of artifacts and consider the contexts of production and consumption, as well as the associations of an entire assemblage and its involvement in human choices (Knappett 2010:195-196; Meskell 2005:6-7).

Monuments

Materialized spaces are perceived as timeless reference points situated in the present that bring the past to bear on everyday practices (Connerton 1989:37, following Halbwachs 1925). Monumental architecture is visible and continually built as a source of group identity and embeds the past in the present, making monuments different from more portable artifacts while still able to obscure social realities (Blitz and Lorenz 2006:95; Bradley 1998:71-2; Cobb 2003; Shanks and Tilley 1982; Thomas 2007; Whitridge 2004:215). Place is materialized in the repeated movements and practices within space, built monuments, buildings and architectural space, mortuary programs and burials, rituals, mundane activities, and political actions that embed a location with meaning and the past (Connerton 1989:45; Hodder and Cessford 2004; Renfrew 2001; Tilley 1994:14-8; Van Dyke and Alcock 2003:5), thus reproducing the schemas and resources that inform their meaning and use. Here, *spaces* are general constructs of form, whereas *places* can be conceptualized as locales with polysemic, contingent meanings that constrain and are informed by practice (Smith 2003:11, 32). Monuments are a stage where continual, repeated constructions and destructions of buildings, or repeated interments of people occur that localize social groups, create and maintain social identity, and create connections with the past through the ancestors (Blitz and Lorenz 2006:96; Connerton 1989; Gillespie 2000; Hendon 2007; Lindauer and Blitz 1997; Relph 1976; Thomas 2007; Tringham 2000; Wilson 2010). However, it is also a contentious, mutable, and malleable stage, where new identities and values are emplaced on the landscape and political leaders seek to affirm, strengthen, or negotiate their position in society by appealing to the past through ceremonial performance and the use of symbolic objects (Blitz 2016; Blitz and Lorenz 2006; Cobb and King 2005; DeMarrais et al. 1996; Kosiba 2012; Van Dyke 2004) and rearticulating schemas and resources in novel ways in the context of an ancient symbol, thereby enhancing their ability to control more human and nonhuman resources and reifying their structural power (Wolf 1999:8).

Multiple mound civic-ceremonial centers are a recognizable and frequently investigated Mississippian monumental context and they were a materialization of the coerced and volunteered human labor needed to artificially modify the landscape (Anderson 2012; Blitz 2010; Blitz and Livingood 2004; DeMarrais et al. 1996; Kidder 2004; Knight 1986, 2006b; Lindauer and Blitz 1997; Muller 1997; Pauketat 2000; Sherwood and Kidder 2011). Earthen platform mounds, like the ones that dominate the Moundville site, were built through the episodic additions of ritualized soil mantles, engineered for vibrancy and erosion control and vary in both size and summit-surface architectural complexity (Anderson 2012; Blitz 2010; Lindauer and Blitz 1997; Sherwood and Kidder 2011). It was the placement of the first elite residences on the summits of Late Woodland period mounds as an act of co-option that signaled a transformation in their use from communal ceremonial stages to elite-centered monuments (Knight 2001; Lindauer and Blitz 1997; Steponaitis 1986). These local and regional centers were dominated not only by monuments, but also by the ritual practices that reproduced and materialized power relationships and reinforced the social order through the interpretation and manipulation of resources and socially valued goods through ceremonial performance (Blitz 1993a:70; Blitz and Lorenz 2006:12-14; Cobb 2003; Hally 1993, 1996; Knight 1986, 2006b; Lewis and Stout 1998; Lindauer and Blitz 1997; Mills 2007; Muller 1997; Pauketat and Alt 2003; Rees and Lee 2015).

There are two idealized models for the nature of social organization that structured multiple-mound Mississippian sites (see discussion, Chapter 3); however, the materialization of earthen mounds and the symbolic objects used on their summits in ceremonies were not dichotomous and bridged both individualizing and communal focuses (Lindauer and Blitz 1997:171). One model asserts that each platform mound was an elite residence where their families or individuals reciprocally hosted ceremonies on occasion for a larger social group. Elite residences were the locus of the bed (seat) of the office of the chief, directly linking materialization with the schemas and resources that supported hierarchy, power, and reciprocity (Lindauer and Blitz 1997). Further, mound construction layers and their associated middens have been directly linked to leaders who commissioned construction elite-centered platform mounds and their attendant architecture during their political tenure (Blitz and Livingood 2004:13; Hally 1996:95). A political position or title is an office when it exists outside of the individual that occupies it and who is there because of their genealogy or the support of a political system (Flannery 1972:403). Thus, the linkage between mound construction layers and political tenure provides clues to the duration of the office of the chief, especially once mound construction ceases (Hally 1996:124). The cessation of mound construction and the sanctioned use of the summit of Mississippian platform mounds corresponded with the collapse of chiefdom political organization, when the population migrated or were no longer as hierarchically oriented (Hally 1996:124). A second model of multiple mound sites asserts that each mound is the materialization of a mound-political unit and functioned as a corporate ceremonial facility that was used periodically to host groups of people in rites of intensification. In the protohistoric and early historic periods, Cherokee townhouses (council houses) became the focus of political energy and were the materialization of identity in the community, thereby shifting the focus of production and identity away from individuals to fulfilling the needs of the community (Meyers 2016:395; Rodning 2009:653). In the Southeast, there was a general trend away from individualizing, elite ancestor-focused symbolism towards an emphasis on communally focused, mortuary and purification ritual after A.D. 1350 (Knight 1986:683-684).

Here, I will follow Blanton et al. (1996) to identify two different strategies that can frame what may have been occurring during the collapse and reorganization (e.g., Knight and Steponaitis 1998) of Moundville's political structure during the fifteenth century. Network strategies are emphasized by an exclusionary nascent elite based on patrimonial rhetoric and display goods exchange. Corporate strategies emphasize the groups and are aimed at obfuscating social differences through interdependence between social subgroups, public architecture, and rituals based on broad themes. While these strategies are tied to concepts of actions that accentuate power over others in a horizontally situated dichotomous model and therefore possibly flawed in their essentialist nature (e.g., Marcoux and Wilson 2010:138-9), the network-corporate dichotomy will be used here to provide material expectations from platform mound midden contexts during a time when archaeologists have very little information about continuing and changing practices at Moundville.

Identifying the nature of these strategies at Moundville during the fifteenth century is important because both the network and corporate strategies can exist through time, as well as fill the void of the other when one fails. Blanton et al. (1996:7) note that when corporate organized societies collapse, network strategies can fill the void left by a faltering, group-oriented institution, potentially leading to diachronic, regional fluctuation between programs. It has been argued elsewhere (Knight 2004, 2010) that mound-based corporate groups were more corporate oriented, at least during the time when the site was extensively used as a necropolis. Any change in strategies or the continuity of an established one is expected to have material correlates that should be evident in mound midden contexts. Further, if group-oriented practices continued to occur on Mound P after A.D. 1450, then broad, inclusive thematic symbols should be emphasized, monumental architecture should be continually manipulated, and a deemphasis on non-local goods networks is expected.

Network strategies are marked by extensive trade and alliance networks that can be utilized by competing leaders leading to instability in the form of increased levels of conflict, display goods production, and competitive feasting; this indicates a need for control over the local population to produce materials needed to compete. This system, when practiced at the macroregional scale, emphasizes social structures and ancestral affiliations that are maintained to perpetuate the system, internationally recognized symbols, and an emphasis on individual producers and the individual leaders who control the networks (Blanton et al 1996:4-5). Thus, network strategies have the potential to be unstable, exclusionary, and inward-looking programs that emphasize individual accomplishments in trading, warfare, and artistry.

Conversely, corporate strategies diffuse internal political threats by deemphasizing external trade networks and display goods consumption, emphasizing monumental architecture, open space, and public works that can be used for group-oriented rituals that promote collective representation over the individuals, and rely on the explicit interdependent relationships of subgroups. Social groups of varying composition are not integrated through rituals that highlight individual achievement and ties to the ancestors, but through "transcendent themes," such as social and cosmic renewal, that also rationalize surplus production (Blanton et al 1996:6). Further, public architecture and ritual associated with broader symbolic themes deemphasize the political or ritual objects that would be exclusionary and emphasize the place where ritual occurs (Blanton et al. 1996:9). Thus, corporate strategies have the potential to be group-oriented, inclusive, outward-looking programs that emphasize transcendent symbols, communal ritual, and public architecture.

Mississippian platform mounds functioned as ceremonial stages, building supports, and burial mounds, but it was their meaning and symbolism that made these places and practices that took place on them transformative. As an iconic family of sacra, they were associated with earth-sky or red-white symbolism, as well as annual purification and renewal rituals (Knight 1986:678). Evidence for these associations comes from the periodic and repetitive practice of destroying buildings on the mound summit and the old (i.e., polluted) mound surface and covering it with a new (i.e., pure) layer of soil or clay and new summit-top buildings during communal rites of intensification (Knight 1986:678). The symbolic meaning of platform mounds was described in native origin myths and cosmology, metaphorical linkages to historic square grounds, and linguistics (Knight 2006b). Ethnohistoric accounts from various Southeastern groups associate mounds symbolically with birth and death, the underworld and burial, and the supernatural, while metaphorically they were hills, mountains, or "earth-mother" representations (Knight 2006b:425). These sacra transformed during the protohistoric period into an annual ceremony called the Green Corn or Busk that has been used, perhaps inappropriately (Knight 2001:328), as an analogy to understand episodic mound construction in the past (Knight 1986:683).

Symbolic Objects and Icons

Symbolic objects used in ceremonies are a materialization of social relations and include ritual paraphernalia, icons, display items, and personal adornment (DeMarrais et al. 1996:18). Ritual practice occurs in specific places as repetitive, symbolic actions where meaning is articulated and rearticulated by powerful, sanctified practitioners (Kertzer 1988:9). However, ritual is not static because when ritual is practiced and performed, it can be manipulated by social actors to meet certain ends (Bell 1992:137-139; Goody 1977). These are important in the communication and standardization of schemas that support competition and hierarchy to a broad audience of people in segmentary societies (DeMarrais et al. 1996:18), but in ranked societies, their contextual use and collective ownership could also help dismantle and counter it (Mills 2004). Their exchange and ownership gives them meaning, but that meaning is polysemic and can be transposed in different contextual situations (DeMarrais et al. 1996:18; Inomata and Coben 2006:17), create inalienable value to ritually created and important objects (Mills 2004). Archaeological evidence of symbolic objects and icons comes from their contextual deposition, life histories, and the refuse left behind by their commission and production (Mills 2004:242). In the Southwest, ritual production and commissioning of ritual objects was accompanied by feasts, raising the cost of the ritual items not through their local or nonlocal materials used in their production, but through the surplus that was accumulated to host commissioning of the object

(Mills 2004:242; Spielmann 2002:197). Objects become inalienable through their exchange and cannot be returned (Mills 2004:243; Spielmann 2002:198).

Regional and Mound Center Abandonment

When archaeologists discuss political instability in prehistoric societies in the lower Midwest and Southeast, their discussions typically focus on ultimate causes of sociopolitical disintegration, such as environmental factors, factionalism and competition, and surplus shortfalls (Anderson 1994:113-137; Blitz and Lorenz 2006:129-133; Cobb and Butler 2002; King 2003:19-22; Meeks and Anderson 2013:70-77; Scarry 1996; Smith 1987). Two of the most common are environmental and agricultural stress due to variations in rainfall and internal political competition and factionalism, although these are not dichotomous.

The Lower Ohio Valley was densely populated by Mississippian peoples, establishing the Angel, Kincaid, and Wickliffe polities during the eleventh century before dispersing to the uplands and neighboring river valleys by the beginning of the fifteenth century (Black 1967; Butler 1991; Clay 1997; Cobb and Butler 2002, 2006; Cole 1951; Hilgeman 2000; Lewis 1990; Monaghan and Peebles 2010; Muller 1986; Pollack 2004; Wesler 2001, 2006; Williams 1983, 1990). The cause for the depopulation of the riverine lowlands and abandonment of the mound centers throughout this Vacant Quarter (e.g., Williams 1983, 1990) was likely due to the link between drought-crop stress and accompanying sociopolitical stress (Cobb and Butler 2002:637; Meeks and Anderson 2013:70-77). Using water availability measurements from tree ring samples in the lower Ohio, Cumberland, and Tennessee river valleys, Meeks and Anderson (2013) identified different time spans that were favorable for a surplus in food production and population expansion (AD 1200-1287, 1309-1384, and 1414-1448) and time spans that were likely to deplete stored surplus as drought-induced stress (AD 1288-1308, 1385-1413, 1449-

1458, and 1483-1492). The time spans that were favorable for population increase and agricultural surplus correspond to mound construction and ritual intensification at Angel, Kincaid, Wickliffe, and sites throughout Nashville Basin, whereas the first two periods of drought-induced stress (AD 1288-1308 and 1385-1413) correspond to times of population stasis or site abandonment in the same areas (Meeks and Anderson 2013:72-76).

In the Savannah River Valley, the occupational history of multiple and single mound, as well as village settlements, was also influenced by periods of rainfall favorable for the accumulation of agricultural surplus and affected by periods of expected shortfalls (Anderson 1994, 1996; Anderson et al. 1995). Rainfall estimates from two tree ring-growth sequences from the Savannah River indicate that intermittent periods of generally favorable conditions for the accumulation of agricultural surpluses (AD 1005-1055, 1154-1299, 1251-1358, 1378-1469, 1477-1559) were balanced with spans of time that likely led to surplus shortfalls (AD 1056-1152, 1162-1164, 1200-1250, 1359-1377, 1469-1476) with some years exhibiting severe drought conditions (Anderson et al. 1995:272-277). Mason's Plantation and Rembert, major multiple mound centers in the lower portion of the basin, were occupied during the last half of the fourteenth century while single mound centers were abandoned, corresponding to the AD 1251-1358 phase of rainfall favorable for agricultural surplus (Anderson et al. 1995:275). Conversely, these sites were abandoned while smaller sites like Irene and Rucker's Bottom were established or reoccupied and built fortifications during unpredictable rainfall from AD 1407-1476 (Anderson et al. 1995:275). These fluctuations in site occupation and mound center use have been interpreted as being influenced, but not determined, by shifts in environmental conditions (Anderson et al. 1995:279), resulting in political cycling between simple-complex chiefdom levels of complexity (Anderson 1994). Alternatively, these fluctuations have been attributed to the process of large-group fissioning and the fusion of constituent mound-political units during times of stress (Blitz 1999). The abandonment of mound centers in the fission-fusion model is due to external and internal stress, where a group may fission due to disagreements in political succession, regional conflict, drought and the related downfall of surplus, labor, and valuables (Blitz and Lorenz 2006:122-123).

Research on the foundation and abandonment of mound centers in the Etowah River valley in northwest Georgia has taken a slightly different and more detailed historical trajectory than studies of other regional settlement systems (Cobb and King 2005; King 2001, 2003; Larson 1971). Etowah is a multiple-mound center surrounded by a crescent-shaped ditch and the Etowah River that was periodically occupied from about AD 1000 to 1550 and associated with several surrounding single mound sites. The political history of the Mississippian mound centers in the valley has been suggested to have been the result of shifting emphases on two different political strategies that were promoted at different times by influential leaders (King 2003). These two strategies form an idealized dichotomy of a more individualistic or elite-focused networking strategy and a more communal and inclusive corporate strategy (Blanton et al. 1996). In the Etowah River valley, the emphasis of one political strategy over the other has been used to explain the series of occupation, abandonment, reoccupation, abandonment, reoccupation, and terminal abandonment that occurred between the early Etowah and Barnett ceramic phases (King 2001, 2003). Thus, there was not a direct rise-peak-decline trajectory that played out among these sites. Leaders could act through materialization (mounds, symbolic objects, ritual) to draw upon different political strategies and different concepts of time to coopt ceremonial spaces that were once abandoned (Cobb and King 2005).

The narrative these studies take is that sociopolitical institutions encountered some form of stress that could not be solved by existing structures, leading to the abandonment of mound centers and river valleys. Later, people often reorganized in villages and / or established new civic-ceremonial centers. However, these discussions typically obscure variation while they seek general explanations of social change. A more detailed understanding of the occupational histories of these mound centers will demonstrate that their trajectories were as much a historical, agent-driven development as they were a result of general, pan-regional trends (King 2001:11).

Summary

In this research, I suggest that the broader macroscale changes of Mississippian mound center abandonment, institutional collapse, and social transformation occurred in Southeastern river valleys at different temporalities. However, these historical processes were not deterministic and a study of short-term, small-scale change by agents through their manipulation and rearticulation of ritual performance in a monumental context should reveal how social actors affected and were effected by structural change. It may not be enough to say that the proximal causes of disintegration and change effected all aspects of social, ritual, and political life during the fifteenth century in the Black Warrior Valley, as the role of monuments and ritual as the locus of the rearticulation of structures has not been adequately considered (e.g., Pluckhahn 2015:94). The advantages to a historical, event-based perspective are that it shifts attention away from long-term processes to shorter-term proximate events and conjunctures to view social transformations and it avoids the assumptions of arbitrary, stage-based archaeological subdivisions of temporalities that obscure small-scale, short-term change (Pluckhahn 2015:94). We should expect that social change is evident in materiality and how humans used and perceived places and space at different temporalities.

CHAPTER 3

THE ESTABLISHMENT AND REORGANIZATION OF MISSISSIPPIAN POLITIES IN WEST-CENTRAL ALABAMA

The social practices that enact, transpose, and materialize schemas and resources are historically contingent. The macroscale historical processes of Mississippian river valley abandonment occurred because of various proximal causes that effected and were affected by historically informed human agency. Since these causes of abandonment, institutional collapse, and social transformation effected how material objects were used and interpreted in monumental settings by hosts and participants and shaped those actors' sense of place, changes in the social use of these ceremonial settings is expected during a time of social instability. However, while the action of hosts and the inclusion of participants in ritual settings were influenced by more general processes, practices by human agents can influence the direction and effect of broader regional and site-level trends. It is the use and display of material objects in monumental settings by hosts and participants that can rearticulate and transpose these resources and schemas. The emphasis or continuation of certain cultural elements reproduces some structural elements while other elements are selectively forgotten or discontinued. The goal of this research is to investigate what materials, symbols, and social settings were emphasized and which ones were deemphasized during the fifteenth century at the multiple mound Mississippian civic-ceremonial center of Moundville. Since structural elements are historically situated, this chapter discusses the archaeological and cultural history of the Moundville site and culture.

Environmental Setting

The Moundville site and its culturally related single-mound and non-mound sites are located in west-central Alabama along the Black Warrior River between the Fall Line at Tuscaloosa and the confluence of the Black Warrior with the Tombigbee River at modern day Demopolis. This valley is within the Fall Line Hills physiographic district, an area forested with oak and pine trees that is bound to the north by the Cumberland Plateau and the swampy Black Prairie to the south. The Black Warrior River traverses these physiographic zones, flowing from north to south where the gradient drops just below the Fall Line, where it drops fertile sediment across the valley floor during regular flooding stages (Knight 2010:1). The river slows with more level gradient and its natural course has created a meander belt environment of well drained, sandy loam soils, oxbow lakes, levees, and cypress swamps. Here, a prehistoric agricultural population could depend on regular silt dumps from flooding for nutrient rich soils, relict channels for aquatic fauna, and the attraction that maize fields have on larger fauna, such as white-tailed deer and turkey.

The Black Warrior eventually meets the Tombigbee at modern day Demopolis and along with the Alabama River system to the east, creates the Mobile-Tensaw river complex that dumps into the Gulf of Mexico. Prior to modern lock, dam, and dredging modifications, as well as the connection of the Tombigbee to the Tennessee river, this river system reached from northeastern Mississippi to northwestern Georgia and south through Alabama, draining a large portion of the Deep South and potentially facilitating river travel that would connect multiple diverse groups of people (e.g., McKenzie 1964:10). Single mound and farmstead sites are distributed north and south of Moundville, which is located at approximately the center of the settlement pattern, although the non-mound sites appear to cluster around the single mound sites (Hammerstedt et al. 2016; Myer 2002; Steponaitis 1992; Welch 1998). Except for a few rounded mounds at Moundville that have not been excavated and could have been true burial mounds, all mounds at the site supported pole-frame buildings (Knight 2010:3). The Rhodes site, located just to the northeast of the modern park, was likely part of the settlement (Nelson 2014).

History of Archaeology at Moundville

The history of archaeological interest concerning Moundville and the valley has been discussed in detail elsewhere (Peebles 1979, 1981; Steponaitis 1983a, 1983b) but here I will briefly discuss the early history of excavations at the site, paying particular attention to how these studies formed our current understanding of cultural processes throughout the Black Warrior Valley. In the nineteenth century, the first two sponsored reports on the mounds near what was then known as Carthage, Alabama were Professor Nathanial T. Lupton in 1869 and James D. Middleton in 1882 (Steponaitis 1983b). Lupton mapped the arrangement of the mounds, documented the remains of the palisade surrounding the site, was able to mention or analyze some artifacts that local people had dug up, and excavated a trench in Mound O. Lupton’s trench into Mound O documented individuals buried at least three different mound construction episodes (Steponaitis 1983b:131). In 1882, Middleton, who was a deputy of Cyrus Thomas, visited the site and attempted to produce a map of the mounds, although the document that was produced was less than accurate. The artifacts that are curated at the Smithsonian Institution from Lupton and Middleton’s excavations include ceremonial artifacts that would be common within a typical assemblage excavated from mound or burial contexts, such as stone discs, gorgets, pipes, palettes, drills, slabs, and abraders, a conch shell, and an engraved bottle (Steponaitis 1983b:137-141). These early excavations did not provide a large assemblage that early antiquarians could have included in studies on the subject and it would not be until Moore landed his steamboat the *Gopher of Philadelphia* at Prince's Landing on March 17, 1905 that the first large scale excavations were conducted at the site.

Clarence B. Moore visited the prehistoric sites along the Black Warrior River in 1905 and 1906, stopping at the landings and sites that were scouted by the captain of the *Gopher*, J. S. Raybon in the summer, prior to the fall through spring excavations directed by Moore (Knight 1996:3). The two monographs that he produced about Moundville (Moore 1905, 1907), were the result of a total of two months of excavations at the site and are still used as the foundation for all modern research at Moundville. Given the size of the site and the planting calendar of anxious farmers, Moore hired local laborers to augment his normal crew to dig standardized, 4 ft deep "trial holes" into the summits of the earthen mounds. Moore always published his work in a timely manner, where he not only presented select artifacts in excellent photographs and illustrations, but also made some observations and generalizations about the artifacts and their contexts. The two volumes that he published on Moundville produced a detailed site map with the letter designations for the platform mounds, documented his methods for recovery, and presented the many artifacts he recovered. What these volumes also reveal are observations and generalizations about associations between grave lots and their recovered spatial and associational context (e.g., Knight 1996:12-13) that have been tested by Moundville archaeologists for the last 110 years. He concluded that Moundville was a prehistoric religious center with evidence supporting social status distinctions between mound and off-mound cemeteries that had been built as a planned arrangement of truncated, multistage domiciliary platform mounds framing a central plaza, except mounds A and B, which were most likely the religious core of the site (Moore 1905:130, 141, 167, 241-243, 1907:404-405). It is perhaps noteworthy that these conclusions are still the basis for many hypotheses that guide modern archaeological research at the site.

In 1929, the same year that the U.S. market crashed, archaeological research at Moundville commenced with two goals, both of which were achieved (Peebles 1981:79). First, the main portion of the site was purchased from private landowners through public donations to the museum and a house mortgage by Walter B. Jones, who succeeded Eugene A. Smith as the director of the Alabama Museum of Natural History. The second goal for the park was an attempt to demonstrate that the importance of the site had not been diminished by the excavations of Moore through the testing of newly purchased areas and after 1932, the employment of more modern archaeological methods by David DeJarnette. This effort was aided by federally funded works projects from 1933 to 1941 that excavated large portions of the site in anticipation of the formal establishment of the park, including the roadway that weaves its way through the park, the museum and planned parking area, park entrance, and areas unexplored by Moore (Blitz 2008:21-22; Peebles 1979, 1981; Wilson 2008). The recording methods used from 1932 to 1935 did not consider stratigraphy to be important, since the off-mound residential areas that DeJarnette targeted were assumed to have only one temporal component, thus alleviating the need to record the vertical context that artifacts, features, and burials were recovered from (Peebles 1979:3). However, from 1935 to 1940, features were recorded by grid square and depth below surface, but these excavation squares or blocks were aligned to cultural or natural features on the site, rather than an overall site grid (Peebles 1979:5). In addition to the excavations under future roads and buildings, some of the mounds and lakes needed to be restored by removing trees, clearing deposited sediment, and patching up erosional damage, resulting in small collections from each mound and a rolled copper fish hook from Lake 4 (Jones 1941:12; Knight

2010). Jones, along with DeJarnette (e.g., Walthall et al. 2002:195), directed work at the site and transformed it into a public park that conserved the archaeological heritage for the education and enjoyment of future generations.

The excavations at Moundville between 1929 and 1941 were bookended between two of the most important events in 20th Century America: the beginning of the Great Depression and the beginning of the Second World War. While the analysis and publication of the results by federally funded researchers was truncated by the necessity for DeJarnette and Franklin D. Roosevelt's Tree Army to train for a different kind of project, the 1930s excavations of the roadway and other areas produced thousands of burials, artifacts, and architectural features. These archaeological remains that were used after the war to establish an outline for what material remains characterized the Moundville culture and site and how they compared to neighboring regions. Further, the CCC excavations and materials have become just as important for the basis of understanding the social history of Moundville as Moore's initial collections. The characteristics that constituted a Moundville centric "culture" (cf. Willey and Phillips 1958:48; Knight 2010:15) were first identified by DeJarnette and Steve Wimberly (1941:99-102) and then later synthesized by DeJarnette (1952:280-284) as a set of material traits falling within the Middle Mississippian period that had some material relationship to antecedent Woodland groups living in the area, but they also included other newly introduced traits that set Middle Mississippian people apart from their Woodland predecessors. These materials were what McKenzie described as constituting the Moundville phase (McKenzie 1964, 1966) in the sense that Willey and Phillips (1958:22) defined a "phase" as an archaeological unit of study that includes temporally and spatially specific material traits that distinguish it from any other phases that are equally defined. Thus, the Moundville phase was an archaeological unit that could be characterized by a list of common Mississippian material traits that were distributed from the Pickwick Basin in the Tennessee River valley southeastward into central Alabama and the Gulf Coast around the Mobile Bay region, westward to the Natchez Bluffs and particularly the Central Mississippi Valley (McKenzie 1964:301-302). Through cross cultural comparison, he dated it to between A.D. 1250 to 1500 (McKenzie 1964:284-287, 301-302, 310).

These early studies set the stage for how modern archaeologists think about Moundville and helped with the development of testable hypotheses with new explanatory models and newly excavated materials. After McKenzie (1964) wrote his dissertation at Harvard, Christopher Peebles and his graduate students from the University of Michigan began their long-term research projects at the site that would expand upon the initial conclusions, generalizations, and contributions that Lupton, Moore, Jones, DeJarnette, and McKenzie made to the history of archaeological thought at Moundville with new anthropological questions and analytical methods. Later, scholars from the University of Alabama and the University of North Carolina-Chapel Hill would start a new wave of research that continues to this day. The rest of this chapter will integrate the contributions made by archaeologists after 1974 into a discussion about the historical trajectory of the site, with a focus on the themes of the current research; chronology, monumentality, social organization, ceremonialism, and interregional relationships. It is important that the historical context of Moundville and related sites in the valley is understood in this manner because social transformation, while it has some generalizable, cross-cultural characteristics, occurs as a contingent historical process.

Monumentality and Social Organization in the Black Warrior Valley

The adoption of Mississippian cultural traits throughout west-central Alabama corresponds to the transitional Woodland-Mississippian period West Jefferson and early

Moundville I phases in the local chronology, beginning around A.D. 1120. Recent archaeological investigations concerning the linkage between vessel form, paste composition, and maize intensification strongly suggest that the adoption of new ways of life were occurring within kin-based households. The shift from the production of conical-based, grog tempered vessels used by Woodland potters to prepare nut and acorn-based foods to globular, shell-tempered handled jars used to produced corn-based meals was necessary so that hominy could be simmered over sustained heat (Hawsey 2015:66) This shift in foodways could not occur without the proper tools needed for hominy preparation (Briggs 2016). Decisions about which tools to use to prepare foods were occurring at that household level, as were decisions about intensifying the amount of labor and space to begin producing larger quantities of maize as a staple crop by A.D. 1120 (Scarry 1986:353).The intensification of maize production and the adoption of different vessel forms is concurrent with a shift from seasonal floodplain and hilltop villages to dispersed, sedentary farmsteads located near floodplain agricultural soils (Bozeman 1982:304). Mississippian single mound sites were often built on top of West Jefferson villages, potentially emphasizing elements of the past and ancient places while materializing new practices (Bozeman 1982:304; Hammerstedt et al. 2016:160). The social integration of these now dispersed people located at family farmsteads in the valley would have been accomplished through communal ritual and decision making by higher ranking individuals within the ceremonial precincts of the platform mound and public buildings (Mistovich 1995:178).

During this time, fully “Mississippianized” people (e.g., Welch 1990:211) began to aggregate along the bluff above the river’s Hemphill Bend in hamlets and construct low platform mounds in at least two two locations (Blitz 2007, 2016; Knight 2010:360; Steponaitis 1992:10). Mound X at Moundville, located to the east of Mound G near the entrance to the park, was established, dismantled, and selectively forgotten, the result of a selection of socially valuable practices that needed to be remembered and the repressive erasure of those that did not need to be included in the plan to follow (Blitz 2007, 2016). This process is evidenced by a portion of the subsequent palisade being built over a clay outline of the mound (Blitz 2007, 2016). Asphalt Plant, a single mound site located one half mile to the northeast of Moundville on the same natural bluff, was the location of one of the first settlements anchored by a platform mound. An abundance of non-local material (i.e., galena, Mill Creek, Bangor, Knox, and Pickwick cherts, and greenstone) as well as local fine gray micaceous sandstone (the material formed into palettes) indicates that early attempts to create asymmetrical social relationships through an acquisition of external items and production of ritual paraphernalia, and hence the restriction of these items for individual consumption, were developing at this early mound site (Steponaitis 1992:11).

Mound-and-Plaza Complex

The aggregation of hamlets along the bluff's edge and the adoption of Mississippian life ways by local Woodland people were subsequently followed by a reconceptualization of the landscape that materialized social relationships, changed and conditioned the way people moved through and experienced the site, and continually integrated intra- and intergroup labor through ritualized earth moving projects. The place that the earliest Moundville inhabitants envisioned was an arrangement of a large, flattened plaza enclosed by a ring of earthen platform mounds on the bluff ridge overlooking the Black Warrior River. The distribution of mounds, midden deposits, buildings, and grave goods has been used to support an argument that the site was bilaterally arranged with symmetrical eastern and western portions (Peebles 1983:190). Synthesizing archaeological data that was limited due to the nature of horizontal and vertical excavation methods, Peebles (1971) suggested that there were two functions for mounds in the Tennessee and Black Warrior River valleys, domiciliary and temple, based on patterns of burials and abandoned or destroyed buildings. He argued that differential mound function at Moundville and corresponding solar and mound alignments, were the conceptual basis for how the mounds were arranged around the plaza. Funerary mounds were paired with funerary mounds and domiciliary mounds were paired with domiciliary mounds (Peebles 1971:82). This was predicated upon a model for Moundville that assumed contemporaneous occupation of the mounds at the apogee of the site's growth and author. This zenith would have occurred after a drawn-out period of construction and increased occupation of the off-mound areas and before its abrupt collapse around A.D. 1450 (Peebles 1986:30-31; Steponaitis 1983a:160, 168). However, subsequent archaeological excavations into some of the larger mounds, a reanalysis of old collections from some of the minor plaza periphery mounds (Knight 2010), and a more refined understanding of the inverse relationship between domestic midden and burials at the site (Steponaitis 1998) support an alternative model for the occupation of the site, which is the accepted model used by contemporary archaeologists.

By A.D. 1250, the community that had been established on the bluff began to change. Earthen mantles were being constructed in certain places, presumably on top of large pre-mound public buildings, which would materialize the social relationships between ranked social groups in a large sociogram (Knight 1998:52). The earliest diagnostic ceramic sherds and radiocarbon dates from the initial layers of mound construction and pre-mound midden from many of the mounds date to the mid to late thirteenth century, corresponding to the duration of off-mound occupation surrounding the plaza (Knight 2010; Wilson 2008). The roadway excavations conducted by the CCC revealed a complex series of residential areas and intrusive burials within house groups along the edges of the plaza (Peebles 1979). The pre-plaza organization of the site was just as extensive as the post-plaza organization was. Before major efforts to flatten the area commenced, clusters of kin-based households and domestic spaces were distributed across the site in the very spaces that would later be maintained by these social groups following plaza construction (Wilson 2008).

These patterns of domestic space and midden refuse suggest that different kin groups had negotiated, established, and defined their relationships on the landscape and to one another prior to mound and plaza landscape modification (Wilson 2008:131). The connections to the landscape through habitual, everyday domestic activities of cooking, craft production, and rebuilding of houses and public facilities strengthened and perpetuated the materialization of kin-based identities on the landscape (Wilson 2008:132). Around A.D. 1250, the off-mound population briefly intensified, as evidenced by an increase in the number and size of buildings within these domestic districts, before a rapid depopulation by A.D. 1300. This rapid out migration of the site is further demonstrated by the shifts in the relationship of burials to domestic midden through time. During the thirteenth century, domestic midden is in higher relative proportions at the site than burials, a pattern that reverses after A.D. 1300 (Steponaitis 1998). These two lines of evidence suggest that the Moundville site was quickly established as a materialization of group social relationships by a resident population before the nature of the site changed to a ceremonial center for retainers and the deceased.

Recent excavations in the plaza, as well as a magnetometer survey conducted in 2010 (see discussion, Chapter 4) have indicated that there is a larger areal distribution of residential and public buildings across the plaza than previously thought and that areas of the original ridge-and-swale topography were artificially flattened or filled in (Davis 2014; Davis et al. 2015;

Lacquement 2009; Thompson 2011; Wilson 2008, 2010). The subsurface anomalies that the magnetometer survey detected indicated that there were multiple types of buildings that dated before and after the plaza fill was in place. These buildings were located across the entire plaza, with few empty areas (Davis 2014; Davis et al. 2015). An interpretation of the magnetometer results suggests that during this time, square or rectangular buildings were located throughout the plaza and oriented with their corners to the cardinal directions. A key exception to this pattern is a potential “proto-plaza” to the east of Mound A, oriented along the same axis, sterile of artifacts, and framed by clusters of pre-plaza buildings. These data lend evidence to suggest that the original orientation of the site was aligned in accordance to the anomalous mound and the proto-plaza (Davis 2014:201-202). This information is noteworthy because archaeologists have always considered Mound A anomalous within the ultimate site plan of Moundville because it is centrally located but not oriented along the same axis as the final versions of any other mound in the plaza periphery group.

The flattening of the ridge-and-swale topography that originally defined the bluff was done by truncating the tops of ridges to fill in the lower swales. Profiles of soils along the margin of the plaza (closest to the mounds), particularly in areas of mounds F, G, N, and O (and possibly J) indicate that these areas were artificially filled with as much soil as required for a large earthen mound. Prior to the construction of mounds these areas exhibited evidence for buried living surfaces (Lacquement 2009:76-77). After the plaza was modified and flattened to create a uniform area, buildings constructed on top of the plaza were oriented with their walls (not their corners) to the cardinal directions, just like the mounds that were constructed around A.D. 1250. This orientation created a sense of order that extended the mound-created plaza periphery towards the center of the plaza, while creating some empty space around mounds A, B and V

(Davis 2014:203-204). Further, the kin-based domestic house groups became the location of corporate cemeteries, where the burials were placed in rectangular patterns that intrude upon the older walls of the now covered domestic space (Wilson 2008:133). The formation of the plaza, erasure of the pre-plaza order, and creation of a new order that was oriented to the plaza periphery mounds potentially emplaced different values (e.g., Kosiba 2012) across the newly flat expanse of civic space, although a portion of the old order in Mound A remained. The intentional placement of the recently deceased in corporate cemeteries, and the remembrance of where these cemeteries were located, continued to emplace corporate identity and validate their claims to space at the ceremonial center after the kin-groups moved to the valley (Wilson 2008:134, 2010).

The establishment of a newly envisioned order of the use and negotiation of social space by corporate groups is exemplified by the construction of up to 32 earthen platform mounds at the site, 29 of which survive into the present, and 21 of which encircle the artificially flattened plaza. The mounds were constructed in multiple stages over premound living surfaces and middens beginning around A.D. 1250, utilizing alternating stages of sandy clay and loamy sand soil fill interspersed with yellow clay caps, flank midden deposits, burned surfaces, and the buried slopes of earlier mound surfaces (Astin 1996; Blitz 2007; Gage 2000; Gage and Jones 2001; Kelly 2013; Knight 1995, 2002, 2004, 2009, 2010; Johnson 2005; Mirarchi 2009). On Mound G, mound construction stages were built on top of an artificially flattened area of plaza fill, while on Mound F, the earliest stage of the mound was built prior to the plaza fill episode in front of it (Knight 2010). This indicates that the extensive landscape modification of the mound-and-plaza complex was a continuous process.

The soil used for mound construction originated from the ravines on the northern portion of the site, as well as a large, artificial lake along the southern plaza periphery (Lacquement

2009:97). Archaeological excavations into the flanks and summits of multiple platform mounds have exposed the features left behind by buildings that varied in their size, style, and function variables that were likely dependent on the kind of activities that were practiced by the corporate sponsors and ritual participants of the ceremonial facility. Mound summit architecture was present on all the large plaza periphery mounds, as evidenced by the quantities of daub in flank midden deposits. Of particular interest in a discussion of architectural variability are buildings on the buried summits of mounds E and Q.

Structure 1 on Mound E was identified as intruding into Stage III, the terminal mound construction stage, in the southeastern corner of the mound and was characterized by high quantities of burned daub (Knight 2010:196). However, no associated foundational or wall support features were identified. Structure 2 on Mound E was exposed in the southeastern portion of the mound associated with Stage II and was identified as a large, single-set post building that was at a minimum 30-x-18.5 m in size (Knight 2010:187-190). The structure was rebuilt at least two times across two of Mound E's terraces and had no evidence for internal roof supports or truss work, lending evidence to suggest that the building was an open compound with no roof supports (Knight 2010:188-189). Notably, the building's long axis is oriented east-west, with the southern wall placed at the edge of the summit. Structure 3 on Mound E was a large wall-trench structure located atop the third mound terrace in the northeast corner of the mound (see below). It was characterized by massive centralized supports for a roof ridgepole and its entrance was on the northern side of the building (Knight 2010:190-194; Ryba 1997). The earlier architecture on Mound E (structures 2 and 3) were oriented away from the plaza, potentially restricting access or knowledge of the activities that occurred atop the mound.

The buildings associated with Stage II of Mound Q (structures 1-4) were rebuilt in place multiple times (see Knight 2010:Figure 4.23), but the associations of structures 1 and 2 in particular provide clues for a different function of these buildings from other mound summits. Structures 1 and 2 were wall-trench buildings with internal rigid post roof supports. Structure 1 was a smaller structure (5.3-x-2.9 m) with closed corners conjoined to the larger Structure 2 (6.5 m on a side) along the southern wall of the former. Thus, it is possible that Structure 1 was a back room or private chamber for the more public or residential Structure 2. The artifacts recovered from midden deposits associated with Stage II were indicative of visual display, artistry, and human bone handling, lending evidence to suggest that structures 1 and 2 were residences of individuals and the location of ritual practices that were oriented towards an audience (Knight 2004:319). The nature of structures 3 and 4 was less clear than structures 1 and 2 since they were minimally exposed and the remains of structures that were associated with Stage IV was also ambiguous due to heavy disturbance of this construction layer. However, these buildings were rebuilt as daubed structures with white plaster on the exterior and rigid post construction (Knight 2010:95-97). The differences in architecture on the summits of mounds E and Q demonstrate that while the mounds were platforms for buildings and the activities that occurred within them, there was variation in their use through time and between one another.

The history of the construction of the mound and plaza complex at Moundville can be characterized as a broad pattern of initial, contemporaneous construction of the mounds and plaza around A.D. 1250 (discussed above) followed by the abandonment of mound construction and use of the plaza periphery mounds about 200 years later (e.g., Knight and Steponaitis 1998:Figure 1.3). The evidence for the abandonment of the platform mounds comes from excavated mound surfaces and flank deposits and the dating of strata with radiocarbon assays and diagnostic pottery types, as well as the relative size of the mounds. These data indicate that by A.D 1450 all but four mounds (B, E, P, and V) had fallen out of use. Between A.D. 1250 and A.D. 1320 the plaza periphery mounds were foundational and symbolic monuments for the social and ritual practices (and the buildings on which rites were performed) that reaffirmed kin-based ties and reciprocal obligations. Diagnostic pottery types indicate that sometime between A.D. 1300 and 1350, mounds I, J, and K, and smaller mounds (e.g., Lacquement 2009:Table 2.3) located along the southern plaza periphery were the first mounds to be abandoned (Knight 2010:320-321), while the rest of the mounds continued to be expanded through additional construction stages. A second wave of mound abandonment occurred between A.D. 1400 and 1450, when radiocarbon assays and diagnostic pottery types indicate that there was little use or construction of mounds A, C, D, F, G, H, L, M, N, O, Q, R, S, and T (Blitz 2008; Knight 2010; Knight and Steponaitis 1998). The four remaining major mounds that show evidence for continued mound construction or use after A.D. 1450 are B, E, P, and V, which will be discussed in detail below.

The Materialization of Social Organization

The timing of the construction, use, and abandonment of mounds at Moundville and the intensification of the occupation of single mound sites in the valley and the precision with which these processes are understood have important implications for how and when the materialization of social organization at the site was established and how, when, and if this social organization changed. Models for the social organization of Moundville and how these compare cross-culturally with other forms of social organization have been a primary focus of scholars for over 100 years. Knight (2016) has recently synthesized four social models for how social space could be arranged around a mound-and-plaza complex, all four of which could be applied to

Moundville and some of which are directly applicable to the current research. These four models can be characterized as 1) “the power perspective,” 2) a “segmentary house group” model, 3) a “platforms as chiefs” model, and 4) a “sodality-alliance” model, each model listed in order hierarchy and centralization. Further, a ritual economy model, a sodality-based social system, and a ceremonial center model have recently been suggested as possible explanations for how social organization was construed at Moundville (Phillips 2012; Scarry and Steponaitis 2016; Thompson 2011). These dovetail, to some degree, with the first four models listed

Power and Centralization. This model can be used to explain why there is a difference in the distributions of 1) surpluses from agricultural production, 2) why “elite” artifact assemblages and activity areas are concentrated in certain areas that are separate from “commoner” artifact assemblages and activity areas, and 3) what happens when this system collapses. The power perspective was originally derived from neoevolutionary models developed in Polynesia and has been used, along with very early Spanish accounts of aboriginal political systems, to explain these differences in the archaeological record at late prehistoric sites in the Eastern Woodlands. According to this model, the political institutions of chiefdoms were based upon the acquisition and accumulation of agricultural surplus from producers that resided away from the political center, the maintenance and acquisition of nonlocal goods, and reciprocal rights and obligations among elite-ranked individuals and commoners. When applied to Mississippian societies in the Southeast, the power perspective suggests that the differences in the distribution of surplus, elite items, and the stability of the system is based upon a highly centralized, kin-based political system that controls the flow of materials from hinterland sites to the center within a site-size hierarchy. The center is where related and ranked elites lived on mound summits in large, permanent residences. There, they could attend to the crafting of nonlocal items and the engineering of the social and political networks needed to acquire these resources because their sustenance was provided by a commoner population that produced agricultural surplus.

The power and centralization model has been suggested to explain differences in the distribution of food surplus and mobilization, as well as variation in distribution of ritual objects for the mound-and-plaza complex at Moundville and its related sites in the Black Warrior Valley (Welch 1991, 1996, 1998). In Moundville's case, Mound B would have been the seat of the paramount chief, with each mound being the seat of genealogically-ranked kin groups separated by an east-west dividing line, in descending order from north (next to Mound B) to the south. The single mound sites in the valley would be "secondary centers" where lower-ranked kin would act as administrators to manage the flow of surplus generated throughout the valley at farmsteads towards the center. However, since this model was suggested as a possible explanation for how Moundville's economic system operated, new archaeological evidence lends evidence to suggest that centralized control of specialized production of socially valued goods at the site is not supported (Blitz 2007; Knight 2010, 2016; Marcoux 2007; Scarry and Steponaitis 2016; Thompson 2011; Wilson 2001). Archaeological evidence for the mobilization of surplus corn and hunted animals, in particular white-tailed deer, does support a portion of the power and centralization model, but as discussed below, this is not the only explanatory model for the movement of food surplus. The consumption of these food items were found in both on- and off-mound contexts (Jackson and Scott 2003, 2010; Welch and Scarry 1995) but the consumption of these objects in a ritual context was not restricted to Moundville proper (Jackson et al. 2016) suggesting it may be a simplification to suggest that elites and non-elites were bound rigidly to dichotomized, on-mound and off-mound areas.

Complementary Segmentary Groups. The complementary segmentary model is derived from ethnohistoric accounts in the Southeast among the Muskogee and Chickasaw, as well as the "social houses" that Levi-Strauss (1982) discussed as estate-centered corporate groups that exist to maintain titles and property. This model has been proposed to explain the site layout, corresponding social organization, and the distribution of artifact production debris (Knight 1998, 2010, 2016). This places Moundville's layout as analogous to a Chickasaw ceremonial campground, with named house groups (i.e., corporate subclans) arranged in ranked spaces within a temporary, ceremonial encampment. These temporary encampments were divided bilaterally east-west and centered on a council fire (Knight 1998:54)

When this model is applied to Moundville, the similarities to historic ranked campground arrangements are readily apparent. The plaza-periphery mounds are arranged in a square pattern around a square or trapezoidal plaza with a central mound (Mound A) off-axis to the group. The mounds that have burials and the mounds without them alternate around the plaza in mortuary and domilicary pairs. These pairings (not to be confused with the bilateral symmetry at the site) were the materialization of fixed rank ordering of corporate segments of Moundville society within a dual organization, with the highest ranking corporate segments located in the north and the lower ranking segments located in the south (Knight 1998). These corporate segments, anchored by the paired mounds, were integrated through the reciprocal, complementary production and exchange of ritual and non-ritual items (Knight 2010:358-360). These items became socially valuable in their variation and complementary nature relative to the entire suite of items being produced. This obligatory exchange would inherently avoid divisive competition between the constituent segments, circumventing any pressures for the group to fission (Knight 2010:358-360, 2016:41). The placement of Mound B in the center of this arrangement, presumably the seat of a paramount chief or corporate segment, and the maintenance of the plaza-periphery mounds as the manifestation of fixed-rank corporate segments, created a diametric relationship between the central axis of mounds A, B, and V and the plaza-periphery mounds, with the occupants of the former "symbolically transcending" the maintained fixed order of ranking (Knight 1998:60). However, centralized authority to restrict access to the production and consumption of ritual items was diffuse and balanced by the shared power and reciprocal exchange of the segment corporate groups (Knight 2010:365, 2016:41).

It is possible that these segmentary, kin-based corporate groups that sponsored pairs of platform mounds and residential house groups (Wilson 2008) arranged in rank order around a central plaza were clans, and that the social structure of the community had dual, chief (town) and priest (ceremonial) leadership. Scarry and Steponaitis (2016) argue that during the early Mississippian occupation of the Black Warrior Valley, town chiefs held primary influence, but that soon shifted to clan priest influence. Thus, when clan priests became more influential, the structure of town organization was relegated to that of a permanent ceremonial center organized by social group (Scarry and Steponaitis 2016:264-267), an organizing principle that has wider North American analogues. When single mound centers began to be, authority began to shift back to town chiefs as people moved back to the valley and built new mounds. This model hinges on the issue of the "permanence" of occupation at Moundville and surrounding sites. Permanently occupied towns gave way to a permanently occupied ceremonial center, which later gave way to a semi-permanently occupied ceremonial center and semi-permanently to permanently occupied single mound sites. This assumes that social interaction and ritual practice were held away from the old center and exclusively conducted at single mound sites or hinterland farmsteads. However, it does not consider that social and ritual participants could have lived elsewhere in the valley but periodically returned to Moundville for special occasions.

Mound-Political Units. Understanding the spatial layout of Moundville's mound-and-plaza complex as an aggregate of towns or mound-political units (e.g., Blitz 1999:586) has not explicitly been suggested for the site (e.g., Knight 2016:29), but it is a model that is worth bearing on the data in consideration in this research. In this model, multiple mounds sites were the result of the fusion and integration of multiple constituent political units (i.e., corporate social groups) into a single site, with each mound is defined as a mound-political unit (Blitz 1999:585-587; Blitz and Lorenz 2006:19). The ethnohistoric analog to constituent corporate groups that sponsored individual platform mounds at multiple mound centers was the *talwa* (Creek) or town organization. These composite compositions of political units came together during times of mutual environmental or social circumscription, when a fusion of the constituent political units, and thus a certain degree of forfeiture of political autonomy, was favored over complete autonomy. In order for the constituent political units to make up a composite, multiple mound center, it would have been necessary for the incoming or weaker political unit(s) to take on a junior rank in comparison to the established or stronger corporate group's senior rank. This relationship corresponds to red:white symbolism (Lankford 2008). Fused groups would have fissioned if chiefly succession was contested and the losing political unit left the multiple mound center to establish its own single mound center, causing the abandonment of their component mound at the multiple mound site and the decentralization of the chiefdom (Blitz 1999:587).

This fission-fusion process has been suggested for the formation and reorganization of Mississippian sites in the Chattahoochee River Valley (Blitz and Lorenz 2006) and it has also been suggested for how the single mound sites in the Black Warrior Valley were established

(Blitz 2008:67-68). Following this model, each mound at Moundville was the seat of an individual corporate political unit. The smaller mounds were junior to the larger mounds and could not amass the requisite amount of labor needed to continually add mound construction levels. Sometime after the sociogram was in place, social and political fissures would have started to show, with corporate groups leaving Moundville to establish their own, competing single mound centers in the valley, and possibly beyond. Thus, it is possible that junior (red) members located along the southern plaza-periphery were the first to leave the arrangement under political competition and contention and establish at least some of the single mound sites in the valley. The senior (white) corporate members would have been entrenched in the northern half, with their position being more stable. Therefore, they would have been able to build their mounds larger and over a longer period until another political contest. The establishment of culturally-related sites in the Black Warrior Valley was accompanied by Moundville-related sites at Bottle Creek, Lubbub, and the Alabama River at different times during Moundville's history. I think it is reasonable to suggest that these areas were established as the result of the fissioning of political units at Moundville (see below). One issue that has been raised about the application of the fission-fusion model to the Moundville polity is the degree of autonomy of the political units.

If the constituent units were *too* autonomous, specialized and interdependent production required for obligatory, complementary exchange would be required for political integration. This pattern has been suggested for the mound midden refuse (Knight 2016:38), but not for the off-mound areas, where replication is more evident (Thompson 2011:221). Thus, each political unit that was represented by a residential area, platform mound, or some combination of the two, was involved in redundant replication of objects that were then used by that corporate group in ceremonies for which they had rights to perform (Blitz 2007; Thompson 2011).

Complementary Heterarchical Community Model. In his critical assessment of the models above, Byers (2013) accepts Knight's diagrammatic model of Moundville, but takes issue with the reliance of dominance-driven models and the degree to which the residents of Moundville were permanent residents. The dominance-driven models that view chiefdoms as organized, surveyed, and managed by central social groups or individuals is rejected. Byers proposes his own model of North American social organization based on associations with allied, autonomous sodalities, world renewal ritual, transience, and ritual franchising by nonlocal participants. At the center of his model is the autonomous dualism that exists between clans and sodalities in which community members mutually participate in cross-cutting social associations. The autonomy of the sodalities allows members to pledge allegiance to other sodalities, an alliance that gains separate autonomy (Byers 2013:21). Some sodality members are likely related, but it was companionship among age, gender, and specialist sets (i.e., not kinship) that functioned as the basis for association in sodalities (Byers 2013:61). This is a key departure from other Mississippian models in which kin-based rank and rights dominate.

Byers's (2013) rewriting of Moundville's organization relies upon three primary interpretational revisions of the empirical data, focusing on three phenomena: the inverse relationship between domestic middens and burials beginning with the Moundville I phase and the permanence of the residents at Moundville; the nature and purpose of the site layout; and the rise of factionalism between social groups. Each of these points will be presented as they are articulated in Byers's (2013) model. First he notes that the inverse relationship between middens and burials is empirically real, but the necropolis concept is contradictory to models that explain the movement away from the center around A.D. 1300 as a sacralization of the site by elite. This reconceptualization would have excluded the very people that were brought back to the site to be buried and insolated commoners from surveillance needed to maintain elite dominance. Especially troubling is the lack of Moundville I burials anywhere in the valley at a time when Moundville reached its densest occupation (Byers 2013:463-464).

Byers (2013:596-597) also rejects the basis for mortuary accoutrements of status or rank and notes that burials without ceramic vessel inclusions date to Moundville I. These burials were part of a separate operational sequence of mortuary activity, thereby leveling the density of burials and negating the necropolis concept. Second, the labor needed to build the mounds was transient. He suggests that the large permanent structures in off-mound areas functioned as hostel-like buildings for age-set or age-grade ritual participants that traveled to the site for rituals from far away. Thus, the domestic refuse found in association with buildings along the riverbank and roadway was the result of continual transient ritual participants, not permanent residents. These people would have been auxiliary participants in rituals to “franchise” events and who had the right to establish sodalities at their pace of origin (Byers 2013:479, 499). The off-mound artifacts of nonlocal chert, greenstone, marine shell, and mica were the result of the production and repair of ritual paraphernalia by transient ritual participants residing temporarily in hostel buildings (Byers 2013:504-505, 514). Stylistically nonlocal pottery decoration and vessels were copies of foreign styles that imported those foreign sodality practices to Moundville, thereby innovating or augmenting the local age-set sodalities established at the site (Byers 2013:639-642). He also makes the point that transient populations within ceremonial centers does not rule out the accumulation of dense middens with domestic refuse (e.g., DeBoer 1997), as these visiting ritual participants would sleep and eat in ceremonial camps. Further, select cuts of meat were procured by junior age-set males who would have both hunted and consumed meat in a ritual context (Byers 2013:513).

Third, the purpose of the site layout was an expressive medium that evoked sacred powers and transformed communal labor through world renewal rituals, thereby creating a place that could be used collectively. Thus, the site was constructed by pooled labor of autonomous, first-order sodality heterarchies that collectively agreed on the nature of the planned nature of the site layout via council (Byers 2013:517-529). The ranked order of the sodality heterarchies could be changed based on the chunky game in a type of "musical chairs" among the platform mounds (Byers 2013:529). The establishment and eventual shift of mound building and mortuary ritual to the valley was the result of factionalism between sodality heterarchies that wanted to maintain autonomy and those that were ambitious, non-compliers to the traditional clan-sodality duality that the former faction favored. The Black Warrior Valley would then have been abandoned by both factions simultaneously (Byers 2013:642-645).

One of the issues with Byers's model is that it is not empirical, but rather a reinterpretation and inference using the extant data. Without new and independent data, the model cannot be tested. However, there are some interesting parallels in Byers' model and Renfrew's (2001) concept of LHDE and sacred economy model that could be operationalized in future research. It would be expected that if an organizing principle of Moundville was based upon associational identities as described above, then there should be a dominant, symbolic theme consumed and presented in a restricted number of ritual contexts. Distributional and stylistic analysis that tested expectations for non-economic, cross-cutting associations or sodalities models have utilized sherds and whole vessels from mound and burial contexts. These studies indicate that although there was an overlapping distribution of Hemphill-style representational art in burials (indicating overlapping, cross-cutting membership), the distribution of these supernatural patrons was not confined to individual platform mound contexts dating from A.D. 1300 to 1450 (Knight 2007:163; Phillips 2012:96-97). Therefore, the organizing principle underlying the spatial layout of the site (i.e., paired platform mounds) was not structured as sodalities, but in the agency of people who had access to the monuments associated with institutions or corporate groups that cross-cut sodality membership (Knight 2016:39).

Materiality in the Black Warrior Valley

When contemporary anthropologists and the public view and experience Moundville, they are seeing the final product of hundreds of years of not only landscape modification and the manifestation of the social order, but they are also immersed in the final version of those practices. Understanding changes in the monumentality and materiality during the final centuries of Moundville's occupation is at the center of this research. In the previous section, I discussed four different models for how Moundville's social structure could have operated and how constituent groups that sponsored individual mounds or mound pairs, whether they were segmentary house groups, constituent corporate groups, or religious sodalities, could have been integrated. These models are explicitly based not only on the monumental layout of the site, but also the artifacts recovered from on- and off-mound midden contexts as well as the excavation of burials excavated over the last 100 years. To answer the research questions outlined in Chapter 1, we need to link the monumental layout of the site to evidence for production and consumption of ceremonial paraphernalia and potential symbolic meanings behind the representational artwork that was produced for consumption in special social contexts. Thus, understanding the mortuary program, socially valued goods used during ceremony, and their sacred meaning as practiced at Moundville from about A.D. 1300 to 1450 is imperative in unraveling how and if the social structure reorganized from A.D. 1450 to 1520.

Mortuary Ritual

C. B. Moore's entire excavation program was aimed at excavating, publishing, and presenting the objects placed with the dead from archaeological sites across the Southeast. The Moundville mortuary program was first presented to contemporary scholars and the public following the mound excavations and off-mound excavations that focused on the northern portion of the site (Moore 1905, 1907). Moore's photographs and technical drawings documented many of the copper, shell, stone, and ceramic objects that were interred with the former inhabitants of the site, but most of the burials curated at the Alabama Museum of Natural History were excavated during the 1930s CCC excavations (Peebles 1971, 1974, 1979; Peebles and Kus 1977; Wilson 2008; Wilson et al. 2010). This research does not deal with human remains or associated grave goods, but it is important to review the distribution of funerary objects because these have been a key archaeological criteria for determining which objects and materials were associated with differential social ranking and inherited status.

Social ranking at Moundville is evidenced by the fact that a limited number of individuals were associated with high energy or nonlocal objects and materials (Peebles 1974:181-191). These individuals tended to be adults and were clustered towards the northern half of the site and near mounds. Conversely, evidence from the Roadway burials suggests that community members with achieved status were buried in corporate cemeteries, thereby materializing social relationships throughout the plaza (Wilson 2008; Wilson et al. 2010). Objects manufactured from copper, specifically copper-bladed axes, and marine shell were the rarest items and tended to be associated with adult individuals, but their inclusion with subadults and infants is suggestive of ascribed status. Further, most individuals were buried with no artifacts, lending evidence to confirm social stratification.

One of the issues with Peebles's (1974) original analysis, including a follow-up article (Peebles and Kus 1977) was the lack of temporal control. It was not until Steponaitis's (1983a) gravelot seriation and reanalysis of the dating for midden deposits and burials that it was understood that the burials at the site were not all contemporaneous. There is a higher ratio of burials than domestic midden depsosits at the site that date from A.D. 1300 to 1450, indicating that for a century and a half, the site was a necropolis and that many of the people were living elsewhere (Steponaitis 1998). After A.D. 1450, cemeteries were established outside of the site at single mound centers.

Objects of Display

The limited distribution of copper and marine shell artifacts (along with other imported items) in the burials of higher ranking individuals creates a general expectation that these materials can be considered markers of elevated social status and social value. The distribution and provenance of raw materials and the objects produced from them have been used to suggest that the Moundville polity was integrated in a system of prestige goods economic exchange (Welch 1991, 1996). However, it has also been argued that while certain materials and nonlocal objects were important, there were not enough prestige goods or evidence of control over their production to support a prestige goods economy model (Marcoux 2007; Wilson 2001). Although crafting was practiced on mound summits or in off-mound areas, production of copper, marine shell, and ground stone artifacts, as well as specialized serving vessels, was part-time. These objects and other manipulated raw materials materialized connections to nonlocal regions and visually demonstrated the distinctions of social status or use-right privileges. They became what we have defined as pendants, ornaments, palettes, bowls, bottles, symbol badges, monolithic axes, copper-bladed axes, quartz crystals, vibrant minerals, effigy pipes and bowls, and many other classifications of artifacts recovered archaeologically at the site. The objects recovered in funerary contexts are not centralized in their deposition (Marcoux 2007; Phillips 2006) and there is evidence for crafting in both on- and off-mound contexts (Knight 2010; Thompson 2011) indicating that production was not specialized. Further, the excavation of crafting refuse in mound midden contexts dating from A.D. 1300 to 1450 is indicative of part-time crafting by elites associated with mound summit buildings (Knight 2004, 2010). However, we lack evidence for the production of high status goods after A.D. 1450, suggesting that a political system organized around the trappings of chiefly office was no longer supported when the Moundville polity had reorganized around communal institutions.

Representational Art

Moundville has been known as much for its monumental architecture as its artwork that can be intrinsically linked to socially valued goods because the artwork is produced on various media (e.g., Knight and Steponaitis 2011:203). The sacred symbols used by ritual practitioners in ceremonial events can be divided into several, common Mississippian themes, many of which have broad distributions across the site and adhere to a conservative, local style. These themes include zoomorphic designs (winged serpent, crested bird, raptor), anthropomorphic designs (severed or isolated human body parts), centering designs (center symbols and bands), and various other, minor designs (ogees, bilobed arrow, human medallions). The locally produced, Hemphill-style was originally identified as engraved representational art on burnished ceramic vessels (Steponaitis 1983a), but that definition has since been expanded to include all locally produced media adhering to the locally stylistic canons (Gillies 1998; Knight and Steponaitis 2011; Lacefield 1995; Phillips 2012; Schatte 1997). Other, more abstract designs, such as chevrons, rectilinear and curvilinear lines, and stepped or terrace motifs have been recovered associated with or separate from the representational motifs. These themes, motifs, and designs have received a great deal of attention by anthropologists and art historians alike, but our understanding of their symbolic meaning is derived from ethnohistoric records, myths, and their context of use.

Summary

The timing of the production and consumption of these socially valuable items has been one of the main lines of evidence used to discuss the ceremonial and social structure of the site. Our current understanding of the timing of the production of engraved, representational art in the Hemphill-style on the exterior of bottles and bowls is that it was no longer produced after A.D. 1450, indicating that their meanings were no longer emphasized and that there was a democratization of their meanings (Knight 1997). However, so little is known about the time corresponding to the late Moundville III and emergent Moundville IV phase that the timing of the production and use of these vessels in a ceremonial context can be addressed with this research.

Interregional Relationships of the Black Warrior Valley

Archaeological research at Moundville has documented the occurrence of many raw materials and finished goods that were not locally available including pottery, stone, and copper artifacts, as well as the presence of non-local fauna, and architectural techniques and styles. These connections are important to understand for this research because of what these connections mean for reconstructing population movement, pilgrimage, trade and reciprocal obligations, and the acquisition of inalienable objects.

Pottery

The composition of pottery assemblages has been the traditional way that archaeologists have reconstructed population movement or interregional connections in the archaeological record. Historically this approach has centered on identifying differences between local and foreign decorative types, their varieties, vessel shape, and decorative modes, such as appliqué strips or nodes or painted decoration. Moundville's external connections to other river valleys throughout the Deep South were observed almost as soon as pottery was excavated from the mounds and surrounding areas (DeJarnette 1952; McKenzie 1964; Moore 1905, 1907), which were confirmed later by more detailed analyses of the whole vessels and sherds from burial, domestic, and mound midden contexts (Knight 2010; Steponaitis 1983a). Stylistically nonlocal decoration and vessel forms connect Moundville to the St. Francis River basin, Upper Yazoo River valley, Natchez Bluffs, the Tennessee River valley, the Nashville Basin, and the Gulf Coast. These connections, particularly to the areas and drainages associated with the Mississippi River valley have been supported by chemical composition analysis of stylistically nonlocal sherds (Salberg 2013; Steponaitis et al. 1996).

Stone

Archaeological excavations at Moundville have recovered numerous types of local and nonlocal stone and minerals (see discussion, Chapter 7). Nonlocal stone types have been recovered from both mound midden and burial contexts and have been visually and chemically identified as originating from the Upper, Central, and Lower Mississippi River valleys, the Lower Ohio River valley, the Upper Missouri River, Gulf Coastal Plain, eastern Alabama, and possibly Mesoamerica (Gall and Steponaitis 2001; Hammerstedt et al. 2008; Knight 2010; Marcoux 2007; Steponaitis and Dockery 2011; Walthall 1981:42; Welch 1991:173-174). It is of considerable interest that exported, finished fine-gray micaceous Pottsville sandstone (a local resource) palettes have been recovered from sites in the Lower Mississippi Valley (Knight and Steponaitis 2011:Figures 9.27, 9.28) a region with considerable ties to the Black Warrior Valley. Items produced from nonlocal stone and mineral materials include arrow points, expedient tools, large bifaces, bit tools, hoe fragments, and pigments of various colors and luster. The frequencies of finished display goods produced from nonlocal stone within burial contexts at Moundville is relatively low when compared to the frequencies of locally acquired materials used for the same purpose. This pattern indicates that while trade connections for non-local resources were an important premise for individual prestige at Moundville, it may have been the act of production, ritual exchange, and use of the finished items in corporate ceremonial contexts that integrated kin-based social segments (Knight 2010:358; Marcoux 2007:242-243). However, it has been demonstrated that the production of items made from nonlocal raw materials was not restricted to mound contexts and that access to these materials was more diffuse (Thompson 2011:220-223). These data suggest that ritual replication and duplication of these items was prepared for the use by autonomous corporate groups (e.g., Blitz 2007).

Copper

Native copper was a highly sought after resource for many prehistoric groups throughout North America. At Moundville and some surrounding sites, copper has been recovered from burial and mound contexts as finished items and production scrap. North American sources for copper are the upper Great Lakes region and the southern Appalachian Mountains. Copper scrap has been recovered from Moundville mound midden contexts and is most likely the result of copper artifact production (Knight 2010:67). Finished artifacts produced from copper recovered from burials and other areas of the site include copper-clad wooden eardisks, shell and wooden beads, axes, wooden effigy rattles, as well as copper gorgets, headdress elements, symbol badges, plates, and fishhooks (Jones 1941:figure 8; Marcoux 2007; Moore 1905, 1907; Peebles 1974; Peebles and Kus 1977; Welch 1996). Since there is not a local source for copper (within central Alabama) all items manufactured from copper, including the copper coverings for wooden and shell artifacts, are nonlocal.

Architecture

There are two notable examples of nonlocal architecture at Moundville from mound summit contexts: Structure 3 on Mound E (Knight 2010:190-194; Ryba 1997) and the earth lodge on Mound V (Knight 2009). Structure 3 on Mound E was a large, rectangular building sitting on the northeast and upper-most (i.e., third) terrace of the summit. Exposed features document a building with a single entrance along the north wall and a roof supported by a single line of large, deeply set posts that required insertion and extraction ramps to place and remove them during at least one reconstruction episode (Knight 2010:190-191; Ryba 1997:12-16). These posts would have supported a central ridge pole that anchored flexed-pole, thatch-covered walls which were inserted into wall trench foundations and surrounded a relatively empty building (Knight 2010:193-194). The presence of this style of building on Mound E dating to the late Moundville II phase is suggestive of the architect having direct knowledge of how to properly construct Cahokian great houses (Knight 2010:193).

Mound V is a broad, low earthen mound attached to the northern portion of Mound B and the two mounds are connected by the north ramp of the latter, and likely connected functionally as well. Excavations into the northeastern corner of Mound V revealed two connected structures. Structure 1 was surrounded by an earthen embankment and the roof was supported by large rigid posts. A tunneled entranceway connected the eastern portion of Structure 1 to Structure 2, a square building with single set posts, heavily daubed walls, and a clay floor. Both of these buildings were rebuilt in the same place and later burned, and in the case of Structure 1b, this burning was deliberate (Knight 2009:25-27). The earth lodge and associated building on Mound V were used during throughout the fifteenth century and the architectural style is South Appalachian in origin (Knight 2009:27)

Fauna

Interregional connections were not only maintained through the exchange and movement of raw materials and finished display goods such as ceramic vessels, stone tools, or copper ornaments, or demonstrated through foreign-style ceremonial facilities on mound summits, but also the trade of non-local species of products made from them. The nonlocal profile of the excavated Moundville faunal assemblages is difficult to distinguish due to the wide ranges of most animal species across the Eastern Woodlands, but there are some clues that trade of animal products were also sustaining external relationships. Marine shell cups, pendants, gorgets, and a bracelet all draw a connection to the Gulf of Mexico (Marcoux 2007) and their recovery in burial contexts suggests that artifacts made from marine shell were intended for display among influential kin-group leaders and for grave goods (Knight 2010:362). The engraved marine shell cups that were found in burial contexts are decorated in the same style as many other marine shell cups found at Spiro (Welch 1991:174-175). Another connection to the coast is the presence of an unfossilized shark tooth recovered from Mound G midden context (Jackson and Scott 2010:345), an identification that is relevant for the Mound P faunal assemblage. The presence of bison metatarsal, lateral malleolus, and the first phalanx from Mound G midden contexts are suggestive of the consumption and exchange of bison products, particularly bison hides originating from the Plains (Jackson and Scott 2010:344).

Summary

Understanding interregional relationships that were developed, maintained, and ultimately severed is imperative in the examination of changes in the political and social structure of Moundville, particularly during the Moundville III phase. The above summary of nonlocal raw materials, fauna, finished ceramic vessels and display goods, and the construction of foreign architecture styles allows us to develop a broader picture of the different river valleys that were tied to the ceremonial center. These connections were strongest to the west and south, with some more limited to the north and east. The height of nonlocal exchange at Moundville was during the Moundville II to early Moundville III phases, the time in which the majority of the burials and mound ceremonialism were occurring at the center, as well as a time when people began to move elsewhere.

The Late Mississippian in Central Alabama

This discussion has generated historical expectations for us to move forward in our understanding of the Late Mississippian period. We know what came before, we think we know what happened during, and what we know came after it. The critical time span for understanding a rearticulation of structural elements throughout the Moundville polity is A.D. 1400 to 1520, when multiple shifts in the archaeological record seem to have occurred. I am hedging here for a reason. The Mound P excavations are the most extensively recovered deposits from this time period that archaeologists have to date. Hence, we think we know what happens at the early Moundville III to late Moundville III boundary, but with this research, we are now in the position to clarify whether these processes occur or not. Beginning around A.D. 1450, the calendar date for what Knight and Steponaitis (1998:21-24) have defined as the beginning of a time of collapse and reorganization for the Moundville polity, several things appear to have happened. First, mound construction ceases. Second, the acquisition of non-local vessels and sumptuary goods halts. Third, cemeteries are established in the valley at single mound sites and the dead are no longer buried at the necropolis. Finally, bottles bearing engraved representational art in the Hemphill-style are no longer produced.

The occupation of Moundville during the late Moundville III phase was limited, a fact that supports the interpretation that populations shifted to other places beginning during the Moundville II phase (Steponaitis 1991, 1998). Large quantities of fired daub from single-set, rigid-post buildings, as well as diagnostic ceramic vessels and sherds recovered from the summits and flanks of four mounds (B, E, P, and V) located on the northern plaza periphery provide evidence for the continued use of earthen platform mound summits, but these materials are not associated with additional mound construction layers. The history of excavations on Mound P will be discussed below, but the occupation sequence of the mound will be briefly reviewed to complete this section. Archaeological investigations prior to 2012 have been relatively limited, but excavations have recovered large quantities of fired daub, Carthage Incised, *varieties Carthage*, *Fosters*, *Lupton*, and *Poole*, red-and-white painted sherds, and Barton Incised, *variety Estill* diagnostic ceramic types. These materials, as well as Structure 1, a large burned daub single-set rigid post building on the summit of Mound P, provide some clues that the mound ceremonial facility was used into the late Moundville III phase, and potentially beyond (Knight 2010:234-236; Moore 1905:218; Porth 2011a, 2011b).

Thomas Maxwell investigated the summit of Mound B in 1840, much to the interest (or concern) of the Carthage inhabitants (1876:69-70). Although the summit of the mound was covered with old growth trees, he did recover a high quantity of fired daub, stone tools, and a concentration of pottery sherds, including large, decorated rim sherds. Middleton’s mention of

Mound B in 1882 noted the terrace along the southern portion of the summit, a feature other large mounds at Moundville share, as well as a pit that was previously dug by someone into the summit of the mound, the identity of whom was most likely Maxwell (Steponaitis 1983b:136). When C. B. Moore visited the site during one of his surveys, he excavated 20 trial holes, and like Maxwell, did not recover any human remains (1905:141). In 1930, the AMNH excavated a portion of the southwestern terrace of Mound B and recovered a cache of whole vessels unassociated with human remains. These vessels, as well as sherds recovered during the mid-1930s CCC park repair project, have designs and modes of decoration that are diagnostic to the late Moundville III phase, including large jars with multiple, small handles and a neckless Carthage Incised, *variety Carthage* bottle (Knight 2010:314-315). Recent excavations by the UA fall field school in 2014 attempted to locate flank midden deposits using a bucket auger to recover a representative sample, but were not successful (Blitz et al. 2014). The materials recovered during the 1930s strongly suggest a late Moundville III terminal use for the mound as a ceremonial facility, but without modern, horizontal excavations on the summit and the location of the associated midden, the form and function of the summit architecture and the related mound activities are missing from our knowledge about the site.

Mound V, attached to the northern portion of Mound B by the north ramp of the latter, supported a large, South Appalachian-style earth lodge on its northeast corner dating to the fifteenth century (Knight 2009). However, there was no evidence for a continuation of mound construction (Knight 2009:27, 2010:363). Thus far, there are three earthen platform mounds with large, fired daub architecture, indicative of large buildings that could have possibly used for communal gatherings, council decisions, or elite precincts, but the ancient practice of renewing a polluted symbol was not practiced as it was, perhaps in different ways.

The Hinterland

Where the evidence for the use or occupation of Moundville during the late Moundville III phase has been limited to the Mound V excavations and the current Mound P investigations, archaeological evidence from the outlying sites in the valley, while limited itself, does provide some clues to the establishment of single mound centers and cemeteries away from the ceremonial center in the latter half of the fifteenth century. There are three archaeological sites that are important to the changes in political and social structure in the valley during this time: Snows Bend, Stephens Bluff, and the White site. It is imperative to this research that the timing and social context of the use of these sites is considered.

The Snows Bend site (1Tu2/3) is a single mound and village site located to the north of the Moundville site, close to Tuscaloosa on a bluff overlooking the Black Warrior and the current location of an organic farm owned by the Snow family. Moore did not visit Snows Bend, but in 1930 and 1932, Jones and the AMNH excavated two test pits in the mound and areas of the village (Bozeman 1982:94-109; DeJarnette and Peebles 1970). The off-mound excavations located a cemetery with multiple burials oriented east-southeast, along with the artifacts that were included with them when they were buried. Infant and subadult burials had a higher frequency of shell beads and clearly defined grave shafts than individuals of the same age at Moundville. Further, copper items that are restricted to a few burials at Moundville have not been recovered from Snows Bend, suggesting that the identity of these individuals was expressed differently than their contemporaries at the larger site (e.g., Peebles and Kus 1977). Effigy vessels were included with adults and older adults tended to have higher quantities of grave inclusions (DeJarnette and Peebles 1970:95). Damage to the summit and northern slope of the mound has limited archaeological excavation and interpretations of the mound, but the lack of recovered artifacts suggests that it was used as a residential platform (Bozeman 1982:94), with a suggested terrace along the southern portion of the summit (Porth 2015). Diagnostic pottery types and daub recovered from test units on the summit and northern flank of the mound provide a relative date of A.D. 1350 to 1450, with potential use of the mound into the Protohistoric Period (Welch 1998:152-153). It is possible that Snows Bend was established as a town from the earlier 1Tu56, located upstream three miles (Bozeman 1982:98), a process of town establishment that has been observed for Mississippian mound sites in the Oconee Valley (Williams and Shapiro 1990, 1996).

The White site (1Ha7/8) is a single mound and village site located to the south of the Moundville site and on the southern edge of an oxbow lake, one half mile from the river. C. B. Moore visited the "mound near Bohannon's Landing" in 1905 and noted that the mound was oriented to the cardinal directions with a height of about 13.5 feet and a distinct western summit rising about 16 feet (Moore 1905:127). Moore's test pit in the summit of the mound recovered some human skull fragments, but no other human remains or artifacts. In the 1930s, the AMNH and Jones recorded the dimensions of the mound and noted that it was largely sterile of artifacts, confirming Moore's observation 30 years prior (Bozeman 1982:247). Archaeologists returned to the site in the late 1970s as part of the University of Michigan's survey of the valley and recorded the dimensions of the mound, as well as conducting test excavations into the upper and lower portions of the mound summit. In 1979 the terraced platform mound measured 44-x-36 m at the base and about 24-x-20 m on the summit (Bozeman 1982:247). The height of the upper terrace was 3.3 m and the lower platform was 2.7 m tall. Paul Welch (1986, 1991 1996) used excavated data from White for his dissertation and a subsequent monograph to suggested that the basis for Moundville's economy was the control of the production and distribution of prestige goods. Disturbances to the summit of the platform mound include a hunting cabin and large tree growth, but the second terrace, located along the western portion of the summit, was still visible in the early 1980s when archaeologists from the University of Michigan visited and tested the site (Welch 1991:37-38). A fifteenth century chronological position for the building and use of the mound has been suggested based on recovered diagnostic pottery sherds, whole vessels, and mound construction stages with heavy concentrations of daub from burned buildings.

Stephens Bluff (1Gr14) is a single mound and village site located on an alluvial terrace in the lower Black Warrior Valley near Demopolis, Alabama. The site has been investigated multiple times to determine the timing of occupation and degree of integration or relatedness to the Moundville polity (Hayward et al. 1995:6). Pottery recovered from sealed off-mound feature contexts indicate that there was a late Moundville III to Moundville IV occupation of at least this portion of the site, with additional potential use of the mound summit, although the summit of the mound is disturbed and excavations were limited (Hayward et al. 1995). Pottery types and decorative modes diagnostic to the Moundville III phase, particularly the latter portion of the phase, recovered from an off-mound context include Carthage Incised, *variety Carthage*, Barton Incised varieties, red-and-white painted sherds, diminutive jar handles, frog and bird effigy features, downturned lugs, a short-necked bowl rim, and a deep flared-rim bowl rim (Hayward et al. 1995:25; Welch 1998:160). It should also be noted that there is a Woodland Period component at the site, but excavations have not been extensive enough to determine if there was continuous occupation from the Woodland Period through to the late Mississippian, or if there was a period when the site was abandoned and then reoccupied hundreds of years later. What is certain, however, is that data from excavated feature contexts at Stephens Bluff, located 15 miles downstream from the White site, suggests a late prehistoric date for the presence of Moundville-related people living away from the center at a critical time. What is not certain is how well integrated this site was with Minter Creek or the White site to the north (Welch 1998:160-161), the two closest contemporary mound sites.

Minter Creek (1Gr76) is a single mound site located 23 km south of Moundville that has been the subject of almost no known archaeological excavations. Auger tests placed into the mound revealed at least two mound construction stages and the presence of McKee Island Brushed, a Protohistoric type from eastern Alabama. This artifact indicates that there was some occupation during the Moundville IV phase, but the nature of the site's occupational history is not known (Welch 1998:160). It may be important to note however that the mound summit is terraced, an architectural feature shared by mounds B, E, and P at Moundville and the single mounds at the White and Snows Bend sites. All these terraced mounds show evidence for occupation or use throughout the Moundville III phase and into the Moundville IV phase (Porth 2015).

The timing and direction of the establishment or reoccupation of prehistoric sites to the south and north of Moundville during the fifteenth and sixteenth centuries is indicative of a continued importance of affiliation to the old center. It is certainly not out of the question that these single mound and village sites were anchored or affiliated to other single mound sites, resulting in at least one locus of influence throughout the valley that was disaffiliated with the former center, possibly located at Snows Bend or White. The history of Moundville research has been largely focused on the center, with relatively little excavation being conducted at the single mound, village, or farmstead sites surrounding it. This omission is as much of a result of antiquarian, archaeological, and public interest and excitement about large, impressive sites as it is an outcome of land ownership issues, historic site destruction, and riverine erosion. It will only be with the undertaking of another, more intensive regional archaeological project that addresses the nature of integration of these sites to the multi-mound center and to one another that we will have a clearer picture of the timing and scope of political and social change in the valley. However, just as we cannot continue to look inward and expect the entire puzzle to fit together, archaeologists must also look to adjoining river valleys to understand where people went when their needs could no longer be met by staying put.

The Moundville Diaspora

In the previous chapter, I discussed the different ways in which anthropologists and historians have explained political and social change in ancient societies. These studies are sometimes limited to an examination of how a society or cultural expression emerged (i.e., how and where it was born), the florescence of that culture (i.e., what it looked like in its mature state), and the society's collapse (i.e., when and how it died). Understanding ancient complex societies through a life cycle analogy has generated a great deal of information about the people and social structures that made up these cultures, but too often we treat the so-called "collapse" of these cultures as an unfortunate end to something that was, or could have been, great. Looking beyond "collapse" allows us to critically ask whether our value of an ancient culture is informed by the material record it left behind. As previously discussed, "collapse" rarely means the complete disappearance of social structures or the people that interacted with them. When certain social or political structures dissolve or rearticulate, the people that were influencing the change or accepting the status quo either stay in the same location or go somewhere else, rather than disappearing into the prehistoric ether. A focus on the social processes of abandonment, coalescence, cycling, regeneration, relocation, diaspora, and fissioning by archaeologists (e.g., Anderson 1994, 1996; Beck 2013; Blitz 1999; Blitz and Lorenz 2006; Faulseit 2016b;

Kowalewski 2006; Marcus 1993; Railey and Reycraft 2008; Regnier 2014; Schwartz and Nichols 2006) have recently begun to expand upon and challenge the terminal processes that have been called decline, dissolution, or collapse. Throughout this research, it is my position that the social processes that occur *after* the waning of social institutions, and how the people of these societies transformed or sustained the structures they knew, is of equal (or even exceeds), the importance of what happens during the waxing of these same organizations.

It is within this framework that the ceremonial center and surrounding towns and farmsteads in the Black Warrior Valley should be understood. Moundville has been discussed as a prehistoric ceremonial center that was the result of a rapid aggregation of people modifying the landscape into a social plan and then leaving the arrangement to establish single mound sites elsewhere in the valley while still being connected to the center through mortuary and mound summit ritual before most vestiges of Mississippian ceremonial life halted at A.D. 1450. What is often not included in the traditional narrative, outside of academic explanations, is what happened during this outward movement of people that built and used a large, multi-mound center. Prehistoric population movement can be traced from river valley to river valley using carefully constructed sequences of absolute dates, ceramic stylistic analyses, and the analyses of architecture, stone tools, and ritual items that people produced using their preconceived ideas of how things should be done. The tracking of the outward movement from Moundville post-A.D. 1450 has been done in areas surrounding Moundville, with specific attention being paid to the groups occupying the upper Coosa and Alabama rivers.

Sometime during the first half of the fifteenth century, a large group of people originating from the Black Warrior Valley moved overland to the upper Cahaba, upper Coosa, and upper Alabama rivers (Jenkins 2009:214-216; Regnier 2014:31-33). The Big Eddy phase is defined as a concentration of Moundville material traits, particularly decorative ceramic styles, dating from about A.D. 1450-1575 located along the upper Alabama River, near the junction with the Tallapoosa River. There are three large archaeological sites that have been identified as being occupied during the Big Eddy phase. These sites include mound sites (Big Eddy, Charlotte Thompson, Thirty Acre Field, Jackson Lake), a mound and village site (Fort Toulouse), and a peripheral village (Ebert-Canebrake) (Jenkins 2009:214-215). It is possible that Tascalusa's chiefdom was centered on these towns and that the (now destroyed) Charlotte Thompson site was the protohistoric site of Atahachi (Jenkins 2009:215). Further, artifacts from the Luna expedition were found in the mound at Charlotte Thompson at various levels (Moore 1899), indicating that mound construction layers were added to the mound after interaction between Alabama River societies and the Spanish expedition that was making its way through the Deep South (Jenkins 2009:215). What is clear, however, is that the people that moved to this area and site that are identified by archaeologists as Big Eddy phase are a site-unit intrusion. This interpretation is based on the high degree of similarity between Black Warrior Valley Moundville III phase and Alabama River Valley Big Eddy phase decorated pottery and vessel forms. C. B. Moore visited Big Eddy, Charlotte Thompson Place, and Thirty Acre Field in March and April of 1899, documenting mound construction episodes, burials, and an overall assemblage that was very similar to materials produced at Moundville, but also included mid- to late sixteenth century Spanish items (Moore 1899:319-347).

Charlotte Thompson Place (1Mt51) was located close to Montgomery on the south side of the Alabama River in a cultivated field (Moore 1899:319-333). It had a single, disturbed mound constructed of a core of clay under a mantle of sand partially constructed on a natural ridge when Moore visited the site from March 5-9, 1899 that included flexed, semiflexed, and bundle burials within and below the mound fill, although the field notes have made it difficult to sort out the associations of the burials with mound construction layers (Sheldon 2001:23). Artifacts recovered by Moore that appear to be more closely related to other Moundville II and III phase contexts include a fine shell-tempered flared-rim bowl with decoration on the interior of the rim that is a derivative of the trophy theme consisting of alternating hands and bones, and a stylized, cat-like effigy adorno (Moore 1899:figures 41 & 42). The second whole vessel recovered from the site (reported from the same burial as the flared-rim bowl) is decorated with incised chevrons and punctates on a fine shell- and grog-tempered carinated bowl that is stylistically related to the Pensacola cultural region to the south (Regnier 2014:76). Other aboriginal objects recovered include clay pipes, a polished stone gorget, shell gorgets, fish hooks, and beads, and copper symbol badges or pendants. What is notable about some of the burials from Charlotte Thompson is that they contained middle sixteenth century Spanish artifacts with adult and subadult burials, including copper plate with a punched heraldic design, glass beads, brass bells and a candlestick, a silver gorget, and iron implements.

Thirty Acre Field (1Mt7) was located close to the Big Eddy site (below) and is characterized by two mounds containing poorly preserved, flexed burials and multiple alternating occupation, midden, and construction episodes (Moore 1899:333-344). Artifacts recovered from both mounds include Spaghetti and Hixon style shell gorgets, clay and stone pipes, large polished “hoe-shaped” tools, adzes, and celts, shell beads, galena cubes, copper discs and symbol badges, and a shell-tempered subglobular bottle decorated with a Carthage Incised, *variety Carthage* design. Additional ceramic sherds and vessels from Thirty Acre Field indicate a close association and connection to Moundville (Regnier 2014:83-84). The copper symbol badges, which were very similar to those Moore excavated at Charlotte Thompson Place, were recovered from burials in both mounds at the site. A couple of these ornaments were damaged, but in one burial in the smaller mound, two were located near the head of the individual, while five were stacked on top of each other on a piece of bark, all of which was wrapped in a split-cane mat. This individual was also buried with large shell beads, shell hair pins, and six long shell beads, likely fashioned from the columella of marine shells. A second individual recovered from the smaller mound was buried with eight copper symbol badges, each stacked on the other, in addition to galena, a stone discoidal, and a ceramic object. The significance of these copper symbol badges and their relevance to Moundville will be discussed in Chapter 6.

The Big Eddy site (1Mt5) is a multi-component site with a single, dominant mound and surrounding village area located two thousand feet to the southwest of Thirty Acre Field. The Moore excavations into the summit of the mound were restricted by two factors. First, a historic European cemetery intruded into the summit of the mound and second, the summit of the mound was used as a refuge for cattle during the river's flood stage (Moore 1899:345-346). The individual recovered in Burial 13 was an adult buried in a flexed position accompanied by shell beads and pins, a ceramic trowel used during pottery production, and copper symbol badges that were placed on top of "a coarse fabric of twisted vegetable fibre [*sic*], which in its turn, lay upon cane matting" (Moore 1899:346) which was most likely a cane burial mat or shroud (Regnier 2014:84). The results from excavations and survey during the 1970s have suggested that the mound was used briefly by late Mississippian peoples for mortuary ritual, but that the surrounding occupation area dated to the Late Woodland Period (Sheldon 2001:23). Jackson's Lake (1Ee82) is a single mound site located in the arc of an oxbow lake, about 9 km below the Coosa-Tallapoosa confluence (Regnier 2014:87). This mound was heavy damaged as the result of looting, but limited excavations did recover stylistically Moundville and Lamar pottery, as well as Woodland ceramics.

The abandonment of an ancient symbol, the disconnection of the valley from external realms, the rearticulation of symbolic art, and the shift in the location of the path to the afterlife are all indications that the polity was becoming more decentralized and less integrated as a chiefdom *before* an event that would ripple across the Southeast (e.g., Knight 2010:364; Knight et al 1999:6-7; Knight and Steponaitis 1998:23; Peebles 1986:33; Peebles 1987:24; Steponaitis 1998): the entrance of Hernando de Soto into the Southeast and the Black Warrior Valley in A.D. 1540 (cf. Curren 1984; Hudson 1997; Hudson et al. 1990).

The Entrada

In the autumn of 1540, a large contingent of Spanish soldiers left the Alabama River and the smoldering ruins of Mabila, where a battle between indigenous North American peoples and Europeans occurred. They traveled to the west for four or five days across uninhabited terrain until they arrived at another sizable river. According to Elvas (Clayton et al 1993:105) it is at this location that they arrive at the village of Taliepataua, the first settlement they encounter belonging to the province of Pafallaya along a river. Conversely, Rangel (Clayton et al 1993:294-296) notes that after an apparent overnight stay on the river, they crossed through swamps and arrived at the town of Talicpacana, located on the river and containing quantities of corn. The differences in the chronicler's itinerary and the identification of the corresponding archaeological sites to the five settlements these men encountered can be saved for another line of research, but whenever they arrived in Taliepataua/Talicpacana during the last two weeks of November 1540, they encountered the residents and settlements of the Black Warrior Valley.

Understanding the timing of this movement is important to this research because it can provide some insight into the timing of social reorganization in the valley.

Here I will rely on historic evidence from Elvas and Rangel since they provide a more complete description, however variable, of the valley than Biedma or Garcilaso (Clayton et al 1993). What societies did these men encounter and do they provide clues as to how they were organized? What kind of settlements do they describe and how far apart are these located? Do they mention the presence or use of platform mounds? Do they record the presence of a leader that may have been important to them as a guide and interpreter when they moved west? Have we recovered any Spanish artifacts from sound archaeological contexts that date from either Moundville III or Moundville IV phases? The answers to these questions serve as components that will help to address the larger question, which is directly related to the task at hand: was Soto's entry into west-central Alabama so eventful that it was a causational factor in the reorganization of social and political relationships among indigenous peoples living a life-style we associate with the Moundville III phase (e.g., Curren 1984:238-239; Hudson 1997:256-259) *or* were these processes already in place by the time he arrived, providing us with a historic glimpse of Black Warrior society after reorganization had occurred sometime in the fifteenth or very early sixteenth century. In other words, were the Spanish were trudging through the valley during the Moundville IV phase (e.g., Peebles 1986:33; 1987:24)?

By late November 1540, Elvas and Rangel had been traveling throughout the Southeast for a long time and had visited and recorded a multitude of villages and towns, including those with mounds. In these instances, the principal man was described as living on an earthen mound, where they met de Soto. However, the five settlements that were visited or recorded during their movement from Mabila to Chicaça are all described as villages or towns, with no mention of earthen mounds. This omission suggests that this symbol with ancient roots already had been abandoned, were only used periodically for ritual purposes (i.e., they were not permanent residences), or that de Soto's men simply did not arrive at any sites with earthen mounds. However, there are some clues provided by Rangel that can help to clarify this problem.

Rangel notes that the army arrived at the town of Zabusta on December 1, 1540, where they commandeered canoes and used a piragua to cross the river at this location (Clayton et al 1993:296). They then traveled to "another town on the other end" which he described as a good town along the Apafalya River where they could lodge for a few days. Here is where Rangel recorded the capturing of the town's "lord," a man named or titled Apafalya, as a guide and interpreter for their journey to the west, which began on December 9, 1540. This short description can potentially provide a clue as to the nature of social and political organization in the Black Warrior Valley in the autumn of 1540. There was no mound located at this unnamed town (most likely "Apafalya"), but it did have a "lord," indicating that some form of ranking was present within these towns, but that the presence of a mound was not necessary. Further, when Elvas records the arrival of the army in Taliepataua, he notes that this is the first town that they arrive in that is within the province of "Pafallaya," indicating that this person held influence over the region. If we have assumed that the presence of a "lord" at a town implies the existence of an earthen mound (which were recorded for other towns with lords), then determining whether or not de Soto experienced Moundville III or Moundville IV phase settlements and social organization, and hence the timing of these changes, could be problematic.

Currently, there are no early sixteenth century Spanish artifacts that have been recovered from a sealed archaeological context from the Black Warrior Valley from sites that were occupied during the Moundville III phase (Bozeman 1982; Peebles 1987; Welch 1991, 1998).

Absolute dates from Moundville using the Gibbs Sampler approach place the boundary of the Moundville III and Moundville IV phases somewhere in the very late fifteenth century and first quarter of the sixteenth century, before de Soto's entry in the fall of 1540 and therefore placing his entrada in the valley during the Moundville IV phase (Knight et al 1999:6-7), further supporting earlier observations by Peebles (1986:33, 1987:5). Settlements that date to this phase were not located around mounds, seemingly supporting what the chroniclers observed in 1540. Thus, it seems that the relevant questions have been answered with the archaeological and historic data we currently have: de Soto entered the valley at the beginning of the Moundville IV phase, after mound construction halted and villages were disconnected from earthen mounds. This realization indicates that social relationships began to reorganize around more egalitarian principles during the fifteenth century, *before* Europeans arrived.

The Forgotten Century

Steponaitis (1983a:168-169) noted that the Protohistoric occupation of the Black Warrior was related enough to the contemporaneous Alabama River and Tombigbee occupations that a single Alabama River Phase could be identified throughout all three of these river basins (Sheldon 1974). Mississippian societies reorganized into more egalitarian, localized groups centered on compact villages that excluded platform mounds, the first time in over 400 years that monumental architecture was not actively constructed. The mortuary program was also different, with a decrease in the quantity and quality of mortuary items and the introduction of secondary burial associated with urns. However, after excavation of the Moody Slough (1Tu4) and Big Prairie Creek (1Ha19) sites in the Black Warrior drainage, as well as a reanalysis of late Moundville III and Alabama River Phase ceramics from the region, Little and Curren (1995) argued that the Protohistoric occupation at Moundville and surrounding sites was a local development from antecedent Moundvillian stylistic traditions, and hence different enough from Tombigbee and Alabama River Protohistoric styles, that the Protohistoric temporal occupation and related material assemblages could be defined as existing during the Moundville IV phase.

The material expectations for Moundville IV in the Black Warrior Valley can be synthesized from the above discussion as follows. Single set, rigid post buildings with interior gabled roof support posts, and daubed walls leave not only large concentrations of fired daub after house destruction, but also amorphous scatters of post holes and building features (Lacquement 2004:64-66) in large, compact villages close to the river, located south and north of Moundville. Individual adult burials are expected to be placed in grave shafts that contain some personal items or in ceramic urns, the result of bone processing (Steponaitis 1983a:168). The decorative pottery styles that continue from the Moundville III phase into the Moundville IV phase are broad line trailed-incised motifs, typically executed on deep and shallow flaring rim bowls (Little and Curren 1995:58; Sheldon and Jenkins 1986:96). These motifs include interlocking scrolls (Carthage Incised, *variety Carthage*), hand and forearm bone combinations (Carthage Incised, *variety Fosters*), and terraces (Carthage Incised, *variety Poole*).

While some pottery motifs continue into a different time, there are others that either drop out of the sequence or are introduced. Arched incisions on wet paste (Moundville Incised) standard jars and representative symbolic art engraved (Moundville Engraved) on bottles are no longer practiced, but there is an increase in red and white painting on flaring rim bowls. Sometime in the fifteenth century there was a ceramic stylistic influence from the Central Mississippi Valley (CMV) related to Kent, Parkin, Walls, and Nodena phases first noted at Lyons Bluff and Yarborough sites from around A.D. 1400-1450 (Sheldon and Jenkins 1986:99-100). Whether or not these changes were representative of a site unit intrusion or a more gradual influence through alliances and exchange (e.g., Sheldon and Jenkins 1986:100) is not clear, but by A.D. 1520 at Moundville, several CMV stylistic traits had been adopted. These introduced or adopted stylistic modes include: appliqué strips added to the neck and collar of standard jars (Alabama River Appliqué), similar to Campbell Appliqué (Phillips 1970:61-62); finger nail-pinched jars (Parkin Punctated); nodes encircling a jar near the shoulder of the vessel (Banks Noded); and an increase in painted decoration, similar to Nodena Red and White. Understanding the timing of these stylistic influences is important because a broader social change was occurring during the fifteenth century in central Alabama.

Future work in the Black Warrior Valley at Moundville III single mound sites should address how these were integrated with Moundville or each other to shed further light on what processes of social reorganization were occurring at the center. Were Snows Bend, White, and Minter Creek relatively autonomous or competing with one another and established as the result of fissioning from the ceremonial center? Were they the primary location of residence for participants in Moundville ceremonies, returning to the center to conduct certain ceremonies then returning to the single mound to carry out other ceremonial, social, and political business? These questions would be addressed through extensive excavations to address these issues over a larger spatial scale than is available at Moundville. We keep asking how the mounds at Moundville were integrated using different explanatory models, but we have been asking these questions with a relatively limited understanding of how the rest of the valley was characterized as a whole.

Summary

The aim of this research is to determine which social institutions collapsed and which ones continued as evidenced by changes in the materialization of structural elements from mound midden contexts on Mound P during the fifteenth century. This research review detailed the historical trajectory of the Moundville site and culture so that any rearticulations or continuities of structural elements materialized in Mound P midden deposits, a specific archaeological context, can be understood in a broader site and regional context.

Current consensus is that Moundville was one of the preeminent Mississippian multiple mound ceremonial centers and our understanding of the historical trajectory of the polity has been influenced as much by popular anthropological and archaeological theory as it has been the ongoing excavations and remote sensing methods that continually allow us to reevaluate our established models, or suggest new explanations, against new data for goodness of fit. Moundville was a place where ceremonies were conducted on mound summits and off-mound areas to reaffirm corporate and kin-based social obligations, compete with constituent corporate groups, and display and manipulate socially valued goods in ritual context. The Mound P excavations in 2012 located and investigated a thick midden that appears to post-date A.D. 1450, a time when mound ceremonialism, long distance connections, human interment, and engraved representational art have been suggested to have halted at the center. The newly excavated materials can be used to reevaluate the timing and occurrence of these changes through an analysis of deposited midden and mound construction layers, radiocarbon assays, vessel morphology, the frequency and distribution of ceramic types, and a macroscopic analysis of stone artifacts and objects of adornment. The changes in these material categories, presented as separate chapters below, will allow us to reevaluate the Moundville III narrative as it relates not only to changes in the Black Warrior Valley, but also in ancient societies that go through periods of institutional collapse and social reorganization.

CHAPTER 4

ARCHAEOLOGICAL EXCAVATIONS ON MOUND P

Social relationships and structural elements are materialized in complex societies as the built environment (DeMarrais et al. 1996; Earle 1997; Sewell 2005:362-365). The built environment encapsulates the meanings and interpretations that people experience when they interact and move through places, especially if those places are shaped through monumental architecture (Sewell 2005:362). In prehistoric societies of the Midwest and Southeast, the built environment took the form of monumental earthworks such as platform mounds that were constructed with episodic layers of specially-selected soils. Mississippian platform mounds functioned as the supporting architecture for summit buildings, where community members lived or conducted specialized activities. The refuse from the production of crafts, quotidian and ritualized food consumption, as well as private and public ceremonies was deposited in large flank midden deposits while the summits were swept clean. The episodic construction layers of Mississippian platform mounds and the destruction of mound summit buildings have been linked to the succession of political office (Hally 1996). More broadly however, the use of platform mounds enacted and reproduced schemas related to their meaning through practice.

At Moundville, it has been suggested that the practice of adding of episodic construction mantles to mounds ceased around A.D. 1450 (Blitz 2008; Knight 2010; Knight and Steponaitis 1998), potentially signaling shifts in schemas or the allocation of resources to other projects. However, small quantities of diagnostic ceramic types and the presence of burned daub buildings on the summits of mounds B, E, P, and V suggest that some sort of mound summit use continued through the fifteenth century. Thus, understanding how structural elements were rearticulated, what institutions collapse, and how social elements were reproduced on mounds are important anthropological questions.

In this chapter, I concentrate on stratigraphy and daub analysis from the 2012 archaeological investigations into Mound P conducted by the University of Alabama. This analysis will address the first research question that asks: did episodic, mantled-mound construction continue past A.D. 1450 on Mound P? If mantled-mound construction continued on Mound P, it would indicate that the schemas (i.e., renewal, community, sanctity) that enacted the resources of human labor needed to move large amounts of selected soils to continue the reproduction of mound symbolism remained intact. Continued mound construction should be present in additional construction layers across all temporal contexts punctuated by deposits of burned daub from destroyed summit buildings. Conversely, if mantled-mound construction did not continue into the latter half of the fifteenth century, the cessation of mound construction was likely the result of shifting schemata in the meaning of mounds and the resources needed to reproduce those rules. A discontinuation of mantled-mound construction is expected to be characterized by an absence of mound construction layers and no deposits of burned daub. This line of evidence will address the overall research problem that seeks to answer what structural elements were reproduced or discontinued at Moundville during the fifteenth century using Mound P as a case study.

Figure 4.1. Mound P from the eastern side of the mound. Note the decided slope and terracing on the southern half of the summit.

Mound P at Moundville

Mound P is the largest earthen platform mound on the western plaza periphery at Moundville (see Figure 1.2). The mound is characterized by steep angled flanks (~30 degrees) and a ramp on the eastern flank that was recorded on Moore's original topographic map in 1905, and is present today as a way for landscaping machinery to access the summit. The basal measurements of the mound are about 55 by 62 m and the summit measures 40 by 30 m and its shape is characterized by a "very decided slope downward from south to north" (Moore 1905:218). This downward slope (Figure 4.1) is the result of a different way of constructing the summit layers as terraced and is not the result of erosion. This form of mound construction is common among Moundville III phase mounds in the valley (Porth 2015). The southern, raised terrace is about 8.2 m (54.5 masl) above the surrounding ground surface and the northern, lower platform is about 7.1 m (53-53.5 masl) above the ground surface (Knight 2010:234). The volume of Mound P, using a digital gridding method for contour maps is currently estimated to be 15,880 m^4, ranking fifth in total mound volume at the site (Lacquement 2009:32-44).

History of Excavations

The history of recorded archaeological investigations into Mound P begins with Clarence Bloomfield Moore and his first visit to the site in 1905. Moore's method for locating and recovering burials and their associated mortuary items was to dig trial holes measuring about 4 x 4 ft into the summits of earthen mounds (Moore 1905:139). When he was unsuccessful in obtaining materials that he could publish and send back to the East Coast, he noted the paucity of artifacts and moved on to the next mound or site. Moore's crew dug 20 trial holes in the summit of Mound P to no avail (Moore 1905:218), one of which was possibly located during the 2012 field school excavations on the northern half of the summit (see *2012 Summit Excavations*, below). In the 1930s, the Civilian Conservation Corps (CCC) cleaned up several mounds at the site by removing trees and patching eroded areas in preparation for the site becoming a park (Jones 1941). It is unknown how much soil was needed to repair Mound P (Lacquement 2009:39), but it is doubtful that it needed the extensive restoration required for mounds B and R (Jones 1941). However, there was a small collection of ceramic sherds diagnostic of the Moundville III and Moundville IV phases and a large quantity of daub recovered from the mound surface maintenance in 1937, indicating that there was most likely a large building on the summit sometime during the fifteenth century (Knight 2010:234-235).

In 1988, Boyce N. Driskell, then of OAR, excavated a stepped 1-x-6 m trench into the southern portion of the eastern flank of the mound while directing the UADA fall field school. The three contiguous 1-x-2 m units were excavated to a maximum depth of 1 m in horizontal 10 cm arbitrary levels and exposed four strata. Zone 2 was a slope deposit with a high quantity of fired daub about 40 cm thick overlaying two zones of probable mound fill. Driskell's excavations were the first modern excavations on the mound and the material recovered from his excavation units included late phase diagnostic ceramic sherds, as well as the evidence for a building destruction episode, provided complementary evidence to the 1937 materials that the mound was occupied and used to some degree throughout the fifteenth century (e.g., Knight 2010:236).

The nature and reason for subsequent archaeological investigations in 2009 and 2012 on Mound P cannot be understood without a short discussion about the Walter B. Jones Archaeological Museum renovations that were completed in 2010. The renovation of the museum included plans for a large, concrete-footed staircase to be placed into the western flank of Mound P, connecting the newly constructed eastern patio of the museum to the summit of the mound for a public viewing area. This would provide the public with an alternate view of the park than the one from the summit of Mound B with benches and binocular stations. However, the plan to integrate Mound P into the visual program of the park and museum required intrusive concrete foundations for the binoculars and deep supports for the staircase footings. Therefore, prior to any disturbances to the flanks or summit of the mound or archaeology, remote sensing and subsurface archaeological investigations were required.

Mound P Magnetometry

There have been two magnetometer surveys conducted on Mound P, both of which were done by Chester P. Walker of Archaeo-Geophysical Consultants, LLC. Magnetometry is one of the most widely utilized geophysical techniques used by archaeologists because data collection and processing are relatively fast (Gaffney 2008:316). It is an electromagnetic method that detects anomalies to the magnetic field of the earth from buried archaeological features and movement or disturbance of strata (Aspinall et al. 2008). Two kinds of magnetism that can result from human activity are relevant to archaeologists: remnant and induced magnetization. Remnant magnetization occurs when thermally altered features align differently than the earth's natural, unordered magnetism. This happens during a process of thermal alteration, when the Curie temperatures of iron rich clays are exceeded, ordering the magnetic alignment and reaching high thermoremnent magnetization (Aspinall et al. 2008:21). For example, the presence of bricks, kilns, or the destruction of a large daubed building from fire, would cause remnant magnetization that would be present in a magnetometer survey. Induced magnetization is caused from the reordering of the magnetic alignment of iron oxides in soils that are anthropogenically altered more than the surrounding soil matrix, such as organically-rich trash deposits or buried middens, architectural features, the addition of magnetic material such as pottery or fired clay to a matrix, or soil formation processes. These changes in magnetism are the result of a process of reduction and re-oxidation of magnetite to maghemite in sealed deposits (Aspinall et al. 2008:24). The form, strength, and magnetic susceptibility of human caused remnant and induced magnetic anomalies are influenced by the earth's magnetic field.

The first magnetometer survey on Mound P was conducted in 2009, just prior to initial excavations into the western flank and summit of the mound. This survey was limited to the summit of the mound and done with a fluxgate gradiom, an instrument that measures the flux density generated by induced magnetism and is regarded as a workhorse of archaeological survey because it can gather data rapidly in a variety of environments (Aspinall et al. 2008). This survey detected anomalies to the magnetic field on the summit of Mound P, including strong dipoles along the raised, southern terrace of the mound and some possible disturbances on the northern platform (Porth 2011a:Figures 3.2 and 3.3). The black or dark lines or areas are positive

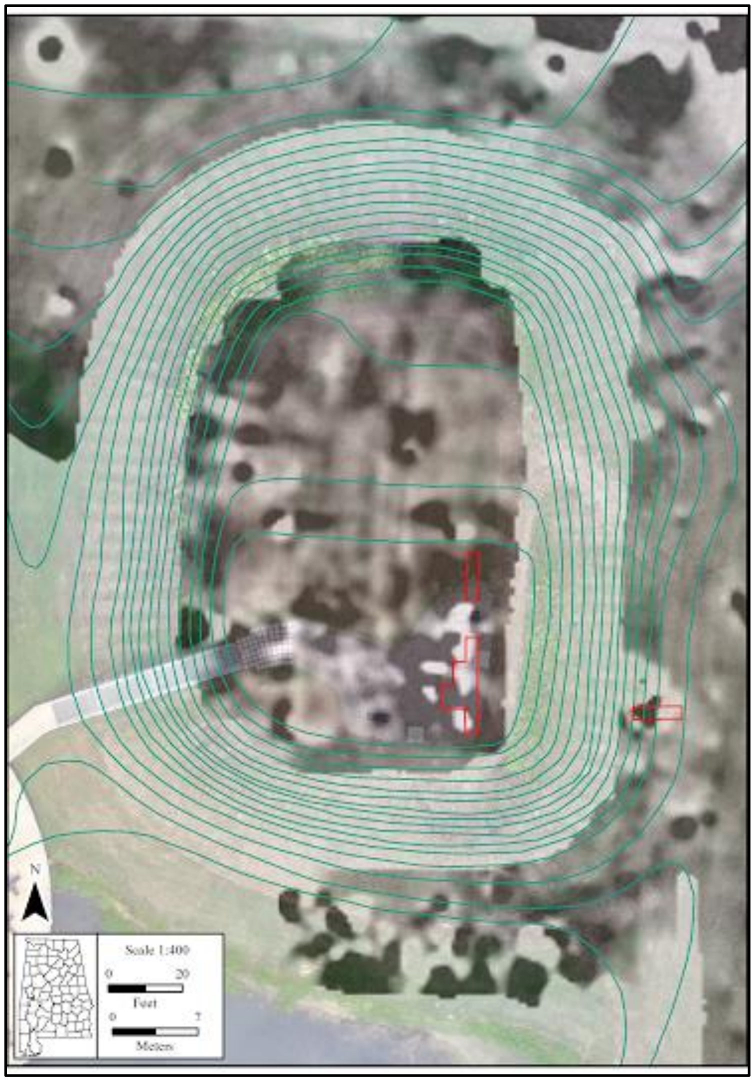

Figure 4.2. 2010 Magnetometer survey on summit of Mound P. The approximate locations of the 2009 summit excavations and 1988 eastern flank trench outlined in red. Location and path of museum staircase and viewing area is along western flank and summit of mound in white. (Figure courtesy of Benjamin Lundberg).

dipoles and are centered on the feature, while the white or light areas are negative dipoles and create a halo around the positive dipole (Aspinall et al. 2008). Walker interpreted these data to indicate the presence of a large, probably burned daub building on the southern portion of the mound, with possible smaller structures on the northern platform, although the depth could not be determined without using a mixed method geophysical approach.

In 2010, funded through a grant secured by John H. Blitz of the University of Alabama, Walker returned to Moundville with a Bartington Grad 601 Fluxgate Gradiom to survey much of the site, with a focus on the large, central "empty" plaza and generated one of the largest ground-based geophysical surveys in North America. He pulled the instrument by hand or it was towed by an all-terrain vehicle along a 1 m traverse interval with a sample interval of 10-Hz (Davis et al. 2015:163). The results of the overall survey are available elsewhere (Davis 2014; Davis et al. 2015; Walker and Blitz 2010), but the magnetic anomalies from the summit of Mound P are of interest here. The placement of large buildings on the summit was like the data from 2009, but there was more clarity to the possible dimensions of the building located on the southern portion of the mound (Figure 4.2). Instead of extending across the entirety of the southern flank, as was interpreted from the 2009 data (e.g., Porth 2011a), the large burned structure appeared to have been limited to the southeastern corner of the summit, while still large. The subsurface anomalies on the northern platform were also still present, but a little less pronounced. The results of both magnetometer surveys directed the research design for the 2009 and 2012 fall field schools, which focused on the summit of the mound to gain a better understanding of the size, location, and extent of Mound P summit architecture.

2009 Archaeological Excavations on Mound P

In the summer and fall of 2009, OAR and UADA conducted archaeological investigations into the western basal flank and summit of Mound P, respectively (Porth 2011a:Figure 3.1). These excavations were done to mitigate the impact of the anticipated metal staircase that would connect the newly renovated museum to a newly designated viewing area on the summit of the mound. The original OAR research design for the 2009 field work, under the direction of Robert Clouse, outlined a plan to excavate two, 1-x-1 m test units (Test Units 1 and

2) at the base of the mound close to the museum in advance of planned minimally invasive staircase foundation pillars. These units were to be excavated in 10 cm levels within natural or cultural strata and soils were to be screened through one-quarter inch mesh. The emphasis on summit excavation in 2009, under the direction of Blitz, was to expose possible features of the subsurface anomaly that Walker interpreted to be a burned daub building in a series of contiguous 1-x-2 m units. This would intersect and identify an edge of the building and the confirmation and dating of the potential structure would provide a terminal date for the use of the mound. The soil from the plowzone would be removed as a single, 20 cm arbitrary level to efficiently expose the possible architecture. Secondly, two 1-x-2 m units would traverse the southern-northern terrace interface to determine the construction history of the terminal summit layers. All unit fill and feature fill soil would be screened through one quarter inch hardware mesh and radiocarbon dates would be taken from sealed deposits.

The results of both the 2009 OAR and Department of Anthropology archaeological investigations on Mound P were used as a case study for my Master's thesis (Porth 2011a), but since I was a new arrival to the university at the time, I did not participate in the excavations. The stratigraphy exposed during the Test Unit 1 excavations indicated that four potential mound construction layers, a wedge-shaped midden, and a yellow clay blanket mantle were exposed in the unit profiles (Porth 2011a:Figure 3.4). Diagnostic ceramic types and decorative modes suggested that the earliest evidence for mound construction from the flank was during the early Moundville II phase and continued through the early Moundville III phase, a span of about 200 years (Porth 2011a:91). The excavation of Test Unit 2, located at the base of the western flank and three m to the west of Test Unit 1, indicated that this area has been heavily disturbed by historic and modern construction of the park and museum (Porth 2011a:Figure 3.6).

A total of nine, 1-x-2 m units were excavated by the 2009 fall University of Alabama, Department of Anthropology field school in the southeastern quadrant of the summit of Mound P. Seven of these units were contiguous and constituted Block 1 (Porth 2011a:28). I volunteered on the summit excavations when time permitted. Field school students, under the direction of Blitz, with Jera R. Davis as field supervisor, removed the top 20 cm of fill as the plow zone to expose shallow pits filled with high quantities of daub and small post holes that were not arranged in an unidentified and amorphous pattern. Since buildings with amorphous, single set posts and high quantities of fired daub are the dominant house form after A.D. 1400 in west-central Alabama (Lacquement 2007:64-66), and these features corresponded to the location of the subsurface anomaly indicated by both the 2009 and 2010 magnetometer surveys, this pattern is identified as Structure 1 (Porth 2011a:Figure 3.8). The remaining two 1-x-2 m units were oriented north to south across the slope of the summit as Block 2. Due to insufficient time and resources, these units were not excavated to great depth because it was anticipated that there would be more intensive future excavations and because students were reallocated to the efforts in Block 1. Thus, no stratigraphy was exposed that would have answered whether the terrace was a small, superficial addition to the summit of the mound or if the mound was built multiple times as a two-tiered form. Diagnostic ceramic sherds (Alabama River Appliqué) from the Moundville IV phase were recovered from the plow zone of the summit, but no diagnostic sherds or carbon samples were recovered from a sealed context below this disturbance. Thus, I concluded that there was some ephemeral use or visitation of Mound P between 1450-1520 (Porth 2011a:119) but the extent of this activity was not well understood because of the shallow nature of the excavations and a lack of sealed summit deposits.

The 2009 Mound P excavations exposed some flank strata at the base of the western flank and some architectural features in the southeast corner of the summit. What may have been most beneficial about these excavations is the confirmation of Structure 1 as a large, burned daub single set post building located on the terminal summit layers of the southern terrace. This building style was previously indicated by the large quantities of daub recovered in the 1937 and 1988 collections and the 2009 (and later 2010) magnetometer survey. Further, while Moundville IV diagnostic sherds were found in disturbed contexts, the occupation of the mound through the entirety of the fifteenth century was confirmed by diagnostics from the summit and flank deposits. These data place the terminal occupation and use of Mound P in the late Moundville III phase (Porth 2011a, 2011b).

The anthropological questions that were addressed by the analysis of 2009 materials were limited to the scope of a Master's thesis. At the time, I was more concerned with exploring the neoevolutionary definition of chiefdoms and if the office of Mississippian chief, or an individual of complementary rank, was still being supported and financed through the fifteenth century on Mound P (Porth 2011a, 2011b). This position could have been identified by measuring the duration of mound construction and analyzing the refuse generated by mound summit activities. The timing and duration of mound construction on Mound P was measured through the strata exposed in Test Unit 1 and the timing of the construction of Structure 1 on the terminal occupation surface of the mound. Unlike the eastern flank excavations by Driskell, building destruction layers were not identified in the stratigraphy of the western flank. Further, since these units were located on the basal portion of the mound, these units did not expose enough of the flank profile to gain an idea of Mound P's construction history.

2012 Archaeological Excavations

In 2012, work was set to commence on the large staircase connecting the museum to Mound P viewing area. Under the direction of Gage, with Thompson as field supervisor, OAR placed three 2-x-2 m units at the planned footings of the staircase to mitigate its impact on cultural deposits. The timing of OAR's excavations coincided with the UADA annual fall field school and thus an opportunity for a joint effort between the two institutions was available. When the field school class was in session on Tuesday and Thursday afternoons, some of the undergraduate students would work with professional archaeologists from OAR and gain critical archaeological knowledge and experience. Students that were not active in the western flank excavations focused their attention on summit and north flank excavations under the direction of Blitz, with myself acting as field supervisor. The department field school conducted a subsurface bucket auger survey around the base of the mound, excavated a 1-x-2 m reference trench on the north flank, and excavated two test units on the summit of the mound. Further, over the span of a couple of weekends in November and December of 2012, graduate student volunteers helped me laterally expand the reference trench as a 1-x-2 m control trench. It is the stratigraphy and cultural materials excavated from all 2012 mound contexts that serve as the basis for this research. To distinguish between the 2009 and 2012 excavations, herein I will refer to the 2012 excavation units as *unit*, whereas the 2009 excavations will remain *test unit*. This is an arbitrary, post-hoc distinction that is necessary here for clarity since a master unit numbering system was not followed for Mound P between the 2009 and 2012 excavations.

2012 West Flank Excavations

The original research design for excavations on the western flank required that three, 2-x-2 m units were excavated in the locations of large concrete stairway foundation pads that would support the metal staircase leading from the museum to the southern summit of the mound (Gage 2012). The excavation units were to be excavated only to the depth necessary to support the concrete footings (i.e., not down to sterile soil) in 10 cm levels within cultural strata, meaning that the terminal depths of Units 1 and 2 would be 160 cm below the upslope side of the unit (eastern profile) and the terminal depth of Unit 3, located at the crest of the mound, would be 140 cm below the high side, or eastern profile, of the excavation unit. Unit 1, located at the base of the flank would overlap with Test Unit 1 (from 2009), the latter being located directly in the center of the former. The fill from 2009 would be excavated out and the old profile exposed to serve as a guide for the excavation of the rest of the unit. Further disturbance to mound and premound deposits would be inflicted by deep helical piers that would reach sterile clay and anchor the staircase to the mound. The location of these piers would not be archaeologically excavated or cored because the piers need an undisturbed soil matrix to be stable. A wooden staircase was constructed on the north side of the units from the base to the summit so that mobility up and down the mound was as safe as possible and to limit the amount of erosion the frequent mobility would cause. A metal soil slide was constructed on the south side of the units so that excavated soils, artifacts, and buckets would not be lost down slope to gravity. With the help of a large push broom and shovels, soils made it safely to the screens located at the base.

All three test units were excavated from early September to early November 2012. Unit 1 was located 2.5 to 3 m downslope from Unit 2, which was located about 3 m downslope from Unit 3 (Figure 4.3). Thus, since the excavation units needed to be terminated at a certain depth and the profiles would necessarily be truncated, and there were up to three m of profiles that would not be exposed between the units, a complete understanding of the exact number of construction stages, midden deposits, and buried summit platforms will not be known until more

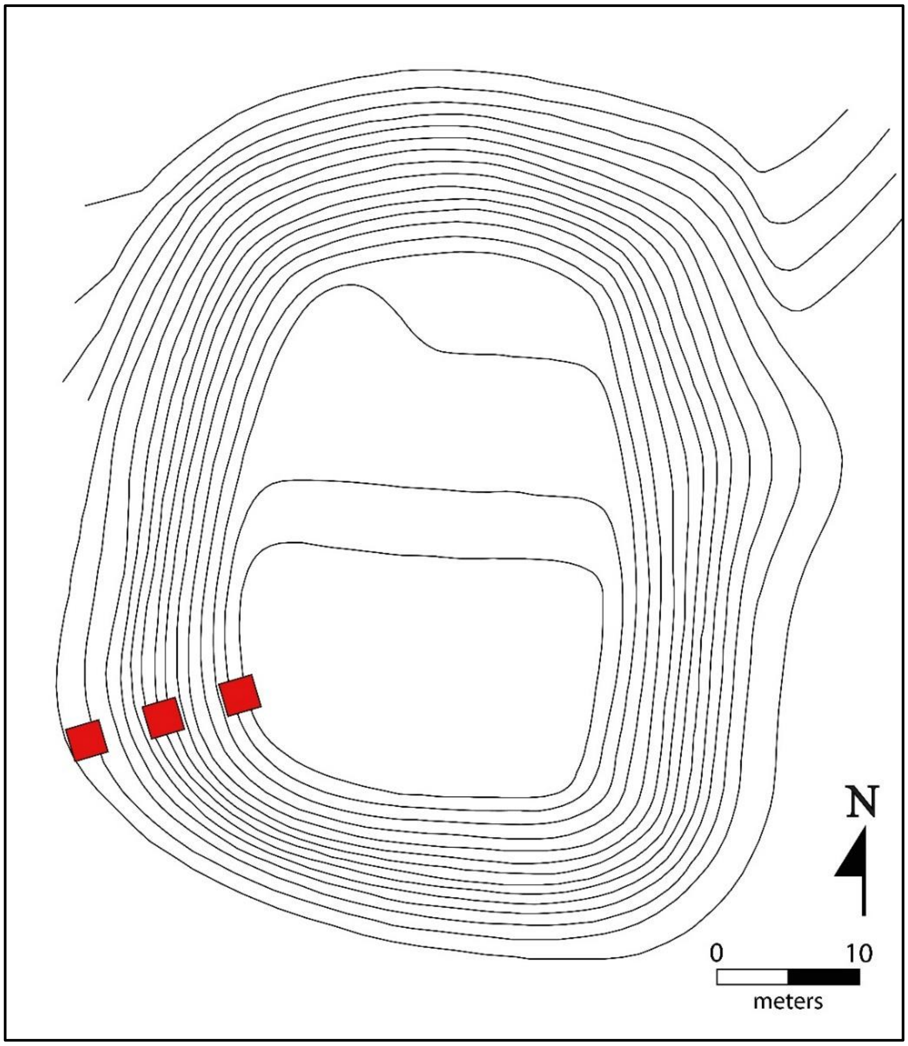

Figure 4.3. Contour map of Mound P with location of 2012 western flank units. Unit 1 is located at the base of the mound (left), Unit 2 is located in the middle of the summit (center), and Unit 3 is located near the summit of the mound (right).

extensive, contiguous profiles are exposed for Mound P in other locations. This problem was an issue for the north flank units as well. The practical limitations on the 2012 field work were unfortunate, but there is still a great deal that we can understand about the final stages of Mound P.

The relationship of exposed mound strata from the north profiles of units 1, 2, and 3 are presented in Figure 4.4, while the south profiles are presented in Figure 4.5. Unit 1 was placed at the base of the western flank 2.5 to 3 m downslope from Unit 2. It was also placed around Test

Figure 4.4. Mound P west flank, north profile.

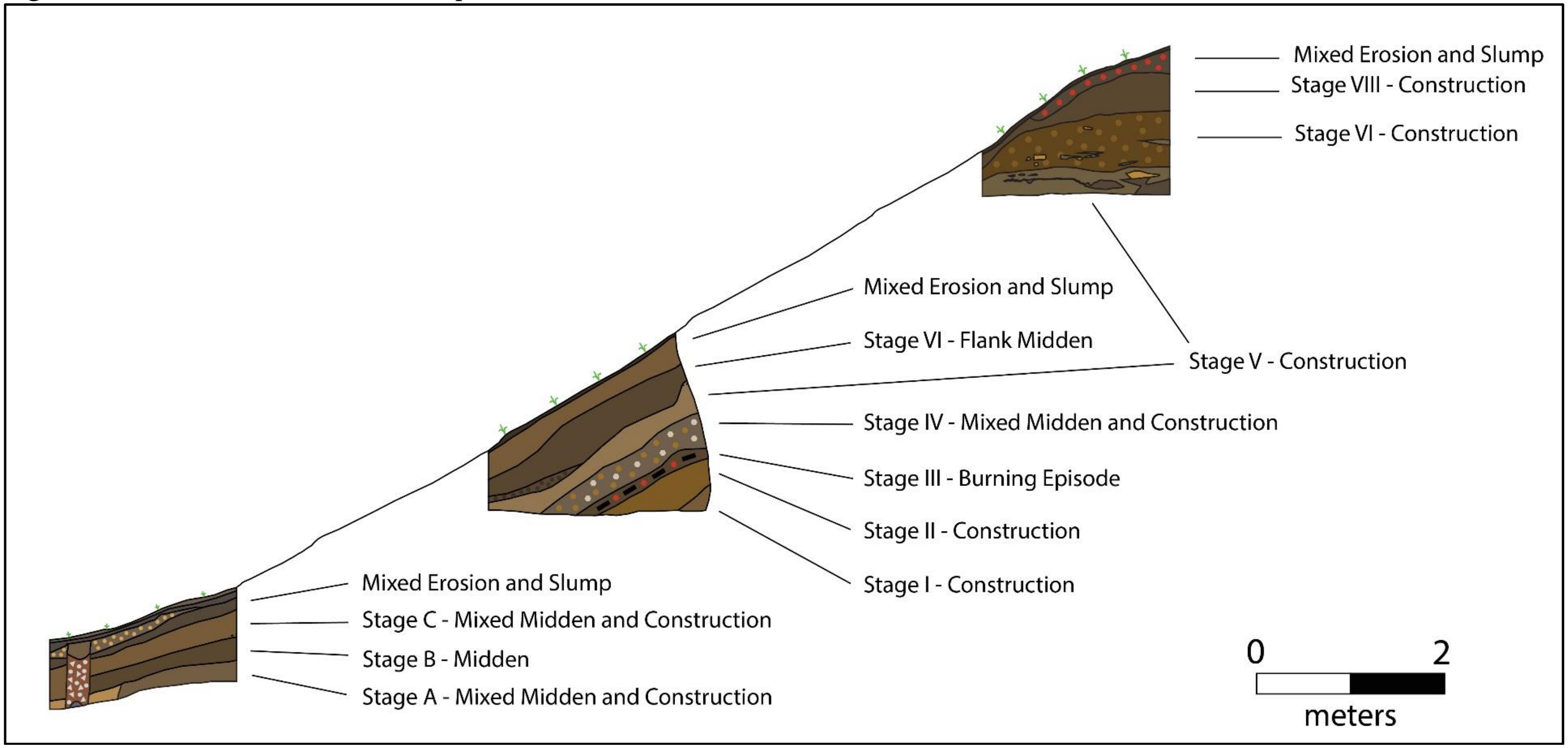

Figure 4.5. Mound P west flank, south profile.

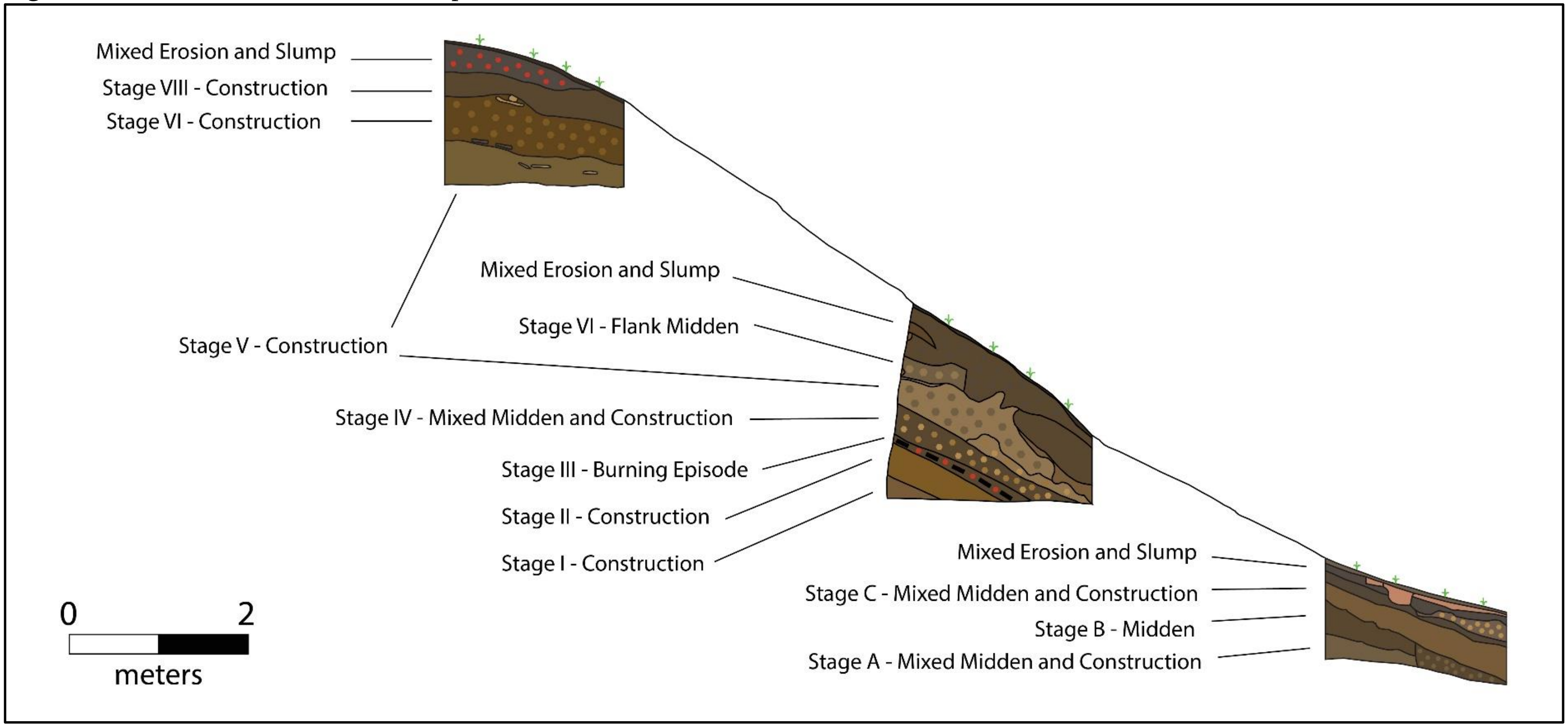

Figure 4.6. East profile of Unit 1. 2009 unit is visible at bottom center of photo.

Unit 1 from the 2009 excavations. The excavation of Unit 1 was complicated not only by the older unit being placed in the center of the unit or years of erosional overburden on top of sealed deposits, but also because the walls of the 2009 unit had collapsed during backfilling, making the excavation and identification of sealed mound strata difficult. Further a modern drainage pipe from the 1960s intruded through the western quarter of the unit, disturbing portions of the deposits. Essentially, once the 2009 backfill and Test Unit 1 wall collapse were excavated out of the present unit, there was a large bowl-shaped pit in the middle of the unit. Efforts were not made to clean up the 2009 unit profiles as a guide to further excavation because doing so would further limit the extent of the sealed deposits. The unit was terminated once two burials were identified during the excavation of Level 16. Luckily, engineers redesigned the staircase footing

Table 4.1. Correspondence of excavated levels to post-hoc depositional zones, west flank Unit 1, Mound P.

Excavation Level	**Analytical Unit**
Unit 1, levels 1-4, 6	Mixed erosion and slump
Unit 1, Level 5	Drainage pipe trench
Unit 1, Level 7	2009 unit slump
Unit 1, levels 8-10	Stage C – Mixed midden and construction
Unit 1, levels 11-13	Stage B – Midden
Unit 1, levels 14-16	Stage A – Mixed midden and construction

for this location so that the burials would not be impacted. The human remains were documented in the field and covered and preserved to NAGPRA protocols.

Four strata were identified from the profiles of Unit 1 (Figure 4.6), but none of these confidently line up with the profiles from Unit 2 and will be treated separately here. Further complicating this matter is that the field notes are sometimes vague about the depth and location of the excavation levels. The correspondence between excavation cuts and analytical units is presented in Table 4.1. The two burials (see discussion, Appendix B) were under or within a layer of mixed midden and construction fill (Stage A) that was overlain by an organically rich, dark brown soil zone (Stage B). A second mixed layer of midden and construction fill (Stage C) was most likely a mixture of Stage B deposits and a homogeneous construction zone. It is treated separately here because of some discrepancies in the field notes. This mixed analytical unit was overlain by thick lenses of overburden and erosion. The drainage pipe, surrounded by iron rich clay and gravel, intruded into these soil layers.

In total, up to nine soil zones or stages were exposed and identified from units 2 and 3 (see figures 4.4 and 4.5). However, it must be stressed that these units merely clipped the outermost layers of a very large mound and in no way exposed the earliest mound construction stages. The sequential classification of mound construction and midden deposit “stages” below is used to order the earliest to latest *exposed* strata from the 2012 field season as analytical units,

Table 4.2. Correspondence of excavated levels to post-hoc depositional zones, west flank units 2 and 3, Mound P.

Excavation Level	**Analytical Unit**
Unit 2, Levels 1-5	Mixed Erosion and Slump
Unit 3, Levels 1-4	
Unit 3, Levels 5-7	Stage VIII - Construction
Unit 2, Levels 6-9	Stage VII - Flank Midden
Unit 3, Levels 8-11	Stage VI - Construction
Unit 2, Levels 10-14	Stage V - Construction
Unit 3, Levels 12-15	
Unit 2, Levels 15-18	Stage IV - Mixed Midden and Construction
Unit 2, Level 19	Stage III - Burning Episode
Unit 2, Levels 20-23	Stage II - Construction
Unit 2, Level 24	Stage I - Construction

not the timing of the actual prehistoric construction sequence. Since Mound P is one of the largest mounds at the site, it is doubtful that the earliest or innermost strata were exposed. These numerical classifications are expected to change over time if future archaeological excavations document earlier sequences of mound construction. The excavation strategy for the western units was to remove 10 cm levels within anthropogenic soil zones without a reference trench. This could create problems of mixing, where one level mixed the contents of two different soil zones (e.g., Knight 2010:120-121), an issue that was largely avoided for units 2 and 3 (Table 4.2).

Stage I – Construction. This was the earliest exposed construction stage during the 2012 field season and was present at the eastern base of Unit 2 as a thin, homogenous darker brown sandy loam layer with minimal artifacts and only light concentrations of charcoal, corresponding to Level 24. However, since the soil layer was truncated and what was exposed and recovered was only a wedge of about 25 cm of maximum thickness along the eastern profile, the amount that can be said or understood about this stage is negligible.

Figure 4.7. Unit 2 eastern and southern flanks. A) Stage V – Construction, basket loaded zone above stage break at B), a possible buried A-horizon that overlays Stage IV – Mixed Midden and construction and C) Stage III – Burning Episode, a thin layer with heavy concentrations of daub and charcoal.

Stage II – Construction. Directly overlying Stage I - Construction was a 40 to 60 cm thick, slightly compact construction layer of homogenous, dark yellowish brown sandy clay loam with some small inclusions of pure reddish brown or red yellow clay, the latter of which increased with depth and distinguished this zone from the underlying darker brown homogenous sandy loam. This layer had some relatively light concentrations of prehistoric ceramic sherds, flaked stone, and a concentration of charcoal in the lower portion. It was truncated and only visible in the bottom portion of the Unit 2 profile as a straightforward mound construction layer.

Stage III – Burning Episode. The earliest exposed midden was a distinct, 10 to 15 cm thick deposit of dark brown soil with high quantities of fired daub, charcoal, and other artifacts overlying Stage II – Construction (Figure 4.7c). The burning occurrence was most likely the result of the destruction by conflagration of a large, daubed building sitting on the corresponding summit. This is an important distinction and one of the stratigraphically deepest layers that could provide us with a relative date for mound use and construction layers. Daubed buildings were first built in west central Alabama around A.D. 1400, which corresponds to the Moundville II to III phase transition. The diagnostic decorated sherds from this layer provide supporting evidence for an early fifteenth century date for this layer (see discussion, Chapter 5). The corresponding excavation level for Stage III is Level 19 from Unit 2, with some mixing from the bottom portion of Level 18. These two lines of mutually supporting evidence provide a Moundville III phase *terminus post quem* date for a large portion of Mound P. All of the exposed strata discussed from here forward, were built throughout the 1400s.

Stage IV - Mixed Construction and Midden. Directly overlying the Stage III – Burning Episode was a heterogeneous layer of darker brown sandy clay and light gray and yellow sandy clays about 40 cm thick in the profiles of Unit 2. The artifact density within this stage was moderate to heavy, and what distinguished it from the previous layer was the degree of mottling of dark brown sandy clay and yellow sandy clay. There is a sharp boundary, highlighted by a thin dark brown layer present in the eastern and southern profiles of Unit 2 between this stage and the subsequent Stage V - Construction zone, but this is a little blurred in the north profile. This brown lens is possibly a buried A-horizon that represents a very clear break in construction

Figure 4.8. Unit 2 southern profile (left), highlighting an area (right) of basket loading.

activities between the underlying Stage III midden and the overlying mound construction layer (Figure 4.7b). Initially, it was tempting to discuss this stage as a mixture of a yellow clay blanket mantle and dark brown midden based on the amount of yellow clay present in the stage right before an apparent layer break, but without more continuous profiles, this distinction cannot be made.

Stage V – Construction. This stage is the first construction layer that is present across more than one profile and shows up in the Unit 2 profiles and at the bottom of the Unit 3 profile (Figure 4.7a). This is a 40 to 60 cm thick construction stage consisting of grayish brown and olive brown sandy clay basket loads after the stage break observed at the top of Stage IV - Mixed Construction and Midden. These basket loads are most evident in the south and east profiles of Unit 2 and increased the height and breadth of the mound (Figure 4.8). In two or three places there are possible buried sod lenses that would have been dug as sod blocks and turned over with the rest of the basket loads of sandy clay to buttress certain areas during mound construction (Sherwood and Kidder 2011).

Figure 4.9. Unit 3 northern profile. Stage VI – Construction is banded orangish brown and dark brown overlying grayish brown of Stage V – Construction. There is no evident stage break in this location.

Stage VI – Construction. The Stage VI – Construction layer was identified in the profiles of Unit 3 as an orange-brown sandy clay construction layer mottled with dark brown, very sandy clay bands with light to moderate artifact density, including daub, pottery, and bone. This stage was directly on top of Stage V – Construction but truncated on the outer, westernmost reaches of the unit and did not continue in the strata to Unit 2. The stage was about 50 cm thick along the eastern portion of the unit profile and I suggest that it was the initial construction layer of the addition of the southern terrace of Mound P, which was built using basket loads (Figure 4.9). The question is if Stage V and Stage VI are two distinct construction events or if they both represent a singular construction layer. If these represent a single layer, then certain soil colors and textures were selected for the fill of the mound. This scenario would also indicate that the terrace was part of earlier mound construction episodes, then accented later with the Stage VIII construction.

Stage VII – Flank Midden. Directly overlaying the basket loading of the Stage V – Construction layer was an organically-rich, dark brown homogenous midden deposit that was about 40 cm thick. This deposit can be seen in the profiles of Unit 2, but it did not continue upslope in the soils exposed in Unit 3. The higher artifact density, especially daub, charcoal, and animal bone, plus the presence of a ground stone palette fragment indicate that this flank midden was added after the previous mixed layer. However, it's relationships to Stage VII and VIII construction layers are not very clear. The interface between the midden deposit and the underlying construction layer undulate and there is not a distinct break.

Stage VIII – Construction. Overlying Stage VI and its basket-loaded construction fill is a mottled, dark brown sandy clay layer that represents a second terrace construction episode. This interpretation is based on the fact that it contained a high quantity of daub and other artifacts. This fill was directly underneath the erosional overburden. It increased the height of the terrace in a separate layer from Stage VI.

Mixed Erosion or Slump. The erosion and slump from the western flank units was present in the upper profiles of units 2 and 3 and was about 25 cm thick.

2012 North Flank Excavations

The western flank excavations were already successful in recovering archaeological materials from midden contexts, so one of the goals of the 2012 field season was to understand the extent of flank midden deposition on the northern, eastern, and southern flanks of Mound P.

The original research design for the 2012 fall field school outlined a plan for locating and excavating mound flank midden contexts through a combination of minimal subsurface testing and unit excavation separate from the OAR efforts on the western flank. First, 15-20 bucket auger cores spaced 10 m apart would attempt to locate and document the horizontal and vertical extent of mound flank middens around Mound P in a minimally invasive and time efficient manner that would prevent erosion and undergraduate injury. Second, if a midden deposit with suitable artifact recovery could be located, a 2-x-2 m excavation unit would be opened to recover a representative sample of it. An alternative solution for mound flank excavation was adopted prior to the excavation of any flank deposits. Instead of excavating a 2-x-2 m unit either by arbitrary levels or cultural strata, a plan was devised that would combine both approaches for better vertical control over artifact recovery. This plan is analogous to the "refuse dump method" suggested by Smith and Williams (1994:34) to locate and document mound midden refuse on Mississippian mounds.

Following methods pioneered by Lewis and Kneberg (1946:29) and used in mound excavations at Moundville and the Walling site by Knight (1990b:22-26, 2010:75), a 1-x-2 m *reference trench*, excavated in arbitrary 20 cm horizontal levels, would be used to expose mound construction layers and midden deposits and be excavated to sterile soil. Mississippian platform mound construction layers and midden deposits undulate and are angled; on Mound P this angle is approximately 30 degrees. A reference trench excavates into the flank of a mound horizontally, cross-cutting and exposing the sloped or angled mound layers in profile. The exposed mound layers then function as a reference for a *control trench,* which would be excavated laterally to the east or west with horizontal cuts into the mound. Excavations would proceed by anthropomorphic strata matching the sloped, culturally deposited construction layers and midden deposits so that the context of the recovered artifacts was congruent with the depositional sequence of the mound (e.g., Knight 2010:120-121). In sum, there would be better control over the natural strata and associated artifacts because of the reference trench. The soils from the proposed unit would be screened through one-quarter inch mesh, with floatation samples recovered from sealed midden deposits.

The execution of the research design was successful. In total, seventeen bucket auger tests were excavated around the lower portion of the flank, high enough up the side of the mound to miss the majority of slope erosion, but low enough to consider the safety of the undergraduates (Figure 4.10). The depths of the auger tests were limited because at the time of excavations, neither the Department nor OAR owned a bucket auger shaft extension. Therefore, auger tests were terminated between 130-160 cm below the upslope surface, at the point where the handle of the auger could no longer be turned due to the slope angle. Regrettably, another limiting factor on the depth and interpretation of the auger tests was the way in which they were placed. The field school laid out the location of the tests every 10 m by hand with a reel tape, creating problems with standardized elevation, as well as vertical measurement and comparison of the 17 soil profiles. However, since the goal of these limited tests were to find and record the extent of midden deposits to excavate a large representative sample, and not to document mound strata or premound surfaces through the auger tests, these two factors are only marginally limiting and had no effect on if a midden was located. Further, stratigraphic auger cores for recording mound construction episodes and premound surfaces are better suited for the summits of mounds.

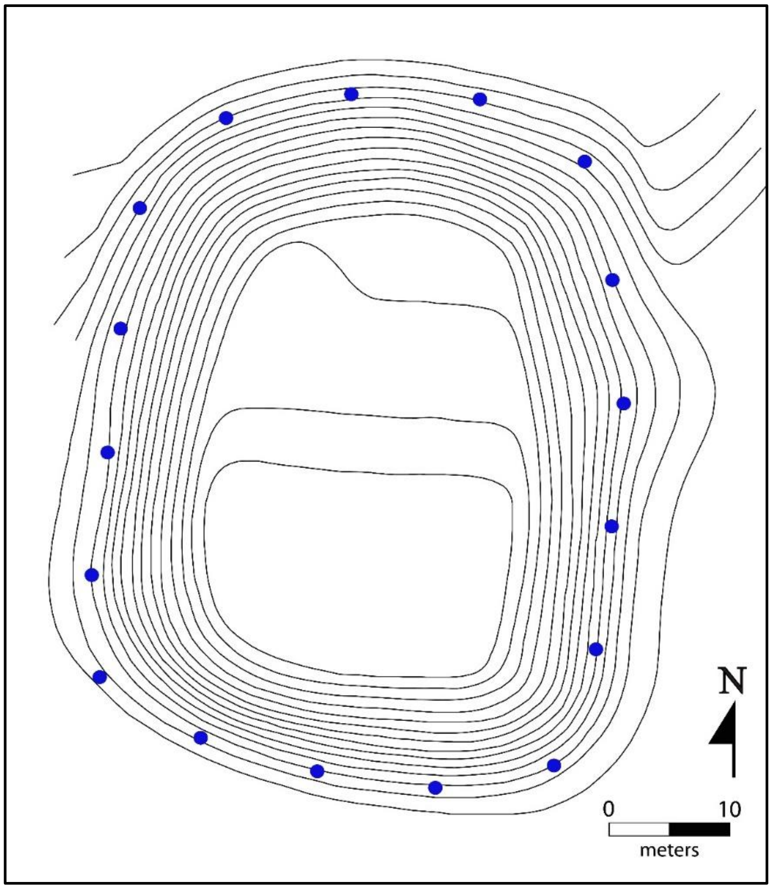

Figure 4.10. Contour map of Mound P with locations of bucket auger tests in blue.

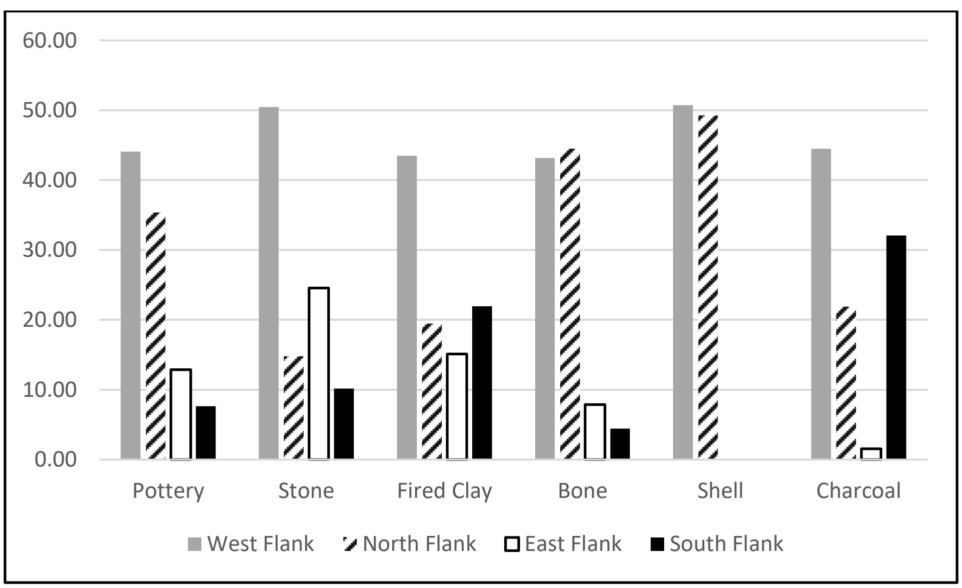

Figure 4.11. Relative frequencies by weight (g) for major artifact classifications per flank from bucket auger tests, Mound P.

The bucket auger survey located midden deposits along the untested portion of the western flank and a section of the northern flank. The eastern and southern flanks contained some artifacts, but none of the auger tests found midden and artifacts recovered from them could be the result of erosion from the summit (Figure 4.11). Since the purpose of an undergraduate field school is to train students in archaeological methods, Munsell colors, soil texture, and artifact descriptions were recorded for every bucket of soil for systematic recording (Appendix A). In general, this minimally invasive survey revealed deposits of sandy clay, sandy loam, and mantles of thick yellow sandy clay around the lower flanks of the mound, a finding which conforms to expected soil profiles for Mississippian mounds (e.g., Sherwood and Kidder 2011; Knight 2010).

The distributions of artifacts on the western and northern flanks of the mound are indicative of thick midden deposits, but the relative low quantities of artifacts on the eastern and southern flanks cannot be ignored. The eastern flank faces the plaza and is the location of the remnant ramp and Driskell’s 1988 excavations. Further, excavations at Moundville and other Mississippian mound centers have suggested that the sides of the mound that face the plaza should be expected to have been kept relatively clear of debris (Knight 2010:75-76; Smith and Williams 1994). However, the eastern flank did produce a higher percentage of pottery sherds and stone compared to the southern flank, although most of the stone recovered was naturally forming ferruginous concretions. Conversely, the southern flank had a higher quantity of fired clay relative to the northern and eastern flanks, which was most likely a product of the former slope’s proximity to the summit building on the southern terrace. However, neither the eastern or southern flanks had organic-rich soils that indicated the presence of a subsurface midden deposit.

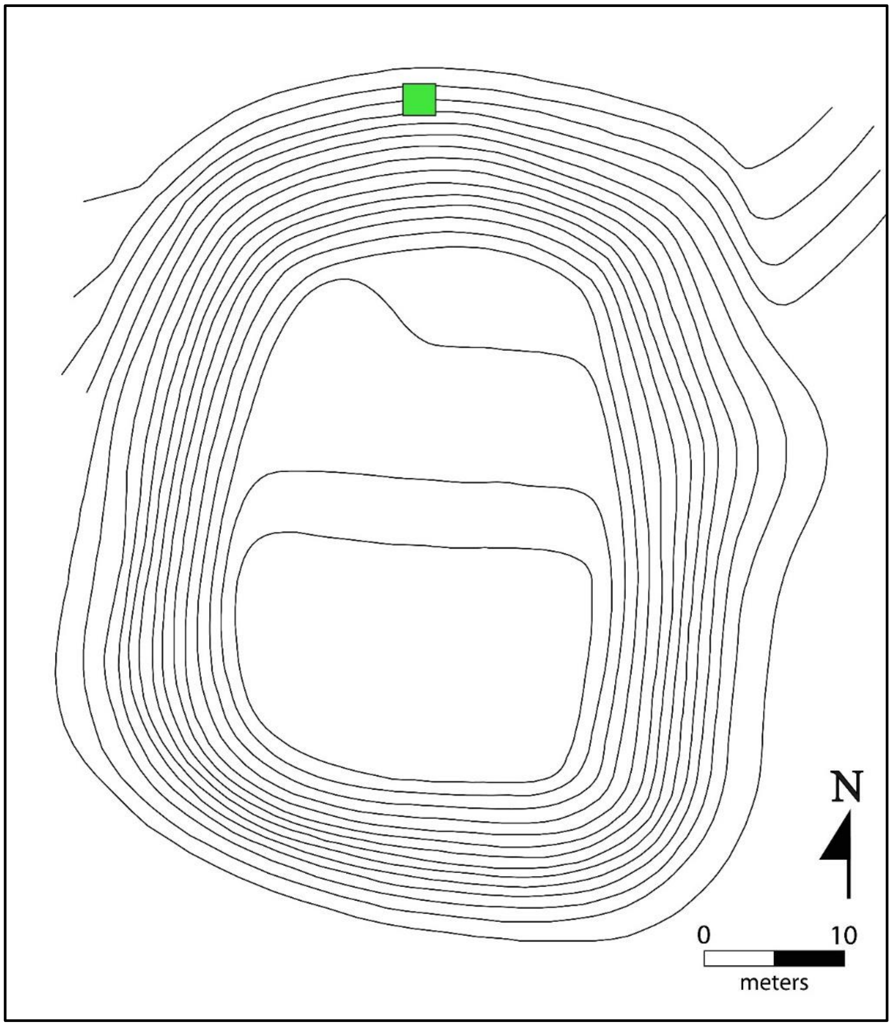

Figure 4.12. Contour map of Mound P with location of Units 4 and 5 on northern flank.

The location and identification of a thick midden deposit along the northern flank within Bucket Auger Test 6 was of particular interest because it allowed the field school to open and excavate the 1-x-2 m reference trench in that location. Thus, once the auger test survey was complete, undergraduate field crews were reallocated to either the northern flank or the summit for excavation.

Unit 4, the 1-x-2 m reference trench, was placed at the location of the sixth auger test (Figure 4.12) and excavated in nine, horizontal 20 cm arbitrary levels, with an additional profile clean-up context that vertically cross-cut all 9 levels, reaching a final depth of 180 cm below the

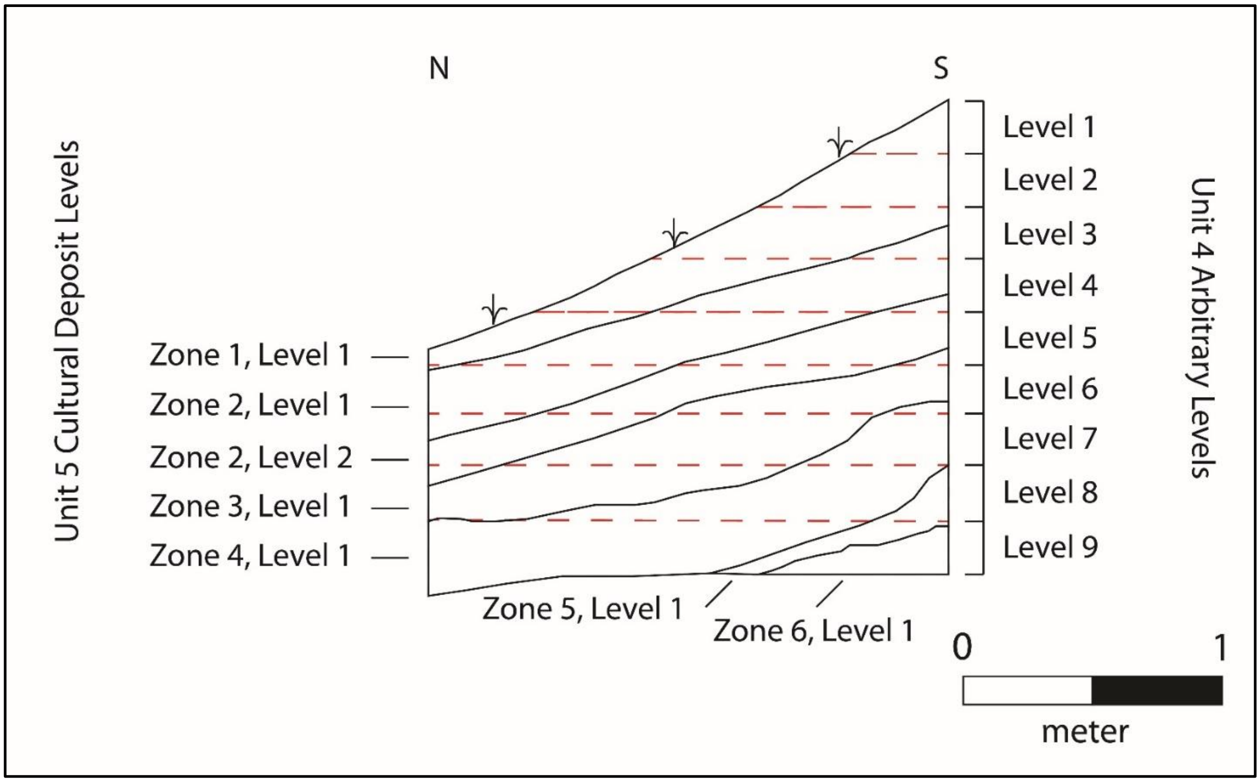

Figure 4.13. Units 4 and 5 excavated levels. Unit 4 arbitrary levels (red dashed lines) and labels are on right and Unit 5 excavation levels by exposed cultural strata in Unit 4 eastern profile (black solid lines) on left.

upslope side of the unit. This method of excavation proved vital in the exposure of mound flank strata in a time efficient manner, but the cross-cutting nature of the excavation levels with the cultural strata as seen in the east and west profiles of the unit (Figure 4.13) means that the artifacts recovered from the reference trench are treated here as a sample from that deposit and cannot be considered *in situ* like those recovered from the control trench. For example, a sherd that we categorize as being diagnostic to the Moundville IV phase could have been recovered from Level 4 or 5, but we would not know if this was from sealed mound layers closer to the center of the mound or the outermost erosion layer. The soils removed from this unit were a mix of sand, sandy clay, organic-rich sandy clay, and charcoal-rich sandy loam, reflecting the crosscutting nature of the excavation strategy, but they also confirm that the northern extent of

Table 4.3. Correspondence of excavated levels to post-hoc depositional zones, north flank units, Mound P.

Excavation Zone, Level	**Analytical Unit**
Zone 1, Level 1	Mixed Erosion or Slump
Zone 2, Level 1	Stage XI - Mixed Midden and Construction
Zone 2, Level 2	Stage X - Banded Midden
Zone 3, Level 1	
Zone 4, Level 1	
Zone 5, Level 1	Stage IX - Homogenous Midden
Zone 6, Level 1	

the mound was the result of intentional cultural deposition and not a mixed deposit from slump or modern mound repair.

The exposure of the mound layers seen in the east and west profiles of Unit 4 allowed us to laterally expand to the east and excavate in cultural layers and deposits. Unit 5, the new 1-x-2 m unit, was excavated outside of the parameters of the undergraduate field school using teams of graduate student volunteers and family members who worked for two weekends in the late autumn to complete the goals of the north flank excavations. The removal of seven anthropomorphic construction layers and midden deposits were completed in excavation *zones*, in arbitrary *levels* which followed the cultural strata that were exposed in the eastern profile of Unit 4 (Table 4.3). Vertical measurements were taken from the northwest corner of Unit 4 for uniformity. Regrettably, the seven excavation levels were removed in whole until there was a natural break and were not excavated in smaller, arbitrary 10 cm levels within the natural soil zone. Despite my best intentions to maintain better vertical control, this eventually rendered the *zone, level* ordinal system moot. The amount of time that was budgeted and the busy schedules of my volunteers necessitated that the complex soil layers were excavated in a timely manner so

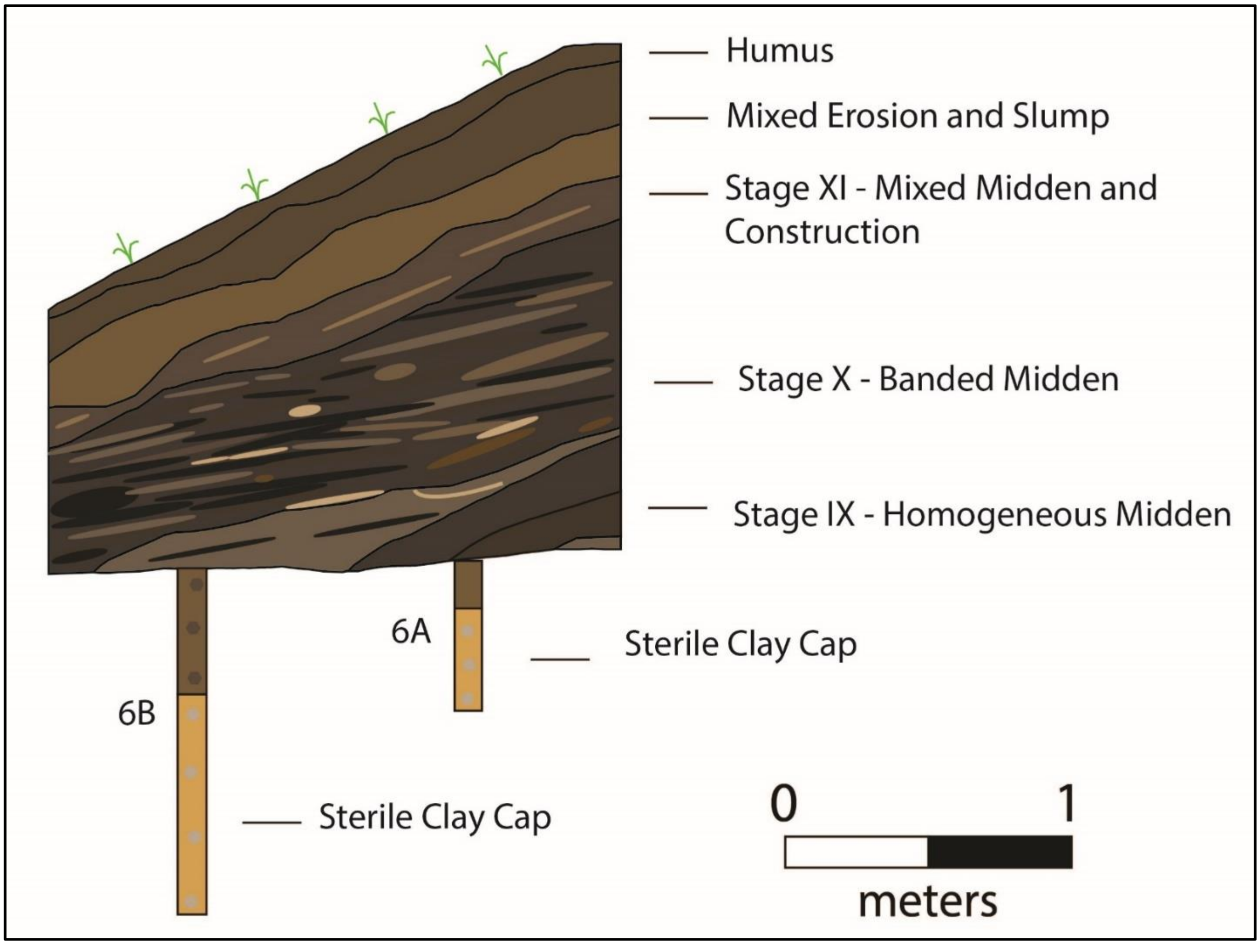

Figure 4.14. Unit 5, eastern profile with major cultural depositional zones. Bucket auger tests 6A and 6B indicate depth of thick sterile sandy clay cap below terminal unit depths.

that the unit could be backfilled before the winter holiday and not exposed to curious members of the public or heavy winter rains. Thus, excavations at the base of Unit 5 truncated portions of the two earliest soil layers when the unit was made even with the base of Unit 4 (Figure 4.14). Blitz and I excavated two bucket auger tests (6a and 6b) in the base of Unit 4 to determine the extent of midden deposits. The soil recovered from the first few buckets was the same midden fill as the lowest levels of Unit 4/5. It was underlain by a thick, yellow sandy clay deposit that matched the contour of the soil layers above it (see Figure 4.14, bottom). The stratigraphy exposed in the profiles of the 2-x-2 m unit is discussed below in the order in which they were deposited in.

Stage IX – Midden. This deposit was a very dark, organically-rich stage composed of very dark brown sandy loam that has a greasy texture. It shifted to a dark yellowish brown, sandy clay loam towards the bottom of the deposit. It was about 40 cm thick at its thickest section along the southern profile, and it was capped with a thin but differentiated lens of yellow sandy clay. There were heavy concentrations of charcoal flecks and ceramic sherds throughout the deposit, and the bone preservation was very good. The homogeneous midden corresponded to Zone 5, Level 1 and Zone 6, Level 1, but because of time constraints, the layers were truncated and not wholly excavated. Flotation samples were recovered from levels 8 and 9 from Unit 4 because the deposit was so discrete in this area. While the cross-cutting nature of the horizontal layers from Unit 4 would otherwise be problematic for matching artifacts to their original provenience, these samples were intentionally taken from this soil layer when it was observed during excavation.

Stage X - Banded Midden. This layer corresponds to Zone 2, Level 2, Zone 3, Level 1, and Zone 4, Level 1 and was up to 65 cm thick. The soil matrix was distinct from other soil layers because it contained multiple faint and distinct "marbled" bands and lenses of sand, silty sand, sandy loam, and charcoal (Figure 4.15), but this context has proven difficult to interpret due to the complicated nature of these soil relationships. This analytical unit had high quantities of pottery, daub, and animal bone in relation to soil layers above and below it, possibly because it is the result of multiple deposits of midden that also contained smaller amounts of mound fill mixed in and thrown down the flank. The banding may have been the result of sheet erosion. If the flank midden had been left exposed during periods of heavy rain, laminar banding may have resulted from midden materials washing downslope in quick succession.

Figure 4.15. Unit 4, southern profile (right) and Unit 5 southern and eastern profiles (left).

Stage XI – Mixed Midden and Construction. The top of this layer was recognized as a distinct break from the underlying banded midden. It was composed of homogenous dark brown sandy loam and a small area of yellow sandy clay in the southwest quadrant of the unit. The northern portion of the stage was about the same thickness (27-28.5 cm) as the southern portion (24-27 cm), with a slight thinning towards the central portion (~19 cm thick) and corresponds to Zone 2, Level 1. The mound fill was sandy clay loam throughout, with some mottling in the north central portion of the level base of very dark brown loamy sand with a greasy texture and dull reddish brown clay. Further, there was a linear band of yellowish brown sand mottled with very dark brown silty sand with a moderate amount of charcoal and burned clay. It extended downslope as seen in the southern profile and contained three distinct clusters of large pieces of fired daub and charcoal. Some carbon samples were taken from these clusters, including a large burned timber or log from the southern profile. Caution should be used when assaying these samples because they may be prone to the old wood problem, since the carbon derived from an exposed surface and the sand inclusion, and daub and charcoal clusters are possibly an erosional inclusion from upslope. This was the first stratigraphic layer exposed, and I expected that the layer would be relatively uniform as we excavated from west to east. This initial expectation proved to be incorrect, not only for this layer, but for all subsequently excavated layers, as the base of the soil layer undulated, especially in the northeast corner.

Mixed Erosion or Slump. The topmost layer was mixed and homogenous dark brown sandy clay loam with a thin sandy loam band that contained a high quantity of artifacts. This layer terminated at a yellow sandy clay layer that was present in the south and east profiles of Unit 4. Thus, it is likely that this soil layer was the result of years of erosion, slump, and mixing of upslope deposits. The soil layer was wedge-shaped, with the thickest portion along the southern half of the unit (44-47 cm), a midpoint measurement of 24 cm, thinning as we progressed north (7.5-8 cm) and corresponds to Zone 1, Level 1. At the beginning of the field season in early September, the slopes of the Moundville mounds are usually covered with overgrowth. The field school cleared some of this from the working areas of Mound P, but the upslope portions were not cleared until the annual Native American Festival approached, when the rest of the mound was mechanically cleared. It was only then that a small erosion gully, located directly upslope from the excavation unit, was noticed (Figure 4.16). While this was a minor revelation, the post-depositional processes are still part of the history of the mound and likely contributed to the mixed nature and thickness of the disturbed layer. It is also possible that the mixed nature of Stage XI was a result of this slump.

Figure 4.16. North flank of Mound P during excavation season. Note the deep shadow highlighting an erosional gully on crest of mound.

2012 Summit Excavations

In 2012, a secondary goal of the field school was to excavate two units that would expose mound summit strata. The summit excavations from 2009 only removed the plow zone to expose what would become Structure 1, so the ability to record deep stratigraphy from the summit was needed to assess the timing of the terminal construction layers and occupation. Additionally, I wanted to know how the mound was built through time. Was the southern terrace added on later or was Mound P built with two terraces at least twice? Unfortunately, due to the time constraints of the field school and a rainy November, the final depth of both of the units was fairly shallow and did not expose as much of a profile as was initially hoped. Fortunately, the east profile of Unit 3 illustrates a portion of the raised terrace along the southern portion of the mound summit, providing what is the best profile for the southern, raised terrace. Two units, units 6 and 7, were excavated on the summit of Mound P. Unit 6 was placed on the lower, northern platform of the mound and Unit 7 was placed on the raised, southern terrace (Figure 4.17).

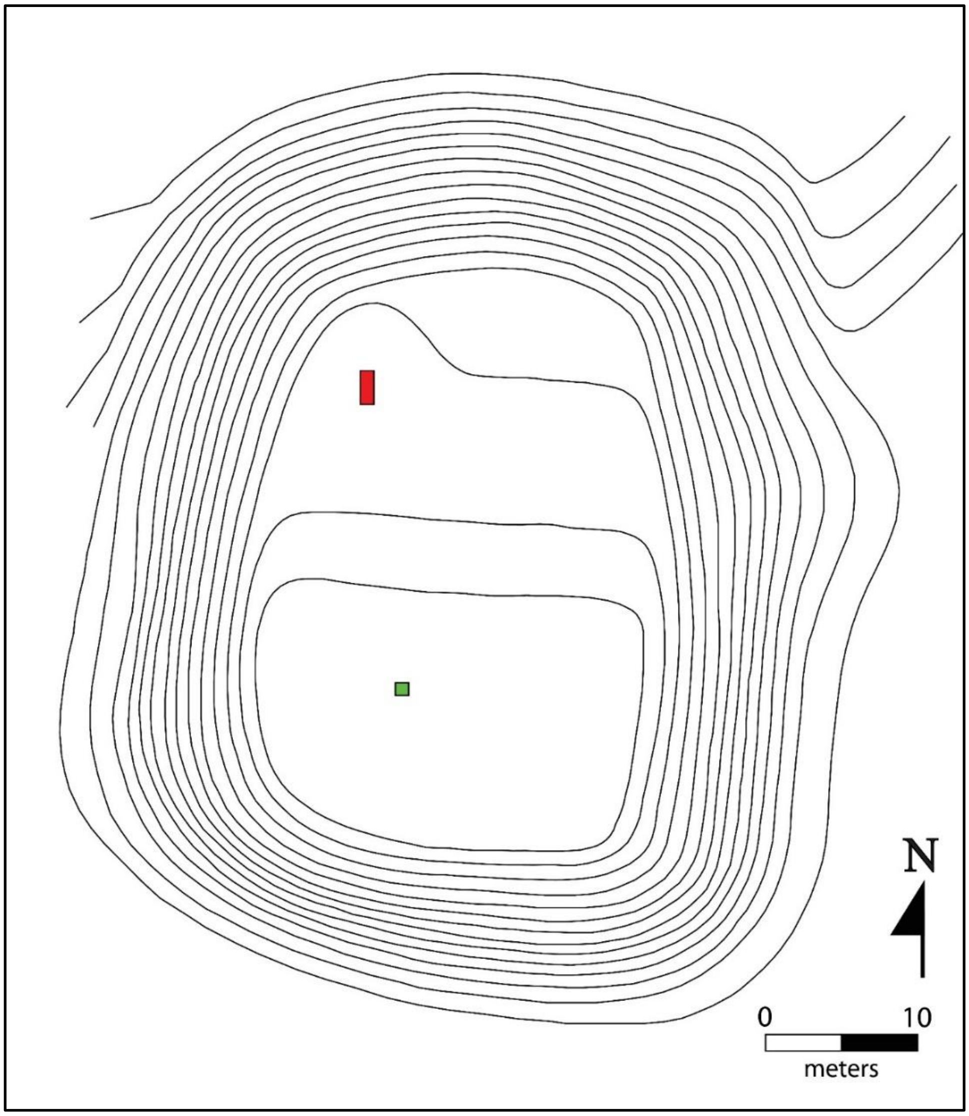

Figure 4.17. Contour map of Mound P with the locations of Unit 6 (red) and Unit 7 (green) on the summit of the mound.

Unit 6 was a 1-x-2 m unit placed on the northern portion of the summit in a location where the magnetometereter survey indicated a subsurface anomaly. The goal of testing the northern summit was two-fold. First, determine the nature of mound construction. The second goal was to record any architectural features. The final depth of the unit was 60 cm below ground surface, excavated in three, 20 cm arbitrary levels. Two soil zones were exposed in the profiles, of which the east profile is particularly problematic due to a large, intrusive homogeneous feature. The field school students recognized this dark brown stain at about 40 cmbs extending into the center of the unit. We used a split core auger to gauge the fill and depth of it, but the fill was still homogeneous after 2.5 lengths. After the removal of the final level, we had run out of time for the field school and decided not to excavate the feature further. It is very possible that this feature was a Moore trial hole. The portion seen in the unit floor is roughly rectangular with rounded edges, and it is oriented east-west and intruded into underlying mound construction layers. It was then truncated by historic disturbances. The shape and size of the feature is similar to the trial holes identified and excavated on Mound E (Knight 2010). The soil zone recognized as a basket loading construction layer in units 2 and 3 on the flank (Stage V – Construction) continued across the summit of the mound and was present in the bottom half of Unit 6. The soil zone here was distinguished by brown, dark yellowish brown, and yellowish brown pockets of sandy clay, representing individual basket dumps (Figure 4.18). The artifact density was distinct from that of the western flank deposit, as the summit deposits were relatively absent of artifacts, which is common for Moundville summit layers. The construction zone was overlain by a plow zone.

Field school students placed Unit 7, a 1-x-1 m test unit, on the southern terrace about half way between the 2009 summit excavations and the 2012 western flank excavations. Structure 1, identified in 2009, was a large, burned daub building that appears in the magnetometer to stretch across the southern half of Mound P. But how large was building, and was the southern half of the mound summit the location of multiple rebuilding episodes? Since the depth of the plow zone was known from the 2009 summit excavations to be about 20 cm, we removed the disturbed soil; but we were only able to expose mottled sandy clay deposits and heavy concentrations of *in situ*

Figure 4.18. Mound P, Unit 6 base with Stage V – Construction basket loading and large intrusive feature along eastern portion of unit.


Figure 4.19. Mound P, Unit 7 base with *in situ* daub from burned daub buildings.

daub across the northern portion of the unit floor before the field season was completed (Figure 4.19). No features were recorded and the daub formed an amorphous pattern, similar to that seen in the Block 1 excavations, thus providing further evidence that the building extended across the southern portion of the mound.

The 2009 and 2012 summit excavations on the southern terrace are now covered by landscaping fabric and mulch, providing visitors with a marked viewing area, but potentially limiting further excavations on Structure 1. In hindsight, our effort should have skipped excavations on Unit 6, which is not currently covered by modern landscaping, and focused on more intensive vertical and horizontal excavations in the location of Unit 7 on the southern terrace.

Fired Clay and Daub from Mound P

The materialization of structural societal elements can be measured through the presence of episodic building destruction in mound strata from the archaeological excavations on Mound P. These occurrences reflect an active, repeated process of place-making and changes to those practices, which are expected to correspond to the nature of mound construction, should signal a change in the reproduction of social and political institutions. The construction of daub-walled buildings on the summits of platform mounds and the episodic addition of new mantles that were linked to political office and its renewal implicitly requires that the buildings were to be destroyed. The termination of old buildings and the construction of new ones are linked to increases in the size of Mississippian platform mounds. Thus, the two practices are linked. This style of daub-walled building was only present in west-central Alabama after A.D. 1400 (Lacquement 2007) and the identification of their termination and renewal is recognizable in the stratigraphic deposits from the western flank that date to the early Moundville III phase and later.

Daub and the fired clay residues of destroyed Mississippian buildings have been an understudied topic in the Southeast, but an analysis of daub architectural impressions from late prehistoric sites has shed some light on construction techniques and the time of the year resources are gathered (Connaway 1984; Peacock 1993; Peterson 1992; Seltzer and Peacock 2011; Sherard 2001, 2009; Solis and Walling 1982; Starr 1997; Starr and Mainfort 1999; Terrel and Marland 1983). Daub is distinguished from fired clay by the presence of building material impressions, such as cane lath and grass temper. Cane impressions are categorized as whole or split (Sherard 2009:32). Further, daub from the earth lodge on Mound V has shown evidence for red and white painted or plastered surfaces, a decorative technique that is present in the Mound P assemblage as well.

A total of 123,107.6 g, just over 123 kg, of daub and fired clay was recovered from units 1, 2, 3, and 5. The distribution of all fired clay by weight by stage is presented in Figure 4.20. Erosional layers, labeled "e" on the far right of the bar chart, are included here to demonstrate the quantity of fired clay recovered from the uppermost levels of Unit 3 that traverse the summit. The total aggregate weight of fired clay from erosional contexts is 30,614.0 g, but 71 percent of this weight (21,710.5 g) originated from layers associated with the summit and southern terrace in Unit 3. The remaining weight is split between three other units. While these layers were disturbed and eroded, this concentration of fired clay at the top of the mound corresponds well with the placement of the large building on the terminal layers of the summit. Three other stages on the flanked of Mound P stand out as having potential evidence for the deposition of building refuse. First, Stage III on the west flank, which corresponds to Level 19 in Unit 2, accounts for 21 percent (26,345.2 g) of all fired clay weight. This layer was identified early on as the layer that most closely corresponds to episodic house destruction due to its extremely high quantity of daub and charcoal throughout the soil matrix. Second, fired clay from Stage VII on the west flank (9,080.6 g), accounts for 7 percent of the total weight. Finally, fired clay from the mixed Stage XI on the north flank (13,975.9 g) characterizes 11 percent of the total weight from Mound P flank deposits. The higher frequency of fired clay in these stages is likely due to the destruction of summit buildings in the corresponding soil layers, providing clues to the continued reproduction of not only the house, but also the practices associated with repeated house construction and destruction associated with moments of political succession. A more detailed quantification and classification of daub is available in Appendix E. There was a total of 9,161 g of fired clay recovered from both units 6 and 7 on the summit and a comparison of this total with weights from the flank units strongly supports the deposition of destroyed buildings on the

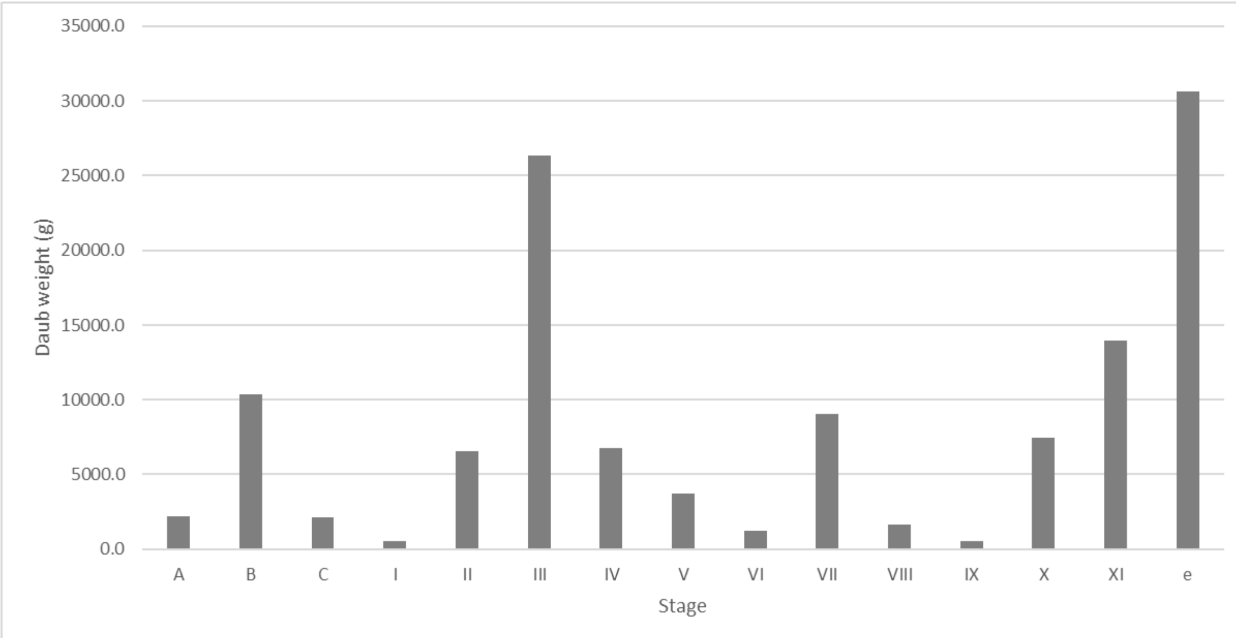

Figure 4.20. Distribution of fired clay weight by mound flank stage, Mound P.

flanks, rather than being covered up *in situ* by new soil layers. This distinction is important because it allows us to link the episodic razing of buildings with soil layers and their associated artifacts.

Summary of Mound P Stratigraphy

For the last 550 years, Mound P has sat quietly along the western plaza periphery, being the subject of only one modern archaeological excavation until the projects in 2009 and 2012. In 1905, Moore tested the summit of the mound but did not find the burials he was looking for. In 1988, Driskell excavated a 1-x-6 m stepped trench in the eastern flank of the mound and exposed mound construction episodes underneath a thick flank deposit full of daub, strongly hinting that a large burned daubed structure was destroyed on the summit of the mound and was discarded or portions of it had eroded down the eastern slope. Driskell's unpublished data has been used to guide research on the mound in the two most recent field seasons, providing expectations of a large building residing somewhere on the southern terrace, as well as diagnostic ceramic types and decorative modes that date to the Moundville III phase, particularly to the late Moundville III phase.

After the museum expansion and staircase construction were instigated, Walker's archaeogeophysical surveys were the first step toward documenting the layout of the summit. His data indicated that at least one large structure was located on the top of Mound P evidenced by large, subsurface magnetic anomalies across the southern portion of the summit. Structure 1, exposed in 2009 by the department field school, was an amorphous, rigid post daubed structure, an architecture form present in the region after about A.D. 1400. The presence of Alabama River Applique jar collar sherds and diminutive jar handles in the plowzone overlying this building provided a potential late Moundville III to Moundville IV date for the destruction of the building. However, since diagnostic artifacts were not recovered from undisturbed contexts and the mound was the subject of patching in the 1930s, I concluded that the terminal occupation of the mound (and hence, the office of the chief) likely dated to sometime during the fifteenth century, with some ephemeral use of the mound early in the sixteenth century (Porth 2011a:120, 2011b).

The answer to questions related to the continued addition of mound mantle layers and burned daub buildings on the summit of Mound P is beginning to take form. On the west flank, there is evidence for the periodic addition of mound construction mantles and midden deposits associated with the conflagration of summit buildings. This is most evident in the quantity of daub from stages III and VII, as well as the erosional layers associated with the upper terrace of the mound in Unit 3. This material suggests that the transition of chiefly office, or a similar hereditary position, required the destruction of summit buildings and the burying of a polluted surface with new soil mantles. As evidenced on the western flank, these materials are the materialization and reproduction of social institutions. Conversely, the north flank strata were the result of successive, periodic activities over a short period of time that generated a large amount of refuse, effectively extending the northern toe of the mound. This series of deposits was finally capped with a dense layer of daub in Stage XI, likely associated with one of the last instances of house razing at the site. Thus, while additional mound mantles were not added to the north flank, some of the social institutions associated with mound ceremonialism continued.

This chapter provided the context and provenience for the excavated materials that will be discussed in subsequent chapters. While the presence of large daubed structures that were burned and discarded during cyclical rituals does provide a clue about the fifteenth century date of the mound, it is only a relative measure for the timing of mound construction on Mound P. The following chapter will provide relative and absolute dates through an analysis of diagnostic ceramic types and radiocarbon dates.

CHAPTER 5

RELATIVE AND ABSOLUTE DATING OF MOUND P

The goal of this research is to understand if social institutions collapsed or reorganized through an examination of changes in ritual practice and the materialization of chiefly practices in a monumental context. At Moundville, social institutions materialize as platform mound construction and termination, the mobilization of labor needed for additional soil mantles and the construction of summit-top buildings, and the consumption of materials in mound summit social contexts. The ability of social actors to use these resources informs schemas and the ways those schemas inform the use and meaning of resources, allow social practices to be reproduced and transformed through time. Sewell’s Theory of Structure (1992, 2005) is applied to an understudied time of social change in the Black Warrior Valley during the Moundville III phase (A.D. 1400-1520), an archaeological phase when many social changes have been suggested to have occurred. This phase is characterized by an end to episodic, mantled-mound construction; a de-emphasis on nonlocal networks; the establishment of cemeteries at single mound sites in the valley; and the final production phase of bottles with engraved representational art in the Hemphill-style. The evidence for late Moundville III phase social contexts at Moundville is sparse (e.g., Knight 2009, 2010). Therefore, one of the goals of this research is to assess the onset of these social changes using mound midden contexts that appear to post-date A.D. 1450, a potentially critical time in the history of the site when some structural elements were no longer reproduced.

In Chapter 4, I introduced the topic of mantled-mound construction through a detailed description of Mound P's stratigraphy and the characterization of depositional layers on the west and north flanks of the mound. Based on these data, I suggest that the west flank deposits were episodic in nature, with clear evidence for alternating construction and midden layers linked to summit building destruction episodes related to chiefly succession rites. These deposits were best observed in the north and south profiles of Unit 2, but the eastern profile of Unit 3 shows evidence for the construction of a separated, albeit restricted, earthen mantle on the southern terrace of the mound. The nature of mound deposits exposed in the profiles of the north flank unit were different in character, likely representing periodic deposition of debris consumed, discarded, or washed off the top of the mound in a relatively short time span. These flank middens were capped with lenses of sandy yellow clay. Therefore, given the evidence from the 2012 Mound P excavations on the north flank, mantled-mound construction was no longer practiced in that specific location. However, even if the character of the Mound P flank construction and midden deposits in these different locations is dissimilar, the *nature* of the deposition does not answer the *timing* of deposition.

Documenting the timing of the deposits is a means to understanding the broader anthropological questions discussed in the first two chapters and the history of the Moundville site as detailed in Chapter 3. This chapter will address the timing of deposition of Mound P mound deposits through relative and absolute dating techniques. Accomplishing this goal is done in two ways. First, percentage stratigraphy and interdigitation (e.g., Lyman et al. 1998:244-246) were conducted on first-order diagnostics from the ceramic assemblage to measure the relative sequence of the deposits. This was generated using the Frequency Seriation 3.0 macro written for Microsoft Excel (Lipo 2001; Lipo et al. 1997). Then, the interdigitation was complemented and compared to radiocarbon assays submitted to the University of Arizona NSF-AMS Laboratory and supported by funds from a National Science Foundation Doctoral Dissertation Improvement Grant (1606379) (Blitz and Porth 2015). The assumptions underlying these two methods are discussed in detail along with the results of the analysis. The results of these analyses will address when the mound deposits date to and thus, what social changes were evident in the changes in ritual practice in mound contexts.

Relative Dating

Seriation is a relative dating technique that arranges and orders attributes of classes of artifacts from a temporal or spatial provenience by relative frequencies based on superposition and interdigitation to develop a chronology (Lyman et al. 1998). This definition insures that changes in the occurrence or frequency of locally representative types or classes from a relatively short period are the result of gradual changes in the popularity of these types through time, not due to geographical distance (Ford 1938, 1962; Phillips et al. 1951:223). Frequency seriation records types (or modes) by their relative frequencies within a given artifact class (in this case pottery) within a collection, and then orders collections through time based on the popularity of certain types or modes. It is based on the popularity principle that types or modes will have a continuous frequency distribution in a distinct locale and those types will have a similar level of popularity in neighboring communities (Dunnell 1970:309; Ford 1962:40; Lyman et al. 1998; O'Brien and Lyman 1999:116-117; Rouse 1967:186).

Seriation methods were first developed for placing artifacts from ancient Scandinavian and Egyptian cultures into a chronological order (Lyman et al. 1997; O'Brien and Lyman 1999; Trigger 1989). Some of the earliest relative dating techniques in Americanist archaeology were developed in the Southwest from surface collections and stratigraphic excavations from sites throughout the Zuni region and at Pecos Pueblo (Kroeber 1916a, 1916b; Kidder 1917; Kidder and Kidder 1917; Spier 1917). These early studies quantified painted and corrugated pottery decoration by absolute and relative frequencies by their location (Kroeber 1916a, 1916b) or stratigraphic depth (Kidder 1917) because the stylistic attributes of pottery were more sensitive "indices of change" than other artifact classes (Trigger 1989:202). They found that changes in the frequencies of pottery attributes from a geographically distinct area were best understood by changes in site occupation and type popularity through time and not by geographic difference. The relative order of the sequence, where certain types (i.e., white painted wares) were determined to be earlier than other types (i.e., red and black painted wares) was established through a comparison of type frequency similarities to historic or modern (at time of publication) popular pottery decorative attributes. Thus, the chronology of prehistoric and historic sites in the Southwest was accomplished by arranging the collections based on the similarities of the frequencies of types and the popularity principle (e.g., Ford 1962:39), a principle that has been critiqued as a weakness of culture history because it is an atheoretical, common sense approach (Lyman et al. 1997:148-149, 228). Kidder and Kidder (1917:349) defined this principle when they observed that when they quantified each type, it "tends to form a normal frequency curve, indicating that each one had a natural rise, vogue, and decline." For archaeologists that adapted this principle to pottery collections in the Southeast, the movement of time is like a stream characterized by intermingling, conjoining, and diverting braided trickles (Phillips et al. 1951), a metaphor that recognizes the diffusion of stylistic ideas and community interaction within a geographic region and cultural tradition (Lyman et al. 1997:141).

James A. Ford is recognized as the Southeastern prehistorian that has had the most influence on the adoption of a Southwestern-style seriation system, with his other major contribution being his work on defining ceramic types for the Mississippi Valley. Ford explicitly based his assumptions on Kidder's work at Pecos with the goal of understanding the cultural history of the Southeastern Indians. Specifically, Ford argued that ceramic decorative styles were developed out of gradual, local development and thus, seriation should be conducted on larger (≥ 100 sherds) samples from the same cultural area to document temporal, rather than geographic, changes in style (1938:262-263). Types would be plotted on strips of graph paper by their frequency per site or stratigraphic cut and then arranged in a master list until each type, in its own column, had a unimodal distribution that provided the sequence with an order; the direction of that order was derived from a comparison of historic type frequencies or other dating methods (Dunnell 1970:310; Ford 1938:263, 1962:42; Phillips et al. 1951:226-230; Rouse 1967:195). Thus, relative sequences were generated by comparing the frequencies of pottery types to others recovered in the same area.

Percentage stratigraphy is a method comparable to frequency seriation (e.g., Phillips et al. 1951:239), but it relies on changes in the frequencies of ceramic types recovered within stratigraphic sequences with those below and above it (Ford 1962; Willey 1939:142). The changes in the frequency of pottery types from stratigraphic deposits indicate chronological change to the unit of measurement for the stratigraphic cuts under consideration (Phillips et al. 1951:239). Interdigitation is a method of seriation that uses percentage stratigraphy from different excavation units or sites into a single graphic representation of changes in relative percepts of attributes (Lyman et al. 1998:244). Each frequency bar is given a unique shade or stippling that signifies a distinct horizontal provenience so that vertical relationships are not disrupted. Percentage stratigraphy and interdigitation are viable relative dating methods to compare the relative frequencies of pottery types between layers of the stratigraphic flank deposits from Mound P because strata from different units are numerous thus allowing for a fine-grain chronology. A revision of the Moundville III phase using multiple lines of evidence from the Mound P midden deposits is important because of the temporally sensitive nature of tighter chronological units from material that has not been excavated from mound contexts prior to 2012.

Moundville's Relative Ceramic Chronology

The chronology for Moundville was first developed based on a gravelot seriation that defined diagnostic types, varieties, and modes of decoration and vessel shape (Knight 2010; Steponaitis 1983a). The concept of a ceramic type used at Moundville and followed throughout this research is that it is an arbitrary, analytical construct that is used for the purposes of generating site and regional chronologies, but is not so rigidly defined that it cannot be expanded (Phillips 1970:23-28). Types can be identified as combinations of attributes, such as paste composition, surface treatment, and the technique (or specific combinations) of decoration. Varieties are spatial and temporal combinations of the specific paste composition, surface treatment, and technique of decoration that constitute a type plus form or design attributes or characteristics that differ from other varieties of the particular type. The arbitrary nature of the type-variety concept stems from the analyst's own perception and assignment of what attributes are important to define the type and understand historical relationships (Phillips 1970:23, 28), not an emic category designed to understand or define natural types (e.g., Rouse 1960; Spaulding 1953:305). Modes are separate from types and varieties and can be defined as "recurrent attribute combinations…of a more specific partitive nature" (Phillips 1970:28). As Phillips notes, modes could just as easily be used as the basis for types, identifying precisely why the type concept is arbitrarily defined by the analyst. Modes include the shape, rim, base, or appendages of vessels and the technique, placement, and design elements of decoration.

This research follows the current, cross-cutting ceramic classification system used at Moundville that utilizes the type-variety concept as complemented by an analysis of modes of decoration and modes of vessel shape. A more complete discussion of ceramic vessel morphology is presented in Chapter 6. The first attempt to institute a ceramic typology for the Moundville culture for chronology building was DeJarnette and Wimberly's (1941:81-84) classification of local types from the culturally-related Bessemer site and McKenzie's (1964:48-50) attempted a refinement of the type system using whole vessels from the Moore and WPA excavations. These earlier studies were initially revised by Steponaitis (1980), who outlined the local phase sequence that continues to be used for Moundville today. The seriation and phase sequence was detailed in Steponaitis's (1983a) seminal work that combined gravelot seriation and percentage stratigraphy. The gravelot seriation was advantageous because graves are closed contexts and thus the chances the provenience is mixed are minimized (Steponaitis 1983a:82-85). Selected gravelots needed at least two attributes and an attribute needed to be present in at least five gravelots. Then, nonmetric multidimensional scaling ranked their closest temporal distances to generate a best-fit for the graves (Steponaitis 1983a:85-86). The gravelot seriation was complimented with the relative frequencies of attributes from the 1978-1979 excavations north of Mound R (Steponaitis 1983a:94). Finally, the chronology was anchored by radiocarbon dates. Recently, Steponaitis's work has been expanded and refined using sherd material from subsequent mound excavations (Knight 2010). The Moundville ceramic sequence relies upon *terminus post quem* and *terminus ad quem* logic (Knight 2010:14-15). The common local types in the Black Warrior Valley associated with the Moundville culture date between A.D. 1200 and

1520, but many of the vessel forms and designs extended beyond A. D. 1520 into the Protohistoric period. These common types include Alabama River Appliqué, Bell Plain, Carthage Incised, Mississippi Plain, Moundville Engraved, and Moundville Incised. Further contributions to the local typology have been made by Ned Jenkins's (1981) work with pottery along the Tombigbee River.

Decorated pottery is not restricted to those designs produced via tooled incising and engraving, as various modes of decoration and modes of vessel shape are present on many of the above types. Modes of decoration are typically split into three general categories: painted decoration, vessel embellishment, and effigy features. Modes of vessel shape are characteristic points (e.g., Shepard 1976:226) that are diagnostic to a form of bowl, jar, bottle, or plate. These characteristic points include the morphology and orientation of vessel rims, but also corner points, end points, inflection points, and tangent points (see discussion, Chapter 5). These modes constitute the cross-cutting nature of the local typology because they are not exclusive to any one type or variety. For example, just as painted decoration occurs on the types Bell Plain, Carthage Incised, and Moundville Engraved without becoming a new variety of those types, beaded rims or effigy features also occur with Bell Plain and Carthage Incised without becoming a new variety of those types (e.g., Knight 2010:43; Steponaitis 1983a:63).

The question then becomes one of sorting and tabulating attributes present in a sherd assemblage when the type-variety concept is the dominant classification scheme. This issue can be explained with a short aside using a hypothetical sample of three sherds, all of which occur in Moundville ceramic collections. Sherd 1 has the temper and surface finish to classify it as Bell Plain, but it is also a portion of a hemispherical bowl rim with a beaded rim mode of decoration applied just below the lip. There are then three things to record for Sherd 1: type (Bell Plain);

mode of vessel shape (hemispherical bowl); and mode of decoration (beaded rim). The type for Sherd 2 is also Bell Plain, but the mode of vessel shape is a portion of a short-necked bowl rim with red-on-white bichrome painted decoration. Following the recording criteria for the first sherd, Sherd 2 also has three things to record: type, mode of vessel shape, and mode of decoration. Finally, Sherd 3 is classified as Carthage Incised, *variety Fosters* that is a portion of a flared-rim bowl rim and has bichrome red-on-white painted decoration. Again, each one of these attributes is recorded as an occurrence and tabulated. What is illustrative about this example is the non-exclusive nature of modes of decoration to types; red-on-white bichrome painted decoration was not confined to a single type, thus cross-cutting the concept and allowing for more precise chronological controls by using *both* type-varieties and modes in tandem.

Mound P's Relative Ceramic Chronology

Here I present the results of the relative ceramic chronology for Mound P. Previous research has indicated that changes in the frequencies of diagnostic types and modes of vessel shape and decoration clearly indicate material shifts that correspond to social changes (Knight 1997, 2009, 2010; Steponaitis 1983a, 1998; Taft 1996). Complete descriptions of all pottery types, varieties, modes of decoration, and modes of vessel shape excavated from Mound P are presented in Appendix C, but the first-order diagnostics important for the Moundville III phase (A.D. 1400-1520) are: Alabama River Appliqué; Carthage Incised, *variety Fosters*; Moundville Engraved, *variety Hemphill*; short-necked bowls; interior-painted jar collars; frog, fish, and human head effigy features; bichrome painted decoration; and trichrome painted decoration.

The percentage stratigraphy and interdigitation methods were chosen for chronology building so that the stratigraphic relationship between decorative styles could be plotted from known horizontal, and hence depositional, relationships. Thus, since the excavation of Units 2, 3,

Table 5.1. Absolute (top) and relative (bottom) frequencies of common local types, by stage, Mound P.

	Stage I	**Stage II**	**Stage III**	**Stage IV**	**Stage V**	**Stage VI**	**Stage VII**	**Stage VIII**	**Stage IX**	**Stage X**	**Stage XI**	**Erosion**	**Total**
	Absolute frequencies												
Bell Plain	91	377	140	691	427	221	441	243	261	1960	352	990	6194
Mississippi Plain	232	1187	359	2007	1342	758	2988	782	562	5798	972	3749	20736
Carthage Incised	5	19	5	40	20	12	44	16	28	200	24	77	490
Moundville Engraved	5	36	10	46	24	18	47	21	16	72	10	92	397
Moundville Incised	3	14	5	14	16	14	17	11	9	12		20	135
Residual and Nonlocal Types		12	5	23	22	26	43	11	6	69	5	59	281
Totals	336	1645	524	2821	1851	1049	3580	1084	882	8111	1363	4987	28233
	Relative frequencies												
Bell Plain	0.271	0.229	0.267	0.245	0.231	0.211	0.123	0.224	0.296	0.242	0.258	0.199	0.219
Mississippi Plain	0.690	0.722	0.685	0.711	0.725	0.723	0.835	0.721	0.637	0.715	0.713	0.752	0.734
Carthage Incised	0.015	0.012	0.010	0.014	0.011	0.011	0.012	0.015	0.032	0.025	0.018	0.015	0.017
Moundville Engraved	0.015	0.022	0.019	0.016	0.013	0.017	0.013	0.019	0.018	0.009	0.007	0.018	0.014
Moundville Incised	0.009	0.009	0.010	0.005	0.009	0.013	0.005	0.010	0.010	0.001		0.004	0.005
Residual and Nonlocal Types		0.007	0.010	0.008	0.012	0.025	0.012	0.010	0.007	0.009	0.004	0.012	0.010

and 5 was stratigraphically controlled, the relationship of sherds from one level to the other is known. Prior to any tabulation of types or modes, it was observed that the west flank appeared to have early-phase diagnostics, whereas the north flank appeared to have late-phase diagnostics. The absolute and relative frequencies for all major local ceramic types recovered from all mound stages in Units 2, 3, and 5 are presented in Table 5.1. A total of 28,233 ceramic sherds were recovered from these three units, of which 1,149 (4 percent) were decorated with engraved, incised, pinched, or punctated attributes. The ceramic analyses from Units 1, 4, 6, and 7 are presented as absolute frequencies per level in Appendix C; they include mixed or cross-cutting excavation levels and archaeological contexts and the primary value of these data is as a sample.

The frequencies presented in Table 5.1 are dominated by the two plain types (Bell and Mississippi) that are omnipresent in Moundville deposits, but changes in the popularity of Carthage Incised, Moundville Engraved, and Moundville Incised provide some initial clues to the relative date of the Mound P deposits. These data are presented and arranged stratigraphically in Figure 5.1 using a frequency seriation macro for Excel (Lipo 2001; Lipo et al. 1997). The frequency seriation was calculated at a 95 percent confidence interval. The west flank stages are filled with light gray, whereas the north flank stages are filled with dark gray. Moundville Incised, a type that generally dates from early Moundville I to the end of the Moundville II phase, is scarce in frequencies from Mound P and declines in popularity most evidently between Stages IX and X, disappearing altogether in Stage XI. Moundville Engraved, a type that dates from late Moundville I to the end of the Moundville III phase, maintained steady popularity from Stages I to IX, but then notably declines in Stages X and XI. Likewise, Carthage Incised, a type that dates from late Moundville I through the protohistoric Moundville IV phase, maintains a steady popularity from Stages I through VIII, but unlike Moundville Incised and Moundville

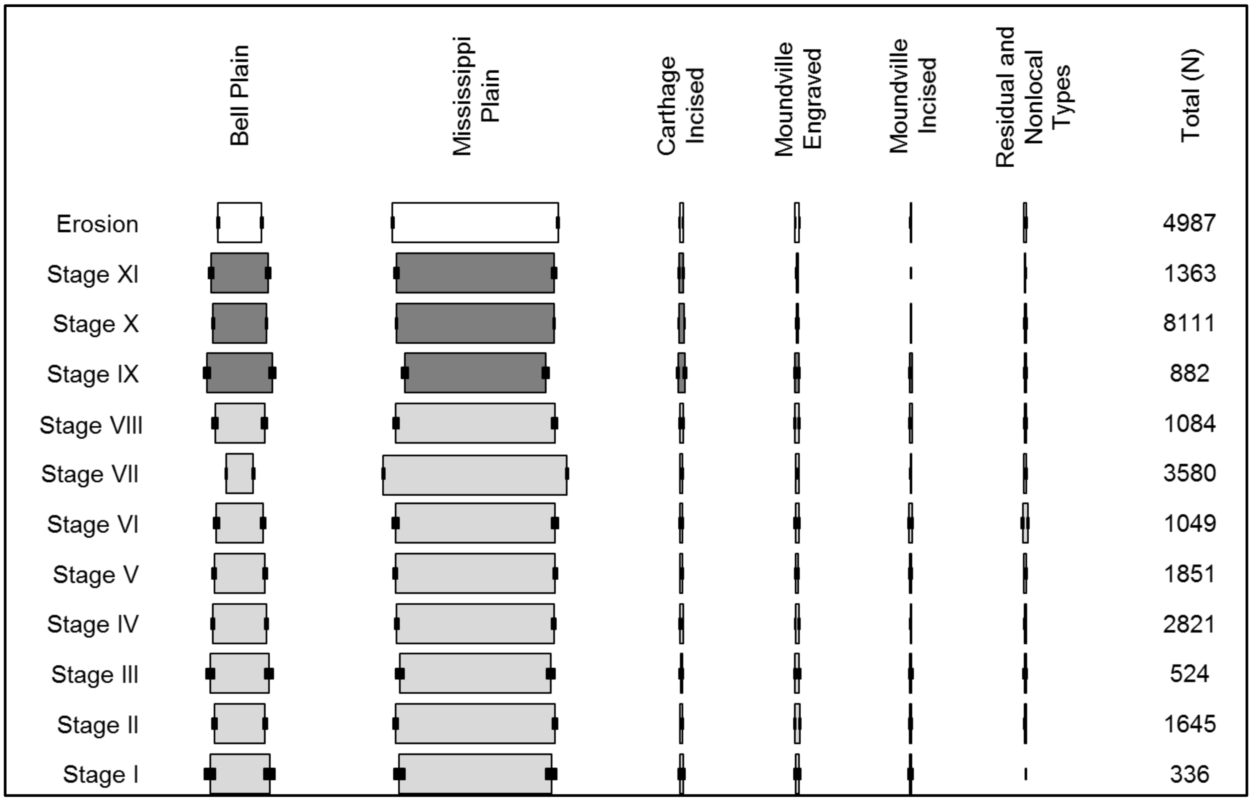

Figure 5.1. Percentage stratigraphy for local ceramic types, Mound P. West flank (light gray) and north flank (dark gray) frequencies are presented stratigraphically.

Engraved, Carthage Incised increases in popularity in Stages IX, X, and XI. Thus, the mound layers likely date somewhere between the late Moundville II phase through the Moundville III phase, and possibly later.

The question remains however: do the west and north flank midden deposits from Mound P date to the same time, in a sequence with an early (west flank) and late (north flank) Moundville III phase relationship or are they interdigitated at or across particular time periods? The initial formulation of the major types from Table 5.1 is problematic because the types in consideration transcend multiple phase boundaries and overlap in popularity. Let us keep in mind however that Moundville's chronology is heavily reliant upon *terminus post quem* and *terminus ante quem* logic. Thus, the introduction of new types, varieties, and modes is vital in the beginning of new phases and the fine-grained chronology needed to understand changes in a relatively limited time frame.

Table 5.2 presents the absolute and relative frequencies for all local decorated type-varieties from mound midden stages. Note that plain, residual, and nonlocal types have been removed. Since many Moundville ceramic assemblages are comprised of the ubiquitous Mississippi Plain and Bell Plain, any percentages calculated for the purposes of seriation are skewed when they are included. This excludes potentially mixed construction or erosional zones that deflate the relative frequencies of diagnostic types in midden contexts. Figure 5.2 presents the frequencies of local types from Mound P midden contexts calculated with a 95 percent confidence interval. Like Figure 5.1, it is organized stratigraphically with the west flank midden contexts in light gray at the bottom and north flank midden contexts in dark gray at the top. This is different from Table 5.2 because it isolates Carthage Incised, *variety Fosters* and Moundville Engraved, *variety Hemphill* as first-order diagnostics. All other local varieties are collapsed into type categories for the seriation.

The varieties of Moundville Incised, a type that falls earlier in the local sequence, ceases to occur between Stages VII and IX. There is a little more variation in the frequencies of Moundville Engraved varieties, however. Many of the varieties that date from Moundville II to early Moundville III were no longer observed or identified in north flank midden contexts. However, Moundville Engraved, *variety Wiggins*, a type that dates from the beginning of the late Moundville II through the end of the late Moundville III phase enters the Mound P sequence at Stage VII and increases slightly through Stage X.

Table 5.2. Absolute and relative frequencies of common local type-varieties, by midden stage, Mound P.

Type, *variety*	**Stage III**	**%**	**Stage IV**	**%**	**Stage VII**	**%**	**Stage IX**	**%**	**Stage X**	**%**	**Total**	**%**
Carthage Incised, *variety Akron*			2	0.020	2	0.019			1	0.004	5	0.009
Carthage Incised, *variety Carthage*	1	0.050	2	0.020	3	0.028	8	0.151	16	0.056	30	0.053
Carthage Incised, *variety Fosters*			2	0.020	1	0.009	1	0.019	29	0.102	33	0.058
Carthage Incised, *variety Lupton*			4	0.040	1	0.009			7	0.025	12	0.021
Carthage Incised, *variety Moon Lake*							1	0.019			1	0.002
Carthage Incised, *variety Poole*									2	0.007	2	0.004
Carthage Incised, *variety Thomas*									2	0.007	2	0.004
Carthage Incised, *variety unspecified*	4	0.200	30	0.300	37	0.343	18	0.340	143	0.504	232	0.411
Moundville Engraved, *variety Havana*	1	0.050	3	0.030							4	0.007
Moundville Engraved, *variety Hemphill*			11	0.110	9	0.083			4	0.014	24	0.042
Moundville Engraved, *variety Jones*			1	0.010			1	0.019	1	0.004	3	0.005
Moundville Engraved, *variety Middleton*					2	0.019					2	0.004
Moundville Engraved, *variety Moore*	1	0.050									1	0.002
Moundville Engraved, *variety Stewart*			3	0.030	2	0.019					5	0.009
Moundville Engraved, *variety Taylorville*					1	0.009					1	0.002
Moundville Engraved, *variety Tuscaloosa*	1	0.050			1	0.009					2	0.004
Moundville Engraved, *variety Wiggins*					1	0.009	1	0.019	7	0.025	9	0.016
Moundville Engraved, *variety unspecified*	7	0.350	28	0.280	31	0.287	14	0.264	60	0.211	140	0.248
Moundville Incised, variety *Carrolton*					1	0.009					1	0.002
Moundville Incised, *variety Moundville*			3	0.030	2	0.019			1	0.004	6	0.011
Moundville Incised, *variety Oliver*			1	0.010							1	0.002
Moundville Incised, *variety unspecified*	5	0.250	10	0.100	14	0.130	9	0.170	11	0.039	49	0.087
Totals	20		100		108		53		284		565	

The decrease in types dating from A.D. 1300-1450 (e.g., Steponaitis and Scarry 2016:9-13) includes Moundville Engraved, *variety Hemphill*, one of the most sensitive types for any early to late Moundville III phase determination. Sherds classified as *variety Hemphill* constitute a notable portion of local decorative types in Stages IV and VII, but are present in negligible quantities in Stages IX and X. This decrease marks a distinct shift in not only time, but likely use of the mound since these richly decorated sherds that depict cosmological schema were no longer displayed or used on mound top rituals. The changes in absolute and relative frequencies of *variety Hemphill* are important because this type is defined by representational art typically engraved on the body (and sometimes base and neck) of subglobular bottles linked with elite or priestly identity. Many of the motifs and themes that are represented in *Hemphill* are part of a larger, Middle Mississippian artistic tradition, often recognized as the areally broad Southeastern Ceremonial Complex (King 2007; Knight 2006a; Lankford et al. 2011; Reilly and Garber 2007; Waring and Holder 1945), that appear on objects from all media, including wood, copper, shell, and stone artifacts (Knight and Steponaitis 2011). Thus, to address the research question that asks if representational art is engraved on bottles in post-A.D. 1450 deposits, knowing when *variety Hemphill* was no longer being produced is expected to provide us with the early to late Moundville III phase transition. It is important to consider other Carthage Incised varieties and the modes of decoration and vessel shape to fully understand the relative chronology of these stratigraphic deposits.

The relative frequencies of Moundville Incised and Moundville Engraved varieties presented in Table 5.2 are relatively scarce. However, this trend is not shared by Carthage Incised varieties, specifically when the relative frequencies of *varieties Carthage* and *Fosters* are considered. Carthage Incised, *variety Carthage* dates to the entirety of Moundville III and is

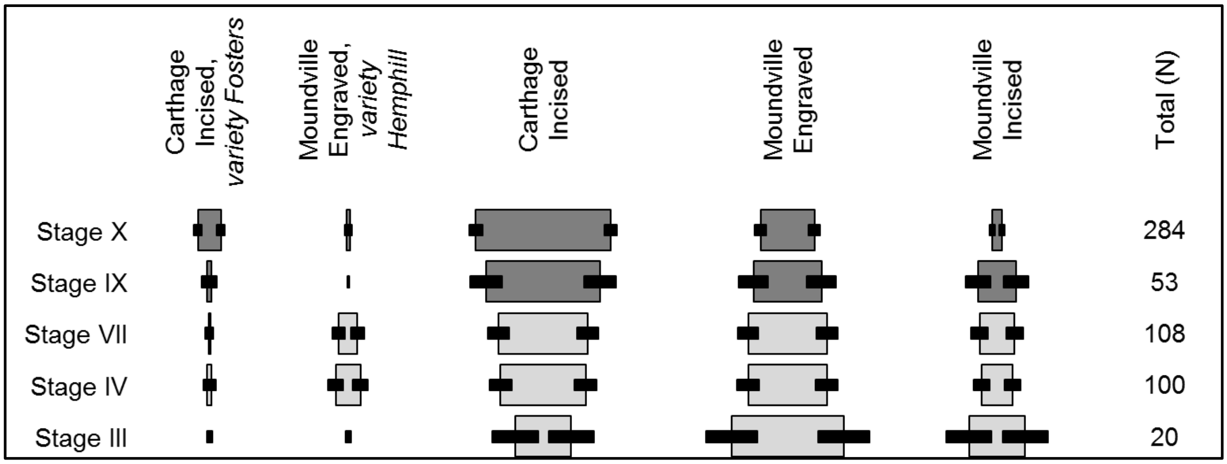

Figure 5.2. Percentage stratigraphy seriation for first-order diagnostics and aggregated local types, Mound P. West flank (light gray) and north flank (dark gray) frequencies are presented stratigraphically.

diagnostic to that phase. Variety Carthage is present throughout the Mound P midden stages but increases by almost 13 percent from Stage VII on the west flank to Stage IX on the north flank, an opposite pattern from *variety Hemphill*. Here is one of our first examples of how the *terminus post quem* logic in the Moundville typology works. Moundville Incised can be expected to be present in minimal quantities beyond late Moundville II and many of the Moundville Engraved varieties are diagnostic of the early Moundville III phase. Thus, it is the presence of Carthage Incised, *variety Carthage* beginning in Stage III on the west flank that provides us with a TPQ of the early Moundville III phase (A.D. 1400-1450) for all mound midden contexts. It should be noted that the sample size for Stage III diagnostics is small. Further, Carthage Incised, *variety Fosters*, diagnostic to the Moundville III to IV phases, but a type that becomes particularly popular in the late Moundville III phase, is also present in most midden contexts, but increases in relative frequency by 8.3 percent from Stage IX to Stage X middens on the north flank. The varieties that are rarer but diagnostic of the late Moundville III phase, like *varieties Poole* and *Lupton*, also increase in frequency from Stages IX to X. Therefore, based on TPQ logic, it is the inverse relationship between Moundville Engraved and Carthage Incised varieties that provide us with a tentative relative date of early Moundville III phase for Stages III through VII and the late Moundville III phase for Stages IX and X.

Nonlocal Types

Now that we have an outline of chronological change between the west and north flanks, we can begin to address how local and nonlocal connections may have changed across this temporal shift. Representational art engraved on bottles in the Hemphill-style appears to have dropped out of the sequence around A.D. 1450, confirming an observed pattern in other mound contexts at the site. A related societal shift has been proposed to have occurred at this time and it is that connections to supralocal regions were deemphasized or ceased. It would then be expected that nonlocal stone (see discussion, Chapter 7), pottery styles, and motifs would be absent or present in reduced numbers in post-A.D. 1450 contexts. While some stylistically nonlocal types were identified in the Mound P assemblage, there were many sherds that were unclassifiable and assigned a descriptive residual name (e.g., Knight 2010:42-43). Herein, non-local types will be mentioned by name and external connection when present, but the reader is directed to Appendix C for full typological descriptions.

The absolute frequency of identified non-local types present from Mound P midden contexts are listed by mound stage in Table 5.3 and include sherds from the Lower Mississippi Valley, the Central Mississippi Valley, and the northern Gulf Coast. It is likely that nonlocal types are present in the residual descriptions, but throughout this research I error on the side of caution when identifying nonlocal raw materials or stylistically nonlocal sherds. Only in instances where I could confirm they were of a nonlocal type through references or a specialist from that region did I provide them with a type name. Further, I tried as much as possible to

Table 5.3. Absolute frequencies of identified nonlocal types, by stage, Mound P.

Type, *variety*	**Stage III**	**Stage IV**	**Stage V**	**Stage VI**	**Stage VII**	**Stage VIII**	**Stage IX**	**Stage X**	**Stage XI**	**Erosion**	**Total**
Anna Incised, *variety Anna*			1								1
Barton Incised, *variety Barton*								1		2	3
Barton Incised, *variety unspecified*					2		1			4	7
Baytown Plain, *variety Addis*										1	1
Leland Incised, *variety Foster*		2									2
Leland Incised, *variety unspecified*		1							1	2	4
Nodena Red and White, *variety Nodena*							1				1
Parkin Punctated, *variety Harris*	1										1
Parkin Punctated, *variety unspecified*		1									1
Pensacola Incised, *variety unspecified*										1	1
Pouncey Pinched, variety Pouncey						1					1
Pouncey Pinched, *variety unspecified*	1	1	1	1	1						5
Salt Creek Cane Impressed, *variety unspecified*		1									1
Totals	2	6	2	1	3	1	2	1	1	10	29

maintain unspecified varieties for all nonlocal types. Identified nonlocal types are present, albeit in very small numbers, but they are present in fewer absolute frequencies in Stages IX and X than from Stages III through VII. Thus, while I cannot make a case for a clear shift in supralocal relationships or networks, the decline in nonlocal pottery is suggestive of a de-emphasis of those networks in favor of local social relations.

Modes of Decoration

The introduction of modes of decoration is also an important chronological marker. The classification of modes of painted decoration follows Knight's (2010:44-46) treatment of them, but I separate them into unichrome, bichrome, and trichrome divisions. Unichrome and trichrome painted decoration is simple enough, but there is a lot of variation in bichrome painted modes, as described in Table 5.4. This is the same variation Knight (2010:45) observed in other

Table 5.4. Modes of bichrome painted decoration identified in Mound P assemblage.

Mode of Bichrome Painted Decoration	Description
Red-on-white, A	Free-painted curvilinear red designs on an overall white slip
Red-on-white, B	Red overall slip on white overall slip
Red-on-white, C	Red painted bowl lip on overall white
Red-on-white, D	Red painted panels contrasting on overall white slip
Red-on-white, E	Red paint within trailed-incised lines
Red-on-white, E1	Red paint between trailed-incised lines
White-on-red, F	Free-painted (thick) white paint on an overall red slip
White-on-red, G	Patchy, grayish-white slip on an overall red slip

Table 5.5. Absolute frequencies of modes of unichrome, bichrome, and trichrome painted decoration, by midden stage, Mound P.

	Stage III	Stage IV	Stage VII	Stage IX	Stage X	Total
Unichrome						
Red filmed	22	66	76	48	227	439
White filmed	4	8	36	12	42	102
Black filmed, interior of jar rim			1		2	3
Red filmed, interior of jar rim	2	3	7	1	25	38
White filmed, interior of jar rim			1			1
Bichrome						
Black-on-red			2	1	2	5
Red and black		1	3		1	5
Black-on-white		1	5	1	22	29
Red-on-white			1		1	2
Red-on-white, A	1		1		18	20
Red-on-white, B		2				2
Red-on-white, C			1		4	5
Red-on-white, E					4	4
White-on-red, F				1	7	8
White-on-red, G					1	1
Red and white		2	3	1	4	9
Trichrome						
Red and black-on-white		3	1		13	17
Black-on-red and white		1				1
Red-on-black-on-white		1				1
Totals	29	88	138	65	373	692

mound contexts with the addition of red-on-white, E1, where a thick red paint is applied to an overall white slip in between trailed-incised lines, not within them. The absolute frequencies of modes of painted decoration present in mound midden contexts from Mound P are presented in Table 5.5. Similar to the ubiquity of Bell and Mississippi plain types, red and white unichrome painted decoration is ubiquitous throughout the Moundville sequence and has little chronological utility. However, bichrome and trichrome painted decoration are represented in higher quantities in Stage IX and especially Stage X, showing a trend towards vibrantly colored bottles and bowls in late Moundville III contexts. Further, red painted interior jar rims are present throughout Moundville III, but also increase in Stage X.

Vessel Embellishments and Effigy Features

Vessel embellishments are molded clay appendages or thickened rims and are presented as absolute frequencies from midden contexts in Table 5.6. Folded-flattened and folded jar rims are the most temporally sensitive modes, but there is almost no change in their frequencies through time. Beaded rims, diagnostic of the late Moundville II through Moundville IV phases is ubiquitous throughout the Mound P contexts. Vessel embellishments in this case are not useful in chronology building. Effigy features diagnostic of the Moundville III phase are fish and frog effigy vessels and human head medallion rim adornos (Table 5.7). In mound midden contexts, frog effigy vessels are present and a single fish fin was identified in Stage X. Missing from this list are two human head medallion effigy adornos recovered in the cross-cutting north flank reference trench. Both were molded to the rim of hemispherical bowls with a beaded rim. Of note are the two feline effigy adornos that were recovered. One was recovered from Stage VII and was painted with an overall white slip and red painted lines in between trailed-incised lines across the neck and face. The feline effigy adorno from the north flank reference trench is solid

Table 5.6. Vessel embellishments by midden stage, Mound P.

	Stage III	Stage IV	Stage VII	Stage IX	Stage X	Total
Beaded rim	1	10	15	2	15	43
Everted lip		1				1
Folded rim		1			2	3
Folded-flattened rim		2	1		4	7
Horizontal lug	1				1	2
Notched lip	2	2	2		1	6
Notched -everted lip		1				1
Scalloped rim			3			3
Totals	4	17	21	2	23	66

Table 5.7. Effigy features by midden stage, Mound P.

	Stage III	Stage IV	Stage VII	Stage IX	Stage X	Total
Effigy feature, feline adorno			1			1
Effigy feature, fish fin					1	1
Effigy feature, frog					2	2
Effigy feature, frog anus					1	1
Effigy feature, frog limb		2	3	1	2	8
Effigy feature, limb			1			1
Effigy feature, tail			2		2	4
Effigy feature, unidentified		1	3		8	12
Totals		3	10	1	16	30

black with stylized trailed-incised lines across its face, like the specimen from the west flank. The trend of frog, fish, and human head effigy features towards the north flank provides more evidence that the north flank midden deposits fall during the second half of the Moundville III phase.

Modes of Vessel Shape

The final line of evidence for refining the ceramic chronology for Mound P is modes of vessel shape (Table 5.8). The functional aspect of ceramic vessels is discussed in the next chapter and

Table 5.8. Absolute and relative frequencies of modes of vessel shape, by midden stage, Mound P.

	Stage III	%	Stage IV	%	Stage VII	%	Stage IX	%	Stage X	%	Total	%
Corner point, bottle	1	0.013	3	0.007	7	0.011	1	0.007	24	0.020	36	0.0141
Neck, bottle	6	0.078	7	0.015	9	0.014	3	0.020	21	0.017	46	0.0181
Pedestal base, bottle					2	0.003					2	0.0008
Slab base, bottle			1	0.002	1						2	0.0008
Total, Bottle	7	0.091	11	0.024	19	0.030	4	0.026	45	0.037	86	0.0338
Rim, cup-shaped bowl			5	0.011	2	0.003			4	0.003	11	0.0043
Rim, flared-rim bowl	2	0.026	36	0.078	26	0.041	31	0.205	142	0.116	237	0.0931
Rim, hemispherical bowl	1	0.013	17	0.037	27	0.043	3	0.020	19	0.015	67	0.0263
Rim, restricted bowl			3	0.007			4	0.026	28	0.023	35	0.0138
Rim, short-necked bowl	1	0.013	7	0.015	6	0.010	4	0.026	53	0.043	71	0.0279
Collar, jar	18	0.234	146	0.318	188	0.299	41	0.272	307	0.250	700	0.2750
Handle, jar	8	0.104	30	0.065	47	0.075	7	0.046	108	0.088	200	0.0786
Total, Standard Jar	26	0.338	176	0.383	235	0.374	48	0.318	415	0.338	900	0.3536
Rim, eccentric bowl							1	0.007			1	0.0004
Rim, plate					2	0.003					2	0.0008
Composite bowl/bottle	1	0.013									1	0.0004
Neck, hooded bottle					1	0.002					1	0.0004
Rim, oversized jar					2	0.003					2	0.0008
Rim, shallow bowl			2	0.004							2	0.0008
Rim, residual bowl	6	0.078	15	0.033	55	0.087	4	0.026	63	0.051	143	0.0562
Totals	77		459		629		151		1229		2545	

some information will be repeated for clarity, but here we are concerned with the chronological implications of secondary vessel shape and the timing of their introduction. Bottles, typically associated with the type Moundville Engraved, stay constant throughout the sequence and in Stages IX and X are typically decorated with Carthage Incised, *variety Carthage*, Moundville Engraved, *variety Wiggins*, and various modes of painted decoration. Short-necked bowls are a vessel form diagnostic of Moundville III, and like Carthage Incised, *variety Fosters*, previous observations from Moundville have suggested that these bowls become more popular after A.D. 1450. While there is a higher absolute frequency of these bowls in Stage IX and especially Stage X, the relative frequencies of the form increase only slightly from Stage III to X.

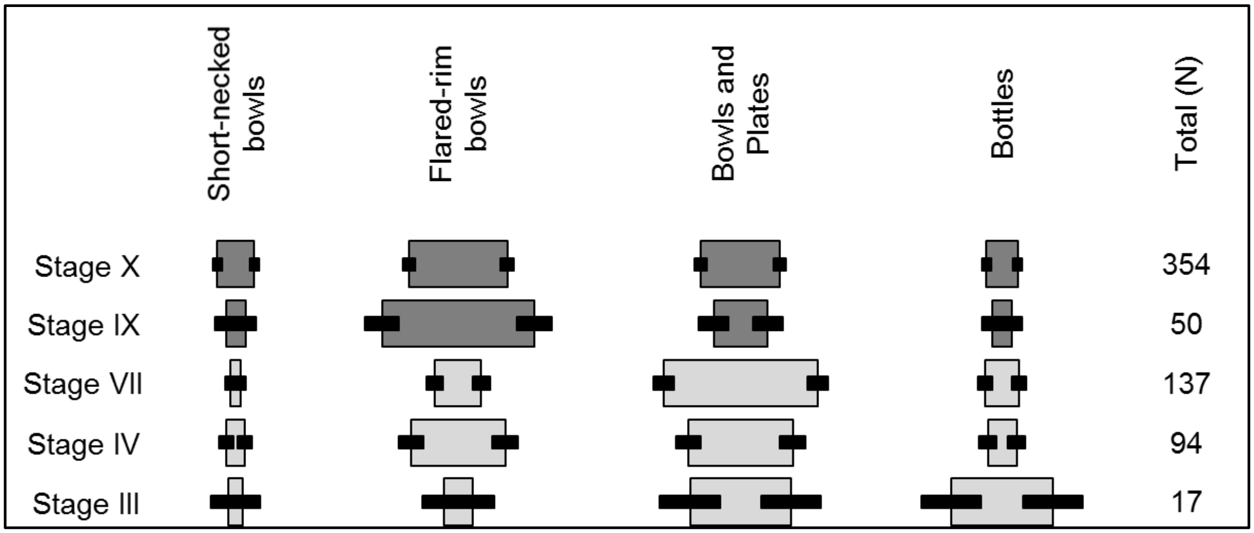

Figure 5.3. Percentage stratigraphy seriation for serving vessels from midden contexts, Mound P. West flank (light gray) and north flank (dark gray) frequencies are presented stratigraphically.

Figure 5.3 presents the results of percentage stratigraphy seriation for serving vessel forms. I combined hemispherical, cup-shaped, restricted, and residual bowls, as well as plates, into a single analytical category. This excludes short-necked bowls and flared-rim bowls, both forms that are diagnostic of the Moundville III phase. The changes in vessel morphology frequency are discussed in more detail in Chapter 6, but since our primary concern here is chronology, it is important to note some of the changes in serving vessel form. Among serving vessels, the largest increase in relative frequency for short-necked bowls is an increase between stages IX to X by 7 percent. This suggests that short-necked bowls may be better understood as a diagnostic marker for the entire Moundville III phase, not just the second portion of it. As discussed in the next chapter, many of the changes in serving vessel form frequency are more likely due to function and the character of the ritual practices associated with the mound midden refuse than chronological.

Summary

The western flank, exhibited by Stages III, IV, and VII, falls entirely within the early Moundville III phase. Taken on its own, the low quantities of Moundville Engraved, *varieties Taylorville* and *Tuscaloosa* in the same context as Moundville Engraved, *variety Stewart* and Moundville Incised, *variety Moundville* would date Stages III through VII somewhere in the Moundville II phase based on the Steponaitis and Knight chronologies. Let us keep in mind however that Moundville's typology is heavily reliant upon *terminus post quem* and *terminus ante quem* logic. Thus, the timing of the introduction of types is vital in the beginning of new phases. The presence of Carthage Incised, *varieties Carthage*, *Fosters*, and *Lupton* in those same midden contexts places the timing of deposition for those phases in the first half of the Moundville III phase. Further, the presence of a short-necked bowl rim typed as Carthage Incised, *variety Lupton* from the (seemingly) mixed contexts *below* Stage III (Stage II, see Table 4.2) provides a *terminus post quem* for all flank midden deposits above that layer, as Carthage Incised, *variety Lupton* is a solid early Moundville III diagnostic. Moundville Engraved, *variety Hemphill*, one of the most sensitive diagnostic types for the early Moundville III phase (below) is present in its largest quantities for the entirety of the Mound P excavations in Stages IV and VII, decreasing slightly from 11 to 8.3 percent of the local decorated ceramic assemblage. It is noteworthy that *variety Hemphill* vanishes almost entirely in Stages IX and X, an important observation that will be revisited below. Moundville Engraved, *variety Moore* makes a single appearance in Stage IV, giving us our first clue that engraved chevrons around the body of short-necked bowls make their debut at least as early as the early Moundville III phase. Another relatively new type, Moundville Engraved, *variety Jones*, was present as a single, white filmed short-necked bowl in Stage VII, also giving this type a TPQ in the early Moundville III phase.

The nonlocal ceramic types present on the west flank are limited, but present in higher frequencies than the north flank. Mississippi Valley types include a Leland Incised, *variety Foster* shallow bowl, and varieties of Parkin Punctated, Pouncey Pinched, and Salt Creek Cane Impressed. A single sherd of Anna Incised, *variety Anna* was recovered from Stage VII. Further, black-on-white negative painted pottery, a stylistic influence from the Tennessee, Lower Ohio, and Cumberland River valleys increases in frequency from Stage IV to VII. In general, bichrome painted pottery increases from Stage IV to VII, but it is present in relatively scarce frequencies. The vessel embellishments, particularly notched lips and notched everted lips, neither of which are expected to extend beyond the early Moundville III phase, are present along the western flank. Further, frog and feline effigies are present along the west flank, showcasing the Moundville III date along this flank.

The pottery assemblage from the north flank midden deposits exhibit some important differences from the midden deposits on the west flank. First, there is a noticeable absence of Moundville Engraved types in general, and a 6.9 percent decline in the frequency of Moundville Engraved, *variety Hemphill* from Stage VII (8.3 percent) to Stage X (1.4 percent). Moundville Engraved does not completely disappear however, as *variety Wiggins* increases slightly from Stage IX to Stage X and Moundville Engraved, *variety Jones* is also present, albeit in small quantities. The decrease in *variety Hemphill* is noteworthy, since there is a clear distinction between the west and north flanks, indicating a social and temporal shift. The decrease in engraved representational art is accompanied by an increase in the frequencies of Carthage Incised, *variety Carthage* and *variety Fosters*, and Moundville Engraved, *variety Wiggins* on flared-rim and short-necked bowls and bottles. Interestingly, Carthage Incised, *variety Lupton* decreases in frequency between stages IV and X by 1.5 percent.

The connections to the Mississippi Valley decrease slightly, but remain present. Barton Incised and Leland Incised types are present on the north flank and one sherd of Nodena Red and White is present from Stage IX. The variety in painted decoration, in particular bichrome red and white painted pottery, red filmed interior jar rims, black-on-white negative painting, and trichrome pottery increases until Stage X where it is ubiquitous. Just like diagnostic engraved types fall from the sequence, some vessel embellishments do as well, with beaded rims continuing as to be expected. One of the big differences is the amount of effigy features present in the north flank. Frogs and fish, Moundville III diagnostics, especially towards the end of the phase, are more frequent. Short-necked bowls are present in all midden contexts and are not introduced at a specific time, suggesting that while this vessel form became more popular in the latter portion of the Moundville III phase, it is not diagnostic of it. The key to understanding the timing of the north flank as a late Moundville III deposit rests in the frequencies of Moundville Engraved, *variety Hemphill*, Carthage Incised, *variety Fosters*, red and white bichrome painted decoration, and a gradual increase in short-necked bowls. However, since the deposits are different volumes and the ceramic assemblages are different sizes, abundance measures are needed to discern the differences between the deposits. These indices are presented and discussed in Chapter 8.

Absolute Dating

The relative dating assumptions and methods adopted by archaeologists from geology treat decorative style, vessel form, and tool morphology like index fossils, where the stratigraphic position of a particular style or form relative to another particular style or form provided the *relative* age of the styles or forms under consideration. If one of these styles is of a known calendrical age, then knowledge of the sequential direction of the artifacts, and hence the order of stratigraphic deposition, could be achieved. When Willard F. Libby and his associates at the University of Chicago (Libby 1952) realized that carbon-14 (^{14}C) naturally occurred in earth's atmosphere in the late 1940s the relative sequences used by archaeologists to understand a culture's history could be affirmed and refined using the more accurate *absolute* radiocarbon and calendrical dates. It should be noted that archaeologists can do more than correct chronological sequences with radiocarbon dates by treating the dates as data through careful calibration and equating the highest quantity of dates with the highest occupation periods of a site or region (Rick 1987). However, this approach to chronology building to understand large temporal and spatial social changes in the past is outside of the scope of this research and will not be attempted here. Libby and his associates' work on radiocarbon dating was the first step in a string of revolutionary changes to radiocarbon dating methods (Taylor and Bar-Yosef 2014) and was followed by the correction of contamination, fractionation, and reservoir effects (second revolution); accelerator mass spectrometry (third revolution); and Bayesian statistical analysis (fourth revolution).

Radiocarbon Dating

Carbon is a non-metallic element with the atomic number 6 and is the basis for all life on Earth. There are two stable carbon isotopes, carbon-12 (^{12}C) and carbon-13 (^{13}C) and one unstable carbon isotope, carbon-14 (^{14}C) that are naturally occurring and an active part of Earth's carbon cycle. When an atom is unstable it is radioactive, meaning that its nuclei spontaneously change at the rate of the atom's half-life, which could be anywhere from milliseconds to thousands of years (Russo and Silver 2000:518-519). It is the length of carbon-14's half-life that makes it an ideal isotope for understanding ancient geological and social changes. Carbon-14 naturally exists in a radioactive state with a half-life of ~5700 years and since it is the only carbon isotope that is radioactive, the terms *radiocarbon* and *^{14}C* can be used interchangeably (Taylor and Bar-Yosef 2014:272). The formation of carbon-14 is a byproduct of a series of chemical interactions initiated when cosmic rays, made up of charged hydrogen and helium nuclei, enter Earth's atmosphere, creating free neutrons that lose energy through a collision of atmospheric particles (Taylor and Bar-Yosef 2014:21-23). During photosynthesis, plants fix carbon isotopes to their cellular structures and since all terrestrial organisms are directly or indirectly dependent on plant products for food, all terrestrial organisms contain ^{14}C (Taylor and Bar-Yosef 2014:22, 32). When the organism that has been directly or indirectly incorporating carbon into their biomass stops this process and their metabolic rate stops (i.e., they die), the ^{14}C is no longer continually replaced and the carbon begins to decay at a stable rate. The rate at which the radioactive nuclei in a given isotope drops one-half of its content due to spontaneous nuclear activity is called its *half-life* ($t_{½}$). The spontaneous process of neutrons changing into protons, protons changing into neutrons, and nuclei losing protons is *radioactive decay* (Russo and Silver 2000:518-519).

Decay counting systems, such as accelerator mass spectrometry, directly measure the rate of ^{14}C beta decay (β^-) in a sample and then compare it to the decay rate and $^{14}C/^{12}C$ ratio of a contemporary standard (Taylor and Bar-Yosef 2014:112). Essentially, ^{14}C is not a way to date a sample, but a measurement of the isotope ratio of a sample; the ratio is then interpreted for dating purposes (Bronk Ramsey 2009:337). The absolute dating of archaeological materials is advantageous because of the stable and relatively long half-life of ^{14}C at 5730 years, the ubiquitous presence of CO_2 and ^{14}C in the living organisms of the oceans and terrestrial environments, the equal ratio of $^{12}C/^{14}C$ in those organisms, and the recovery of seeds, bones, and other organic materials for ^{14}C dating (Tuniz et al. 1998:227).

Accelerator Mass Spectrometry

Accelerator mass spectrometry (AMS), is a highly sensitive and very precise isotopic analysis technique developed from nuclear physics that has had a profound impact on absolute dating for archaeologists (Dass 2007; Taylor and Bar-Yosef 2014; Tuniz et al. 1998). AMS, increased the accuracy of radiocarbon dating by directly counting the natural levels of ^{14}C through a combination of two techniques that were developed for nuclear physics, mass spectrometry (MS) and particle acceleration. AMS dating has been important for archaeologists because of its high accuracy and energy advantages over normal mass spectrometry (Dass 2007; Taylor and Bar-Yosef 2014; Tuniz et al. 1998). The size of samples used for AMS can be as small as 25µg, but limitations on the precision of AMS from depositional carbonates, field or collection contamination, and laboratory processing contamination make the small sizes of AMS samples delicate (Tuniz et al. 1998:228). The accuracy and precision that archaeologists rely on, and that has made AMS a reliable technique, are controlled by correcting for fractionation, contamination, and reservoir effects, as well as variation in the ^{14}C production rate in the atmosphere.

A tandem accelerator is the basis of most AMS systems and the machine used to measure the Mound P samples at Arizona's AMS laboratory. Arizona was one of the first solid-carbon counting instrumentation labs in the U.S. (Taylor and Bar-Yosef 2014:288) and houses two AMS machines that directly measure the amount of ^{14}C from a sample, comparing the sample's content to oxalic acid standards I and II and a normalization to modern A. D. 1950 (Donahue et al. 1990). The NSF-AMS laboratory's website outlines in detail the methods used to pretreat, measure, correct, calculate, and calibrate carbon-14 samples (Donahue et al. 1990), information that will be synthesized here, especially when appropriate for the Mound P sample.

The AMS Sample

A carbon sample of thirteen deer bones was submitted to the University of Arizona's NSF-AMS laboratory in the fall 2016 for AMS analysis (Table 5.9). The sample was selected from mound midden contexts that were most likely to be temporally distinct. After initial laboratory processing, the bone material was bagged by provenience until funding for faunal analysis was possible. The identification of portions of the Mound P faunal assemblage was conducted by Susan Scott, J. Lynn Funkhouser, and H. Edwin Jackson using the extensive zooarchaeological comparative collections at the University of Southern Mississippi (USM) and the University of Michigan (UM), the results of which are forthcoming (Porth et al. 2017). Prior to their analysis, I had selected deer bone as the preferred sample for carbon dating because of their higher bone density (e.g., better preservation) and because they are present in high frequencies in Mississippian consumption contexts.

The selection of deer elements from the Mound P faunal assemblage followed a fairly straight forward premise. In midden contexts, the goal was to minimize and equate, if at all possible, the number of individuals selected with the planned number of samples to be submitted. For example, a specific deer bone element from a certain side of the deer should be selected for every sample from a provenience to eliminate the possibility that multiple assays would be drawn from the same individual. Luckily, the sampling method worked out and back-up samples were selected in the case that one sample did not yield enough collagen for AMS. Another benefit to using deer bone from midden contexts is that it avoids potential "old wood" and aggregate charcoal sample issues.

Table 5.9. List of deer bone specimens from midden contexts, Mound P. Specimens are listed stratigraphically from bottom to top.

Sample No.	Arizona Sample No.	Provenience	Context	Species	Element	Side	Quantity	Weight (g)
MMP005	AA108745	Moundville, Mound P, Unit 5, Zone 2, Level 2	Stage X	*Odocoileus virginianus*	Distal tibia, unfused	Right	1	3.5
MMP006	AA108746	Moundville, Mound P, Unit 5, Zone 2, Level 2	Stage X	*Odocoileus virginianus*	Distal tibia, unfused	Right	1	4.4
MMP007	AA108747	Moundville, Mound P, Unit 5, Zone 3, Level 1	Stage X	*Odocoileus virginianus*	Distal tibia, fused	Right	1	6.9
MMP008	AA108748	Moundville, Mound P, Unit 5, Zone 3, Level 1	Stage X	*Odocoileus virginianus*	Distal tibia, unfused	Right	1	4.1
MMP013	AA109489	Moundville, Mound P, Unit 5, Zone 4, Level 1	Stage X	*Odocoileus virginianus*	Distal tibia, fused	Right	1	25.7
MMP009	AA108749	Moundville, Mound P, Unit 5, Zone 5, Level 1	Stage IX	*Odocoileus virginianus*	Distal tibia, unfused	Right	1	25.0
MMP010	AA108750	Moundville, Mound P, Unit 5, Zone 6, Level 1	Stage IX	*Odocoileus virginianus*	Distal tibia, fused	Right	1	21.4
MMP011	AA109488	Moundville, Mound P, Unit 2, Level 7	Stage VII	*Odocoileus virginianus*	Distal tibia, unfused	Left	1	0.5
MMP002	AA108742	Moundville, Mound P, Unit 2, Level 7	Stage VII	*Odocoileus virginianus*	Distal tibia, fused	Left	1	0.9
MMP003	AA108743	Moundville, Mound P, Unit 2, Level 8	Stage VII	*Odocoileus virginianus*	Distal tibia, fused	Left	1	6.0
MMP012	AA109193*	Moundville, Mound P, Unit 2, Level 9	Stage VI	*Odocoileus virginianus*	Distal tibia, fused	Left	1	5.4
MMP004	AA108744	Moundville, Mound P, Unit 2, Level 19	Stage III	*Odocoileus virginianus*	Metatarsal 3-4		1	3.7
MMP001	AA108741**	Moundville, Mound P, Unit 2, Level 6	Stage VII	*Odocoileus virginianus*	Distal tibia, unfused	Left	1	3.0

*AA109193 was a replacement for a sample that yielded no collagen
**AA108741 did not yield any collagen

Animal bone is appropriate for AMS because animals continually consume carbon, which is incorporated into the soft and hard tissues of the animal (Taylor and Bar-Yosef 2014:75-76). Collagen, a protein and organic compound found in the laminated fibers of bone, is separated from inorganic compounds through laboratory pretreatment to produce gelatin, avoiding some of the previous issues associated with the dating of bone samples and allowing for more reliable ^{14}C assays (Higham et al. 2006:179; Taylor and Bar-Yosef 2014:75-76). The preservation of bone collagen from archaeological samples is dependent on the sample's depositional environment because a soil matrix's pH, the present microbial activity, temperature, and water levels are variable between and within archaeological sites (Higham et al. 2006). The use of the term collagen as it relates to radiocarbon dating is a misnomer, since archaeological samples contain small amounts of unaltered collagen, which requires identification through biochemical analysis (Taylor and Bar-Yosef 2014:80). The more appropriate terms for archaeological samples are: "collagen" as degraded ancient material; acid-soluble or acid-insoluble; base-soluble; gelatin; and ultrafiltered gelatin fractions (Taylor and Bar-Yosef 2014:80; van Klinken 1999:687).

In the Arizona AMS lab, bone carbon samples are pretreated through a soaking process and the ultrafiltration (UF) of gelatin, the preferred pretreatment for AMS, separating the high molecular weight (MW) of "collagen" (> 30kD) from low MW fractions (< 30kD), thereby increasing the measured age, improving the C:N ratios, and eliminating other components (Donahue et al. 1990; Higham et al. 2006:180, 192; Taylor and Bar-Yosef 2014:75-76). The apatite fraction in smaller bones samples (~1g) is removed through an acid soak and then the bone collagen is hydrolyzed in order to sample them (Donahue et al. 1990). The pretreatment of younger samples (within the last couple of thousand years) removes contaminates through a standard, sequential process of soaking the sample in dilute hydrochloric acid, distilled water, diluted sodium hydroxide, distilled water, acid, and finally distilled water until the washing water reaches neutrality (Donahue et al. 1990). One of the issues with ultrafiltration is the possibility that residual humectants can contaminate the cellulose membrane, requiring proper cleaning protocols to be in place prior to ultrafiltration (Higham et al. 2006:180).

Radiocarbon Dates from Mound P

In the fall of 2016, ten deer bone samples were submitted to the University of Arizona's AMS Laboratory for processing. In total, nine radiocarbon assays were obtained from the deer bone sample since one sample, lab number AA108741, did not yield enough collagen for testing and a replacement was required. A second batch of three samples, including the replacement sample, was submitted in the winter of 2017. The one and two sigma calibrated date ranges and medians from all twelve radiocarbon samples are presented in Table 5.10, arranged by stratigraphic provenience. They were calibrated at 1 and 2 sigma using OxCal 4.2/IntCal 13 atmospheric and corrected for contamination and fractionation effects at the University of Arizona. Dates that are corrected for fractionation in the Black Warrior Valley are younger by 40 years than the raw dates (Knight 2010:132). The results from all twelve radiocarbon samples are presented in (Figure 5.4) in the multiplot in generated in OxCal 4.2 (Bronk Ramsey 2013). Like the samples in tables 5.9 and 5.10, these dates are arranged by stratigraphic provenience, with the earliest provenience at the bottom and the latest at the top.

The radiocarbon dates from Mound P can be discussed in three sets: the five dates from stages III, IV, and VII on the west flank; the two dates from Stage IX on the north flank; and the five dates from Stage X on the north flank. Further, there are two outliers that need to be addressed. The first set of dates to be addressed consist of samples recovered from the west flank: three samples came from Stage VII midden, one originated from Stage IV midden, and

Table 5.10. Radiocarbon dates from Mound P. Specimens are listed by stratigraphic provenience from bottom to top.

Lab Number	Provenience	Context	14C Age B.P.	Uncalibrated Date	Calibrated Date (1 sigma)	Calibrated date (two sigma)	Median
AA108745	Unit 5, Zone 2, Level 2	Stage X	378 ± 25	1572 ± 25	A.D. 1453 -1512 (53.5%); 1601-1616 (14.7%)	A.D. 1446-1524 (65.4%); 1572-1630 (30.0%)	1498
AA108746	Unit 5, Zone 2, Level 2	Stage X	435 ± 28	1515 ± 28	A.D. 1434-1462 (68.2%)	A.D. 1420-1491 (93.9%); 1603-1610 (1.5%)	1449
AA108747	Unit 5, Zone 3, Level 1	Stage X	640 ± 29	1310 ± 29	A.D. 1292-1315 (27.3%); 1356-1389 (40.9%)	A.D. 1283-1329 (40.8%); 1341-1396 (54.6%)	1353
AA108748	Unit 5, Zone 3, Level 1	Stage X	360 ± 29	1590 ± 29	A.D. 1466-1522 (37.6%); 1535-1625 (30.6%)	A.D. 1451-1530 (48.0%); 1541-1635 (47.4%)	1535
AA109489	Unit 5, Zone 4, Level 1	Stage X	432 ± 23	1518 ± 23	A.D. 1436-1460 (68.2%)	A.D. 1428-1483 (95.4%)	1449
AA108749	Unit 5, Zone 5, Level 1	Stage IX	432 ± 29	1518 ± 29	A.D. 1435-1466 (68.2%)	A.D. 1420-1495 (92.2%); 1501-1615 (3.2%)	1451
AA108750	Unit 5, Zone 6, Level 1	Stage IX	486 ± 28	1464 ± 28	A.D. 1420-1440 (68.2%)	A.D. 1408-1449 (95.4%)	1430
AA109488	Unit 2, Level 7	Stage VII	432 ± 23	1518 ± 23	A.D. 1436-1460 (68.2%)	A.D. 1428-1483 (95.4%)	1449
AA108742	Unit 2, Level 7	Stage VII	470 ± 29	1480 ± 29	A.D. 1425-1445 (68.2%)	A.D. 1410-1456 (95.4%)	1435
AA108743	Unit 2, Level 8	Stage VII	785 ± 29	1165 ± 29	A.D. 1224-1266 (68.2%)	A.D. 1206-1280 (95.4%)	1245
AA109193	Unit 2, Level 9	Stage VI	642 ± 24	1308 ± 24	A.D. 1294-1310 (25.5%); 1360-1387 (42.7%)	A.D. 1284-1325 (40.4%); 1345-1394 (55.0%)	1356
AA108744	Unit 2, Level 19	Stage III	413 ± 29	1537 ± 29	A.D. 1440-1485 (68.2%)	A.D. 1431-1518 (85.4%); 1594-1619 (10.0%)	1465

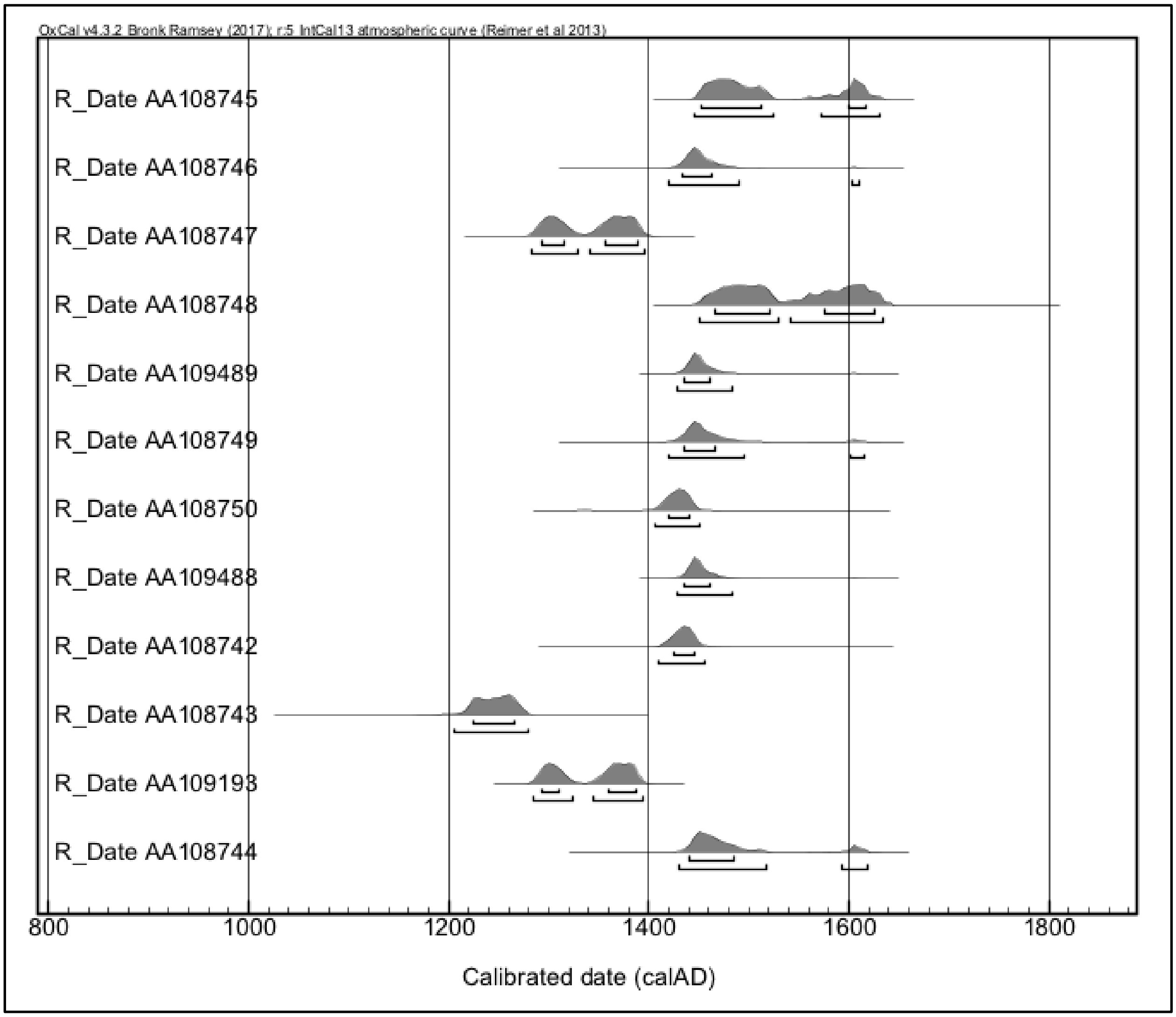

Figure 5.4. Multiplot of calibrated dates from midden contexts, Mound P; 1-sigma range is in small bracket, 2-sigma range is larger bracket. Presented stratigraphically, top to bottom.

one came from Stage III midden. I selected these because of the distinct nature of the Stage III daub deposit and the high artifact quantities in stages IV and VII. Further, there were enough distal left tibias present in Stage VII to gather multiple samples. The single sample from Stage III (AA108744) when considered at 2-sigma, unexpectedly dates to the late fifteenth century, with a median of A.D. 1465. However, a single date (AA109193) from Stage IV midden that overlies Stage III has a median date of A.D. 1356, but at 2-sigma it extends into the very late fourteenth century. Further, two samples from Stage VII, a deposit that overlies Stage III stratigraphically, pre-date this sample at 2-sigma, with median dates of A.D. 1435 (AA108742) and A.D. 1449 (AA109488), falling in the first half of the fifteenth century.

The ceramics from Stage III were placed in the early Moundville III phase based on the introduction of a short-necked bowl with Carthage Incised, *variety Lupton* decoration in the underlying Stage II deposit and the presence of Carthage Incised, *variety Carthage* in Stage III; all are early Moundville III phase diagnostics. Since Stage III cannot fall later than Stage VII based on stratigraphy and supported with evidence from our ceramic typology, it is most likely that Stage III falls prior to A.D. 1450, a date that is within the 1- and 2-sigma range for the sample. The Stage VII sample then falls in line with the ceramic sequence, and since the levels overlaying this stage are mixed and eroded, and those layers underlying Stage VII continue into the strata exposed in Unit 3, the west flank deposits date to the early Moundville III phase (A.D. 1400-1450). It is possible that this date excludes the southern terrace of the mound, present in the profiles of Unit 3 and restricted to the erosional analytical unit from that same unit. Future excavations into this portion of the summit should make it a priority to obtain quality carbon samples. The ceramic sequence and stratigraphic relationships on the west flank have provided a relative and absolute date of A.D. 1400-1450 for the west flank midden deposits and related construction layers.

We now turn to the second set of radiocarbon dates, which include two dates obtained from the Stage IX Midden at the base of the north flank excavations and presented in the middle of Table 5.10. My initial impression of the dating of the north flank deposits was that they were all contemporaneous and based on the ceramic sequence, dated to the second portion of the fifteenth century or possibly later. Thus, the date of one of the samples from Stage IX (AA108750), recovered from the deepest excavation cut on the north flank (Unit 5, Zone 6, Level 1) that immediately draws our attention because it solidly dates to the first portion of the fifteenth century. The second date from Stage IX (AA108749) falls in the middle to late portion of the fifteenth century and there is some overlap of the 2-sigma ranges for the dates.

As a reminder, Stage IX was a truncated deposit of sandy loam with a greasy texture capped with a thin yellow lens of sandy clay. I previously mentioned that it was possible that the analytical unit consisted of two soil zones that were removed separately as excavation levels, but because the bottom-most cut was very thin and was better exposed on the eastern portion of the unit, it was difficult to discern a difference between the two layers. This is most evident in the lighter soil color at the base of Unit 4/5, as seen in Figure 4.15, that underlies a layer of dark brown greasy soil. There are a couple of considerations here. First, the arbitrary analytical unit Stage IX could be divided and the two new stages would then correspond to their respective excavation cuts. This introduces an issue of small sample sizes but it could be possible to more accurately outline the temporal differences between the two. A second consideration would be to say that given the nature of the excavations and a lack of diagnostic artifacts, the analytical unit should stay intact, but that an absolute sub-phase date should not be given to the deposit. This avenue would allow the research to proceed with appropriate caution, but would not lead to a satisfying temporal split between the flanks. Thus, given the lack of diagnostic artifacts, the truncated nature of the Stage IX excavation levels, and the difference in dates from potentially two separate deposits, I am not confident in providing a definitive date of early or late Moundville III for this stage. It may be most parsimonious to say that Stage IX falls in the middle of the fifteenth century, an observation supported by the 2-sigma range for AA108749.

The third group of dates are from Stage X – Banded Midden from the north flank. All four of these dates fall within the middle to late fifteenth century. Two dates, AA108746 and

AA109489, both have a median date of A.D. 1449, while AA108745 has a median date of A.D. 1498. Finally, AA108748 has a median date of 1535. These late fifteenth century dates match the expected ceramic typology from the same proveniences. Carthage Incised, *variety Fosters*, short-necked bowls, a wider range of painted decoration, and other minor varieties of Carthage Incised increase or dominate the ceramic assemblage in this context. Thus, I feel comfortable with a post-A.D. 1450 date for the Stage X periodic midden deposits.

There are two outliers, one from the west flank (AA102743) and a second from the north (AA108747), visible in Figure 5.4 as the only two date ranges that fall before A.D. 1400. However, all twelve samples, even the two outliers, fall within the occupation span of Moundville, easing concerns about potential aberrant radiocarbon dates due to contamination during recovery, analysis, or processing. The early range for both dates suggest that massive amounts of soil were moved at Moundville during the fifteenth century and that these bones are actually older than the mound building stages in which they are found. It is the "old wood" problem, except that they are "old deer bones". This observation is unfortunate, because it indicates that the midden deposits were more mixed than I originally thought. However, with a single outlier present on each flank, I am inclined to support an interpretation that favors minimal mixing of flank midden deposits. If these construction episodes used substantial amounts of fill from earlier stages, I would expect multiple intercepts to be off. Fortunately, they are not and we can be assured that there was minimal mixing.

The date range from the first set of radiocarbon dates placed the western flank midden deposits within the early Moundville III phase (A.D. 1400-1450), while the second range of dates has overlapped with the later portion of that assessment, placing Stage IX somewhere in the middle of the fifteenth century. We can now turn to the last set of four dates that all originate from Stage X on the north flank, a thick deposit of rapidly deposited soils overlaying Stage IX, presented in the top portion of Table 5.10. We can set aside one outlier from Stage X (AA108747) that dates to the fourteenth century. The other four dates fall within the late fifteenth to early sixteenth century, securely within the late Moundville III phase (A.D. 1450-1520). This date is confirmed by the increase in late diagnostics such as Carthage Incised, *variety Fosters*, an increase in the variety of painted decoration, and the introduction of Carthage Incised, *variety Poole*.

Discussion

This chapter addresses the timing of social change evidenced by shifts in the consumption of pottery and radiocarbon dates. The determination of when these changes took place on Mound P is key to understanding when changes happened across the site and in the valley. Around A.D. 1450, four changes have been proposed to have happened at the Moundville site. First, mantled mound construction, an ancient tradition in the Eastern Woodlands, ceased to be practiced. Second, elite-related motifs were no longer engraved on subglobular bottles. Third, nonlocal networks were deemphasized. Finally, the dead were placed elsewhere in the valley. However, there is archaeological evidence that Mounds B, E, P, and V continued to be used past A.D. 1450 in some way. On Mound V there was an emphasis on communal decision making, materialized as an earth lodge (Knight 2009) and on Mound E, the evidence for mound summit use comes from the uppermost layers of soil and a burned building on the terminal summit layers (Knight 2010). Thus, the mound-related activities at the Moundville site that post-date 1450 are ephemeral in relation to the activities practiced at single mound sites of Snows Bend and White

<table>
<tr><th></th><th>West flank deposits</th><th>North flank deposits</th></tr>
<tr><td rowspan="2">Late Moundville III phase, AD 1450-1520</td><td rowspan="2"></td><td>Stage X Midden</td></tr>
<tr><td rowspan="2">Stage IX Midden</td></tr>
<tr><td rowspan="5">Early Moundville III phase, AD 1400-1450</td><td rowspan="2">Stage VII Midden</td></tr>
<tr><td rowspan="4"></td></tr>
<tr><td>Stages IV, V, VI</td></tr>
<tr><td>Stage III, Burning Episode</td></tr>
<tr><td>Stage II</td></tr>
</table>

Figure 5.5. Chronological alignment of deposits from two excavation areas on Mound P.

(Welch 1991, 1998). The decentralization of Mississippian populations is not unique to the Black Warrior Valley or large, multiple mound civic-ceremonial centers like Moundville as other studies across the reason have demonstrated (Anderson 1994; Beck 2013; Blitz 1999; Blitz and Lorenz 2006; Cobb and Butler 2002; Hally 1996; King 2001, 2003; Kelly 2008; Knight 1997; Marcoux and Wilson 2010; Peebles 1986; Smith 1992; Williams 1990, 1996; Williams and Shapiro 1996). These studies approach social transformation and institutional collapse from 1) a general perspective and 2) a historical approach, of which this research favors the latter.

The previous sections of this chapter detailed the assumptions behind relative and absolute dating methods used by archaeologists to create chronologies to understand and document cultural change. One of the main questions of this research asks if mantled mound construction continues past A.D. 1450 on Mound P or if it ceases to be practiced, as observed in other mound contexts at Moundville (Knight 2010). A second aim of this research is to understand if representational art was produced or consumed in contexts that post-date A.D. 1450. The symbolic art executed on bottle bodies, shoulders, bases, and necks is related to cult institutions (Knight 1986) and changes in the presence of these motifs is expected to indicate shifts in social reproduction. The archaeological data needed to address these questions are 1) alarge sample of decorated and diagnostic ceramic types, modes of decoration, and modes of vessel shape from mound midden deposits for relative dating and 2) radiocarbon dates submitted for precise, AMS dating from those same midden deposits for absolute dates. The midden deposits identified from Unit 2 on the west flank and Unit 5 on the north flank and their corresponding relative and absolute dates are presented in Figure 5.5.

This assessment of the relative and absolute chronologies from Mound P flank deposits is supported by the introduction of diagnostic ceramic types and deer bone collagen assays. The first research question related to the timing of mound construction is addressed by a lack of mound construction layers present in the north flank stratigraphy. On the west flank, the thin Stage III Burning Episode likely dates to the first portion of the fifteenth century. The unexpected later radiocarbon date from this layer suggests a late fifteenth century date for the deposit, but Stage VII, which overlies Stage III, has an early fifteenth century absolute date. Further, diagnostic ceramics from these deposits show moderate frequencies of late Moundville II to early Moundville III phase diagnostics, drawing more attention to the stratigraphic relationship between stages III and VII. Thus, based on the stratigraphic relationship between stages III and VII, and the presence of diagnostic pottery throughout all mound stages, the west flank middens date to the early Moundville III phase. The stratigraphy in the west flank deposits shows a clear pattern of alternating construction and midden deposits, while the deposits on the north flank consisted entirely midden.

The problem of the Stage IX Midden deposit, addressed in more detail above, is that this analytical unit consists of two thin and truncated excavation cuts and the nature of the soil texture and artifact density have made it difficult to divide it into smaller analytical units. Thus, we must settle on a mid-fifteenth century date for the Stage IX deposits. However, Stage X consisted of periodic midden deposits that contained a high frequency of Carthage Incised, *variety Fosters*, high levels of variation in painted modes of decoration, and elevated quantities of short-necked bowls. Further, the relative absence of late Moundville II to early Moundville III diagnostics combined with late fifteenth to early sixteenth century radiocarbon dates places the Stage X Midden squarely in the late Moundville III phase.

Therefore, I can now document that episodic, mantled mound construction did not continue past A.D. 1450 on Mound P as evidenced by the high frequency of late Moundville III diagnostic ceramics and three radiocarbon dates that place the Stage X midden deposits solidly in the second part of the fifteenth century. Further, another research question can now be addressed. There is an inverse relationship between Moundville Engraved, *variety Hemphill* and Carthage Incised, *variety Fosters* frequencies signaling not only a shift from early to late Moundville III phases, but also a shift in what decorative motifs and themes were being produced and emphasized in the later, north flank contexts. Further, the increase in red, white, and black painted decoration and the increase in flared-rim bowls have important functional and symbolic ramifications on structural elements that were being reproduced in during the last half of the fifteenth century. Bayesian analysis of the dates is currently underway because it allows for a better understanding of short-term temporalities. In the next chapter, I investigate changes in the social use of the platform mound through an analysis of vessel morphology and size to gain a better understanding of historical changes on Mound P.

CHAPTER 6

VESSEL MORPHOLOGY

This research seeks to address the nature of institutional collapse and social transformation in late prehistoric complex societies in the Southeast. These historical processes were not restricted to the Black Warrior Valley and were a widespread occurrence among Mississippian societies in river valleys across the region. Further, these moments or processes of social transformation or institutional collapse have typically been generalized as monolithic "collapse" without documenting how the society changed and what exactly collapsed. Thus, understanding what social institutions were reproduced through practices associated with monumental architecture can address what elements of society were emphasized and which ones were not. More broadly, this research investigates the relationship between monumental architecture and ritual practices that could rearticulate structural elements through the agency of hosts and participants, leading to social change. Understanding how shifts in the materialization of ritual practice and social institutions as practiced on Mound P influenced or were influenced by broader social changes during the fifteenth century is at the center of this research.

The timing of the cessation of mound construction on Mound P is one of the central problems addressed in the previous two chapters. There, I presented stratigraphic data as well as relative and absolute dates that suggests that mantled-mound construction was no longer practiced on Mound P after A.D. 1450. Further, a second research question was addressed using percentage stratigraphy in midden contexts, particularly the changing frequency of bottles bearing Hemphill-style representational art. It was found that while the consumption and production of the style and its associated meanings had notably declined, it carried on in low occurrences into the late Moundville III phase. These two lines of evidence, mound construction and engraved symbols, materialized an the schemas that enacted the resources (labor, raw materials, knowledge) needed for social reproduction.

Additional data to address these questions come from reconstructing group size and the range of foodways practiced in specialized spaces. These variables can be inferred through a study of vessel morphology and function, their depositional context, and ethnographic sources (Shepard 1976:224). Ceramic vessel size and shape are measured from ceramic sherds recovered from Mound P mound midden contexts to indirectly address the core anthropological issues of this research: what was the group size and composition that generated the deposited refuse; what range of activities were they practicing; and is there a change in social composition and practice through time? Ceramic vessels can have multiple functions, but potters produce them as tools (Braun 1983:108) to satisfy the everyday and special use needs of food preparation, storage, presentation, transport, and serving, a vessel's functional efficiency, as well as non-food utilitarian, storage, and presentation uses (cf. Gosselain 1998:80). Thus, the shape and size ranges of ceramic vessels are influenced by their intended function and related secondary functions and activities (Braun 1983; DeBoer and Lathrap 1979; Hally 1984; Henrickson and McDonald 1983; Mills 1985; Shepard 1976; Smith 1985).

Archaeological Approaches to Vessel Morphology

The study of ceramic vessel function and morphology in ethnographic and archaeological contexts has focused on the properties of ceramic vessels that are influenced by their intended function as tools for food and non-food related activities, where vessel morphology can be defined as a ceramic vessel's size and shape (Smith 1985:254). These studies inform three objectives for my study of ceramic vessels: vessel function; the vessel's aesthetic properties; and the determination of classes of vessel form (Shepard 1976:224). Ceramic vessels function to constrain their contents, whether those contents are liquid, solid, or meant to be served or stored and differences in function are expected to be reflected in different shapes and sizes (Henrickson and McDonald 1983; Smith 1985). Vessel shape is defined as the various vessel forms, such as bowls, jars, pitchers, and bottles, as well as the portions of the vessel that have different shapes or contours, such as the body and collar of jars (Plog 1980:17). The contours of a vessel profile can be described by four "characteristic points" that are used in the measurement of vessel dimensions: end points; corner points; inflection points; and tangent points (Rice 1987:218; Sheppard 1976:226). *End points* are points at the ends of the vessel profile, starting at the lip and terminating at the base. *Tangent points* are points along a vessel contour where the body or neck of a vessel touches a vertical tangent. An *inflection point* is the point between tangent points where the vessel contour changes from concave to convex. A *corner point*, a vessel contour profile point that is important to the identification of vessel shape in sherd assemblages, is an abrupt or distinct change in the contour of a vessel.

The "characteristic points" of vessel contour provide landmarks for the definition of the portions (or anatomy) of vessels, which include the base, body, orifice, neck, shoulder, rim, and lip of vessels. The chronological implications of these characteristic points for Mound P was discussed in the previous chapter and presented in Table 5.8 in absolute and relative frequencies per midden stage. The *base* of a vessel touches the resting surface and can be flat or rounded. The *body* of a vessel is the portion of the vessel between the base and the highest inflection or

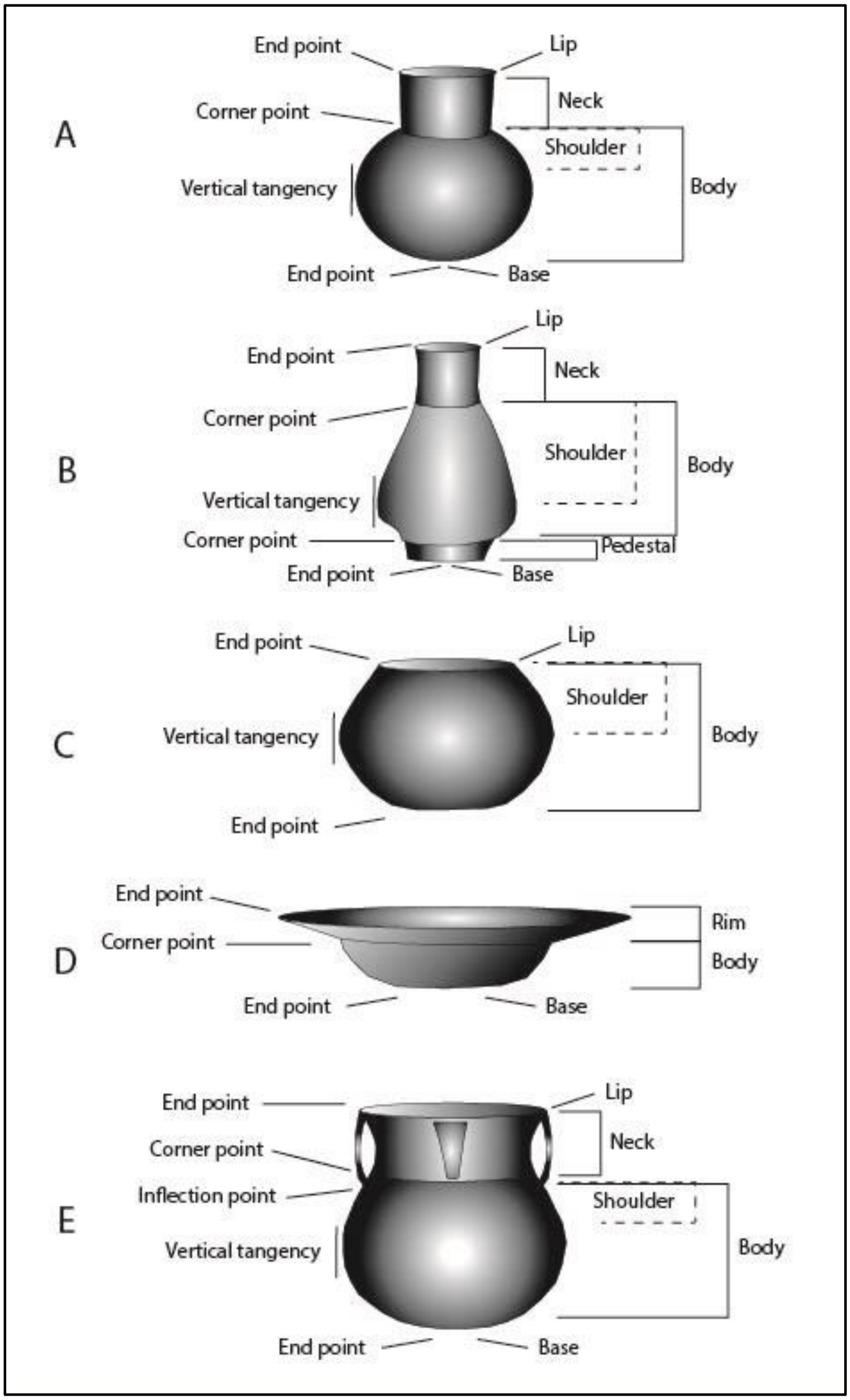

Figure 6.1. Common vessel shapes from Mississippian contexts in west-central Alabama showing characteristic points and portions of the vessel: (A) Bottle, (B) Bottle with pedestal base, (C) Bowl, (D) Flared-rim bowl, and (E) Standard Mississippian Jar (after Rice 1987:Figure 7.2; Steponaitis 1983a:Figure 21).

corner point (or lip) (Steponaitis 1983a:65) that "includes the maximum diameter of the vessel or the region of greatest enclosed volume" (Rice 1987:212). The *orifice* is the mouth opening of the vessel and can be restricted or unrestricted based on its relationship to the maximum diameter of the vessel (Rice 1987:212; Shepard 1976:228-230). A *restricted* orifice (or "restricted vessel") is when the orifice is less than the maximum diameter of the vessel, whereas an *unrestricted* orifice (or "unrestricted vessel") is equal to or greater than the maximum diameter of the vessel. The *shoulder* of a vessel is that portion on restricted vessels between the orifice or neck and the point of maximum diameter; the *neck* is above the point of maximum diameter and is a restricted of the vessel opening. A *collar* is a continuation of the point of maximum diameter and "does not significantly reduce the orifice opening relative to the diameter of the body" (Rice 1987:212). The rim and lip of the vessel are two categorically separate portions of the orifice. The *lip* is only that portion of the orifice that is the shaped or elaborated edge of the vessel mouth; the *rim* can be defined as "the area between the change of orientation of the lip…and the side or neck of the vessel" (Rice 1987:214). When the contour of the vessel is direct and there is not a change in the orientation of the lip, the lip and the rim are synonymous. The discussion of these "characteristic points" and portions of vessel anatomy allows the definition of Mississippian and Moundville vessel shapes (Figure 6.1) to be standardized, as well as outlines how these vessels are defined, referred to as "modes of vessel shape" (e.g., Knight 2010:50-53).

Potters make distinctions in vessel function between noncooking and cooking, as well as what food is prepared or served in the vessel, and this distinction shapes the way that the clay is selected, how the vessel takes form, its size, how it is decorated, and how it is fired (DeBoer and Lathrap 1979; Hally 1986). Henrickson and McDonald (1983:631-634) synthesized ethnographic data on cooking technologies to standardize expectations for archaeological vessel assemblages.

Various food-related functions for ceramic vessels include: cooking vessels and trays, long and temporary storage, serving and eating, and liquid storage and transport. Cooking vessels are generally globular in form with a restricted orifice to prevent the evaporation of boiling liquids. Trays or griddles are flat or open vessels with a large basal surface for increased surface area in direct fire cooking. Unrestricted, flat-bottomed bowls are the most common serving and eating vessel shape, while the serving or transport of liquids generally had a globular body and at least had a restricted orifice, if not a neck to avoid spillage. Vessels used for the storage of liquids tended to be tall and thin to facilitate pouring, since the vessel would be heavy. The storage of dry goods and the vessel shape required depends on the longevity of storage needed. Long-term storage vessels tended to be taller, while temporary storage vessels were generally wider and shorter. Shipibo-Conibo potters, producing pottery in a domestic context, produce various sizes and shapes of ceramic vessels for various cooking and storage functions. Different size classes are preferred for different dishes or drinks. Three sizes of *ollas* (cooking pots) are produced: large for the brewing of beer; medium for general, daily cooking; and small for the heating of medicines (DeBoer and Lathrap 1979:105). Some Shipibo-Conibo special use vessels are produced and stored in the rafters of homes for future use, specifically beer mugs, which must be new when offered to a guest.

Since vessel morphology is influenced by primary vessel function, and domestic and secular contexts have a wider range of activities than ritual or political ones, then it can be expected that in contexts where there is a limited range of activities, there should be a limited range of vessels (Blitz 1993b:85). Further, it can be expected that site use should correspond to higher frequencies in the vessel form and function that are needed for that range of activities (Plog 1980). If the assessment for the function of platform mounds is as symbolically charged stages for the presentation of ceremonial performances is correct and the range of activities would be limited to these actions, then the range of vessel forms should be limited. Further, since vessel size is an indication on the size of the group in attendance (e.g., Shapiro 1984; Turner and Lofgren 1966:125-128), the vessel sizes should be larger. The size of the group or importance of the dish on a daily or special-use basis also influenced the morphology of ceramic vessels (Hally 1986:271-272).

The Southeastern Food-Use Pattern

In the Southeast, important dishes and ingredients like hominy and bear oil needed to be produced in higher quantities, so larger vessels were required. Further, the production of Black Drink for large, ritual settings required larger vessels. Conversely, foods that were consumed in smaller quantities or could not easily be stored, such as meat, beans, and squash, only necessitated small bowls. The general food-use pattern for the Southeast was the "hominy-beans-pottage pattern," characterized by a reliance on parched, parboiled, and boiled maize by products, beans, and soups and stews made from maize, vegetables, oils, and boiled meat (Hally 1986:291). Food was not the only use for ceramic vessels in the Southeast (Hally 1986:271). Jars and bowls were used for the shell of a drum, to soak hides during the tanning process, to soak reeds to make baskets to carry and mix colorful dyes and pigments (e.g., Knight 2004, 2010), and as fire carriers. Ethnographic and ethnohistoric descriptions of native food harvesting/hunting, preparation, serving, storage, and consumption indicate that an ancient, widespread food-use pattern was practiced from the Atlantic coast to the Mississippi Valley. Hence, vessel forms that would be influenced by the functional requirements of this food-use pattern are expected to be not only widespread geographically, but also in place in archaeological contexts from the beginnings of intensive maize agriculture around A.D. 900-1000. This food-use pattern can be divided into quotidian (i.e., every day or common) preparation and consumption and communal or feasting practices. In both instances, an emphasis on boiling, roasting, and parching foodstuffs was common, and the importance here is how these functional requirements would influence the vessels that were used. It should be noted that while pottery sherds preserve relatively well in archaeological deposits and therefore are ubiquitous. However, wooden, shell, and gourd vessels and platters were also commonly used for serving.

Quotidian Foodways

The hominy-beans-pottage food-use pattern would require a series of requisite activities to prepare, serve, and store the various foodstuffs consumed by Southeastern people (Hally 1986). These steps would require vessels for frying, broiling, parching, baking, and the most common method of cooking, boiling. Southeastern people used water almost ubiquitously in the preparation of daily food. Water was used not only for drinking, but also for boiling, rinsing, soaking, and parboiling. Boiling or parboiling foodstuffs was the most common method of preparation for pottage, the extraction of nut oils, the brewing of ritual emetic drinks, and the cooking of animal flesh. Parboiling, the partial cooking of food for completion by another method, and boiling would require jars and bowls with restricted necks or collars to limit the evaporation of water and boiling over. Soaking substances in water or water solutions made them more edible, separated maize kernels for hominy, prepared flavored drinks, or extracted oils from nuts and seeds. Some of these prepared foods, especially lye-processed maize, needed to be rinsed before they were processed into edible food. Boiled foods constitute the pottage portion of the food-use pattern. Creek *sofkee*, or corn soup, was eaten throughout the day and would be available in homes in a jar or bowl near the door.

The most important boiled dish throughout the Southeast was hominy (Hally 1986:269), a maize-based dish that was prepared in the multiple steps of nixtamalization using multiple jars for the soaking, rinsing, and boiling of maize by-products (Briggs 2015:120-121, 2016:322-323). Boiling was the most common method of food preparation, but not the only one used (Hally 1986:269-271). Meat was prepared by boiling, but also by roasting animal flesh on spits and grills over an open fire. Common animals that were consumed were white-tailed deer, fish, turkey, and turtles. Black drink, a ritual emetic drink made from yaupon holly leaves, was prepared by first parching the leaves and them steeping them in water in a jar. They were then strained and poured in another vessel to store and cool, then served in a conch shell cup or gourd. Another flavored drink was made from soaking honeysuckle in water. Hickory nuts were important for oil and meal and acorns were also broken down for meal. This involved boiling, roasting, and grinding. Some of this meal was made into dumplings and bread loaves, the latter of which were baked in a fire or covered with a ceramic bowl like a Dutch oven. Preparation of foodstuffs required multiple vessels made from clay, but also wood, shell, and dried gourds. These foods were stored in granaries, baskets, gourds, animal skins, and pottery vessels. The storage of food items in pottery vessels was usually restricted to water (Hally 1986:271). People did not eat at set times, but rather multiple times, intermittently throughout the day. This meant that food had to be readily available to eat throughout the day for visitors and residents of a house (i.e., *sofkee*) which would require vessels that limited evaporation and could sit on the ground with minimal secondary support.

Feasting

There are many Southeastern ceremonies, festivals, political activities, and dances where large-group food consumption is described as "feasting" in the ethnohistoric literature (Swanton

1911, 1922, 1928a, 1928b, 1931, 1946). These communal meals were separate from everyday meal preparation and part of the liturgical order of annual and periodic ritual practices. Plant and animal byproducts were pooled as contributions or tribute by the group, sanctified, and then dispersed by the chief or religious specialist in specially selected open spaces, typically during the spring, summer, and autumn of the year. For example, Creeks held monthly dances and their accompanying feasts during the warmer months, including "the last dances," "the old man's dance," the "soup-drinking feast" and "the wolf's dance" (Swanton 1928b:556). The soup-drinking feast was a three-week long series of games and wagers between a man and a woman that has married into his clan (a practice that would be contradictory to observed matrilineal social organization). Portions of a deer and a pot of blue dumplings or *sofkee* were wagered once a week. Hunters killed deer and brought them back to the square ground to the woman that married into the clan and feasts were held. Adair noted that the Chickasaw ate a large quantity of food on festival days compared to quotidian consumption, which included dishes made from dried animal flesh, fish, oil, maize, beans, peas, pumpkins, and wild fruit (Swanton 1928b:599). The preparation of larger quantities of food than consumed daily would have necessitated larger preparation areas, and either larger or higher quantities of vessels, or both. The quantity, type of animal or plant, and size and shape of the vessel these animal and plant foods were processed and served in is of importance to this research because the function of a ceramic vessel (i.e., the processing and serving of certain liquid or non-liquid substances) heavily influences the morphological characteristics the potter gives the vessel.

Political activities that warranted feasting were peace, alliance, and war rituals. Natchez warfare rituals involved the rapid consumption of an emetic brew or tea in large quantities by all members of the raiding party and the consumption of roasted animals (Swanton 1911:123).

These drinks were brewed and boiled in large jars and typically served in shells or gourds. Animals consumed during warfare ritual were roasted dog and deer, sometimes in the house of the (Natchez) war chief (Swanton 1946:699). Another political instance of large-group consumption involved the forging of alliances or welcoming of a peaceful ally in a designated cabin (Swanton 1911:134). Bartram noted that when the Seminole needed to welcome a *miko* into town, a selected building, or bed that surrounded a central square-ground was used, which was a space limited for chiefs and warriors (Swanton 1928b:535). Three bears were killed and their ribs and "choice pieces" were barbequed or roasted and served to the chief, his warriors, the visitor, and his retinue along with hot bread and honeyed water. The calumet was smoked and passed and black drink was consumed before young people danced and socialized.

The Choctaw mourning ceremonies were drawn out events that included the deceased, their immediate family, their friends, and ritual specialists (Swanton 1931). After the body had decomposed or was processed by a priest, the friends of the deceased would dance and feast, while the immediate family continued to mourn. On the last day of the ceremony, large quantities of meat and maize were prepared and consumed, followed by a night of dancing. Feasts were also observed as occurring for the infirm (Swanton 1931:232-233). The *Pishofa* ceremony among the Chickasaw occurred in the yard of the sick person on the final day of medical treatment by a specialist (Swanton 1928a:88).

The most commonly observed and recorded festivals and ceremonies in the Southeast were community-wide and occurred in the middle of summer, autumn, or both. These can generally be described as harvest festivals, although for the Creeks they have also been called green corn and busk. The liturgical order and symbolic nature of these festivals is widely known, and the focus of these festivals for the present discussion is limited to 1) the size of the group and participants, 2) the location of the ceremony, 3) any vessels used, and 4) the varieties of plants and animals processed and consumed. Summer and autumn festivals were noted among the Natchez (Swanton 1911, 1946), the Choctaw (Swanton 1931), the Chickasaw (Swanton 1928a), and the Creek (Swanton 1922, 1928b). Various ethnohistoric accounts discussing the relationship between Choctaw feasts and dances note that they were held year-round, but the most important occurred in the autumn or winter (Swanton 1931:221-226). Hunters stalked deer on special hunting grounds, bringing back the processed flesh or whole deer to the location of the feast, where the principal dish was venison (or beef) and maize that was prepared in large pots and then portioned out. The green corn dance was held in the summertime and was an occasion for the community to set marriage relationships, with a feast occurring on the final day of ceremonies.

On the designated day for feasting during the Creek busk, quantities of meat, brought back to the square ground by hunters, and vegetables were consumed, but per some accounts, meat and salt were avoided (Swanton 1928b:573, 584). Laudonnière also noted that Cusabo feasts were placed in a specific, clean location and accompanied by dances and conducted by ritual specialists (Swanton 1922:79-80). Natchez harvest festivals were described in detail by Du Pratz, Dumont, Pénicaut, Gravier, Charlevoix, and Le Petit (Swanton 1911:110-123). These festivals lasted anywhere from one to ten days, occurred in the summer, autumn, or both, and involved the entire community practicing ritual at a special, temporary square ground. While the details about the timing of the festivals, and whether one or two occurred annually (summer or autumn) differ among the European observers, a broad description of the liturgical order of the rituals and food consumption does emerge. Once the time of the festival was drawing close, warriors would go to a clearing that was separate from the main village. This grassy square ground was used annually for the ceremony, and temporary cabins were constructed for the families on the edge of the clearing. The chief's cabin was constructed at one end of the grounds on an earthen mound, while the granary and war chief's cabin were constructed opposite of the former's. On the day of the festival, the women, the elderly, and the youth would travel from the village to the ceremonial ground to begin preparations. In Dumont's account, women from four different villages would prepare hominy at the grounds (Swanton 1911:118). The warriors would transport the chief on a litter from the village to the ceremonial grounds, where oratory would commence and the chief would signal the appropriate time to collect grain from the granary. Maize was boiled by women in the family cabins over a fire in large pots and served to the chief and individuals of higher rank on plates. After more oratory, the square was lit with torches and dancing occurred until daybreak.

While the description of the Natchez summertime festival is general, what is important is where it occurred, what facilities were constructed to hold it, the actors involved, what foods were consumed, and what vessels were used to prepare the food. The festival occurred at a temporary square ground, separate from the main habitation village(s) where the community would gather. Temporary family cabins surrounded the square ground, with the cabins of the chief and war chief located at either end. The entire community (except those too old or sick to travel and temple attendants) and people of every social rank were in attendance and involved in the successful completion of the ritual. Maize for the festival was processed in the cabins and boiled in pots, likely cooking jars. The boiled maize dish, likely hominy, was served in two separate forms of "plates," the specific form of which was not clearly recorded described (Swanton 1911:116). The substances consumed were restricted to maize and water, excluding animal or other plant by products.

Summary

The tools needed for the hominy-beans-pottage food-use pattern of the Southeast included a wide range of shapes and sizes of ceramic vessels, as well as wooden platters, conch shell cups, and dried gourds. Since maize had been intensively cultivated since around or just before A.D. 1000, and the recovery of floral and faunal remains at archaeological sites across the region match ethnographic and ethnohistoric consumption patterns, it is reasonable to assume a similar or identical foodway for Mississippian people (Hally 1986:291). The total vessel assemblage for Southeastern intensive agriculturalists should include jars for cooking and water storage, a large bowl for cooking, and various sizes of burnished bowls and bottles for serving. These vessels were employed in both everyday and special use situations, ranges of activities that should correspond to the characterization of the overall vessel assemblage. Hence, it is appropriate to understand the distribution of vessel shapes and sizes at Mississippian sites to understand commensal politics, social composition, and ceremonial practice.

Vessel Morphology in the Southeast

Ceramic vessel form and function in North America have received a lot of scholarly attention since archaeologists' primary focus has shifted away from stylistic typologies for the purposes of constructing local chronology and regional relationships towards an understanding of foodways, social organization, gender, ethnic identity, site use, and economic production. In one of the first series of scholarly publications on prehistoric technology on the continent, William Henry Holmes (1903:61-63) precociously noted that vessel shape was influenced by the necessity to constrain the container's contents. Further, Holmes noted that the practical considerations of heating or storing food would determine whether the vessel was produced was ovoid or subglobular. Since Holmes's original publication there has been a large quantity of research on the function and form of ceramic vessels in North America, particularly in the Southeast (Braun 1983; Blitz 1993a, 1993b; Boudreaux 2007, 2010; Hally 1983, 1984, 1986; Knight 2010; Johnson 2003; Linton 1944; Pauketat 1987; Pauketat et al. 2002; Shapiro 1984; Steponaitis 1983a; Taft 1996; Welch and Scarry 1995; Wilson 1999, 2008; Wilson and Rodning 2002). It is informative to briefly review some of this research by region.

Northern Georgia

One of the first formal attempts in the Southeast to consider prehistoric pottery beyond decorative and chronological types was Hally's (1983, 1984, 1986) work defining late prehistoric domestic vessel assemblages from the Little Egypt and King sites, located in northwest Georgia. He used variables of vessel size, use-wear, mechanical performance, and surface decoration to identify, with as much specificity as possible, the function of the total vessel assemblage from these sites. The total or full vessel assemblage is defined as "the array of physically and functionally distinct vessel types that are recognized and utilized by the members of a community or society" (Hally 1983:175). The total vessel assemblage from domestic contexts at the two Mississippian sites, as well as Beaverdam phase sites on the Savannah river in eastern Georgia (Hally 1984), provided archaeologists with a baseline for understanding a widespread, prehistoric food-use system that necessitated multiple vessel forms and sizes and had likely existed since at least A.D. 900. This was supported by ethnographic evidence from historic and modern populations that used different size classes of the same vessel forms with different names for different tasks. Further, the restricted range of vessel sizes in domestic contexts was interpreted as cultural standardization (cf. Blitz 1993b, Hally 1986:273).

The American Bottom

The location, participants, and materials used in large-scale communal or private quotidian food consumption link space with social and political obligations. Diachronic shifts in the distribution of frequencies of serving bowls between ceremonial centers in the American Bottom reflect regional political changes, from more centralized ceremonial uses of mound sites to a more widespread distribution of political ritual (Wilson 1999). Changes in the distribution of fine ware bowls throughout sites in the American Bottom from the Lohmann, Stirling, and Moorehead phases indicate that influential individuals either restricted access to ritual practices, co-opted them in competition with other ritual hosts, or popularized them to gain followers (Wilson 1999). During the Lohmann phase, a restricted range of fine ware bowl sizes were restricted to Cahokia and related mound centers (Wilson 1999:103-104). The range of bowls sizes, especially larger bowls and shallow bowls used for display, increased in frequency and distribution throughout the American Bottom during the subsequent Stirling phase. This indicates that larger groups were gathering at Cahokia and the wider distribution suggests that elites in surrounding areas were competing with other elites for followers or an intentional popularization of ritual by Cahokia elite to curb dissatisfaction (Wilson 1999:103-104). These fine ware bowls decreased in frequency during the Moorehead phase and were replaced by the adoption of other bowl forms.

The residues of feasting recovered from a rapidly-filled stratified deposit below Mound 51 at Cahokia indicate that performances at a ceremonial center with a wide range of participants were an important, expressive act that negotiated the past with the present (Pauketat et al. 2002). The vessel assemblage from this deposit exhibited evidence of a wide range of cooking jar sizes and sooting patterns that corresponded to domestic contexts elsewhere at Cahokia (Pauketat et al.

2002:268-269). However, the sherd assemblage was characterized by high densities of sherds and larger vessel sizes overall. Further, the frequency of seed jars, which are restricted orifice bowls, contributed to over 25 percent of the overall vessel assemblage from lower deposits. When the ceramic evidence was combined with environmental, faunal, botanical, and special use artifacts, the sub-Mound 51 deposit was indicative of large group communal feasting (Pauketat et al. 2002:274-276). Even though larger vessel sizes were indicated through the sherd assemblage, and there was a restricted range of vessel shapes in some layers, the size range of cooking jars fell into a domestic Cahokian pattern (e.g., Pauketat 1987). The wide range of jar sizes that correspond to ordinary jars does not discount the deposit as feasting, as well as quotidian botanical by-products but rather as the result of festivities with a community-wide participation; ordinary people participated in and prepared food for annual ritual events (Pauketat et al. 2002:276). Thus, the sub-Mound 51 deposit alters the expectations for the identification of communal food consumption from being strictly identified based on large cooking vessels for larger group sizes and includes multiple vessels from a range of sizes and a range of participants.

Carolina Piedmont

The integration of multiple, discrete social units through communal ritual was a common social practice in Mississippian societies (Blitz 2010:14-15), including at Town Creek, a mound center located in the Carolina Piedmont (Boudreaux 2007, 2010, 2013). A high frequency of small serving vessels was recovered from premound contexts, but subsequent mound construction and midden contexts associated with large, mound summit architecture had a high frequency of large jars and bowls, the reverse of off-mound contexts. This suggests two things. At a broad scale, this pattern adds to the growing archaeological evidence that the morphology of ceramic vessels corresponded to group size and the range of activities practiced in certain spaces.

In the Town Creek example, this pattern suggests that there was a temporal shift from restricted, possibly private, small group use of the premound space, but that communal events were held later in time in association with large, public buildings to attract more followers where social differences were not institutionalized (Boudreaux 2007:103-104).

The Mobile-Tensaw Delta

The use of spaces by people or corporate groups with elevated social standing or influence can be expected to produce midden assemblages that are reflective of the range of activities practiced in those spaces. Johnson (2003) compared vessel shapes between mounds A and C at the multiple mound Bottle Creek site, a Pensacola culture site located in the Mobile-Tensaw Delta dating from A.D. 1250-1550 with some early relationships to Moundville (Brown 2003). Using rim and lip morphology, as well as use-wear analysis, he suggests that the Mound A refuse was the result of the consumption of prepared foods, while the Mound C midden was from the generation of food by-products to be consumed by individuals of higher status at different locations (2003:166). Specifically, the lower proportion of jars in Mound A midden contexts compared to Mound C, in particular those recovered from pre-mound surfaces, is suggestive of an increasing importance of the mound as a locus of specialized activity and the serving of food by-products. This observation corresponds to expectations about the range of vessel shapes present in activity areas. At Bottle Creek's Mound A, the proportion of serving ware was higher than cooking ware when compared to other excavated contexts, providing clues as to the social contexts of mound use at the site.

The Tombigbee Watershed

The distribution of large vessels in a ritual context at Town Creek is similar to the distribution of vessel forms at Lubbub Creek, a single mound site located on the Tombigbee

River in west-central Alabama and considered a variant of the Moundville culture (Blitz 1993a, 1993b). The frequency of vessel sizes and forms between the excavated mound and village areas of Lubbub revealed that the range of activities practiced in a particular space corresponded to the range of vessel forms and sizes consumed during those events. The distribution of functional pottery classes (service and utility) between the village and the mound were not significantly different, nor were the distributions of vessel shape (Blitz 1993b:84). However, the range of vessel form sizes between the mound and village contexts at Lubbub Creek was significantly different, with a restricted range of medium and larger-sized bowls and jars in the mound context indicating that large-group food consumption was a central activity in the establishment of differential social ranking (Blitz 1993b:87-90). This distribution suggests that the origins of social ranking and inequality in segmentary societies may have had its origins in the ability of charismatic individuals to link the storage of agricultural surplus with prescribed and ritualized population aggregations at mound centers (Blitz 1993a:184).

Summary

The functional study of ceramic vessel shape and size in the Southeast was largely initiated by Hally (1983, 1984, 1986) to understand the relationship between a regional, general food-use pattern and prehistoric archaeological assemblages. What has been found at Mississippian sites since those initial studies provides us with varied, if not complicated expectations for newly excavated assemblages or museum collections. In most cases, the distribution of higher frequencies of service ware corresponds to the range of activities practiced in certain contexts, but is generally not restricted *only* to specialized contexts (Blitz 1993a, 1993b; Boudreaux 2007, 2010; Johnson 2003; Pauketat et al. 2002; Wilson 1999). There is some variability in the distribution of the size of vessels, however. Large group communal consumption at Cahokia required higher quantities of common-sized jars (Pauketat et al. 2002), while the large group consumption needs of the people at Lubbub Creek were satisfied by a restricted range of larger sized vessels (Blitz 1993a, 1993b). Thus, the identification of large group consumption, which may have occurred periodically at multiple times per year, cannot be equated to larger vessel sizes in every case. Correspondingly, large quantities of domestic-sized jars in midden contexts do not immediately need to be classified as "domestic." Each new archaeological case must be tested to understand the range of vessel sizes and shapes and then compared to the overall material assemblage to place it in a historical social context.

Vessel Morphology at Moundville

A discussion of the variation observed in different regions across the Southeast informs my research at the Moundville site. It also presents some tension between studies that emphasize comparative models and those that seek to understand historical variation since the observed changes in vessel form and size at different Mississippian sites is indicative of variation that cannot be explained by traditional expectations. To understand the range of Moundville vessel sizes and shapes is to understand historical changes within Mound P and between other mounds in the valley. Steponaitis's (1983a) discussion of pottery production in the Black Warrior Valley is the standard by which archaeologists document the recipes of ceramic pastes, the chemical properties of those pastes, finishing and decoration, and the firing of the ceramic vessels. These are vital constituents in the ability to meet the functional needs of ceramic vessels for the task they are produced to perform, whether that is for serving a large group of people, boiling maize dishes, or everyday sustenance. Thus, understanding *how* vessels were constructed is as important as *what* they were used for.

Vessel Production at Moundville

Ceramic paste is made up of two separate ingredients: clay and temper. Kaolinite and illite clays are located within a kilometer of Moundville and were chosen by potters to produce ceramic vessels because of their resistance to shrinkage and their refractory qualities (Rice 1987:47; Steponaitis 1983a:18-19). The second component of ceramic paste is temper. In the Black Warrior Valley, as well as across large portions of the Southeast, prehistoric potters used crushed shell, alone or in combination with grog, grit, or sand, to provide tensile and thermal shock strength to vessels Locally acquired mussel shell was heated and crushed prior to being added to the clay, which allowed for the expansion and contraction that occurs when aragonite chemically alters into calcite over open, low firing temperatures (~550-750°C). This would make the shell easier to crush into smaller particles and allow for the expansion that occurs when mineral aragonite chemically alters into calcite prior to the creation of a ceramic vessel (Steponaitis 1983a:20).

The forming of the ceramic vessels recovered from Moundville was achieved through slab construction, molding, hand modelling, and coiling (van der Leeuw 1981:105-108). Different methods were chosen by female potters (e.g., Swanton 1946:549-555) to add strength and height of the walls, selected upon the desired vessel function, and to increase the output of production. Vessels such as bowls and bottles were constructed on a flat or slightly concave surface and coils were pressed and blended into shape, either against a spherical mold or through squeezing together smaller coils (van der Leeuw 1981). These support bases have not survived or are unidentifiable, but it is likely that large sherds, shallow bowls (Steponaitis 1983a:21), or another lightweight flattened surface were used to rotate the vessel while it was being formed. At some point, these support bases may have begun to function as molds for bowls and bottles

(Steponaitis 1983a:22, citing Hardin 1979:2-3). The subglobular portion of the bottle was molded as two hemispheres, fused on the open ends, and the neck hole was cut out (Hardin 1981:110; Steponaitis 1983a:22). Since the larger fragments of shell and grog temper in the clay coils used for jars would make the clay less malleable (but abler to make large shapes), these vessels were likely formed by paddling free-standing coils (i.e., no support base) flat. Pottery trowels, used as anvils to support the force of the coil-flattening hammer blows, have been recovered at Moundville, and these vessels have an outward, hammered appearance. Hand modelled vessels, or pinch pots, were formed from a solid piece of clay and manipulated by hand, forming small, miniature vessels and some simple bowls (Steponaitis 1983a:22-23). Finally, rectanguloid bowls and bottle necks were formed by flattening and forming slabs of clay into squares and joining or bending them at the corners (van der Leeuw 1981:107). Vessel walls were then scraped and thinned before being finished through burnishing, painting and filming, or tooled decoration (Steponaitis 1983a:23).

Vessel Distribution in the Black Warrior Valley

Steponaitis's formal analysis of the Moundville pottery assemblage was not the first attempt to identify the full range of vessel shapes and sizes present at the prehistoric site. Douglas McKenzie's dissertation at Harvard (1964:50-72) was the first modern analysis aimed at describing and categorizing a sample of whole vessels excavated from burial contexts from Moore and archaeologists during the 1930s. He found that there was a wide range of sizes and shapes interred with Moundville's deceased individuals. The distribution of these vessels and others excavated in off-mound contexts by ceramic phase has led to an understanding of the shifts and continuities in community patterns from the Moundville I through III phases (Steponaitis 1983a:149-161). The distribution of vessels recovered in other off-mound contexts dating to the Moundville I phase indicates that bowls, bottles, and jars were used in all contexts. Mean standard jar sizes from the northwest riverbank were almost identical to those sizes recorded by Blitz (1993b) from village contexts at Lubbub Creek, but still smaller than the jars recovered in mound contexts (Scarry 1995:52).

Commoners living at non-mound sites in the Black Warrior Valley during the Moundville I phase were not reliant on their identity being forged through their relationship with so-called elites assumed to have been living at Moundville proper (Maxham 2000; Scarry et al. 2016). Conversely, their identity was formed through interactions with one another during annual or periodic communal gatherings at locations in the valley, evidenced by domestic and ritualized refuse recovered from pits at multiple rural non-mound sites. The frequency of decorated serving bowls and the diversity of taxa recovered from these pits, as well as stylistic evidence for the involvement of multiple households from decorated jars, is suggestive of the production of identities that were not contingent on interaction with people living at Moundville. These assemblages include: the remains of colorful and symbolically important bird species for feathers and ritual importance; the consumption of fine ware bowls; and diverse faunal assemblages. The domestic refuse (ceramic vessels, stone, ritual and food by-products) from farmsteads in the valley (1Tu459, 1Tu552, 1Tu768) were distinct from the refuse from Grady Bobo (1Tu66) a non-mound site which had a higher ratio of cooking to serving ware and rare taxa including brightly plumaged birds (Maxham 2000:347-348). Thus, 1Tu66 appears to have been a communal gathering location where social and political bonds were maintained and created, divorcing commoner identity from interactions with elites. Multiple households contributed processed food by-products to ritual communal meals that functioned to integrate discrete social groups that were “not necessarily linked to one another by ties of descent or marriage” (Scarry et al. 2016:185). Thus, it was the occasion or the social context that was provisioned, not the social rank. Social ties and group identity during the West Jefferson to Moundville I phases was thus the result of group contributions to feasts and rituals conducted in the countryside that were separate from the obligations or relationships needed at the multiple mound center (Scarry et al. 2016:185). Further, the introduction of shell tempering, standard Mississippian jar forms, and intensive maize agriculture occurred during this transitional time (Hawsey 2015:64-66), commencing a reorganization of social obligations and space that would have been rectified by these domestic rituals.

To identify status-related differences between different off-mound areas of Moundville and sites in the valley, Welch and Scarry (1995) combined ethnobotanical and ceramic vessel analysis to reconstruct food-use patterns during the Moundville I phase. Maize kernels, the byproducts of the processing of maize for consumption, were in higher ratios at the farmsteads than at the mound centers, with the off-mound contexts at Moundville having the smallest ratio of kernels (Welch and Scarry 1995:408-410). Bowls were ubiquitous across contexts, but flared-rim bowls, likely platters used to display their contents, were in high frequencies in the mound midden contexts at the single mound site of Hog Pen (Welch and Scarry 1995:413). Compared to Lubbub Creek, the distribution of larger vessels and a restricted range of vessel forms did not occur to the same degree in the Black Warrior Valley, leading Welch and Scarry to argue that the foodways in the valley were more complex than in the Tombigbee, and that elites, living at Moundville, were provided with food by non-elites (1995:416).

The most extensive archaeological excavations at Moundville were conducted during the 1930s prior to the paving of the roadway, construction of the museum and adjacent parking lot, as well as the park administrative buildings. The analysis of the distribution of architectural features across this relatively wide swath of the site revealed that matrilineal households used and reused the same place during the Moundville I phase and then returned to these places to bury their dead in the former house locations (Wilson 2008, 2010). Inter-assemblage variation between these areas suggests that food storage, domestic preparation and consumption of food, and potential household ritual were practiced in similarly-sized households, regardless of status differences (Wilson 2008:118-119, 126-127). However, there were statistically significant differences in the size of jars and bowls between the area north of Mound R and the Administration Building and the Roadway and Museum Parking Area, a product of change through time rather than restricted status areas (Wilson 2008:124, cf. Welch and Scarry 1995).

A comparison of the ratio of service to utility ware and percentages of individual vessel shapes, plus an analysis of the diversity of vessel shape size classes using a dial indicator from Moundville II to III phase primary midden contexts from mounds E, G, and Q indicated that mound function was variable (Taft 1996). The distribution of vessel shapes and sizes is indicative of differences between the mounds, but also of mound function through time (Knight 2010). The Mound E assemblage had a diverse range of vessel shapes and sizes trending small and medium-sized classes, indicative of sustenance of mound residents, the hosting of foreign guests or allies, and the practice of some ritual activity (Knight 2010:215). It is noteworthy that special-use vessels were either absent or in very low frequencies compared to the vessel assemblage of Mound Q. The vessel assemblage from Mound Q was the aggregation of diverse, functionally variable mound summit activities by elite artisans or craft specialists that ate quotidian meals and were involved in communal ritual at various scales (Knight 2004, 2010:142). These activities were exhibited by a wide range of larger vessel sizes and vessel shapes, including shallow plates, eccentric and composite bowls, and flared-rim bowls that could be considered special-use vessels for use in display and crafting. The Mound G vessel assemblage had a diverse range of vessel shapes but a restricted size range of vessel classes that trended towards larger vessels (Taft 1996:64). This was the result of restricted consumption practices that focused on non-local connections, rare and symbolic animal species, and bottles engraved with Hemphill-style representational art (Knight 2010:301-302). The earth lodge on Mound V (Knight 2009; Mirarchi 2009) provides an appropriate, contemporary comparative context for the Mound P vessel assemblage, especially if the research questions for the latter are to understand group size and group composition. Mirarchi compared the proportions of common vessel shapes to those from Mounds E, G, and Q (2009:63-64). The high frequency of flared-rim bowls and other bowl shapes indicate that like Mound Q, Mound V was the locus of communally focused social activity. The differences between these three mounds points to a diverse range of social contexts for the use of mound summit architecture from early Moundville II through the early Moundville III phases. These contexts will be compared to the Mound P vessel assemblage and frequencies of functional ceramic wares, vessel shapes, and sizes below.

Vessel Morphology and Function on Mound P

This research is concerned with understanding changes in the materialization of structural elements enacted by social agents in a ritualized context. Whereas Chapters 3 and 4 addressed the timing of mound construction and some changes in the symbolic art that was consumed in those contexts, this chapter uses changes in vessel morphology and size from Mound P midden assemblages to address changes in the social use of the mound during the fifteenth century. The understanding of changes in mound function can be directly assessed through an analysis of ceramic function, the distribution of vessel shapes, and an assessment of vessel size following the classificatory guidelines just discussed.

Ceramic Function

The function of ceramic sherds is roughly determined by the temper size and surface finish of the sherd, which is traditionally dichotomized as service and utility ware in studies of Mississippian ceramic assemblages. Understanding the frequencies of service to utility wares is an important first step in outlining the social contexts of mound use, but it is a relative measure that should not be relied upon without multiple, complementary lines of evidence (e.g., Knight 2010:139-140). This is because service ware, such as burnished bowls and bottles, is not restricted to specialized contexts and have been recovered from domestic as well as ritual contexts. In addition, the identification of eroded burnished sherds, which are classified as Bell Plain, can differ between researchers. However, the service-utility ware dichotomy is still a useful relative measure of mound function if treated carefully.

In general, the proportion of service to utility ware from Mounds E, G, and Q is 25 percent and 75 percent, respectively (Taft 1996). The proportions of service to utility ware by the west and north flanks of Mound P are presented in Figure 6.2 and quantified in Table 6.1. While the overall proportions of service to utility ware match the proportions from the other mounds, there are some differences between the flanks. The proportions of service ware increase from the west to the north flanks by 7 percent, while the proportions of utility ware decrease from the west to the north flanks by the same amount. A chi-square test was performed to determine if the frequencies of service and utility ware between the west and north flanks were from a random distribution, or if the observed differences were from a real distributional pattern. There was a significant difference between the frequencies of service to utility wares between midden contexts from the west and north flanks of Mound P ($\chi^2 = 104.9$, $df = 1$, $p < .001$), indicating that the observed distributional pattern is not random. There is a difference between the frequencies

Table 6.1. Absolute and relative frequencies of service and utility ware by flank, Mound P.

	West	%	North	%	Total	%
Service	1460	0.21	2538	0.28	3998	0.25
Utility	5396	0.79	6383	0.72	11779	0.75
Totals	6856		8921		15777	

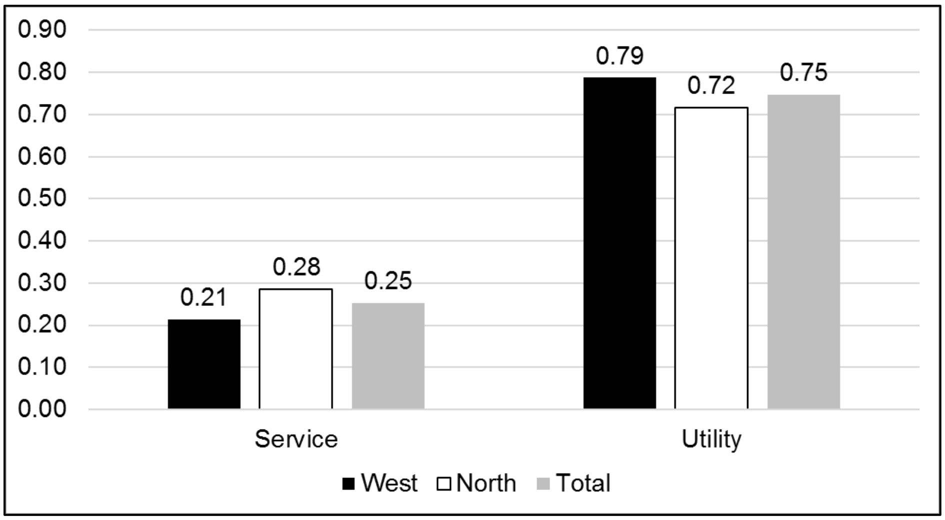

Figure 6.2. Frequencies of service and utility pottery from midden contexts, by flank, Mound P.

of service and utility ware between the west and north flanks, but how does that difference look when each midden context is compared against other midden contexts?

The proportions of service and utility ware by midden stage are presented in Figure 6.3 and Table 6.2. The distribution of these functional wares, in all cases, does not match the 1 to 3 service-utility ratio observed as a general trend. In Stages III and IV, there is more of an emphasis on serving ware than utility ware, but the service ware decreases by 13 percent and the utility ware increase by the same amount in Stage VII. This is a similar proportion to what Knight (2010:214, 298) observed for Mound E’s Stage II features and Mound G’s Stage IV. He interpreted this marked change in service-utility proportions as the result of a lack of deposited

Table 6.2. Absolute and relative frequencies of service and utility ware by stage, Mound P.

	Stage III	%	Stage IV	%	Stage VII	%	Stage IX	%	Stage X	%	Total	%
Service	155	0.30	777	0.28	528	0.15	306	0.35	2232	0.28	3998	0.25
Utility	364	0.70	2021	0.72	3011	0.85	572	0.65	5811	0.72	11779	0.75
Totals	519		2798		3539		878		8043		15777	

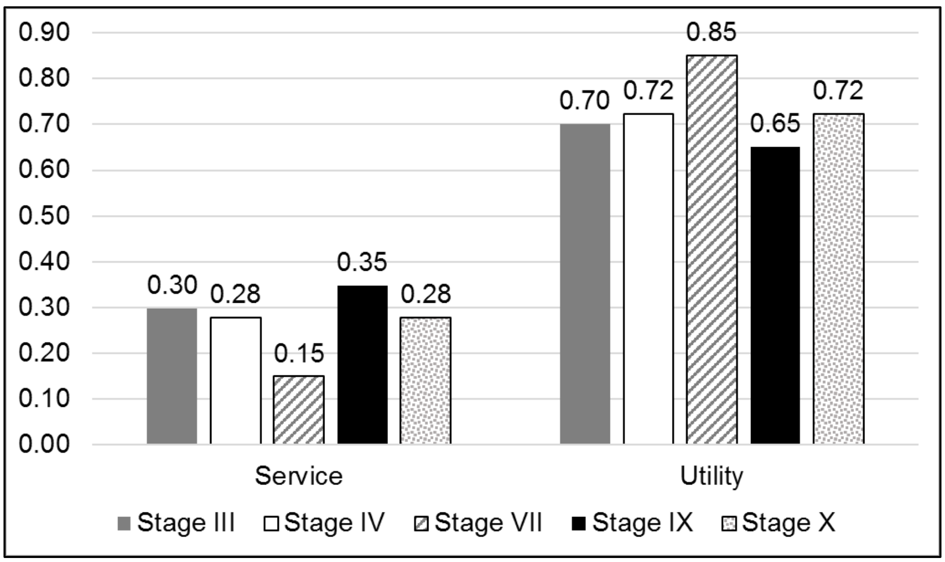

Figure 6.3. Frequencies of service and utility pottery from midden contexts, by stage, Mound P.

refuse for Stage II building from Mound E and an increase in sherd fragmentation from post-depositional processes for the Mound G deposit, rather than an increased emphasis on food preparation. The Stage VII midden from the west flank of Mound P does have a high sample size for service (n = 528) and utility (n = 3011), so an emphasis on cooking in this case is possible. The north flank deposits show a slight shift from the west flank, in particular Stage IX. The service ware for Stage IX increase by 20 percent over Stage VII, and 7 percent over Stage IV, while utility wares decrease from Stage VII by 20 percent from Stage VII and 7 percent from Stage IV. This pattern shows a clear emphasis on service ware from the midden deposit. The proportions in Stage X return to a level equal to Stage IV. The midden deposits were compared to one another by chi-square test to determine if the observed patterns were the result of a random distribution or actual distinctions. Not surprisingly, Stage VII was significantly different than all other compared middens at the .001 level; in every comparison, the *p*-value was less than 0.0000. Further, the distribution between stages IV-IX ($\chi^2 = 16.13$, $df = 1$, $p = .0001$) and stages IX-X ($\chi^2 = 19.61$, $df = 1$, $p = .000009$) were significantly different at the .001 level. There was no significant difference between stages III-IV ($\chi^2 = 1.00$, $df = 1$, $p = .3293$), stages III-X ($\chi^2 = 1.10$, $df = 1$, $p = .2978$), and stages IV-X ($\chi^2 = 0.0004$, $df = 1$, $p = .9845$) at the .05 level. However, the difference between Stages III-IX was nearly significant at the .05 level ($\chi^2 = 3.70$, $df = 1$, $p = .0554$), bordering on a significant finding that could demonstrate a likely association. However, the patterns of service-utility pottery from midden contexts is a means to an end and a relative measure of consumption patterns for pottery and food by-products. When these data are combined with the distribution of vessel shapes and sizes, a more complete picture can be understood.

Frequencies of Modes of Vessel Shape

In sherd assemblages, the identification of vessel shape is not limited to the profile and orientation of rim sherds because corner points, bases, and other diagnostic shape characteristics have great potential in aiding archaeologists in the identification and quantification of vessel shape (e.g., Knight 2010:50-53). This methodology will increase the sample size. It is with this in mind that an analysis of vessel shape, as identified by diagnostic modes, can provide complementary evidence for the social use of mound summits in the latter portion of Moundville’s history. Knight, along with Taft (1996) have already defined in detail how to identify modes of vessel shape and this research follows their guidelines (above). The

Table 6.3. Absolute and relative frequencies of common vessel shapes by stage, Mound P.

	Bottles	%	Flared-rim Bowl	%	Bowls and Plates	%	Jars	%	Total	%
Stage X	45	0.06	142	0.18	167	0.22	415	0.54	769	0.50
Stage IX	4	0.04	31	0.32	15	0.15	48	0.49	98	0.06
Stage VII	19	0.05	26	0.07	92	0.25	235	0.63	372	0.24
Stage IV	11	0.04	36	0.13	47	0.17	176	0.65	270	0.17
Stage III	7	0.16	2	0.05	8	0.19	26	0.60	43	0.03
Total	86		237		329		900		1552	

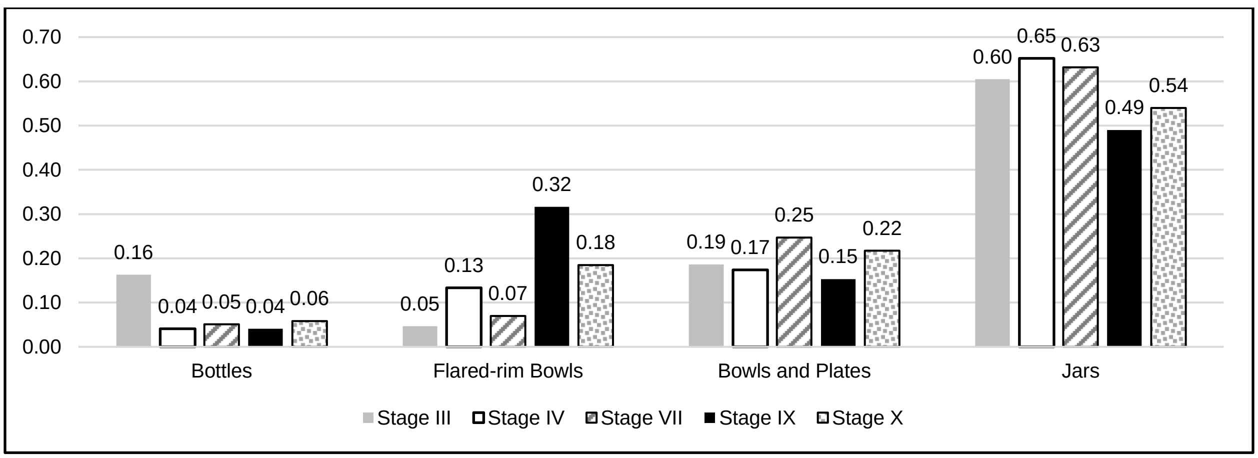

Figure 6.4. Frequencies of common vessels shapes from midden contexts, by stage, Mound P.

frequencies of common vessel shapes (Bottles, Flared-rim Bowls, Bowls and Plates, and Jars) by midden context are presented in Figure 6.4 and Table 6.3. The “Bowls and Plates” category combines cup-shaped bowls, hemispherical bowls, short-necked bowls, residual bowls, and plates into a single category, and excludes a non-local shallow bowl and a rectanguloid terraced-rim bowl. Keeping two separate “Flared-rim Bowl” and “Bowls and Plates” categories allows us to examine the distribution of frequencies of bowls per midden context in a little more detail, especially given the flared-rim bowl shape’s presumed importance in serving and display. A chi-square test was conducted to determine if the distribution of vessel shapes was independently distributed between all of the midden contexts from the west and north flanks, or if the observed distribution was the result of patterned deposition. The difference between the flank deposits was highly significant ($\chi^2 = 67.06$; $df = 12$; $p < .001$), suggesting that different vessel shapes were utilized in different contexts and that the social usages of mound use also likely shifted through time.

The most obvious difference between the two flanks is the inverse relationship between the proportions of flared-rim bowls and jars, presented in Figure 6.4. In general, the proportion of jars is higher on the western flank, where the frequency of flared-rim bowls is lower. This pattern reverses in the north flank stages. The proportion of flared-rim bowls and jars is both relatively high in Stage IV, but this is likely due to the 12 percent decrease of bottles from stages III to IV. However, the sample sizes from Stage III are lower in relation to all other later stages (see Table 6.3), generating a lower confidence in the ability to accurately compare the stage's vessel proportions. In Stage VII, the proportions of jars and bottles remain similar, but flared-rim bowls decrease by 6 percent while bowls and plates increase by 8 percent. Presumably, Stage VII represents the last early Moundville III midden deposit on Mound P, with the next excavated deposit (Stage IX) relatively dating to the late Moundville III phase from the north flank. There is a marked, 25 percent increase in the proportion of flared-rim bowls in Stage IX from Stage VII, compared to a correspondingly marked 14 percent decrease in the proportion of jars, as well as a 10 percent decrease in bowls and plates between the same two deposits. In Stage X, the proportions of flared-rim bowls decrease by 14 percent, while jars, bottles, and bowls and plates all increase accordingly.

The changes in the distribution of vessel shape frequencies, as identified by diagnostic vessel modes, is suggestive of changes in some mound summit activities that can be briefly summarized here before being expanded upon later. The question becomes: what does this indicate about food preparation or serving activities on the summit prior to deposition on the flanks? I am hesitant to attribute the decrease in jars in later stages to a shift away from on-site (i.e., mound summit) food preparation, an issue that has implications for relevant explanatory models concerned with ranked differences among populations and the locations of rank-related activities. It is evident in the Mound P assemblage that the decrease in what archaeologists traditionally consider to be cooking vessels (jars) is accompanied by an increase in vessels traditionally categorized as serving ware (bottles, bowls, plates). I am more confident in suggesting that the shift from higher to lower proportions of jars relative to a shift in higher frequencies of flared-rim bowls and bowls and plates indicates an emphasis during the late Moundville III phase on the service and easier access to comestibles in highly decorated vessels. Thus, the contents of the bowl and the decorative symbols would be displayed in a more visible way to a larger group of people. This preference for different vessel forms for serving over cooking does not mean that food preparation moved away from the mound. The only way to accurately determine whether this proportional shift was the result of on-site or off-site food preparation is to combine these data with the faunal assemblage, data that will be published separate from this dissertation.

Vessel Size

Assessing the orifice diameter of prehistoric ceramic vessels has been used as a proxy for the overall size of vessels because there is an established correlation between the two in cases like these (Blitz 1993b, Boudreaux 2007; Hally 1983, 1986). Understanding different size classes present in archaeological assemblages is important to gain an understanding of group size and membership. Hence, there is an expectation that the larger the group membership or participation is, the larger the assemblage's overall vessel sizes should be. Conversely, the needs of a large group of people could be satisfied through pooled contributions by the actors, thereby generating an assemblage characterized by more vessels of smaller or everyday size classes (Blitz 1993b:85). This analysis sought to answer two questions: what was the distribution of vessel size classes between midden contexts; and how does the range of vessel shapes between middens compare to the ranges observed using modes of vessel shape (above)? These questions are then a means to answer the larger research question: how did the materialization of social reproduction change during the fifteenth century as evidenced by the material assemblage from Mound P? Answering this question is paramount in understanding changes or continuations in social organization during late prehistory.

The Mound P rim sample (n = 123) was pulled from the overall rim sherd assemblage (n = 1,151) where the rim sherd was at least five percent (≥ 5%) of the vessel rim, excluding rim sherds that could not be identified to a particular vessel shape. Using rims of this size, instead of limiting the analysis to rims that represented at least seven percent (≥ 7%) of the vessel rim, increased the sample size and allowed for a more complete understanding of the overall vessel assemblage (e.g., Boudreaux 2007:97; Wilson 2008:95; Wilson and Rodning 2002:30). The (external) orifice diameter of the rims was measured using a standard, metric radius board of concentric circles that would account for up to 25 percent of the rim sherd at 0.5 cm intervals. Vessel size classes (small, medium, large) were approximated based on size criteria outlined by Taft (1996) from rim sherds of at least seven percent (≥ 7%) of the vessel rim measured using dial indicator (e.g., Hawsey 2015, Maxham 2000; Plog 1985) from midden contexts from

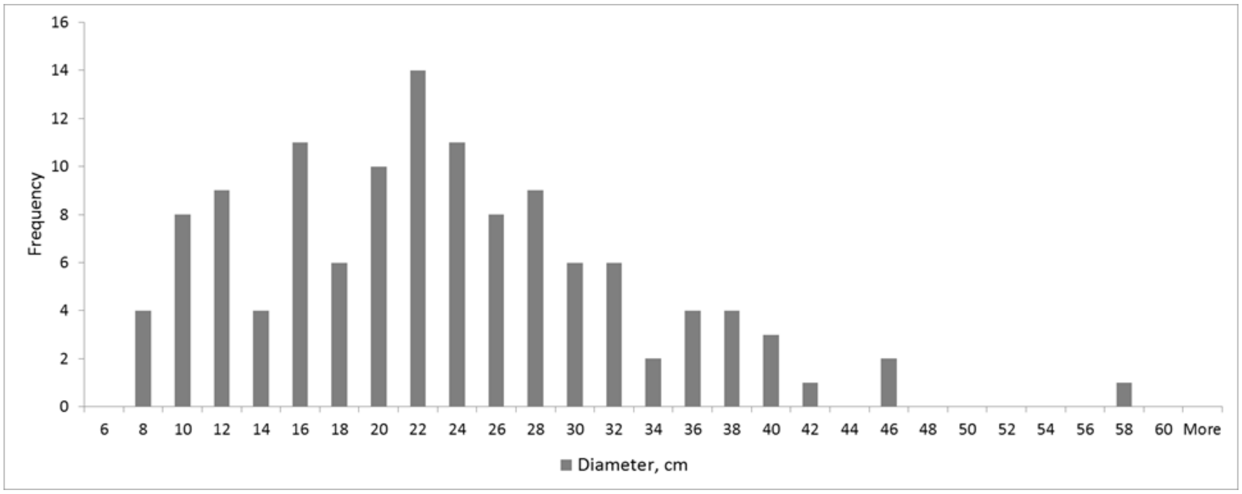

Figure 6.5. Distribution of orifice size frequencies for all midden contexts, Mound P.

Mounds E, G, and Q. The advantage to using a dial indicator over a standard diameter board is that the former has been argued to be a more accurate measure of vessel diameter with less inter-observer error in measurement than the latter (Plog 1985). This is important when vessels that were made by hand are measured by multiple people using a standard board that forces the recorder to choose the best fit for the rim. Early in my analysis I considered forgoing a radius board in favor of the dial indicator method so that the Mound P rims could be more accurately measured and compared to Taft's research, thereby providing a better comparison of the variation between mound use at the site. I decided against this approach because the sample of rims that represented over 7 percent of the total vessel diameter from Mound P was very limited. Nevertheless, using a dial indicator for the measurement of vessel diameter is a useful method and will be employed in future research. While the analysis of the Mound P rim sample differs from the method employed by Taft, her vessel size classes have generated useful size categories that can be used as a comparison for the overall distribution of vessel size classes from Mound P midden contexts.

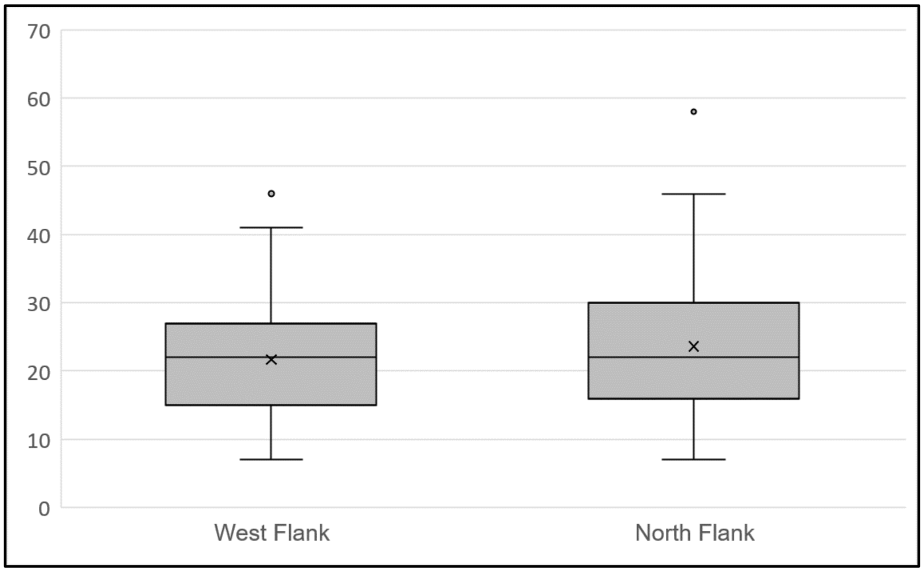

Figure 6.6. Box plot of aggregate orifice diameters by flank, midden contexts, Mound P.

The vessel categories used for the investigation of size distributions were: standard jars; flared-rim bowls; restricted bowls; bottles; and a combined bowl category comprised of cup-shaped, hemispherical, short-necked, and other bowls. Orifice diameter for all vessel shapes from midden contexts on Mound P ranged from 7-58 cm with a mean of 22.7 cm and a median of 22 cm. The histogram in Figure 6.5 shows a fairly normal distribution of orifice diameters across the mound, with many of the vessel sizes falling between 10-32 cm. This measurement, while combining vessels of different functional categories and size, provides a proxy for overall vessel size for Mound P.

When the frequencies of vessel diameter sizes are compared between the north ($n = 69$, $\bar{x} = 23.9$) and west ($n = 54$, $\bar{x} = 21.4$) flank midden deposits, presented as a box plot in Figure 6.6, there is a similar distribution of orifice diameters with a slight tendency towards larger vessels in the north flank midden deposits. A two-tailed *t*-test assuming equal variances compared orifice diameter means from the two flanks. The null hypothesis states that orifice diameter means from

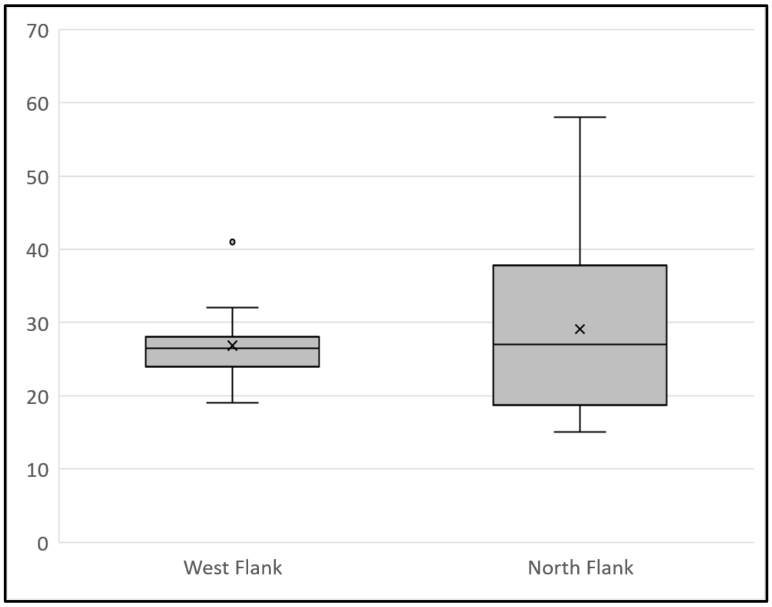

Figure 6.7. Box plot of standard jar orifice diameters by flank midden contexts, Mound P.

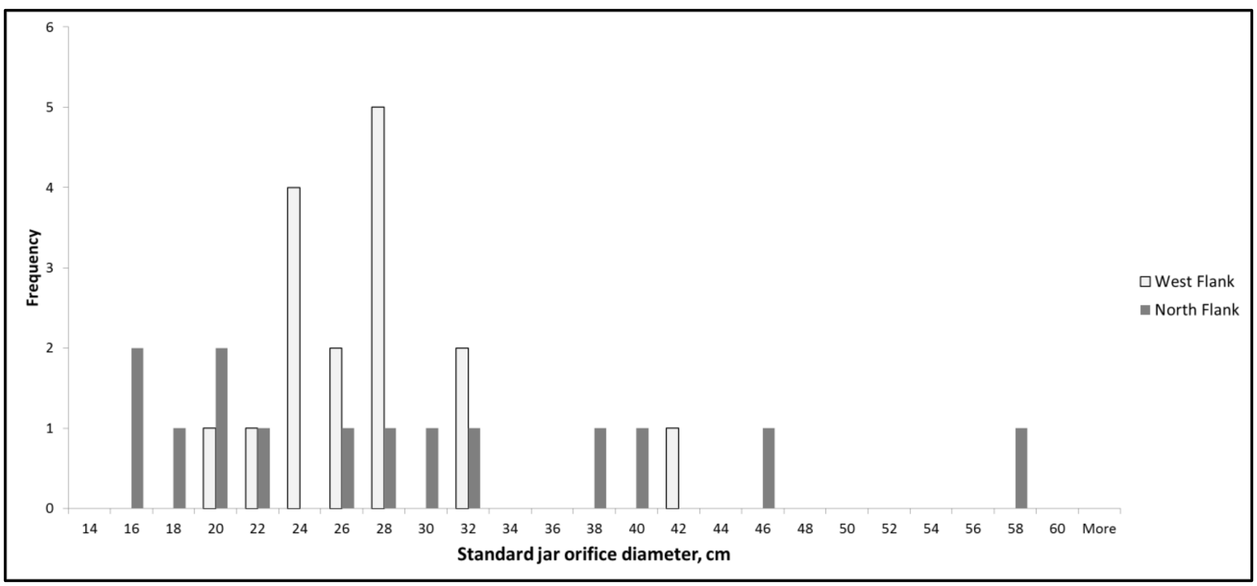

Figure 6.8. Histogram showing frequency distribution of standard jar orifice diameters per flank, Mound P.

the rim sample from the west and north flanks are equal. The alternative hypothesis states that orifice diameter means from the rim sample from the west and north flanks are not equal. A two-tailed *t*-test assuming equal variances revealed that the difference in means were not significantly different ($t = -1.45$, $p > .05$), indicating that the null hypothesis is accepted and that vessel sizes between the north and west flanks are relatively equal. However, when individual vessel shapes are analyzed per mound stage, some differences are apparent.

Standard jars (n = 30, $\bar{x} = 27.8$) were used to prepare liquid-based foods and had a restricted neck to prevent spillage and evaporation. A Mann-Whitney test found that the orifice diameter means for standard jars from the west flank (n = 16, $\bar{x} = 26.8$) and the north flank (n = 14, $\bar{x} = 29.1$) were statistically identical ($U = 112$, p = 1.000), but there was a wider range of standard jar orifices represented on the north flank (15-58 cm) and a more restricted range of jar orifice diameters on the west flank (19-41 cm), represented in the box plot in Figure 6.7. These ranges fall in Taft's (1996:26) medium and large standard jar size classes. The distribution of the frequency of standard jar orifice sizes is presented in the histogram in Figure 6.8, where more jars in a restricted range of sizes is observable from the west flank. Further, the standard jar sizes from the north flank were slightly skewed due to one jar rim from Stage IX with an orifice diameter of 58 cm and a red painted interior jar rim. Looking solely at standard jar orifice diameter differences between the west and north flank indicates that individuals were likely participating in more small-scale specialized occasions that produced the western flank refuse and that the practices that produced the north flank refuse deposits were more variable or general in nature.

Bottles (n = 15, $\bar{x} = 10$) are restricted orifice, subglobular vessels that were likely used for the serving of liquid contents and often engraved with representational art or painted with

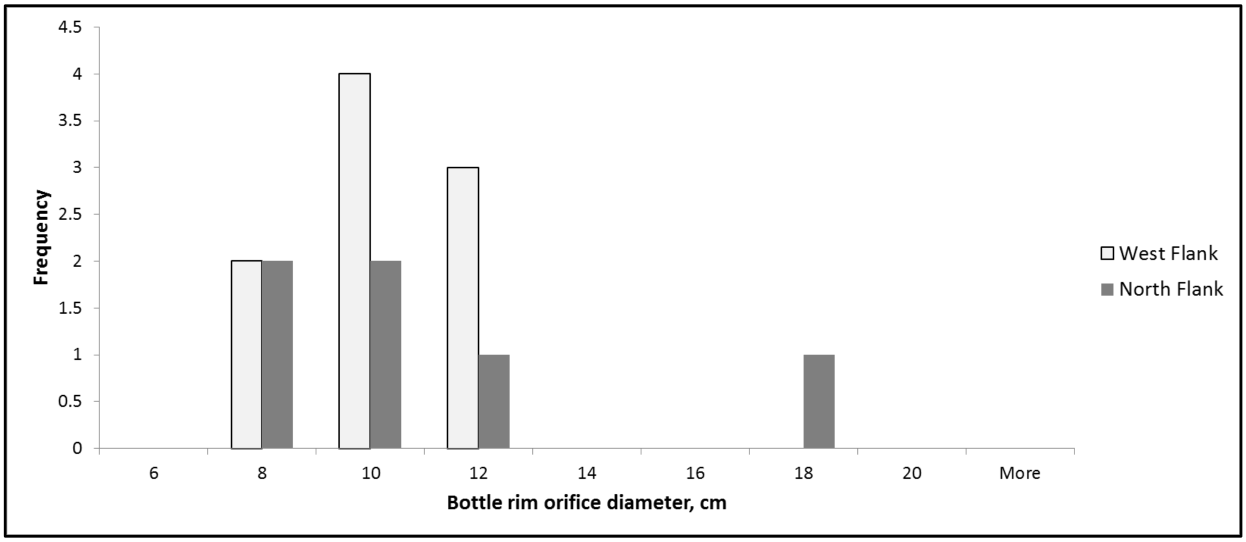

Figure 6.9. Distribution of bottle orifice sizes by flank, Mound P.

various combinations of red, white, or black. Bottle rims, identified by the neck of the vessel, from the western flank (n = 9, $\bar{x}$ = 9.7) had a range of 7-12 cm, whereas bottle rims from the north flank (n = 6, $\bar{x}$ = 10.5) appear to have had a slightly wider range of 7-18 cm, but this was due to one outlier from Stage IX on the north flank with a rim diameter of 18 cm (Figure 6.9). When this large rim sherd is removed, the range of sizes between the west and north flank is almost identical. The size ranges for bottles from both flanks fall within Taft's (1996:23) medium size class for bottles, with the outlier from the north flank representing a large bottle. A better understanding for any differences in the function of may come from changes in exterior decoration.

Flared-rim bowls (n = 24, $\bar{x}$ = 30.7) are considered a true ceramic serving bowl in Moundville social contexts (Welch and Scarry 1995:412), and the range of flared-rim bowl orifice size across mound contexts on Mound P is 14-46 cm. Rims recovered from the west flank (n = 4, $\bar{x}$ = 32) have a larger range (14-46 cm) than the flared-rim bowls recovered from the north flank (n = 20, $\bar{x}$ = 30.4) that range in size from 15-40 cm (Figure 6.10). This is an inverse

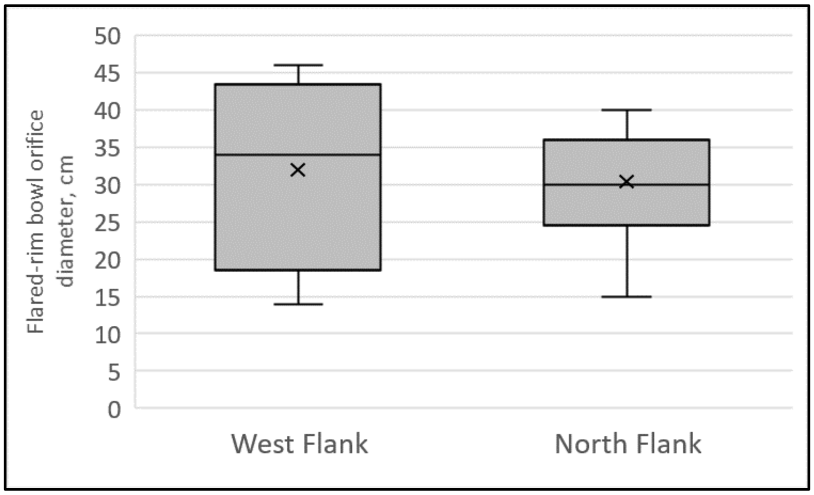

Figure 6.10. Box plot of distribution of flared-rim bowl orifice diameters by flank, Mound P.

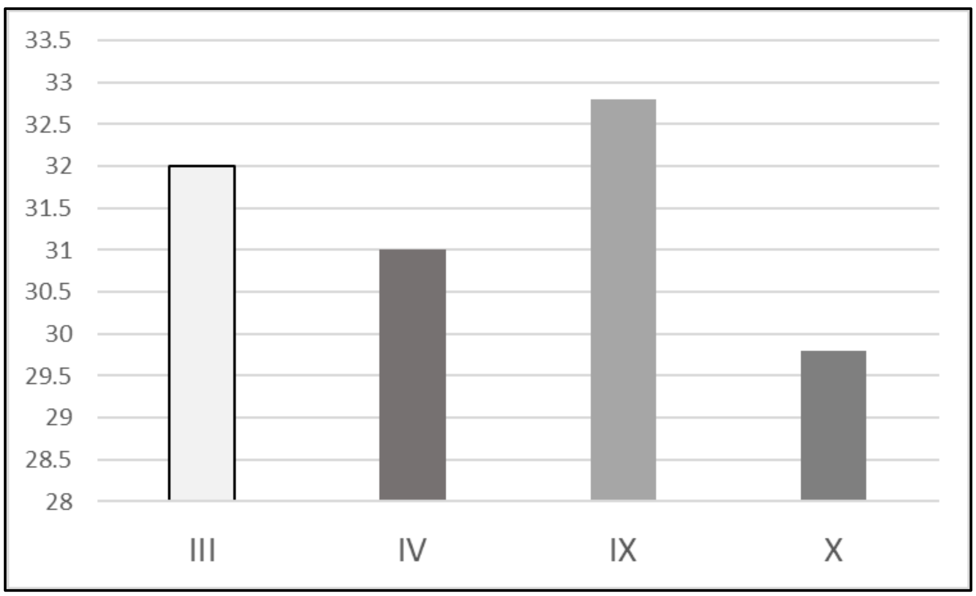

Figure 6.11. Comparison of mean flared-rim bowl orifice diameter, by stage, Mound P.

pattern than that observed for standard jars, but it suffers from a very small west flank sample size. Thus, conclusions that could be made about changes in flared-rim bowl size distributions and functional changes are tentative at best. There are a wide range of sizes from both flanks, falling into all three of Taft's (1996:31) size classes for flared-rim bowls. A comparison of the means for the four midden contexts with adequately large flared-rim bowl rims for measurement reveals some subtle changes in vessel size (Figure 6.11). The mean flared-rim bowl orifice diameter decreases by 3 cm from Stage IX to Stage X.

Restricted bowls (n = 11, $\bar{x}$ = 15.5) are restricted orifice, hemispherical-shaped bowls that were likely used to contain liquids. Due to the restricted nature of their orifice, larger rims are easily recognized by their scalloped or crescent shape and need to be measured on a diameter board with the exterior face of the sherd flush against the table. Restricted bowl orifice diameters range from 11-22 cm, spanning Taft's (1996:35) small and medium size classes. Due to a small samples size for restricted bowl rims recovered from the west flank (n = 2, $\bar{x}$ = 18.5), it will be difficult to compare changes in vessel size to the north flank (n = 9, $\bar{x}$ = 14.9). The range of sizes on the north flank was 11-22 cm, but interestingly there is a difference in means between Stage IX (n = 3, $\bar{x}$ = 20) and Stage X (n = 6, $\bar{x}$ = 12.3). Restricted bowl orifice diameters for Stage IX, with a range of 18-22 cm, fall exclusively within Taft's medium size class, while those from Stage X, with a range from 11-14 cm, are restricted to her small size class. Again, these are small sample sizes, but when combined with the disparity in orifice diameter means from flared-rim bowls, overall orifice diameter means for Stage IX serving vessels are consistently larger than those from Stage X.

Bowls (n = 41, $\bar{x}$ = 20.4) include all cup-shaped, hemispherical, short-necked, and "other" bowl rims grouped into a single analytical category. Aggregating these bowl forms into a single analytical category is appropriate because they likely overlapped in function and in sherd assemblages, and can be difficult to distinguish without an adequately large rim profile. The distribution of bowl sizes from the west flank (n = 21, $\bar{x}$ = 19.2) was restricted, with a range of 10-26 cm. Conversely, the distribution of bowl sizes from the north flank (n = 20, $\bar{x}$ = 21.7) was

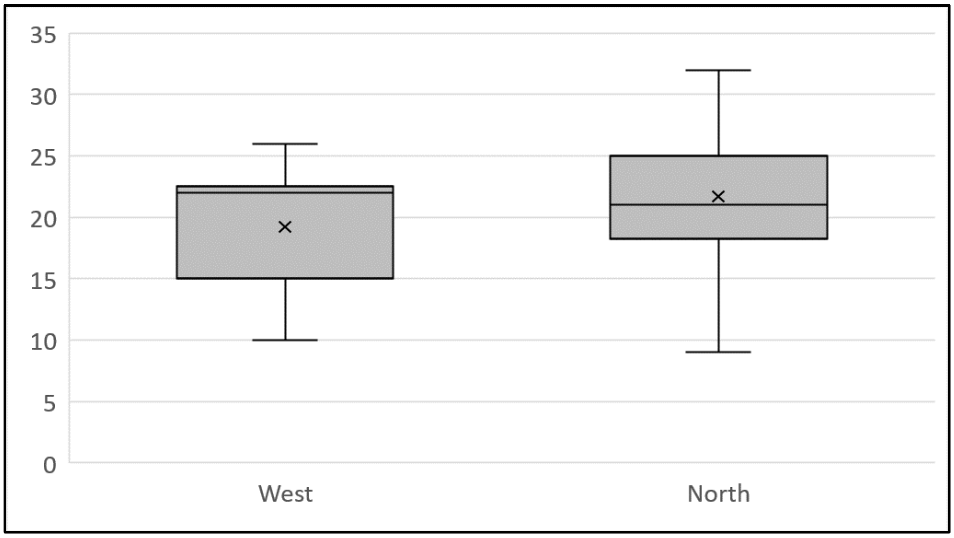

Figure 6.12. Orifice diameter range and mean for aggregate bowls by flank, Mound P.

more variable, with a wider range of orifice diameters from 9-32 cm. The distribution of bowl sizes and the means is presented in Figure 6.12. Once these data are combined with the previously discussed data on frequencies of modes of vessel shape and frequencies of functional wares, a more complete picture of the Mound P vessel assemblage emerges.

Full Vessel Assemblage

It is now possible to define what the full vessel assemblage for Mound P looks like. Hally (1983:175) defined the full vessel assemblage as all of the morphologically and functionally distinct vessels that were used in a specific context. This includes all of the present shapes and sizes, as well as their hypothesized function. These vessel shape classes are based on Taft's classifications and are only a relative measure of vessel size (see above). The full vessel assemblage for Mound P is characterized by small to large sized vessel shapes for a variety of tasks related to food by-product preparation and serving, and likely some non-food related uses as well (e.g., Hally 1986:Table 4). Medium to large-sized *Standard Mississippian jars*, the most common vessel form in most Moundville contexts, were used primarily for the storage and heating of water-based foods that would require a constricted neck to discourage evaporation and spillage. *Oversized jars*, which are present in minimal quantities, were used for the storage of comestibles. Medium-sized *Bottles*, some of which from the west flank had pedestal and slab bases, were used to serve liquids or maintain small quantities of dried stores. A *hooded bottle*, which has a very restricted orifice and is more common in the Tennessee and Cumberland River valleys, was likely used for the same purpose as all other bottles. *Hemispherical bowls*, *short-necked bowls*, and *cup-shaped bowls* were likely used to serve or heat small portions of food and possibly also to manipulate non-food items. A *shallow bowl*, which is from the Lower Mississippi Valley (Leland Incised, *variety Foster*) was also used for the same purpose. *Restricted-neck bowls* may have been used for the heating of liquid-based foods, and *flared-rim bowls* and *plates* were used for the open access serving and display of food items in large-group contexts. Finally, the *terraced rim bowl* from Stage IX was used in a ritual context for manipulation of food or non-food contents and display.

Discussion

The study of ceramic vessel morphology from prehistoric assemblages has provided a relative measure for the use of domestic and specialized spaces. This proxy for social practices and behaviors in the past has been demonstrated through the analysis of vessel size, shape, and (ethnographically inferred) function. Expectations generated from previous studies of Mississippian pottery suggest that the range of food-related activities practiced in a location should be reflected in the range of vessel shapes and sizes present in that space (e.g., Blitz 1993b). Thus, in a space where there were a wide range of activities for the preparation and consumption of floral and faunal byproducts, there should be a wide range of vessel sizes and in particular, shapes. Conversely, specialized spaces such as those used for periodic rituals or higher rank activities should have a lower range of vessel shapes present. Further, the size of the vessels should correspond to the size of the group; larger groups are expected to have large vessels, while small groups should have smaller ones. The expectation that human activity should correspond to the level of assemblage variety has not appeared in all cases. This requires that every context is tested anew against the existing models to understand the context of use for the representative social space. For instance, the sub-Mound 51 feasting deposit at Cahokia yielded a large quantity of small to medium-sized cooking jars, which Pauketat and his co-authors used as evidence to suggest that the social context was not only specialized, but also a communal event with contributions from the participants (Pauketat et al. 2002).

The Mound P assemblage was identified through the classification of sherds as either originating from service or utilitarian vessels; the quantification of identifiable modes of vessel shape from rim and body sherds; and a preliminary measurement of vessel size from adequately-sized rim sherds. The distribution of service and utilitarian pottery from Mound P was significantly different across some variables between the north and west flank midden deposits, as well as significantly different between some of the midden stages across both flanks. The differences in these distributions generally suggest that the activities that were performed on the western flank emphasized cooking and those from the north flank emphasized serving. However, this is only a relative measure of social practice. The distribution of modes of vessel shape in the body and rim sherd assemblage between the two mound flanks corresponds to the distribution of service and utility wares. The refuse from the western flank resulted from behaviors emphasizing cooking and food preparation, as exhibited by higher frequencies of jars than bowls or bottles. This pattern was inverted on the north flank, as evidenced by an increase in the proportions of flared-rim bowls and a decline in the proportions of jars. There was also a slightly wider range of vessel shapes present along the western flank, suggesting that the practices were a little more varied. However, there was not a significant difference in the distribution of vessel shapes between the west and north flanks.

The range of vessel sizes from Mound P midden assemblages, using Taft's (1996) size classes as an outline, was relatively similar between the north and west flanks. However, once vessels were divided by morphological class and provenience, some patterns began to appear. Interestingly, there was more variation in vessel sizes between the two north flank midden deposits than between the flanks, indicating that the ritual activities that generated the refuse in Stage IX necessitated large vessels for large-group consumption. However, small sample sizes limit a comparison of vessel form size classes between flanks. There are also very few specialized containers, with only one terraced-rim bowl rim from Stage IX present from midden contexts.. The wider range of vessel sizes with a more restricted range of vessel shapes from the north flank does not fit nicely within the distributions observed at other Mississippian sites. One possibility for this combination is that more people would have participated in very specific public events that would have emphasized visualization in a larger group. In other words, these specialized events called for a limited range of pottery forms to perform rituals. This is one measure of changes in the social use of Mound P. In Chapter 7, items of display that were consumed in mound midden contexts will be discussed.

CHAPTER 7

CRAFTING AND SOCIALLY VALUED GOODS

Throughout this research, I have demonstrated that the reproduction of structures in Mound P summit contexts changed from the early Moundville III phase to the late Moundville III phase, an important transition in the historical trajectory of the Moundville culture. In Chapters 4 and 5, I presented evidence for the cessation of mound mantle construction in later contexts with a continuation of midden deposition on the north flank. This likely signified a rupture in existing structures, as schemata related to the meaning of platform mounds and the enactment of resources needed to continually add to Mound P had shifted. In Chapter 5, I discussed the shift from engraved representational art on bottles to trailed-incised motifs on bowls. These compositions constitute what has been defined elsewhere as the trophy theme, and argued that they are likely connected to mortuary ritual. However, it is also possible that death imagery characterized associational identities and groups that had access to the mound (e.g., Phillips 2012). In Chapter 6, I demonstrated that in general, vessels that predate A.D. 1450 from the flank middens had a more restricted in size ranges but displayed a wider range of forms. Conversely, there was a more restricted range of vessel forms in deposits post-dating A.D. 1450, indicative of more specific social practices. It is possible that those practices or rituals included large-group gatherings in mound-summit contexts, evidenced by larger vessel sizes. Further, the high-visibility of painted vessels and wide, trailed-incised line decoration on the interior rim of flared-rim bowls was likely aimed at visualization and the communication of meaning in large-group social contexts (i.e., Mills 2007).

In this chapter, I address the production and consumption of socially valued goods. *Socially valued goods* are those items required for ceremonial performances and social interaction that reproduce social structures (Spielmann 2002:195). As a concept, the use of socially valued goods produced for ritual purposes, as opposed to the more traditional “prestige goods” (e.g., Frankenstein and Rowlands 1978) shifts the focus from hierarchical structures toward a more dynamic process “in which goods condense and encode social principles, cultural and economic values, and sacred tenets” (Wells 2006:285). The materiality of resources and schemas can be rearticulated by individuals through ritual performance in the context of platform mound ceremonialism. Since structures are overlapping and interrelated, and resources have multiple meanings, power is derived from the ability to negotiate and enact resources and schemas outside of their original context. If the schemata related to the meaning of resources shifts, it is expected that the production and consumption of socially valued goods will change. These objects acquire meaning and value through their local or nonlocal origin, their crafted quality, their aesthetics, and their historicity. In other words, some of these objects were crafted as ritual paraphernalia that acquire inalienable value (Mills 2004).

In monumental contexts of ancient ranked societies in the Southeast, the production and consumption of these valuables are inferred from mound midden contexts as the stone, minerals, and bone tools needed for painting, tattooing, leather, wood, and lapidary work. Further, bits of crafting refuse and finished objects that were used in ceremonial performances were discarded in mound midden contexts, providing some clues to the changes in the social use of monumental architecture through time. This chapter will address part of the central research objective and one of the research questions. The overall aim of this research is to understand how structural elements were materialized and rearticulated in a ritualized, monumental social context. Here, changes in the social contexts of platform mound use that would reflect changes in institutional elements and social organization can be inferred from the tools needed to produce objects of display and socially valued goods. Further, these changes can be inferred from the quality and character of those finished objects consumed in mound social contexts and deposited in mound midden refuse. Second, this chapter will address whether nonlocal networks were maintained or de-emphasized between the early and late Moundville III phase through an analysis of nonlocal stone debris and the consumption of objects made from shell and copper.

Symbolic Objects in an Archaeological Context

An individual's power is derived in part from their ability to use and present portable display items, murals, and ritual attire that materialize ideology in ceremonial performances (DeMarrais et al. 1996:18). Understanding the production and consumption of symbolic objects is important because of their immediacy; their use in specialized contexts by social actors materializes power and their polysemic meaning to an audience. These objects and their use in ceremonial settings materialize the schemas and resources utilized by social actors in monumental contexts. It is an object's depositional context and hence, its social use, in which archaeologists can infer the inalienable value of socially valued objects, especially if these objects were produced from nonlocal materials (Mills 2004:247-248).

Some of these objects were acquired from nonlocal regions, imbuing them (and the performer) with added ritual meaning and importance, thereby gaining inalienable qualities through their provenance and external, esoteric knowledge that can potentially promote or de-emphasize power (Cobb 2003:73; DeBoer 2004:99; Helms 1993; Mills 2004:240). A deemphasis of power or a shift in the source of that power happens when the identities they promote are communal or an object is alienated from its history and the knowledge of how to use it (Mills 2004:240, 248). Further, individual or inherited power may not be the reason for the presence of nonlocal materials and finished objects at a site (e.g., Renfrew 2001), specifically one like Moundville that is associated with highly symbolic meaning. This observation runs counter to many approaches applied by archaeologists to explain differences in the production and consumption of socially valued objects that create analytical dichotomies that link those objects of supralocal origin and high energy output with elite as wealth and categorize those materials related to subsistence to non-elites as functional (Spielmann 2002:198). These analytical approaches have essentialized what could be multiple levels, meanings, and contexts of the consumption and display of valued objects.

Display Goods at Moundville

The Moundville site is wellknown for its high quantity of high quality items of display and value, but many of the finished items that appear in comparative studies and the museum are from funerary contexts. Many of these were first recovered and published in the two complementary reports by C. B. Moore (1905, 1907), with more being recovered during the AMNH excavations two decades later (Peebles 1974, 1979). The distribution of these items as grave goods has been used to interpret the social organization of the site as hierarchical, where elite members of the community with elevated status entered the afterlife and their graves with restricted, supralocal objects that materialized their social status (Peebles and Kus 1977). Copper and marine shell were two of the supralocal materials associated with elevated status, being restricted to some adult burials in the northern portion of the site (Peebles 1974). However, this model overemphasizes a tributary economy model controlled by and for elites that is supported by agricultural surplus produced by farmstead residents. An influential development in the understanding of Moundville's economy was Paul Welch's (1991, 1996) adoption of a hierarchical prestige goods model, where the production of finished objects manufactured from nonlocal materials was centralized and restricted to elites at the multiple mound center. Thus, the individuals or groups that controlled nonlocal exchange and the restriction of prestigious goods gained and held power over those who produced agricultural surplus and had limited access to those objects (Welch 1996:89-91). At Moundville, it was suggested that greenstone, mica, copper, and marine shell were the raw materials that were most restricted in their location of production that provided these elites with power and control over agricultural surplus (Welch 1991:163-166, 1996:81, 83). Welch's model for Moundville was influenced by Frankenstein and Rowlands's (1978) prestige goods model for the Iron Age Hallstatt culture in central Europe, where access to the production and distribution of valued items was highly competitive and gave leaders of descent groups access to alliances and power. One issue with a traditional prestige goods model is that it tends to ignore the ways in which materials gained valued outside of an economic system, such as ritual contexts (Mills 2004:239).

Recent research has reexamined the prestige goods model for Moundville (Marcoux 2007; Thompson 2011; Wilson 2001). A reanalysis of the greenstone artifacts determined that their production was not restricted and that when old axes broke, they were recycled into new or expedient woodworking tools (Wilson 2001). This suggests that woodworking activities and the tools needed to do the work were not restricted but common. However, it was the specialized production of non-utilitarian greenstone objects through which elites demonstrated their connections and knowledge of local cosmology (Wilson 2001:125-126). Another line of research (Marcoux 2007:240-242) concluded that it was the role of the production of local display items (tabular sandstone pendants and formal sandstone palettes) concentrated in elite household contexts from A.D. 1300-1450, not nonlocal material control and production, that influenced elite power. Further, the presence of Moundville-produced pendants and palettes at contemporaneous sites in the Tombigbee and Mississippi River valleys demonstrate connections to Moundville on some level. However, there is little evidence from other Moundville culture sites to support the practice of a prestige goods economic strategy (Marcoux 2007:242). The distribution of nonlocal and local stone and pottery vessels in off-mound, domestic contexts was diffuse and there was very little to no restriction of these objects at the household level (Thompson 2011:221). This suggests that non-kin social groups common in segmentary societies (Kowalewski 2006) were engaged in ritualized, competitive replication of display or craft items at the site (e.g., Kelly 2006).

In mound contexts dating from A.D. 1300 to 1450, craft production and the consumption of nonlocal materials and finished objects has been suggested to support a system of complementary reciprocal exchange connecting ranked social segments on mound summits (Knight 2004, 2010). However, after A.D. 1450 the occupation and use of single mound sites at opposite ends of the valley (White and Snows Bend) was intensified, signaling a shift in the location of political power (Welch 1991, 1996). On Mound V at Moundville, a contemporaneous context for Mound P, the focus of the materialization of sociopolitical interaction is communal, evidenced by communal architecture, red-white symbolism, and high frequencies of bowls (Knight 2009; Mirarchi 2009). Thus, if Moundville was effectively vacant after 1450, the cult institutions that were at the center of ritual and social organization collapsed, and long-distance exchange was diverted to other regions, it can be expected that (1) the crafting of socially valued goods was absent in Mound P contexts that post-date A.D. 1450 and (2) that the socially valued goods consumed in those contexts should be local materials. This evidence would support an argument for the periodic or episodic (i.e., not permanent) use of Mound P as a ceremonial facility after general site abandonment with an emphasis on local materials that were crafted elsewhere.

Socially Valued Goods on Mound P

To addresses changes in the social use of mound contexts through the materialization of conceptual schemata that were reproduced or altered in ritual performances, this chapter will present the results of an analysis of consumed and discarded stone, bone, copper, and shell materials, as well as certain ceramic types and vessels from Mound P midden deposits. The archaeological contexts in which these have been recognized at Moundville are discussed above, and this provides an expectation for the types of materials and kinds of artifacts that are expected to have been discarded in ritualized contexts. The definition of stone, metal, and mineral types presented here follows similar studies at Moundville and the description of these types of materials are available therein (Knight 2004, 2010; Marcoux 2007; Markin 1997; Peebles and Kus 1977; Phillips 2006; Scarry 1995; Gall and Steponaitis 2001; Thompson 2011; Welch 1991, 1996; Whitney et al. 2002; Wilson 2001). Here, I present the occurrences of raw materials and objects from all excavated contexts on Mound P since these objects are scarce when compared to portions of broken ceramic vessels from across the mound.

Minerals, Flaked Stone, and Ground Stone Artifacts

The analysis of modified and unmodified stone artifacts from Mound P follows the classification of those objects elsewhere at the site (Knight 2010; Scarry 1995; Wilson 2001). There are four classes of artifacts present in the stone assemblages from Moundville: unmodified stone; pigments and minerals; flaked stone; and ground stone. The categories for modified stone (flaked and ground) include artifacts for processing leather, wood, stone, and food items. In total, 26,645 stone and mineral artifacts or objects were recovered across Mound P contexts with a total aggregated weight of 66,810.4 g. Unmodified stone (see discussion, Appendix D) by weight constituted 86 percent (57,586.7 g) of the recovered stone objects. The pigments and minerals used for painting human bodies and objects, as well as tattooing, made up 1 percent (674.1 g) by weight. Flaked stone, characterized by debitage, projectile points, bit tools, and expedient tools, made up 3 percent (1,711.4 g) of the total stone by weight. Further, ground stone artifacts, characterized by palette fragments, greenstone axes, small stone disks, and ordinary tools, made up 10 percent (6838.2 g) of the stone by weight.

Projectile Points. Previous excavations in Moundville mound contexts, including Mound P, have recovered small, thin Mississippian triangular arrow points as well as thick, pre-Mississippian stemmed dart points (Knight 2010; Porth 2011a). The latter are present in Mississippian mound contexts from mixed mound fill layers (Knight 2010:143). Triangular Mississippian arrow points are commonly referred to as Hamilton and Madison points, but here I use descriptive terms. There was a total of 15 (25.1 g) projectile points recovered across Mound P contexts (Table 7.1), but none of these were thick Late Archaic or Woodland dart points. In general, the projectile points from the west flank were manufactured from heat-altered and unheated Tuscaloosa gravel chert, with a single point with an incurvate base made from Fort Payne chert. Conversely, there was more variation in the raw material used to make points recovered from the north flank. Most of the points were typical triangular points, but there were two stemmed points that did not conform to pre-Mississippian point types. A stemmed quartz point with evidence of sharpening on the distal tip was recovered in the mixed erosional layer

Table 7.1. Projectile points in Mound P contexts.

Catalog No.	Context	Raw Material	Base Form	Length (mm)	Thickness (mm)	Maximum width (mm)	Weight (g)	Comments
2012.102.468	North flank, erosion/slump	Quartz	stemmed	37.17	10.80	24.19	8.9	
2012.102.441	North flank, reference trench	Tuscaloosa gravel chert*					0.6	Distal tip of triangular point
2012.102.445	North flank, reference trench	Unidentified	stemmed	47.91	4.20	15.11	2.8	Stem width, 9.16 mm; stem thickness, 4.20 mm
2012.102.428	North flank, reference trench	Unidentified	straight		2.97	15.48	1.4	Likely Hamilton point; distal end snapped off
2012.102.475	North flank, Stage X midden	Blue-gray Fort Payne Chert			3.64		0.8	Hamilton; medial and distal portion of point
2012.102.480	North flank, Stage X midden	Blue-gray Fort Payne Chert	incurvate	30.21	4.48	13.83	1.4	Hamilton
2012.102.486	North flank, Stage X midden	Tuscaloosa gravel chert*	straight		5.24	13.22	1.5	Hamilton; distal tip broken
2012.102.487	North flank, Stage X midden	Unidentified	straight		3.84	13.55	1.5	Slightly petal-shaped; distal tip flaked off;
2012.102.497	North flank, Stage IX midden	Tuscaloosa gravel chert	straight	18.08	3.07	11.95	0.6	Diminutive triangular point
2012.103.399	West flank, erosion/slump	Tuscaloosa gravel chert*	incurvate		4.45	15.33	1.2	Distal tip is broken
2012.103.565	West flank, erosion/slump	Tuscaloosa gravel chert	incurvate	24.22	3.53	14.10	0.7	
2012.103.568	West flank, erosion/slump	Tuscaloosa gravel chert	incurvate	20.20	4.97	16.13	1.2	
2012.103.472	West flank, Stage VII midden	Tuscaloosa gravel chert*					0.6	Medial portion of traingular point
2012.103.488	West flank, Stage VII midden	Unidentified	stemmed		4.26	17.47	1.6	Serrated edges
2012.103.487	West flank, Stage III layer	Tuscaloosa gravel chert	straight	25.17	3.91	13.91	1.1	
2012.103.551	West flank, Stage I construction	Fort Payne chert	incurvate		4.95	17.07	1.5	Distal tip missing with hinge scar
2012.103.434	West flank, Stage A mixed	Tuscaloosa gravel chert*	straight		4.10	13.73	0.7	Distal tip and portion of one shoulder missing

*heat-altered

from the north flank. In addition, an elongated and stemmed point was recovered from the north flank reference trench that likely has nonlocal origins.

Expedient Tools. Expedient tools are small, hand-held flakes of chert of variable form, often exhibiting an edge with unifacial flaking that were used for simple cutting and scraping tasks. In the Mound P excavations, there were a total of 24 (95.1 g) expedient tools across midden contexts (Table 7.2). Eight of these flakes were produced from blue-gray Fort Payne chert and 12 were manufactured from Tuscaloosa gravel chert. Unlike the raw material pattern from the projectile points, there was an even distribution of materials across mound contexts.

Bit Tools. Bit tools include drills, perforators, and microdrills. In total, ten (6.0 g) bit tools were recovered across mound contexts, six of which were the sharpened and polished bit end of microdrills (Table 7.3). Further, there was one perforator recovered from west flank construction layers. Interestingly, while there was more variation in the raw materials used for projectile points on the north flank, there was more variation in the raw materials of bit tools recovered from the west flank. The identification of drills, perforators, and especially microdrills is important because of their use in shell-working or similar fine-scale crafting, indicating that there was a part-time microlith craft industry at Moundville and surrounding sites (Ensor 1991:36; Knight 2010:58).

Stone Debitage. There is a general lack of evidence for stone tool reduction in mound contexts at Moundville. Given the potential for flakes, shatter, and cores to be transported in mound fill, as well as the small size of Tuscaloosa gravel chert pebbles, I follow the minimalist approach to debitage analysis outlined by Knight (2010:58-59, 146). Various stone types made up the debitage assemblage from all mound contexts that were screened with ¼-mesh, totaling 809 (1,142.1 g) specimens. However, only 24 percent (n = 195) of that total originated from

Table 7.2. Expedient tools in Mound P contexts.

Catalog No.	Context	Material	Count	Weight (g)	Comments
2012.102.468	North flank, erosion/slump	Tuscaloosa gravel chert	1	0.5	
2012.102.471	North flank, erosion/slump	Tuscaloosa gravel chert	1	6.7	
2012.102.482	North flank, Stage X midden	Blue-gray Fort Payne Chert	2	6.7	
2012.102.482	North flank, Stage X midden	Tuscaloosa gravel chert	1	1.8	
2012.102.426	North flank, reference trench	Tuscaloosa gravel chert	1	0.6	Possible prismatic blade
2012.102.432	North flank, reference trench	Blue-gray Fort Payne Chert	1	30.3	Composite core / expedient tool
2012.102.442	North flank, reference trench	Tuscaloosa gravel chert	1	0.9	Prismatic blade
2012.102.452	North flank, reference trench	Blue-gray Fort Payne Chert	2	16.1	
2012.103.569	West flank, erosion/slump	Blue-gray Fort Payne Chert	1	0.6	
2012.103.475	West flank, erosion/slump	Dover chert	1	1.0	
2012.103.642	West flank, Stage VIII construction	Tuscaloosa gravel chert	1	3.3	
2012.103.524	West flank, Stage VII midden	Unidentified	1	9.8	
2012.103.527	West flank, Stage VII midden	Tuscaloosa gravel chert	1	0.9	
2012.103.660	West flank, Stage VI construction	Tuscaloosa gravel chert	1	0.7	
2012.103.504	West flank, Stage V construction	Blue-gray Fort Payne Chert	1	1.7	
2012.103.617	West flank, Stage V construction	Blue-gray Fort Payne Chert	1	0.4	
2012.103.504	West flank, Stage V construction	Blue-gray Fort Payne Chert	1	0.7	Possible prismatic blade
2012.103.482	West flank, Stage IV midden	Tuscaloosa gravel chert	1	5.5	
2012.103.541	West flank, Stage II construction	Tuscaloosa gravel chert	1	0.4	
2012.103.553	West flank, Stage I construction	Tuscaloosa gravel chert	1	1.8	
2012.103.458	West flank, Stage B midden	Tuscaloosa gravel chert	1	2.8	
2012.102.506	Summit, mixed	Blue-gray Fort Payne Chert	1	1.9	

Table 7.3. Bit tools in Mound P contexts.

Catalog No.	Type	Context	Raw Material	Comments
2012.102.471	Microdrill	North flank, Stage XI mixed	Tuscaloosa gravel chert	
2012.102.475	Microdrill	North flank, Stage X midden	Tuscaloosa gravel chert	
2012.102.482	Microdrill	North flank, Stage X midden	Unidentified	
2012.102.482	Drill bit	North flank, Stage X midden	Tuscaloosa gravel chert	
2012.102.426	Microdrill	North flank, reference trench	Tuscaloosa gravel chert*	pyramidal/triangular in profile with some evidence for unifacial flaking
2012.103.437	Drill bit	West flank, erosion/slump	Blue-gray Fort Payne Chert	
2012.103.574	Microdrill	West flank, Stage VIII construction	Blue-gray Fort Payne Chert	polish and wear on the bit; triangular in cross-section
2012.103.574	Perforator	West flank, Stage VIII construction	Tuscaloosa gravel chert*	
2012.103.636	Drill bit	West flank, Stage IV midden	Blue-gray Fort Payne Chert	
2012.103.624	Microdrill	West flank, Stage II construction	Tuscaloosa gravel chert	
2012.103.410	Drill bit	West flank, Stage C mixed	Unidentified	Drill bit with hafting portion intact

*heat-altered

midden contexts. This disparity warrants further consideration. If the identification of intact midden contexts on the mound is correct (and I believe it is), then the relatively low percentage of debitage recovered from midden contexts would seem to suggest that up to 76 percent of the debitage present from all excavated summit and flank contexts was transported to the location as mound fill. However, since most the deposits on the north flank are midden fill and 282

Table 7.4. Stone debitage from midden and non-midden contexts, Mound P.

	TGC	**%**	**BGFP**	**%**	**Other**	**%**	**Total**
			Midden Contexts				
Cores	4	0.57	1	0.14	2	0.29	7
Shatter	45	0.61	2	0.03	27	0.36	74
Flakes	81	0.71	14	0.12	19	0.17	114
Subtotal	130	0.67	17	0.09	48	0.25	195
			All Other Contexts				
Cores	7	0.78	1	0.11	1	0.11	9
Shatter	143	0.56	5	0.02	108	0.42	256
Flakes	255	0.73	33	0.09	61	0.17	349
Subtotal	405	0.66	39	0.06	170	0.28	614
Totals	*535*	*0.66*	*56*	*0.07*	*218*	*0.27*	*809*

Note: TGC = Tuscaloosa gravel chert; BGFP = blue-gray Fort Payne chert.

specimens were recovered from the north flank reference trench in excavation levels that cross-cut both erosional layers and midden layers, 35 percent of the total debitage assemblage is accounted for in this analytical unit. This is an important observation because the high frequency of debitage from the reference trench matches the elevated quantity of debitage recovered from midden contexts in the north flank control trench (n = 153), which constitutes only 19 percent of stone debitage recovered from all mound contexts, but notably makes up 78 percent of the debitage recovered only in midden contexts. Thus, segregating the midden and non-midden debitage assemblages is important in the identification of any stone tool manufacturing in mound contexts.

Table 7.4 presents the subtotals for midden and non-midden debitage recovery from Mound P. The locally available Tuscaloosa gravel chert predominates all midden contexts in all classifications, characterizing 66 percent of stone debitage material from midden contexts. There is an increase in the utilization of blue-gray Fort Payne chert flakes from the Tennessee Valley, suggesting that a higher quality chert was desired and used for larger flaked tools. The “other” category includes minor raw material types like Bangor chert, Tallahata quartzite, and quartz.

Table 7.5. Absolute and relative frequencies of chert types by midden, Mound P.

	TGC	%	BGFP	%	Other	%	Total
North flank, Stage X	107	0.72	6	0.04	35	0.24	148
North flank, Stage IX	3	0.60			2	0.40	5
West flank, Stage VII	11	0.44	8	0.32	6	0.24	25
West flank, Stage IV	5	0.42	2	0.17	5	0.42	12
West flank, Stage III	4	0.80	1	0.20			5
Total	130		17		48		195

Note: TGC = Tuscaloosa gravel chert; BGFP = blue-gray Fort Payne chert.

Further, this category includes unidentified materials. However, when blue-gray Fort Payne and the residual material category are combined, Tuscaloosa gravel chert is still the favored chert type disposed of in midden contexts. Changes in the relative frequency of chert types through time by midden stage are presented in Table 7.5. These changes are a little difficult to track due to the low frequencies of stone debitage in all midden contexts except the north flank, Stage X midden that dates to the late Moundville III phase. Tuscaloosa gravel chert characterizes 55 percent of all stone debitage recovered from midden contexts, and 72 percent of all debitage recovered from the Stage X midden. Not only does the consumption of mainly local chert in north flank contexts indicate a preference or availability of localized cherts, it also signals increased flaked stone activity using those local cherts in later contexts.

Greenstone. Artifacts made from chlorite schist, or commonly referred to as greenstone, were used for utilitarian and non-utilitarian purposes (Gall and Steponaitis 2001; Knight 2010; Welch 1991, 1996; Wilson 2001). Mineralogical, petrographic, and chemical evidence strongly supports the origin of many of the finished greenstone celts recovered in social contexts at Moundville as the central Hillibee formation along Hatchet and Gale creeks in eastern Alabama, within 150 km of the site (Gall and Steponaitis 2001:112-113). Since greenstone is exposed in the creek beds, quarrying of the stone would not have been necessary and celt-quality boulders

Table 7.6. Worked and unworked greenstone, Mound P.

Item	Context	Count	Weight (g)	Comments
	Midden contexts			
Celt fragment	North flank, Stage X midden	1	102.5	Symmetrical celt bit
Ground/polished chip	North flank, Stage X midden	1	1.8	
Unworked shatter	North flank, Stage X midden	8	20.5	
Celt fragment	North flank, Stage IX midden	1	89.0	
Celt fragment	West flank, Stage VII midden	1	60.8	Fragmentary with rounded edge
Celt fragment	West flank, Stage VII midden	1	51.7	Celt bit is rounded with some polish; badly damaged
Ground/polished chip	West flank, Stage VII midden	5	8.9	
Unworked shatter	West flank, Stage VII midden	9	31.6	
Total, greenstone from midden contexts		*27*	*366.8*	
	Other contexts			
Ground/polished chip	Summit, humus	1	0.6	
Unworked shatter	Summit, mixed and disturbed	1	1.5	
Celt fragment	North flank, erosion/slump	1	24.5	Material is pale green and less dense than other Hillabee schist
Unworked shatter	North flank, erosion/slump	3	3.7	
Celt fragment	North flank, reference trench	1	38.9	Celt bit with flat edge, no bit
Ground/polished chip	North flank, reference trench	2	1.4	
Unworked shatter	North flank, reference trench	9	13.0	
Celt fragment	West flank, erosion/slump	1	52.2	No edges or bit
Ground/polished chip	West flank, erosion/slump	1	5.2	
Unworked shatter	West flank, erosion/slump	11	63.4	
Ground/polished chip	West flank, Stage VI construction	2	2.4	
Unworked shatter	West flank, Stage V construction	2	8.5	
Ground/polished chip	West flank, Stage II construction	1	0.4	
Unworked shatter	West flank, Stage II construction	1	1.2	
Unworked shatter	West flank, Stage C mixed midden and construction	1	39.6	
Unworked shatter	West flank, Stage B midden	3	7.7	
Ground/polished chip	West flank, Stage B midden	1	10.5	
Unworked shatter	West flank, Stage A mixed midden and construction	1	0.2	
Total, greenstone from other contexts		*43*	*274.9*	
Totals		70	641.7	

could have been recovered from along the creeks or the Coosa and Tallapoosa rivers. Further, given the general lack of evidence for the initial stages of production of utilitarian axes at the Moundville site, they likely arrived at Moundville as celt preforms or finished items (Gall and Steponaitis 2001:115; Wilson 2001:125). Thus, greenstone shatter and polished chips recovered in social contexts at Moundville were the result of the recycling of broken celts into small expedient and utilitarian tools (Wilson 2001). However, there is some direct evidence for the crafting of tabular, ceremonial greenstone objects in association with Mound E when the quantity of polished scrap and sandstone saws are considered (Knight 2010:220-221; Wilson 2001:121-122). The high frequencies of finished or polished greenstone chips and flakes from Mound Q are indicative of celt use in woodworking, but not manufacturing (Knight 2010:148). Therefore, the presence of greenstone objects in Mound P contexts is expected to follow the pattern of recycling found in other locales with high frequencies of greenstone shatter with finished or polished surfaces.

In total, there were 70 specimens of finished and unmodified greenstone with an aggregate weight of 641.7 g recovered across Mound P contexts, presented from midden and non-midden contexts in Table 7.6. These items included unworked shatter, polished chips, and celt fragments but chisels were not observed in the assemblage. An assessment of the total quantity of greenstone recovered is derived from the median weight in grams of all unmodified greenstone shatter (Knight 2010:148, 221). Almost three-quarters (70 percent) of the greenstone recovered from Mound P contexts was unworked greenstone (n = 49), with an aggregate weight of 190.9 g and a median weight of 3.25 g. In midden contexts, unworked greenstone shatter (n = 17) constituted 63 percent of the total greenstone recovered, but with a weight of 52.1 g, it only comprised 14 percent of greenstone from midden contexts by weight. Greenstone specimens with at least one finished or polished surface (n = 14) had an aggregate weight of 31.2 g. In midden contexts, polished or finished chips were recovered in small numbers (n = 6) representing only 3 percent of the total weight. A total of seven celt fragments recovered from all mound contexts had a total weight of 419.5 g, but four of these were recovered from midden contexts, constituting 83 percent (304.0 g) of the weight of greenstone specimens recovered from midden contexts. The bit ends on these celts were symmetrical, indicting their original function as medium to heavy woodworking tools (e.g., Wilson 2001).

Palettes and Tablets. Formal sandstone palettes are almost completely restricted in distribution to the Moundville site and thus signaling the probable importance of these artifacts in mound ceremonialism (Knight 2010:62; Steponaitis 2016; Steponaitis and Knight 2004:174-175). These objects were produced from fine gray micaceous sandstone that originates from an outcrop near the campus of the University of Alabama (Whitney et al. 2002), and were typically formed into circular (20-30 cm) and thin (1-2 cm) portable altars where reduced and mixed mineral pigments were produced (Steponaitis and Knight 2004:174). They are often engraved around their circumference and sometimes exhibit V- or U-shaped notches in the edges, executed by sandstone saws. A few notable examples contain highly visible representational art and are well-known. Traditionally, these objects have been classified as prestige or display goods, but their distribution in the graves of adults and restriction to the site in general characterize them as inalienable objects of great social and ceremonial value (Steponaitis and Knight 2004:174; Steponaitis 2016:132-133). Formal fine gray micaceous sandstone palettes have been suggested to be restricted to Moundville II-III, but tablets may have a wider temporal distribution (Knight 2010:62). Tablets that are classified as “informal” are irregularly-shaped objects of fine gray micaceous sandstone that were used for the similar function of grinding and mixing paint, but

Figure 7.1. Formal palettes from Mound P: (top) circular palette fragment (2012.103.444) with sawn grooves, Stage B; (bottom) circular palette fragment (2012.103.474) with residual red pigment and formal decoration, Stage VII.

Table 7.7. Formal and informal palettes and tablets of sandstone, Mound P.

Catalog No.	Item	Context	Fragment	Thickness (mm)	Est. diameter (cm)	Comments
2012.102.488	Palette fragment	North flank, Stage X midden	body	12.18		Body of palette; no decoration or paint residue
2012.102.449	Tablet fragment	North flank, reference trench	body	14.3		
2012.103.439	Palette fragment	West flank, erosion/slump	body	12.76-17.95		Tapered to one side and wedge-shaped
2012.103.471	Tablet fragment	West flank, Stage VII midden	body	15.1		Ground on one surface and slightly concave; 15.10 mm thick
2012.103.474	Palette fragment	West flank, Stage VII midden	rim	10.65	18-20	
2012.103.543	Tablet fragment	West flank, Stage II construction	body	11.94		
2012.103.444	Palette fragment	West flank, Stage B midden	rim	9.8	11	
2012.103.667	Palette fragment	West flank, Stage B midden	body	9.33		
2012.103.667	Tablet fragment	West flank, Stage B midden	body	9.87-10.09		

likely in less formalized settings (Knight 2010:62).

A total of five palette fragments and four tablet fragments were recovered across Mound P depositional contexts (Table 7.7). Two of these fragments had a circular edge with shallow notches and engraved lines on at least one surface. One palette fragment with an intact rim originated from Stage B Midden in Unit 1 and had an original diameter of about 11 cm (Figure 7.1, top). On one face, there were three shallow, parallel engraved lines oblique to the arc of the rim. It is likely that these were saw marks rather than formal decoration. There was no evidence of pigment on either face of this palette fragment. A second circular palette was recovered from Stage VII Midden on the west flank, was originally about 19 cm in diameter with sawn notches along the rim (Figure 7.1, bottom). Residual red pigment remained in the engraved lines on both faces, while some red pigment is present on the body of the palette. One palette body fragment was recovered from Stage X on the north flank, but this object did not have any decoration or paint residue. The presence of this palette fragment in the later midden is intriguing because it suggests that at least one palette was necessary as part of the ceremonies associated with this midden deposit.

Minerals. Before discussing the remainder of the ground stone artifacts from the mound, I segue to discuss minerals and pigments related to the use of palettes and tablets in ceremonial contexts. Here, I briefly discuss pigments and the minerals they are derived from that make up a portion of the elite-related Pigment Complex (Knight 2004, 2010). This suite of raw materials and finished objects is characterized by the formal palettes, the mineral limonite (red and yellow), glauconite (green), cerrusite (white), and graphite and coal (black). Further, galena and muscovite mica are likely associated with adding a luster to paint. Hematite (red), available within 50 km of the site to the northeast, has not been identified in mound contexts at

Table 7.8. Sandstone saws, Mound P.

Catalog No.	Item	Context	Raw Material	Comments
2012.102.470	Saw?	North flank, Stage XI mixed	Petrified wood	Possible saw with ground and rounded edge
2012.102.494	Saw	North flank, Stage IX midden	Tabular Ferruginous Sandstone	Two edges
2012.102.425	Saw	North flank, reference trench	Tabular Ferruginous Sandstone	Two edges
2012.102.462	Saw	North flank, reference trench	Tabular Ferruginous Sandstone	Two edges
2012.103.499	Saw	West flank, Stage V construction	Tabular Ferruginous Sandstone	beveled edge that does not wrap around to opposite side
2012.103.539	Saw	West flank, Stage II construction	Tabular Ferruginous Sandstone	
2012.102.503	Saw	Summit, mixed fill and Moore hole	Tabular Ferruginous Sandstone	Two edges

Moundville (Knight 2010:67). In the Mound P assemblage, yellow and red are represented and black may be present in small quantities from a couple of pieces of coal, but glauconite, cerrusite, and graphite were not identified. Further, four small galena crystals with ground surfaces were recovered. Muscovite mica was quantified by occurrence, in which it occurred 17 times.

Sandstone Saws. Sandstone saws are treated separately here because of their importance in lapidary work associated with the production of palettes (Knight 2010:62). These handheld tools were made from thin sections of locally available and naturally-formed tabular ferruginous sandstone. They exhibit up to three working edges, characterized by a rounded and worn edge that exposes the darker, unweathered interior of the stone. In total, seven sandstone saws were recovered from Mound P contexts (Table 7.8). It is possible that a piece of petrified wood with a rounded and ground edge was used as a saw, but the rest of the examples were produced from tabular ferruginous sandstone with at least one grinding edge.

Ordinary Stone Tools. Ordinary tools of rough stone were recovered in most Mound P contexts and were typically manufactured from locally available brown Pottsville sandstone or quartzite. These include grooved abraders, pitted anvil stones, composite tools, a mortar, and hammerstones (Knight 2010:63, 65). Further, there was a high quantity of fragmentary brown Pottsville sandstone recovered with at least one surface that appeared to have been ground smooth, but many of these pieces of stone had no other distinguishing characteristic, allowing for only a descriptive identification (e.g., Scarry 1995:84). It is quite possible that many of the sandstone objects with at least one ground surface were whetstones, mullers, or mortars at some point in their use life, but given their fragmentary nature and potential reuse as hearth rock in mound contexts (Knight 2010:63), identifying these artifacts beyond a generic “ground surface” classification was difficult. There are two types of grooved abraders present in Moundville mound contexts that may have had different functions, exhibited by parallel, U-shaped grooves versus overlapping, V-shaped grooves on rough or smooth sandstone surfaces. The abrasive qualities of rough sandstone would have been ideal for the sharpening or smoothing of bone implements, such as hairpins, needles, and awls, or the finishing of thin greenstone artifacts (Knight 2010:225; Wilson 2001:122). Pitted anvil stones exhibit a small, cup-shaped indentation on at least one rough or ground surface of a small sandstone block, often associated with grooves. When a single object has pits, grooves, or concave surfaces in combination, I classify these as composite tools. Quartzite cobbles that were waterworn and exhibit pecked or damaged surfaces were classified as hammerstones.

Ordinary tools of rough stone from the Mound P assemblage are listed in Table 6.9 from all contexts. In total, twelve grooved abraders, a single stand-alone pitted anvil stone, one mortar, a muller, five hammerstones, and two composite tools were recovered across contexts from the mound. This tally does not include those objects of fragmentary rough stone with at least one ground surface that could not confidently be identified. Grooved abraders from Mound P had both U-shaped and V-shaped grooves, typically associated with a ground-smooth surface. The sole stand-alone pitted anvil stone had a single indentation that was about 2.5 cm across, but not very distinct. The composite tools both had abrasion grooves and a pitted anvil stone. One had

Table 7.9. Ordinary tools of rough stone, Mound P.

Catalog No.	Context	Item	Raw Material	Comments
2012.102.467	North flank, erosion/slump	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Very shallow U-shaped groove in soft/friable sandstone
2012.102.472	North flank, Stage XI mixed	Hammerstone	Quartzite	
2012.102.478	North flank, Stage X midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	V-shaped groove
2012.102.478	North flank, Stage X midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	One deep U-shaped groove
2012.102.478	North flank, Stage X midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Very shallow U-shaped groove on soft/friable sandstone
2012.102.479	North flank, Stage X midden	Composite tool	Sandstone, Brown or Ferruginous Pottsville	U-and V-shaped grooves; composite grooved abrader and pitted anvile stone
2012.102.489	North flank, Stage X midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Two U-shaped grooves on two different faces
2012.102.496	North flank, Stage IX midden	Hammerstone	Quartzite	
2012.102.429	North flank, reference trench	Composite tool	Sandstone, Brown or Ferruginous Pottsville	both faces have processing pit, one face has shallow U-shaped groove
2012.102.446	North flank, reference trench	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Broad, shallow V-shaped groove; smooth-ground surface on adjascent surface
2012.102.446	North flank, reference trench	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Both stone objects have a single, V-shaped groove but also exhibit a ground smooth surface
2012.103.602	West flank, erosion/slump	Hammerstone	Quartzite	
2012.103.521	West flank, Stage VII midden	Hammerstone	Quartzite	
2012.103.476	West flank, Stage V construction	Hammerstone	Quartzite	
2012.103.513	West flank, Stage IV midden	Hammerstone	Quartzite	
2012.103.513	West flank, Stage IV midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	U-shaped groove on one face, with possible V-shaped groove on a second face
2012.103.479	West flank, Stage IV midden	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Groove is very shallow and U-shaped; smooth-ground surface
2012.103.481	West flank, Stage IV midden	Pitted anvil stone	Sandstone, Brown or Ferruginous Pottsville	25.65 mm wide indention; red marbleing and color throughout
2012.103.538	West flank, Stage II construction	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	U-shaped groove on ground-smooth face
2012.102.501	Summit, mixed and disturbed	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Object has a broad, shallow groove
2012.102.503	Summit, mixed and disturbed	Grooved abrader	Sandstone, Brown or Ferruginous Pottsville	Object has at least two grooves, U-shaped and V-shaped on different sides

two parallel U-shaped grooves and a possible V-shaped groove crosscutting them. The other object had a pit on both faces and one face had a shallow U-shaped groove. The presence of these tools across mound contexts, including late Moundville III phase midden on the north flank, is potentially indicative of different activities that needed these tools, but it should be remembered that chunks of rough sandstone were recycled as heart rock, so their presence is not indicative of certain activities, merely that those objects were used. However, even if they were used as hearth rocks, there was at least a hearth being kept on the summit of Mound P after A.D. 1450.

Other Objects of Stone, Clay, and Metal

Ornaments. Pendants and beads that were used in display and personal adornment were present in the Mound P assemblage in limited numbers. These valued goods were manufactured from clay, ground-and-polished stone, and shell. Three pendant fragments were excavated in the north flank reference trench, which is unfortunate given their symbolic content (Figure 7.2). One of these objects was manufactured from yellowish-brown, ferruginous shale, is 4.04 mm thick at the engraved decoration, and ground in the shape of a tapered, oblong pendent (Figure 7.2a). The top layer of stone is friable and deteriorating, but the end is engraved with oblique lines (chevrons) and a stylized eye or ogee, closely resembling the pattern and composition of an embossed copper symbol badge excavated from the same flank (see below). A second ornament was 2.41 mm thick and manufactured from a deep red ferruginous shale (Figure 7.2b). It is the distal end of a pendent or ornament and is engraved with a rattlesnake tail; the rattles are V-shaped, with rounded edges and an engraved dot at each end. At the break of the object there is a zone of cross-hatching, setting the maximum number of rattles at three. Finally, a blank or plain pendant fragment was excavated from the north flank reference trench (Figure

Figure 7.2. Engraved pendants, north flank reference trench, Mound P: (a) engraved chevron and ogee, eroded; (b) engraved rattle of a snake; (c) pendant blank with ground edges highlighted by dashed-line.

Table 7.10. Ornaments, Mound P.

Item	Raw Material	Context	Weight (g)	Comment
Bead	Clay	North flank, reference trench	3.9	spherical clay bead; 1.5 mm in diameter
Bead	Clay	North flank, reference trench	10.1	spherical clay bead; 2.4 mm in diameter; refit
Ear gauge	Clay	North flank, reference trench	1.7	
Ear gauge	Clay	North flank, reference trench	2.6	
Ear gauge	Clay	North flank, Stage IX midden	1.6	
Ornament	Clay	West flank, Stage V construction	0.9	circular ornament; squared sides and flat in profile; red filmed clay
Pendant	Clay	North flank, mixed	11	triangular-shaped pendant with two suspension holes
Pendant	Ferruginous shale	North flank, reference trench	0.8	dark red in color; engraved rattles of snake; Thickness, 2.4 mm
Pendant	Ferruginous shale	North flank, reference trench	4.7	yellowish-brown in color; engraved chevron and ogee; Thickness, 4.0 mm
Pendant	Clay	West flank, auger test	0.8	L-shaped and irregular
Pendant	Clay	West flank, Stage V construction	2.6	deer astragalus effigy; Length, 19.68 mm; Width, 14.13 mm; Thickness, 9.66 mm

7.2c). This pendant had ground edges, noted by the dashed outline in Figure 7.2c. No other ground stone objects of personal adornment were identified in the Mound P assemblage.

In total, eight clay ornaments or objects of personal adornment were recovered from mound contexts, including ear gauges, clay beads, and ornaments for suspension. Three ear plugs or gauges were recovered from the north flank. Two of these had a convex, mushroom-head shape and were broken where a long, tapered stem would have been inserted into the pierced ear lobe. Modern tapered jewelry is used for gradually stretching the pierced hole to eventually accommodate larger ear gauges. The third was oval-shaped with a restricted center that flared outwards at each end. This shape is like modern wood, acrylic, and steel ear gauges used in body modification and keeps the ornament in the ear lobe. There were two spherical clay beads recovered from the north flank, each with a central suspension hole. One of these objects broke across the medial portion of the object, exposing the suspension hole. It appears that the hole was not drilled, but rather formed by placing a long fiber or piece of grass through the center while it was fired. There was one circular ornament with squared sides that was red filmed at some point. There were also three pendants, each of them warranting a description. One was modeled from temperless clay and represents a deer astragalus. The articular surfaces of the bone are stylized into points, with one missing. Initially, it was assumed that it was merely a small effigy object, but in the laboratory, we could clean out the suspension hole, clarifying its function as an object meant to be suspended. Another clay pendant was recovered in a bucket auger test near the west flank excavations. It is a diminutive object of clay with a hole drilled through it. Finally, a triangular-shaped pendant with two drilled suspension holes at the top was recovered from the north flank.

Copper. Native copper was an important material to eastern peoples during prehistory and because it originated from limited sources, had appealing aesthetic qualities, required travel and mobilization for acquisition, and was metallurgically transformed into a workable product, copper is associated with display and individual status (Muller 1997:135, 251). Further evidence for the importance of copper as a socially valued good comes from the finished objects placed in burials, which were formed or decorated in highly visible and meaningful ways (Sullivan and Mainfort 2010). At Moundville, the probable source of this metal are the southern Appalachians, but another source could have been the Great Lakes (Muller 1997:251; Steponaitis and Knight 2004:176). Finished objects of sheet copper have generally been limited to funerary contexts (Marcoux 2007; Moore 1905, 1906; Peebles and Kus 1977; Phillips 2006; Steponaitis and Knight 2004), but there have been some instances of finished objects discarded in mound contexts as well (Kelly 2013:59; Knight 2010:156-157). Further, scrap from the production of finished copper objects has been found in on-mound (Knight 2010:157, 227) and off-mound (Scarry 1995:83) areas of the site. Embossed copper objects recovered in mortuary contexts were both local and nonlocal in their likely stylistic origin. Locally made copper pendants associated with elite identity are circular and oblong in form and feature swastika, scalloped circle, and hand-and-eye motifs common on stone pendants and bottles and stylistically nonlocal pendants and ornaments that draw connections to the Etowah area (Marcoux 2007:238; Steponaitis and Knight 2004:176-177). Copper only occurred three times in Mound P contexts. Table 7.11

Table 7.11. Occurrences of copper, Mound P.

Catalog No.	Item	Context	Weight (g)	Comments
2012.102.283	Copper symbol badge	north flank, Stage X Midden	4.6	Twisted and folded embossed symbol badge
2012.102.352	Copper scrap	north flank, Stage X Midden	0.6	
2012.103.663	Copper ornament	west flank, summit terrace slump	0.1	Rolled tubular ornament

presents these occurrences from midden and non-midden contexts. This includes one piece of copper scrap, likely from craft production, a rolled piece that may have been a portion of a tubular bead, and an embossed oblong symbol badge or pendant. The copper ornament is 3.14 mm in diameter and is doubled-over at the roll. The embossed copper pendant or symbol badge (e.g., Waring and Holder 1945:9) was excavated from the Stage X banded midden on the north flank (Figure 7.3). When it was recovered, the distal portion was twisted and folded over the medial portion of the object; the proximal portion that would have been used to secure the object is missing. Upon transport and initial handling of this object in the lab for identification, these two portions unfortunately separated, but this allowed for an understanding of the overall shape of the object and the embossed decoration. The shape is only slightly tapered with a broad, rounded end, whereas the design consists of oblique lines or chevrons and a C-shaped stylized eye and pupil.

Copper symbol badges, presumed to have been attached to the headdresses of important and high status individuals, have been recovered at multiple sites in north and central Alabama and northwest Georgia (Brain and Phillips 1996). These include Burial 92 at the King site in northwest Georgia (Hally 2008:434; Larson 1959; Smith 1987:101), Burial 32 at Koger’s Island in the Tennessee Valley as presented by Webb and DeJarnette (1942:297) in plate 253.1, Mound H at Moundville (Moore 1905:196, 198), Burial 20 at the Lubbub Creek site just west of Moundville (Blitz 1993:102; Jenkins and Krause 1986:97), Burial 28 at Cemochechobee (Schnell et al. 1981:218-227), and from burials in at Thirty Acre Field and Charlotte Thompson

Figure 7.3. Copper symbol badge, north flank Stage X Midden, Mound P.

Place in central Alabama (Moore 1899:326-327, 342-344; Regnier 2014:77). There is a striking similarity in form and style between the Mound P symbol badge and those recovered from a burial at Thirty Acre Field (Moore 1899: figures 66 & 67), not the first material link to contemporaneous populations living along the Alabama River.

Copper symbol badges in this style have not been recovered in Moundville burial contexts, setting up an interesting problem in Mound P case. It is stylistically like other symbol badges from central Alabama recovered in terminal prehistoric burial contexts, raising the possibility that it is at least nonlocal in style and possibly in manufacture. Conversely, it could be local in manufacture and exported to socially connected regions. There are multiple social scenarios that could have resulted in the consumption of a seemingly nonlocal, highly symbolic artifact in mound-related activities on Mound P in the fifteenth century. These include the acquisition of a nonlocal item by a local individual through trade or gifting, the local production of a discarded, rejected object that was never worn, the local copying of a nonlocal style, or the use of the object by travelling nonlocal people in a local ritual setting. Without similar objects in primary deposits it is difficult to conclude which scenario would have led to its use and discard in the north flank midden contexts. However, I would argue that it is reasonable to infer that objects that were at least produced to be displayed as bodily adornment and markers of individual rank were consumed in these late contexts. This adds one more clue to the nature of the social use of Mound P that post-dates 1450.

Marine Shell and Shark Tooth

Two shell beads were excavated from the north flank reference trench, and one was recovered from Stage II construction layer on the west flank (bottom row, Figure 7.4). They are presented in Table 7.11 along with their dimensions. It may be noteworthy that the shell bead from the west flank differed in shape from the two from the north flank. This object was flat and circular in shape and the surfaces on each face were convex whereas both beads from the north flank had one convex face and an opposite, flat surface. All three of these beads had a drilled suspension hole. I am sure that these beads were produced from marine shell, but since an identification of the consumption of this material in mound contexts has very delicate implications for the social use of the mound, and I am not a specialist, I will err on the side of caution and keep their classification simply to shell for the moment. However, their origin from the Gulf Coast may not be out of place since marine shell scrap was recovered in the same contexts as the beads (see above).

There were three pieces of marine shell scrap recovered from Mound P (top row, Figure 7.4). Two of these originated from the north flank reference trench, while one originated from the Stage IV midden deposit on the west flank. These do not exhibit ground edges, but rather appear snapped from larger pieces, possibly as a result of shell-related crafting on the mound (Knight 2010:155). Finally, a single shark tooth, identified by Susan Scott and Lynn Funkhouser as a bull shark tooth, was recovered from Stage X midden on the north flank (bottom row, Figure 7.4). This is important because it was associated with the copper symbol badge, both traditionally understood as highly visible markers of individual social rank.

Table 7.11. Marine shell and a shark tooth from Mound P contexts.

Context	Classification	Artifact	Count	Weight (g)	Comments
North flank, Stage X midden	Carcharhinus leucas	Shark tooth	1	0.8	Live shark tooth (not fossilized); bull shark
North flank, reference trench	Marine shell	Scrap	1	1.7	
North flank, reference trench	Marine shell	Scrap	2	7.3	
North flank, reference trench	Shell	Bead	1	0.5	7.59mm length; 9.54mm width; 5.82mm thick; flat on one face; drilled hole
North flank, reference trench	Shell	Bead	1	0.5	8.17mm length; 8.40mm widht; 6.54mm thick; flat on one face; drilled hole
West flank, Stage IV midden	Marine shell	Scrap	1	2.3	
West flank, Stage IV midden	Gastropod		2	1.2	Spiral/columun
West flank, Stage II construction	Marine shell	Bead	1	0.7	10.31x12.60 mm in diameter; 5.46 mm thick; circular shell bead with drilled hole

Figure 7.4. Marine shell and shark tooth from Mound P contexts. Upper row: (left) marine shell scrap from west flank midden, (center, left) marine shell scrap from north flank reference trench; lower row: (left) marine shell bead from west flank construction, (center) bull shark tooth, (left) marine shell beads from north flank reference trench.

Small Disks of Stone and Clay. Four small stone disks were recovered across Mound P, but none of these were from midden contexts. Two were unfinished round stone objects produced from tabular ferruginous sandstone, but two of the specimens were manufactured from fine gray micaceous sandstone into finished rollers. One of the finished stone disks was recovered from the west flank erosional layer and is about 47 mm in diameter and between 14.8 and 17.8 mm thick (Figure 7.5). One face was relatively flat with a rounded edge, likely to influence the rolling direction and accuracy. The edge of the artifact is flat except for the slight rounding from the convex side of the disk. The opposite face of the disk was flat with a sharp

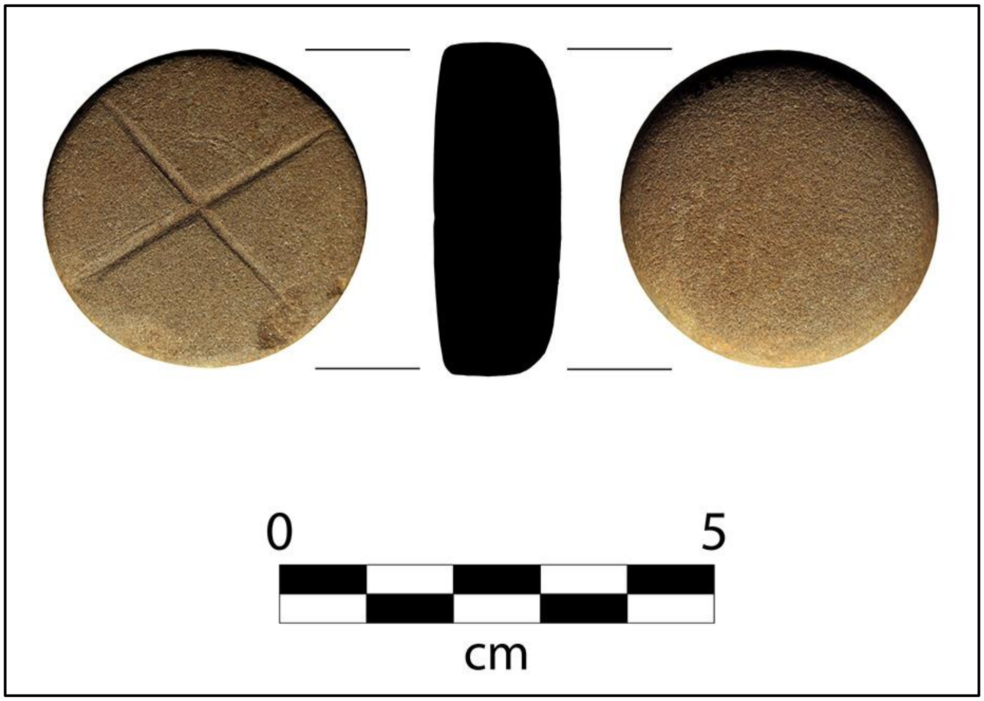

Figure 7.5. Engraved ground stone disk, fine-gray micaceous sandstone.

edge and an X engraved across the center. The second specimen was recovered from the bottom-most excavation level of the north flank reference trench. It is a little smaller, with a diameter of 26.14 mm and is 12.08 mm thick with a rounded, beveled edge. Small clay disks made of tempered clay, commonly referred to as discoidals, were common but not frequent across mound contexts. A total of 44 ceramic disks or ceramic disk fragments were recovered, ranging in diameter from 1-5 cm. Ceramic disks are identified as flat, rounded sherds that often have a rounded-flattened ground edge and were likely made from standard jars; some disks were made from sherds that were burnished or painted red.

Smoking Pipes, Figurines, and Miscellaneous Objects. Stone and clay smoking pipes are rarely recovered at Moundville, with only a few fragmentary examples of clay or stone pipes recovered in other mound midden contexts (Knight 2010). There were a total of three clay pipe fragments recovered from Mound P contexts, but no stone pipe fragments were identified (Table 7.13). All the clay pipe fragments were rims of the pipe's bowl with an orifice diameter of 3-4

Table 7.13. Miscellaneous objects of molded clay, Mound P.

Context	Item	Comments
West flank, Stage A mixed	Molded object	Portion of human figurine arm
West flank, erosion	Molded object	Portion of effigy?
West flank, Stage V construction	Molded object	Portion of human figurine arm
North flank, reference trench	Clay figurine	Arm and hand of clay figurine with incised fingers
North flank, reference trench	Molded object	Effigy with simple face
North flank, reference trench	Molded object	Clay cap or vessel lid
North flank, reference trench	Molded object	Red painted cone
North flank, Stage XI mixed	Molded object	
North flank, Stage X midden	Molded object	Ovaloid-shaped with thick center and lateral fins
North flank, Stage X midden	Molded object	Head with simple face; very small
North flank, Stage X midden	Molded object	Clay coil?
North flank, Stage X midden	Molded object	Tapered clay rod; clay coil? Figurine arm?
North flank, Stage X midden	Molded object	Tapered clay cone or peddle-shaped object
North flank, Stage IX midden	Molded object	Red filmed; triangular portion with rounded stem on other end
West flank, Stage V construction	Pipe bowl	Mississippi Plain
West flank, Stage VII midden	Pipe bowl	Mississippi Plain; Case ID 140

cm, but no other shape diagnostics were present in the breakage profiles. All three pipe bowl fragments were unembellished and formed from shell-tempered clay. Some fragments of small clay figurines were recovered across Mound P contexts, including crude heads and faces as well as one arm.

Discussion

The aim of this research is to understand how changes in the materialization of social institutions in monumental, ritualized contexts could have influenced or been effected by broader cultural changes. It has been suggested that nonlocal networks and chiefly intuitions were no longer emphasized or had collapsed at Moundville after A.D. 1450. The evidence for this is a decline in the presence of marine shell, nonlocal ceramic vessels, copper, rare and exotic taxa that were more common in funerary and mound contexts prior to this date (Knight 2010; Knight and Steponaitis 1998; Marcoux 2007; Peebles 1986; Welch 1991, 1996). Thus, it was expected that if Moundville was abandoned and institutions collapsed, but Mound P was still used or occupied, then compared to earlier contexts (1) the crafting of socially valued goods should be absent in Mound P contexts that post-date A.D. 1450 and (2) that the socially valued goods consumed in those contexts should be local materials. The deposit that post-dates A.D. 1450, and hence falls after the time for heightened ritual practice at the site, is Stage X, while those that pre-date 1450 are the west flank middens and construction episodes. This evidence would support an argument for the periodic or episodic (i.e., not permanent) use of Mound P as a ceremonial facility after general site abandonment with an emphasis on local materials that were crafted elsewhere. In general, flaked tools needed for leather working, cutting tasks, and drilling or punching holes in shell or leather were present across mound contexts. Stone debitage, evidence of the production of flaked stone artifacts, was present in relatively small quantities on the west flank, but the quantity of Tuscaloosa chert debitage on the north flank is notable. There is evidence that polished woodworking tools manufactured from greenstone were recycled, and it is assumed that since there is no evidence for caching behavior at Moundville (Marcoux 2007:241), then these finished objects were being mobilized to Moundville late in the fifteenth century. Further, ordinary ground tools are common across all mound contexts.

Specialized knowledge was displayed by individuals with access to formalized stone palettes and other related materials in the pigment complex (Knight 2004, 2010; Steponaitis and Knight 2004:174-175; Steponaitis 2016). This suite of ritual paraphernalia has been suggested to have fallen out of use and circulation at Moundville after 1450, potentially marking institutional collapse. The strongest evidence for the consumption of formal palettes in Mound P contexts comes from two specimens recovered from mixed deposits on the west flank. There was one identified palette fragment in the Stage X Midden on the north flank, but its classification was based on raw material, its thin profile, and smooth-ground surfaces. It was associated with high quantities of red and yellow mineral pigments, ground galena and mica, and sandstone saws, but this object lacked ground edges or decoration.

Further clues for changes in the social use of Mound P through the fifteenth century can be observed in the presence of objects of personal adornment in the north flank contexts. The presence of copper, shell and clay beads, marine shell scrap, a bull shark’s tooth, ear gauges, a clay pendant, and two engraved stone pendants from the north flank was entirely unexpected. Further, these items are almost absent from earlier contexts, suggesting that elite identity and institutions were reproduced and even accentuated in the late Moundville III phase on Mound P. Further, the decline in nonlocal debitage and nonlocal pottery types (see discussion, Chapter 5) runs counter to the expectations and the presence of objects from the southern Appalachians and the Gulf Coast.

Therefore, the evidence from Mound P suggests that trade connections to the west changed in character. While chert quality declined, painted decoration and applique jar rims increased. More interestingly, connections to the east and northeast continued to delivered copper, and those to the south brought in greater numbers of shell and a shark’s tooth. Some of these material resources were used to reproduce elite institutions that emphasized social interactions focused on individual display and public performances.

CHAPTER 8

ABUNDANCE MEASURES

The demonstration of the differences between the two flanks of Mound P, and hence between the early to late Moundville III phase, is necessary to understand temporal changes in materiality, social relationships, and monumentality. Thus, it is not adequate to merely identify temporal changes in material patterns. These changes need to be contextualized to understand how things change to understand short-term processes. A standard measure of the differences between two or more assemblages of different size and disparities between mound midden volume is a calculation of abundance measures (Knight 2004:315-317, 2010:352-360; Markin 1997:123-124). These have been developed to compare the differences in crafting or the consumption of certain objects in platform mound-related contexts by using a standard background indicator of normal activity. At Moundville, this background measure has been the total weight of sandstone used as hearth rock (Markin 1997), the total number of jar rims (Knight 2004), and the total quantity of service ware or total sherd count (Knight 2010).

For Mound P, counts for the abundance of relevant artifacts recovered from midden contexts dating to the early or late Moundville III phase, as the numerator, were divided by the count for the background activity, as the denominator, and then multiplied by a standard number (Knight 2010:352-353). These are the same midden contexts that have been used throughout this research, where the deposition of intact deposits can be confidently assessed. These are stages III, IV, and VII on the west flank that date to the early Moundville III phase and stages IX and X on the north flank that date to the late Moundville III phase. Note that the data presented for stone materials in Chapter 7 included *all* contexts, but here the totals used for indices of stone categories are restricted to reliable midden contexts. Many of these indices were adopted from Knight's (2010:352-360) application and development of abundance measures for other, earlier mound contexts; the Mound P abundance measures will be compared to early Moundville III results from his study for salience, whereas late Moundville III indices will stand alone. Thus, while these data provide a localized, microhistory of changes for Mound P, any conclusions drawn from the later contexts must be tentative since there is little to compare them to.

Abundance Indices

The indices used in this research can be described herein.

Hemphill Index. Total sherds Moundville Engraved, *variety Hemphill* divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 1,000. This index measures the abundance of service ware engraved with religious art that is common in funerary and mound midden contexts from A.D. 1300-1450 (Knight 2010:353-354). Thus, this measurement will provide a temporal dimension as well as an understanding of the prominence of engraved religious artwork in early and late Moundville III contexts.

Fosters Index. Total sherds Carthage Incised, *variety Fosters* divided by totals sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 1,000. This index was developed for this study because of the high relative frequencies of the skulls, forearm bones, hands, and the hand-and-eye motifs and compositions executed as trailed-incised tooled decoration in late Moundville III midden contexts on Mound P. These designs are common on the interior rim of flared-rim bowls and the shoulders of short-necked bowls, highly visible locations on vessels. It is meant to be a counter measure to the Hemphill Index because it measures the abundance of a specific theme or composition. It has been suggested that the presence of these motifs on service ware was related to trophy-taking behavior (Dye 2007:161-166; Knight 2007:157-158) and death more broadly (Lankford 2007:193-204). The relative frequencies of Carthage Incised, *variety Fosters* in the north flank midden and its inverse relationships with the multithemed *variety Hemphill* has important implications for the understanding of social use of Mound P in the late Moundville III phase.

Engraved Index. Total sherds Moundville Engraved divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 100. This index is adopted to indicate the abundances of decorative service ware decorated with tooled engraved designs (Knight 2010:354).

Trailed-incised Index. Total sherds Carthage Incised divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 100. Like the Fosters Index, this measure of abundance for wide-lined tooled decoration was developed for this study and will act as a counter to the Engraved Index. The trend on Mound P in relative frequencies was towards more visible decorative modes that may have been used in large-group ceremonial performances (e.g., Hegman et al. 1995; Mills 2007).

Red-on-white Index. Total red-on-white sherds (all expressions) divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 1,000. Related to the Trailed-incised Index, the Red-on-White Index considers perceived increase in the variation of bichrome, red-on-white painted decoration on bottles and bowls from the early to late Moundville III phase. These vibrant serving vessels would have been important for visual display, but red-white dual symbolism was also a vital component in Southeastern social and political organization (Lankford 2008:73-97). I should note that this mode of decoration is not necessarily a diagnostic trait of the Moundville III phase (e.g., Knight 2010:46), but it does increase in frequency throughout this phase.

Bottle Index. Total bottle sherds (neck, corner point, bases) divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 1,000. The Bottle Index measures the abundance of a service ware potentially related to individual prestige (Knight 2010:354). It is expected that elite social contexts should have more bottles than those that emphasize large-group competition and consumption.

Flared-rim Bowl Index. Total flared-rim bowl sherds (rim and corner point) divided by total sherds service ware ("Service" = Bell Plain, Carthage Incised, Moundville Engraved) x 1,000. The Flared-rim Bowl Index will measure the abundance of a service ware related to functional aspect of serving large-groups and displaying visible symbols.

Sandstone Saw Index. Total sandstone saws divided by total sherds x 10,000. These common sandstone tools were likely used to manufacture, shape, and finish pendants, formal palettes, and non-utilitarian greenstone celts (Knight 2010:354). The measure of abundance for saws and the stone tools and artifacts that follow allow for an understanding of the general character of crafting in early and late Moundville III contexts.

Greenstone Index. Total of all greenstone refuse (shatter + polished chips + celts) divided by total sherds x 10,000. This measures the abundance of general woodworking activities occurring in Mound P social contexts (Knight 2010:354) which have been demonstrated to be a widespread and unrestricted practice (Wilson 2001).

Debitage Index. Total of all debitage (flakes + shatter + core fragments) divided by total sherds x 1,000. This measures the importance of general flaked tool production and rejuvenation, particularly concerning expedient tools (Knight 2010:354-355).

Nonlocal Debitage Index. Total of all debitage categories (flakes + shatter + core fragments) for raw materials classified as blue-gray Fort Payne chert or “other” divided by total debitage of all raw materials x 100. This measures the abundance of nonlocal debitage separate from local Tuscaloosa gravel chert (Knight 2010:355).

Core-and-Expedient Tool Index. Total of two categories of debitage (expedient tools + core fragments) for raw materials classified as blue-gray Fort Payne chert or “other” divided by total debitage of all raw materials x 100. This is a slight revision of Knight’s (2010:355) Core-and-Blade Index. Unfortunately, I did not systematically record instances of blade-like flakes for the flaked tools category from Mound P. Thus, the identification of blade-like flakes or prismatic blades from the Mound P assemblage likely misses some of the specimens. Thus, any comparison with other mound contexts using this index must be a relative measure of fine carving.

Analysis of Mound P Indices

Table 8.1 presents the calculated abundance measures for Mound P by phase. A pooled value was calculated for each index so the observed values can be compared. This pooled value is calculated by dividing the raw data total for the relevant category by the total of the relevant background (Knight 2010:355). For example, the total of Carthage Incised, *variety Fosters* sherds from all Mound P midden contexts (n = 33) was divided by the total of service ware sherds for all Mound P midden contexts (n = 4001) and multiplied by 1,000, thus providing the pooled value for each index. These are presented at the bottom of tables 8.1 and 8.3. The value to

Table 8.1. Abundance indices for two phases, Mound P.

	Hemphill Index		Fosters Index		Engraved Index		Trailed-incised Index		Red-on-white Index		Bottle Index		Flared-rim bowl Index		Sandstone saw Index		Greenstone Index		Debitage Index		Nonlocal debitage Index		Core-and-expedient tool Index	
Late Moundville III phase	1.6	-0.73	11.8	0.43	3.5	-0.27	8.9	0.14	10.6	0.29	19.3	-0.10	**68.2**	2.84	0.1	-0.84	7.8	-0.46	17.0	0.39	28.1	-0.16	2.6	-0.16
Early Moundville III phase	**13.7**	1.28	2.0	-0.76	7.0	0.47	5.8	-0.26	4.1	-0.50	25.4	0.18	**43.7**	1.46	0.0	-1.00	**23.1**	0.60	6.1	-0.50	**52.4**	0.57	**4.8**	0.56
Pooled value	6.0		8.2		4.8		7.8		8.2		21.5		17.7		0.6		14.4		12.3		33.3		3.1	

Table 8.2. Data used in calculating abundance measures.

	Hemphill Sherds	Fosters Sherds	Moundville Engraved Sherds	Carthage Incised Sherds	Red-on-white Sherds	Total Bottle Diagnostics	Total Flared-rim Bowl Diagnostics	Sandstone Saws	Total Greenstone	Total Debitage	Total Nonlocal Debitage	Total Nonlocal Cores & Expedient Tools	Total Service Ware	Total Sherds
Late Moundville III phase	4	30	88	227	27	49	57	1	7	153	43	4	2537	8993
Early Moundville III phase	20	3	103	85	6	37	14	0	16	42	22	2	1464	6925
Totals	24	33	191	312	33	86	71	1	23	195	65	6	4001	15918

the right of the measure of abundance highlighted in gray is the deviation from the pooled value calculated as the observed number divided by the pooled value, minus 1 (Knight 2010:355). When these values are compared to other contexts, as I do below, salience can be demonstrated when the observed values are greater than 0.50 above the pooled average. However, the data presented in Table 8.1 is strictly for Mound P and thus, any observed value greater than 0.50 can only be considered a change in material consumption. In short, these values do not demonstrate salience. These higher values are in bold in Table 8.1.

Higher values of observed Hemphill abundances were concentrated in the early Moundville III phase, which is not surprising given its temporal position. However, it does conveniently provide an additional metric for the confirmation of the second research question, that the frequencies of Moundville Engraved, *variety Hemphill* sherds dropped precipitously from early to late Moundville III. This index was used to measure the importance of representative religious imagery as used in mound summit contexts. Thus, when Mound P consumption patterns are compared, there was a higher emphasis placed on the use and display of religious imagery during the early Moundville III phase on Mound P.

The Fosters index was developed for this research because of the perceived importance in a shift from the multiple themes of representational art included in Moundville Engraved, *variety Hemphill* and the singular emphasis on hands, forearm bones, skulls, and the hand-and-eye motif in late Moundville III midden contexts on Mound P. In general, the values for the Foster index are inverted from those of the Hemphill index, with higher observed values and deviation from the pooled value during the late Moundville III phase. Like the temporal trend for the Hemphill Index, this shows the value of the types for characterizing a Moundville III ceramic assemblage.

Indices for changes in the abundances for engraved and trailed-incised tooled decoration were not predominant in either context, although the Engraved index was higher for early Moundville III contexts. Further, the red-on-white index did not yield elevated values for chronological changes on Mound P. Indices calculated for the abundance of vessel shapes did not meet expectations. I expected there to be a temporal shift that would correspond to a shift from prestigious, elite-centered contexts to inclusive, communal ones. This was expected to be represented in an inverse relationship between the observed values for bottles and flared-rim bowls. However, the Bottle index was relatively low and close to the expected, pooled values across mound contexts. The Flared-rim bowl index, however, generated higher values for both early and late Moundville III contexts with particularly large deviations from the pooled value. This is an important functional observation, as flared-rim bowls were likely used in large-group gatherings for the service of food.

In total, there was one tabular sandstone saw fragment recovered from Stage X midden on the north flank. However, the lack of lapidary tools in midden contexts may be telling, since it appears that this practice was not emphasized on Mound P. The Greenstone index, a measure of general woodworking activities on the mound, is higher in the early Moundville III phase, but gets much smaller for the late Moundville III phase. In general, the Debitage index did not yield variable results. This was unexpected since the quantity of Tuscaloosa gravel shatter, flakes, and cores for the Stage X midden deposits was so high, but the observed abundance measures were relatively normal, suggesting that while there was more flaking of local stone in later contexts, when the data are standardized, it was not emphasized. However, the consumption of nonlocal debitage by raw material abundance and the Core-and-expedient tool index are higher for the early Moundville III phase. When compared to the chronological trend for greenstone, this provides more evidence for general and fine woodworking occurring on the mound in the early Moundville III phase.

Comparison of Mound Indices

Table 8.3 presents the abundance indices calculated for Moundville III midden contexts at Moundville, arranged chronologically. Deviation from the pooled total is located to the right of the observed value and highlighted in gray. As I stated previously, when this observed value exceeds 0.50 while comparing batches of indices, that value is considered salient. The raw data totals, presented in Table 8.4, and observed totals were derived from data presented by Knight (2010) and used to calculate abundance indices for a comparison of Moundville II and III phase middens. Since middens that date to late Moundville III are missing for mounds Q, G, E, and R, all Moundville III contexts could be reassigned to the early Moundville III phase for this research. Further, the abundance indices developed here were added to the tables presented below from data presented in Knight's volume, but not included in his original indices. The contexts used are listed therein (Knight 2010:352).

The indices were calculated the same for the observed values, while the pooled values and the deviation from the pooled values required recalculation following the equation above. Notably, many of Knight's observed salient values remained, but when the Moundville II data was replaced with the later Mound P data, the Hemphill index for mounds G and E and the core-and-blade index for Mound Q become salient. Before we go any further, we need to consider three important points. First, the Core-and-Blade index developed by Knight and the Core-and-Expedient Tool index generated here are slightly different in the sharpened or utilized flakes they include. Thus, this index should be treated with caution until a more fine-grained analysis of nonlocal blades and cores is completed for Mound P. Second, I excluded the Moundville II data

Table 8.3. Abundance indices for six mound contexts.

	Hemphill Index		Fosters Index		Engraved Index		Trailed-incised Index		Red-on-white Index		Bottle Index		Flared-rim Bowl Index		Sandstone Saws Index		Greenstone Index		Debitage Index		Nonlocal Debitage Index		Nonlocal Cores & Expedient Tools Index	
Late Moundville III phase																								
Mound P	2.0	-0.9	**11.8**	2.5	3.5	-1.0	**8.9**	0.9	**10.6**	1.7	19.3	-0.1	**68.2**	3.1	0.1	-1.0	7.8	-0.4	17.0	0.3	28.1	0.0	2.6	-0.4
Early Moundville III phase																								
Mound P	14.0	0.0	2.0	-0.4	7.0	-0.9	5.8	0.3	4.1	0.0	25.4	0.2	**43.7**	1.6	0.0	-1.0	**23.1**	0.6	6.1	-0.5	**52.4**	0.8	4.8	0.1
Mound Q*	12.1	-0.2	2.1	-0.4	10.2	-0.9	4.9	0.1	1.9	-0.5	18.0	-0.1	23.4	0.4	0.7	-0.8	13.9	0.0	10.7	-0.2	40.9	0.4	**8.4**	0.8
Mound G*	**22.1**	0.5	0.0	-1.0	14.7	-0.8	4.9	0.1	2.9	-0.3	6.2	-0.7	19.1	0.1	0.0	-1.0	2.7	-0.8	4.9	-0.6	**61.1**	1.1	**22.2**	3.9
Mound E*	**25.0**	0.7	0.3	-0.9	11.5	-0.9	1.1	-0.8	1.5	-0.6	24.0	0.1	9.5	-0.4	**8.7**	1.1	6.5	-0.5	7.3	-0.4	41.6	0.4	4.0	-0.1
Mound R*	9.3	-0.4	0.0	-1.0	2.8	-1.0	0.9	-0.8	**9.3**	1.4	18.7	-0.1	0.0	-1.0	**75.4**	17.3	**188.4**	12.4	**212.3**	15.1	1.8	-0.9	1.2	-0.7
Pooled Value	14.6		3.4		90.3		4.6		3.9		20.9		16.8		4.1		14.0		13.1		28.9		4.6	
*totals derived from Knight 2010																								

Table 8.4. Data used in calculating abundance measures.

	Hemphill Sherds	Fosters Sherds	Moundville Engraved Sherds	Carthage Incised Sherds	Red-on-white Sherds	Total Bottle Diagnostics	Total Flared-rim Bowl Diagnostics	Sandstone Saws	Total Greenstone	Total Debitage	Total Nonlocal Debitage	Total Nonlocal Cores & Expedient Tools	Total Service Ware	Total Sherds
Late Moundville III phase														
Mound P	4	30	88	227	27	49	57	1	7	153	43	4	2537	8993
Early Moundville III phase														
Mound P	20	3	103	85	6	37	14	0	16	42	22	2	1464	6925
Mound Q*	45	8	383	186	7	68	88	1	20	154	63	13	3764	14346
Mound G*	15	0	100	33	2	11	13	0	1	18	11	4	679	3638
Mound E*	97	1	446	41	6	93	37	12	9	101	42	4	3879	13746
Mound R*	1	0	3	1	1	2	0	6	15	169	3	2	107	796
Totals	182	42	1123	573	49	260	209	20	68	637	184	29	12430	48444
*totals derived from Knight 2010														

from Knight's original study to compare Moundville III contexts and to understand the shift from early to late phase crafting, elite display, and representative art. The final note regards Mound V, one of the only contemporaneous mound contexts at the center to Mound P (Knight 2009; Mirarchi 2009). The mound contexts compared here consider only midden contexts, thus fulfilling Knight's (2010:352) requirement for only including those primary midden deposits that can confidently be representative of mound-related activity and excludes fill or mixed deposits. In my review of the relevant Mound V literature, I did not identify sealed, primary midden deposits in the stratigraphic descriptions.

The Mound P abundance measures, when compared between mound contexts, shift slightly. The early Moundville III Hemphill and Core-and-expedient tool indices are no longer salient, but the early Greenstone, Nonlocal Debitage indices stay salient, as does the overall flared-rim bowl index. However, the Fosters, Trailed-incised, and red-on-white indices are all now salient for the late Moundville III phase. This comparison places Mound P in a broader, inter-mound context. In the early Moundville III phase, Mound P shared some common characteristics with contemporaneous mounds, but it is notable that the consumption of representative religious art was present in Mound P contexts in rather mundane levels, especially considering the residential nature of the mound. High values of flared-rim bowls in early and late contexts indicate a focus on large-group consumption in mound contexts. Further, while the values for greenstone and woodworking are not as high as the values of greenstone for Mound R, Mound P appears to have been generally engaged in woodworking tasks. Further, nonlocal networks that were maintained to acquire more resilient stone, possibly for finer woodworking tasks.

There is not an adequate late Moundville III comparative mound sample from the Moundville site, so the abundance indices presented in Table 8.3 for this subphase should be more of a suggestion for the material and social changes of mound contexts that post-date A.D. 1450. However, there are some intriguing clues for changes in mound function through time. There was an emphasis on death and trophy imagery in representative art executed with trailed-incised tooled decoration. Further, red-white symbolism was on full display on bottles and bowls in the late assemblage. Finally, Carthage Incised becomes the dominant decorative type on service vessels, a trend that continues into the Protohistoric. Thus, the character of Mound P during the late Moundville III phase was one where display of local goods and the trophy theme was emphasized over nonlocal networks and general crafting.

CHAPTER 9

RECONSIDERING THE COLLAPSE AND TRANSFORMATION OF MOUNDVILLE

Institutional collapse and social transformation in complex societies has long been a topic of public and academic interest and research. However, barring truly catastrophic events, the collapse of ancient societies should be thought of in terms of resilience, reorganization, transformation. We need to consider carefully and critically what collapse means and why we are preoccupied with identifying *the* collapse of a complex society (e.g., Eisenstadt 1988; Tainter 1988, 2016). Is it because a society failed to live up to our own subjective definition of success (*sensu* Diamond 2005), therefore suggesting that progressivist approaches have a stronger hold on theoretical discourse than some of us would like to admit? Change and continuity in materiality are dual, and since we know of only a couple of cases of true catastrophe, understanding what institutions collapse and how society transformed in particular ways can provide a more historical understanding of culture change in ancient complex societies. Considering how contingent, diachronic social change unfolded does not require a major paradigm shift or a rejection of sound scholarship, but it does require archaeologists to be careful about what parts of the past we choose to represent. If we only focus on fluorescence and times of relative stasis, or we only feel comfortable in making general comparisons, then other times will naturally appear to be the "Dark Ages" of prehistory, rather than times of (potentially) intriguing historical change.

Periods of social change occur when schemata and resources that inform and constrain social action, are generalized, transposed, and rearticulated in novel social settings through an actor's knowledge and negotiation of those structural elements (Giddens 1979; Sahlins 1985; Sewell 2005). In ancient societies, short-term social transformation is observable in rapid or novel changes in materiality (Rees and Lee 2015:163). Agency is the ability of individuals to knowingly manipulate and negotiate schemas and resources at their structural intersection. When multiple contingent ruptures of these intersections occur that cannot be absorbed by other structures, an event occurs that allows social actors to rearticulate schemas and resources in novel ways (Sewell 2005). However, just as searching for *the* collapse of a society is a misguided enterprise, so is trying to identify *an* event (Beck 2013, 2015). The goal of event-based, historical approaches are to understand social transformation and reorganization as contingent outcomes of the duality of structure (Beck et al. 2007; Bolender 2010a; Gilmore and O'Donoughue 2015; Hodder 1987). Thus, it is the degree to which materiality changes or continues, not the presence or absence of traits, that is important in understanding these processes.

This research seeks to address institutional collapse and social transformation within the late prehistoric complex societies in the Southeastern United States during the fifteenth century, immediately prior to European exploration and colonization. Specifically, this research focuses on the historic trajectory of the multiple mound civic-ceremonial center at Moundville to investigate how structural elements were materialized and enacted by agents in a monumental, ritualized setting to affect culture change. Previous archaeological research from mound and off-mound contexts suggests that around A.D. 1450, several changes took place; mound construction halted, the mobilization of nonlocal materials and finished objects to Moundville was deemphasized, engraved representational art was no longer produced, elite crafting in mound contexts halted, and the burial of the dead moved to other sites in the Black Warrior Valley (Blitz 2008; Knight and Steponaitis 1998; Knight 2010, 2016; Steponaitis 1998; Steponaitis and Scarry 2016; Welch 1991, 1996; Wilson 2008). These observations have led scholars to suggest that the Moundville site was essentially abandoned or forgotten sometime in the middle of the fifteenth century, with populations moving elsewhere and organizing around communal principles. However, there is some evidence that mounds B, E, P, and V were occupied or used throughout the fifteenth century (Knight 2009, 2010; Porth 2011a). Using recent excavations from Mound P at Moundville as a case study, I expected to find evidence for continuity and change in materiality because monuments and monument-related activities were the locus of intersecting and overlapping schemata and resources.

Mississippian platform mounds were multifunctional and polysemic monuments built-up and expanded through the labor of a community or corporate group. They were utilized as the foundation for elite residences, communal facilities, and courtyards, where everyday practices and ceremonial performances reproduced social structures through the production and consumption of large quantities and distinct qualities of crafting, ceremonial, and commensal refuse that were then discarded on the flanks. These practices and the schemata they reproduced were contingent and generative, meaning they were informed and constrained by historical processes but also continued to reproduce and generate contingencies. It is the reproduction of structural elements through ritual practice and performance that is the locus of social change. Thus, it is expected that change and continuity of schemata and resources related to platform mounds, social organization, cosmology, and socially valued goods can be inferred through an analysis of the contents and character of flank midden refuse.

Discussion

The abandonment of mound centers and river valleys across the Midwest and Southeast occurred throughout the prehistoric period and was a common feature of politically unstable polities and intensive monocrop agriculture (Anderson 1994; Blitz 1999; Blitz and Lorenz 2006; Hally 1996; Meeks and Anderson 2013; Peebles 1986). It is perhaps notable that the processes of site and river valley abandonment began in the thirteenth and fourteenth centuries, long before Europeans arrived in North America. The historical processes of site abandonment, population dispersal, and mound reuse observed in the archaeological record for late prehistoric complex societies occurred in the Black Warrior Valley as well. The schemata that materialized as episodic mantled-mound construction, crafting, large-group consumption, display, the raising and razing of summit buildings, materials and finished objects from nonlocal areas, and representational art on Mound P during the fifteenth century were contingent upon the generative social reproduction at Moundville since the center's establishment. Thus, the practices that accumulated at Moundville resulted in a large, mound-and-plaza complex that changed in function and likely meaning through time. These practices resulted in the slow, but patterned abandonment of platform mounds beginning in the fourteenth century, likely the result of internal discord (Blitz 2008:67-68; Knight 2010:363-364; Knight and Steponaitis 1998:18-20; Peebles 1986:30-31), as well as external proximal causes (e.g., Anderson 1994).

Previous research at the site has indicated that four general practices that materialized structures halted or changed around A.D. 1450, being recognized as the collapse of the Moundville polity: episodic, mantled-mound construction ceased; nonlocal exchange networks were deemphasized; representative art engraved on bottles was no longer produced; and funerary practices moved to mound sites in the valley (Blitz 2008:67-68; Knight 2010:363-364; Knight and Steponaitis 1998:21-22; Peebles 1986:30, 1987:9). However, since the excavations of Mound P in 2012 were the first substantial fifteenth century mound excavations at the site, we can develop these observed patterns into research questions.

The first research question asked: *when did monumental construction and the built environment change or continue, as evidenced by mound construction layers and midden deposits on Mound P at Moundville*? The evidence needed to address this question, presented in Chapters 4 and 5, were stratigraphic profiles from Mound P excavation units with a large sample of temporally diagnostic decorated ceramic types and vessel shapes, as well as radiocarbon dates from midden deposits. Excavations on the west flank of Mound P exposed strata related to episodic mound mantle construction and midden deposits. This pattern was most evident in stage III, IV, and VII midden deposits, where the quantity of daub, as well as the total weight of artifacts, was present in high frequencies when compared to intermittent mound construction layers. The construction layer stages exhibited evidence for basket-loaded mound fill, suggesting that schemata and resources related to platform mound construction were reproduced on the west flank. Using percentage stratigraphy and *terminus post quem* logic, I analyzed diagnostic ceramic types, modes of decoration, and modes of vessel shape from mound midden contexts. The seriation of these attributes provided a relative date of A.D. 1400-1450 for all midden deposits and construction layers on the west flank. Further, a sample of radiocarbon dates from midden contexts falls within the first half of the fifteenth century. Thus, the mutually supporting ceramic sequence and radiocarbon dates for the mound construction layers and midden deposits on the west flank of Mound P confirm that they date to the early Moundville III phase. The practice of episodic, mantled-mound construction was expected for this subphase, as other mounds at the site exhibit evidence for the utilization of labor by influential individuals or corporate groups to increase the size and brevity of platform mounds at Moundville (Knight 2010). Alternating construction layers and midden deposits, punctuated with the razed remains of summit architecture link the west flank deposits to cyclical and purifying mound-related rituals (e.g., Anderson 1994, 1996; Hally 1996; Knight 1986; Lindauer and Blitz 1997).

It should be noted that the southern terrace, which likely represents the terminal construction layer of the mound, does not have a secure absolute date. In the Unit 3 profile, the construction of the terrace is distinguished from earlier construction layers by a distinct break, where the underlying soil was mottled and the overlying soil representing the terrace, was darker and homogenous. However, the flank deposits associated with the homogenous terrace construction layer were heavily eroded. Archaeological evidence from the 2009 summit excavations and Walker's magnetometry surveys indicate that a large, burned-daub building was present on the southern terrace, just below the surface. Determining the timing of terrace construction through deep, stratigraphic summit excavations should be a priority for any future work on Mound P. I suggest, as I have elsewhere (Porth 2011a:120; 2015) that terraced mounds, or secondary mounds (Benchley 1974), were a distinguishing characteristic of these late-phase Moundville culture platform mounds. Did the meaning of platform mounds shift late in Moundville's history? Were these terraces purposely constructed as the last raised platform of the mound? Were the mounds constructed with multiple terraces throughout their history, as Mound E at Moundville was? Did the labor needed to add full mound mantles reject the practice or move elsewhere? Unfortunately, the summit layers of many Southeastern mounds are the first impacted by historic or modern activity or construction, making their function and construction history difficult to interpret. A similar problem exists for Snows Bend, White, and mounds B, E, and P at Moundville, which limits our understandings of these terminal layers and their relationship to other summit surfaces.

Excavations on the north flank exposed two different soil zones (stages IX and X) that had high artifact densities, but relatively low quantities of daub. Further, the greasy nature of Stage IX soils was indicative of a high organic content and the banded character of the lenses in Stage X are suggestive of periodic deposition of refuse over a relatively restricted time span. The low total weight of daub from these contexts, and the high total weight of daub from the overlying Stage XI mixed deposit, suggests that the mound-related activities that generated the north flank midden deposits were not related to cyclical house destruction and purification ritual. Thus, the high quantities of serving vessels and ritual paraphernalia were associated with a standing, daub-walled summit building that was not destroyed until after the midden refuse was deposited. The first order diagnostics important in recognizing the early to late Moundville III phase transition are Moundville Engraved, *variety Hemphill*, Carthage Incised, *variety Fosters*, short-necked bowls, and bichrome and trichrome painted decoration. A relative date of A.D. 1450-1520 for the north flank deposits was supported using percentage stratigraphy and *terminus post quem* logic. Thus, these deposits date to the late Moundville III phase.

The radiocarbon dates for Stage IX are unexpectedly early and place this analytical unit somewhere in the middle of the fifteenth century. A conservative estimate for the dating of this stage is appropriate because of the truncated nature of the deposits. In hindsight, completing excavations on the north flank to sterile soil would have been a relatively quick enterprise and it is regrettable that this did not occur. Nevertheless, we must settle on a mid-fifteenth century date for the midden deposit. The radiocarbon dates from the periodic Stage X Midden deposits are firmly within the second half of the fifteenth century, corresponding to the late Moundville III phase, some of the latest dates now available for the Moundville site.

Thus, we are now able to address the first research question by saying that monumental construction did not continue on Mound P at Moundville after A.D. 1450, matching a site-wide pattern. However, this observation needs a little more explanation since the built environment is not only shaped by humans, but it also influences human movement, memory, interpretations, and perceptions. From A.D. 1400-1450 on Mound P, episodic mantled-mound construction was punctuated by the razing of summit buildings. This practice has been linked to the death of corporate group leaders (e.g., Hally 1996) and would facilitate the purification of the polluted symbol (i.e., the mound). After the building was destroyed, a new construction layer was added to the mound, signifying the beginning of a new political office-holder.

Around A.D. 1450, the schemata related to this institution, and the resources they enacted, shifted. However, I would argue that they did not rupture since the place of the mound continued to be important for ritual purposes even if individually-oriented institutions were de-emphasized. The north flank deposits were not added to the mound as additional mantles, but rather as accretional midden deposits. The resources of human labor, planning, and soil needed to enlarge the mound through mantled construction had shifted elsewhere but schemata related to platform mound ceremonialism continued. Thus, one of the final acts in Mound P's history may have been the conflagration of the large building on the southern terrace sometime around A.D. 1500, ritually ending the use of that space.

The second research question asked: *how did symbolic art change during the fifteenth century on Mound P*? The evidence needed to address this question, presented in chapters 5 and 8, was a careful examination of Moundville Engraved ceramic sherds and the changes in percentage stratigraphy across dated mound contexts. In general, Moundville Engraved decreased from early to late Moundville III deposits, but here we are concerned with how the relative frequencies of *variety Hemphill* changed. Between the last deposited west flank midden layer (Stage VII) and the midden deposits on the north flank, Moundville Engraved, *variety Hemphill* decreased by 7 percent to represent a total of 1 percent of all common local decorative types. Thus, it is not the complete absence of a type that is important here, since some bottles may have been curated or reused in later times, but rather the distinct change in percentage of that type that indicates a shift in popularity. It is notable that there is an inverse relationship between the frequencies of *variety Hemphill* and Carthage Incised, *variety Fosters* between the two flanks, signifying a temporal and possibly structural shift.

The trophy theme was executed as engraved scalps, skulls, hands, forearm bones, and hand-and-eye compositions on subglobular bottles and hemispherical bowls during the height of the Hemphill-style from A.D. 1350-1450 (Knight 2007:157-158; Phillips 2012). During the latter portion of the style's popularity, the trophy theme fell from prominence (Phillips 2012:77-78), possibly replaced by more limited compositional elements that we classify as Carthage Incised, *variety Fosters*. These designs, limited to hands, the hand-and-eye motif, and forearm bones, were decorated in broader trailed-incised tooled decoration on the interior rim of flared-rim bowls. On Mound P, these designs dominate the decorated pottery assemblage after A.D. 1450, superseding all other decorative types from the north flank midden deposits.

Therefore, we can now address the second research question by saying that symbolic art shifted focus and themes to emphasize the trophy theme. When symbols dominate, like the trophy theme for Mound P, they are identified as culturally important, key symbols that condense meaning but have more elaboration and cultural restrictions associated with them (Ortner 1973).

It is also noteworthy how the production of symbolic art on Mound P changed, where communication and visualization to a larger group (e.g., Hegmon et al. 1995; Mills 2007) was emphasized after A.D. 1450. Thus, the Hemphill-style motifs engraved on the exterior of bottles and bowls were so fine that they would have restricted visualization to those individuals in close proximity. Conversely, motifs executed with trailed-incised decoration on the interior of flared-rim bowls or the shoulders of short-necked bowls would have been easier to see due to their placement on the vessel and broader lines. The shift in symbolic art to a restricted theme that was meant to be seen and the important symbols communicated is suggestive of more inclusive mound-related ceremonies with large-group participation. Further, the increase in diversity and vibrancy of painted modes of decoration supports the observation that these objects were produced to be visually stimulating.

There is another possibility that needs to be addressed as it relates to the social organization of the site. The shift in symbolic art to emphasize death imagery after A.D. 1450 signals an increased importance of the meanings associated with that composition. It has been suggested that one of the integral organizational principles at the site was individual association with mound-based sodality membership that cross-cut kin ties (Byers 2013; Phillips 2012). If this were the case, then the distribution of specific, representational themes would be expected to corresponded with individual mounds (Knight 2016:39). This expectation is not supported by the distribution of Hemphill-style engraved sherds from mound midden contexts (Knight 2016:39; Phillips 2012), but the data from the north flank of Mound P are suggestive of a shift in the symbols utilized to integrate constituent groups. In short, it is possible that if Moundville's organizing principle was religious sodality-alliance, then Mound P was a ceremonial facility for a secret society with distinct connections to supernatural patrons linked to the underworld and death. However, this late-phase context stands on its own and a stylistic analysis of trailed-incised motifs and their distribution has not yet been conducted. Thus, this suggestion is tentative until borne out through a distributional analysis of the terrace motif, interlocking scrolls, the trophy theme, and other dominant, late-phase symbols.

The third research question asks: *how did nonlocal resource connections change during the fifteenth century*? The evidence needed to address this question, presented in chapters 5 and 7, are the occurrences of identified stylistically nonlocal ceramic sherds, nonlocal stone artifacts, marine shell, galena, mica, and copper. It was expected that midden deposits on the west flank should have higher frequencies of these objects and raw materials, but unexpectedly, there was no clear pattern of consumption. In general, nonlocal pottery types did occur more in west flank, non-eroded deposits (n = 14) than in non-eroded north flank deposits (n = 4), but we need to exercise caution in this assessment, since applying nonlocal type names to a local ceramic assemblage is not always appropriate. I am unfamiliar with the ceramic typologies from other regions unless the decoration is unambiguous and therefore I was conservative in my identification of decorative types that fell outside of the local typology (e.g., Knight 2010:37). I am sure that within the residual pottery descriptions there are stylistically nonlocal pottery types, but even in an aggregate residual/nonlocal category (see Table 5.1), the relative percentages of this category decline from the west flank to the north flank, or from the early to late Moundville III phase. This assessment does not include the negative-painted black-on-white or trichrome painted decoration because it has been shown chemically that local potters were making these bottles in a nonlocal style (Salberg 2013; Steponaitis et al. 1996). However, the production of these painted bottles also increases in late Moundville III phase contexts, and along with the introduction of appliqué fillets on the shoulder of standard jars at the beginning of the

Moundville IV phase, represent an influence from the Memphis/Sunflower/Missouri Bootheel areas of the Central Mississippi Valley during the fifteenth century. The identified nonlocal types from Mound P contexts include connections to eastern Arkansas, the Lower Mississippi Valley, the Nashville Basin, and the Gulf Coast.

The flaked stone from midden contexts indicates that there was an increase in the use of local chert in the production of flaked stone tools in late Moundville III deposits, but that blue-gray Fort Payne chert and other nonlocal chert types were still utilized. Greenstone, derived from east-central Alabama, was present in all temporal contexts, showing a continued emphasis on at least using and recycling woodworking tools from a nonlocal location. Thus, it falls upon the occurrences of copper, muscovite mica, galena, and marine shell to determine the nature of nonlocal connections in Mound P deposits that post-date A.D. 1450. Copper, the closest source of which is the southern Appalachians, occurred in three instances, two of which were from the Stage X Midden deposit on the north flank. This includes the embossed copper symbol badge that is stylistically similar to the Thirty Acre Field symbol badges distributed at late prehistoric sites in central Alabama and northwest Georgia (Brain and Phillips 1996; Hally 2008; Moore 1899; Regnier 2014; Smith 1987). Muscovite mica, also derived from east-central Alabama and possibly used in paint production, occurred in higher instances than on the west flank deposits. This includes two possible cut-mica pieces recovered in the north flank reference trench, indicative of evidence for the rare practice of producing cutout mica ornaments (Knight 2010:69).

Crystalline galena specimens from Moundville have been sourced by trace element analysis to the Ozark uplands in the Central Mississippi Valley and the Paleozoic Plateau in the upper Midwest, even though it is found in northeast Alabama (Walthall 1981:55). While the elemental source of the four galena specimens from Mound P contexts is unknown, the occurrences of the mineral were restricted to late Moundville III phase deposits, with only one ground galena cube originating from Stage VII on the west flank. Finally, marine shell scrap was present in both early and late Moundville III phase deposits along with shell beads that were likely produced from the material. The presence of marine shell in late contexts is important, because along with a bull shark's tooth recovered from Stage X, it draws connections to the Gulf Coast and strengthens an argument for the nature of social activities being oriented towards elite identity.

Thus, the answer for the third question is not very clear cut. The sourcing of chert became more localized, but obtaining or using greenstone was still important. Ceramic vessels decorated in nonlocal styles generally decreased, but conservative classification may have obscured some of the nonlocal variation. The strongest evidence for a continued emphasis on nonlocal networks comes from mica and greenstone from east-central Alabama, galena from at least as far as northeast Alabama and likely further, copper from the southern Appalachians, and marine shell and a shark's tooth from the Gulf Coast. In short, the emphasis shifted from a west-north orientation to amore localized, east-south one. Using Blanton et al. (1996) or Renfrew (2001) to explain this change leads us in two different directions. Competition with other individuals supported schemata related to external realms and individual prestige enacted by nonlocal materials and finished objects (Blanton et al. 1996). Conversely, group-oriented practices focused on key symbols and public, monumental construction to de-emphasize competition. Both strategies are active at once and it is the degree to which they are materialized that leads to inferences about political strategies. In the case of Mound P, there is a shift away from certain nonlocal connections but a continuity of others associated with display and performance. Thus, while objects such as the copper symbol badge and marine shell have been associated with individual rank, they are objects with a high display value. When combined with the monumental context of the ritual practice and the emphasis on transcendent symbols, there is a stronger corporate orientation later in Mound P's history than earlier.

However, this model places a primacy on economic strategies and considers ritual to be secondary. If the sacred economy (e.g., Renfrew 2001) was the primary driver of ritual and social interaction at the site, then some of the post-A.D. 1450 connections draw our attention to the populations that left Moundville during the fourteenth and early fifteenth centuries for the east and south (Regnier 2014). The copper symbol badge is stylistically similar to those recovered from terminal prehistoric sites in the Alabama River Valley and the marine shell and shark tooth are likely from the Gulf Coast. I suggest that after A.D. 1450, individuals or groups living to the east and south returned to Moundville to participate in, or perform ceremonies centered around, the display of death imagery and red-white symbolism in a monumental context.

In the first chapter of this dissertation, I outlined four research questions that would contribute to the larger research problem. I have addressed three research questions using data from Mound P contexts to this point. After A.D. 1450, episodic mantled-mound construction and Hemphill-style representative art on bottles did not continue, but some nonlocal connections that were still maintained. To address the fourth research question and the larger research problem, I added abundance indices that allowed the data from Mound P to be considered in a broader, intra-site context. These questions can now be addressed. The fourth research question asked if ritual performances on the summit of Mound P in the fifteenth century emphasized communal or individualistic structural elements. The changes in the west and north flank assemblages from

Mound P are indicative of a ritual setting that could accommodate large groups of participants in a monumental context, emphasizing symbols almost singularly-focused on death, trophy-taking behavior, mortuary ritual, or ancestor veneration. In cooperative or collective social settings (e.g., Blanton and Fargher 2008; Carballo et al. 2014), individuals will deemphasize individualizing display and nonlocal sources of power in favor of communal symbols and public goods because they need to compete with peers for followers with an active stake in their participation and labor expenditure. Thus, the communal symbols of ancestors, mounds, and larger vessels are clues to the changes in the social use of Mound P during the late Moundville III phase. The idealized dichotomy of communal-individual is perhaps not applicable in this case, since supralocal materials and symbols, such as copper, marine shell, pigment complex materials, and rare taxa in late Moundville III phase contexts were consumed. Thus, there seems to be a shift in emphasis, away from individualizing schemata throughout the fifteenth century and towards transcendent symbols of ancestors and the dead in social contexts that remained elevated or elite in status.

The periodic deposition of refuse over a span of 25-75 years as represented in Stage X dissuades us from recognizing this as a single ceremonial occasion such as mound-summit ceremony or mortuary ritual. However, the character of its contents does suggest that collapse was not a singular event at Moundville. In fact, we can now reevaluate what collapse means in relation to Moundville's historical trajectory. Collapse is an inappropriate concept as it has been applied to Moundville. Further, I suggest we adopt the term *disintegration* for describing the gradual fraying of Moundville's fabric. Further, if there was a conjuncture of schema-resource disarticulations, it likely occurred around or before A.D. 1300, not in the middle of the fifteenth century (sensu Marcoux and Wilson 2010). Ceremonies and performances that rearticulated elements associated with prestige (copper, shell) in a mound context with a focus on display allowed social agents to recombine materials and monuments in novel ways. Thus, they had transformed slightly to emphasize red-white dualism and death imagery in monumental contexts.

There is one more set of clues we need to begin to understand Moundville just prior to the Spanish *entrada*: faunal remains. Faunal analysis for remains from midden remains is underway, with some of the changes in faunal use corresponding to changes in the mound midden content (Porth et al. 2017). The full results of this analysis are forthcoming and it is not appropriate to provide data or comparative detail here, but there are a few general trends that are worth noting. The ratios of fox to gray squirrel from late Moundville III midden are indicative of forests encroaching on previously cleared areas, supporting the dispersal of centralized populations in the valley to other places (Susan Scott, personal communication). Further, there is a high diversity of bird, and in particular duck, from the Stage X Midden. The multiple species of duck present in this context represented migration patterns from various times in the year, potentially providing further evidence for a year-round residence or multiple, periodic rituals being hosted on the summit. While these observations are general, and we are still working through the data to compare it to other mound contexts, the fox to gray squirrel ratio and the high diversity of year-round migratory duck species do support portions of the overall Moundville narrative.

Future Directions for Research

This research could address some of the research questions, but further analysis will be needed to gain a broader picture of the fifteenth century in the Black Warrior Valley. First, Bayesian analysis is planned for the radiocarbon dates presented here that will place the Mound P middens in a more precise chronological context. This is currently underway and the results will be published soon after the dissertation has been completed. Second, faunal analysis is underway that will add a complementary line of evidence to these data and inform our interpretations of changes in structural elements from early to late Moundville. Further, stylistic analysis is needed on sherds bearing skulls, hands, forearms, and the hand-and-eye motif. Research is needed on the production of ceramic vessels and execution of tooled decoration between mound contexts that can address the number of participants present in mound ceremonies through an analysis of ceramic attributes. This analysis has the potential to address if there was wide community involvement in communal mound contexts, or if there was variation in the nature of restricted mound-top rituals. Finally, any discussion of the fifteenth century and the changes at Moundville need to be addressed by considering the single mound centers in the Black Warrior Valley and their relationship to each other and the people living along the Alabama River just prior to European incursions.

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APPENDIX A

BUCKET AUGER SOIL DESCRIPTIONS

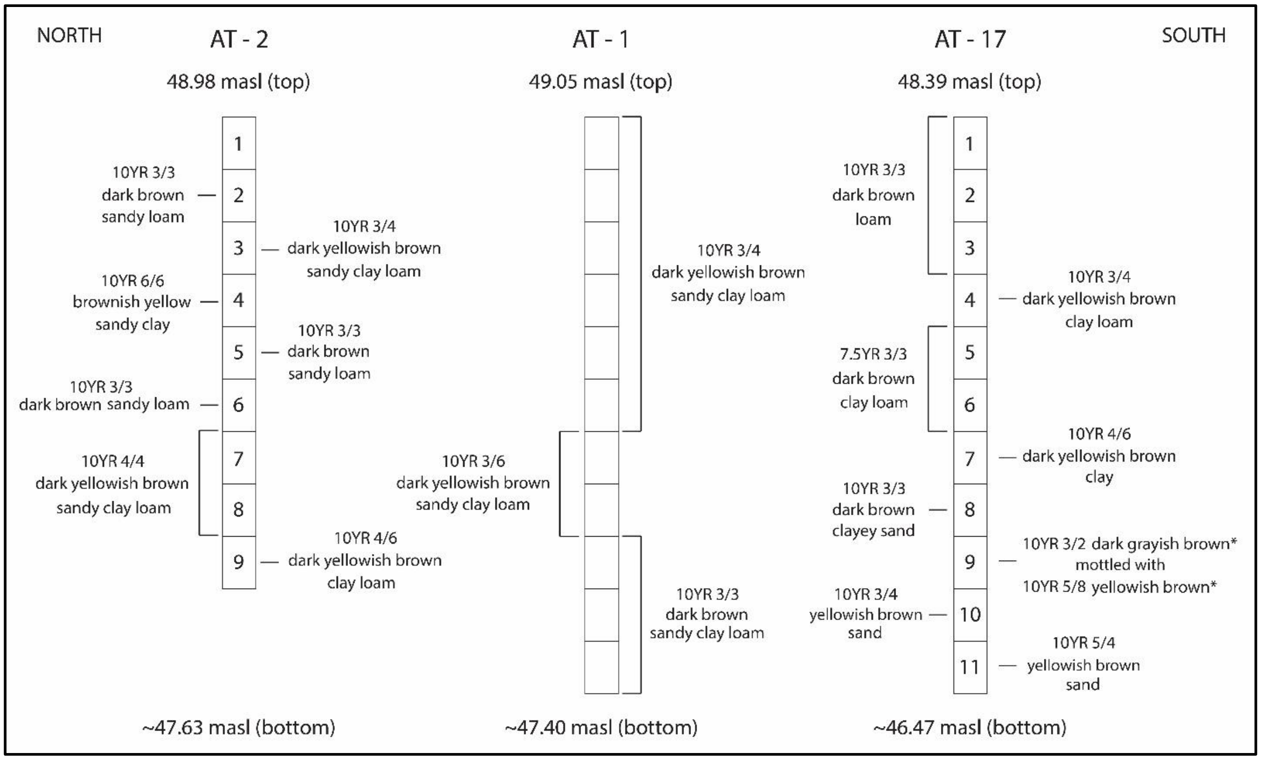

Figure A.1. Soil descriptions for bucket auger tests 2, 1, and 17, west flank, Mound P.

Note that Bucket Auger Test – 1 was recorded for soil changes per depth and not per bucket. Further, units 1, 2, and 3 are located in between auger tests 1 and 17.

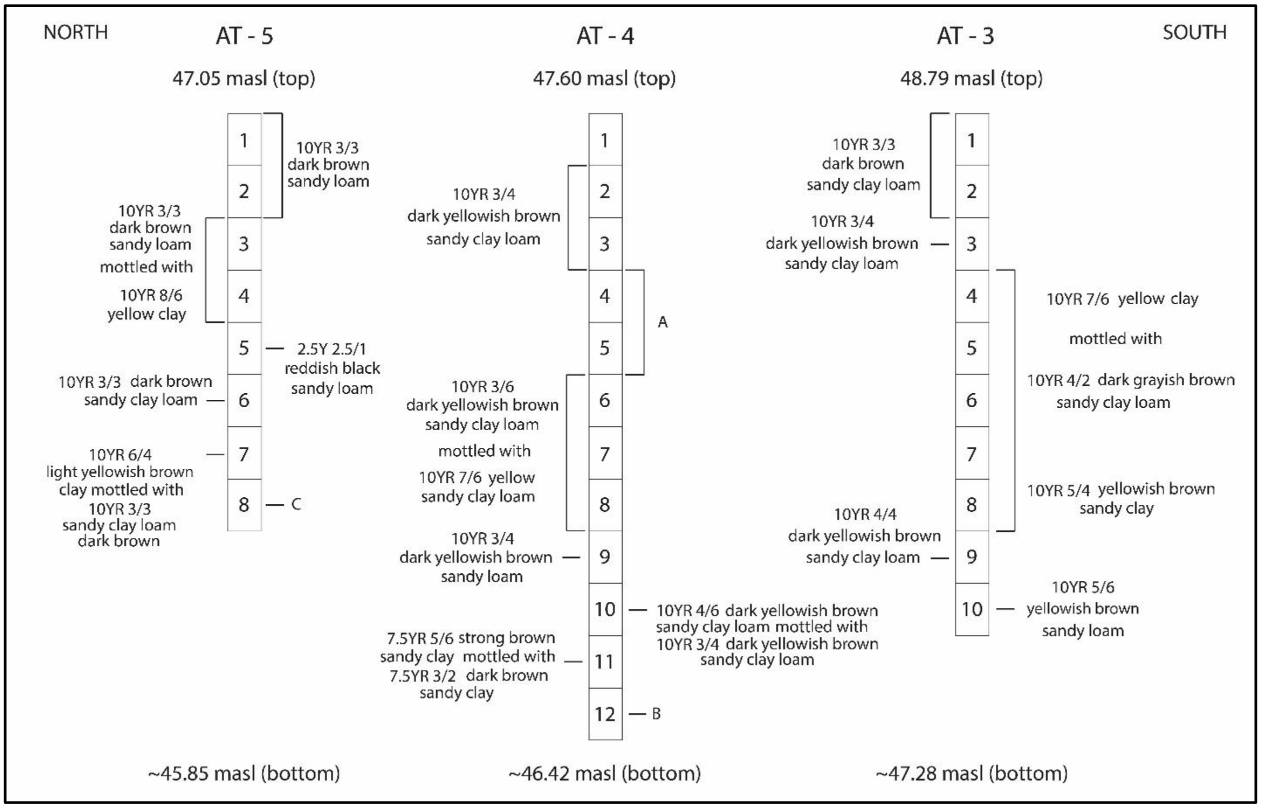

Figure A.2. Soil descriptions for bucket auger tests 3, 4, and 5, west flank, Mound P.

The zone of soil recorded for Bucket Auger Test 4, labeled as "A" in Figure A.2, including buckets four and five, contained multiple soil textures and colors. The layer was characterized by (10YR 6/6) brownish yellow sandy clay loam with quantities of (5YR 5/8) yellowish red sandy clay loam, (10YR 7/6) yellow sandy clay loam, and (10YR 3/6) dark yellowish brown sandy clay loam. The zone of soil recorded for Bucket Auger Test 4, labeled as "B" in Figure A.2 and including bucket 12 at the base of the subsurface test also contained multiple soil textures and colors. The soil matrix was characterized by: (7.5YR 6/8) reddish yellow clay loam; (7.5YR 5/6) strong brown clay loam; (5YR 5/8) yellowish red clay loam; (2.5YR 4/6) red; and (10YR 4/6) dark yellowish brown clay loam. The zone of soil recorded for Bucket Auger Test 5, labeled as "C" in Figure A.2 and including bucket 12 at the base of the subsurface test was heavily mottled with: (10YR 7/2) very pale brown clay; (10YR 6/6) brownish yellow clay; (10YR 5/4) yellowish brown clay; and (10YR 3/2) very dark grayish brown clay.

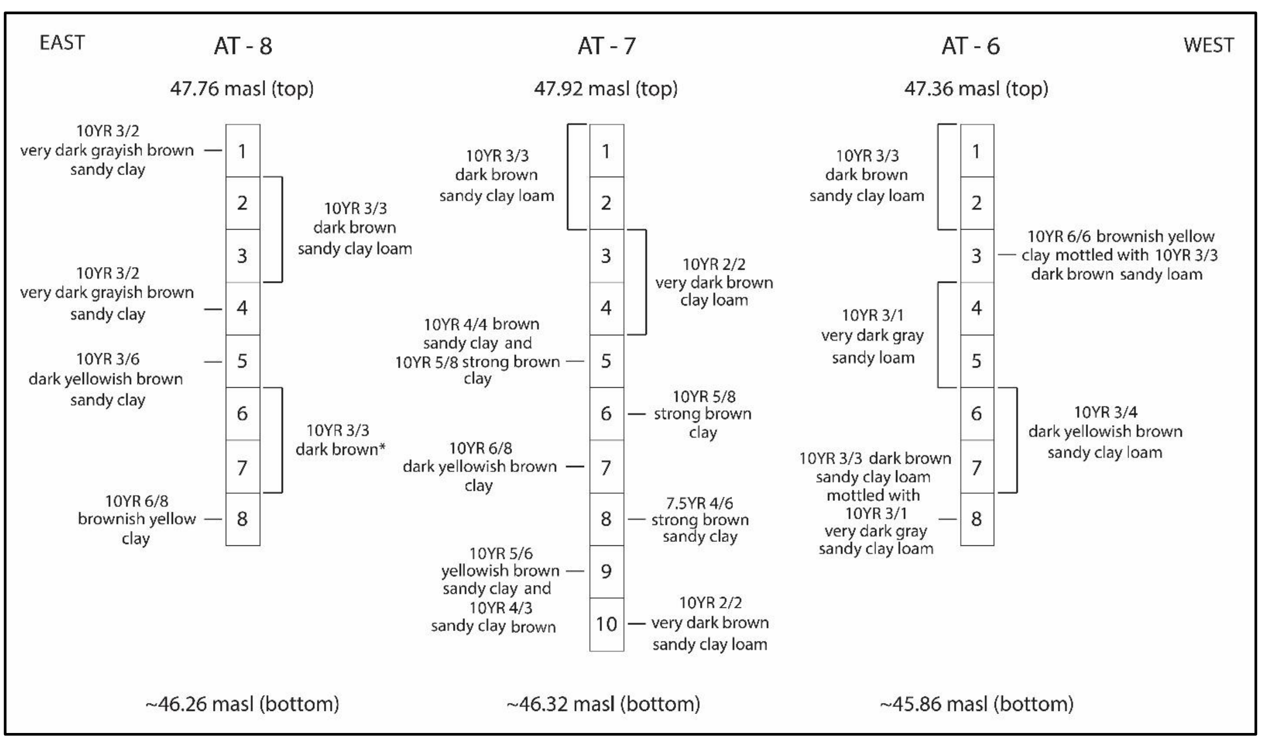

Figure A.3. Soil descriptions for bucket auger tests 6, 7, and 8, north flank, Mound P.

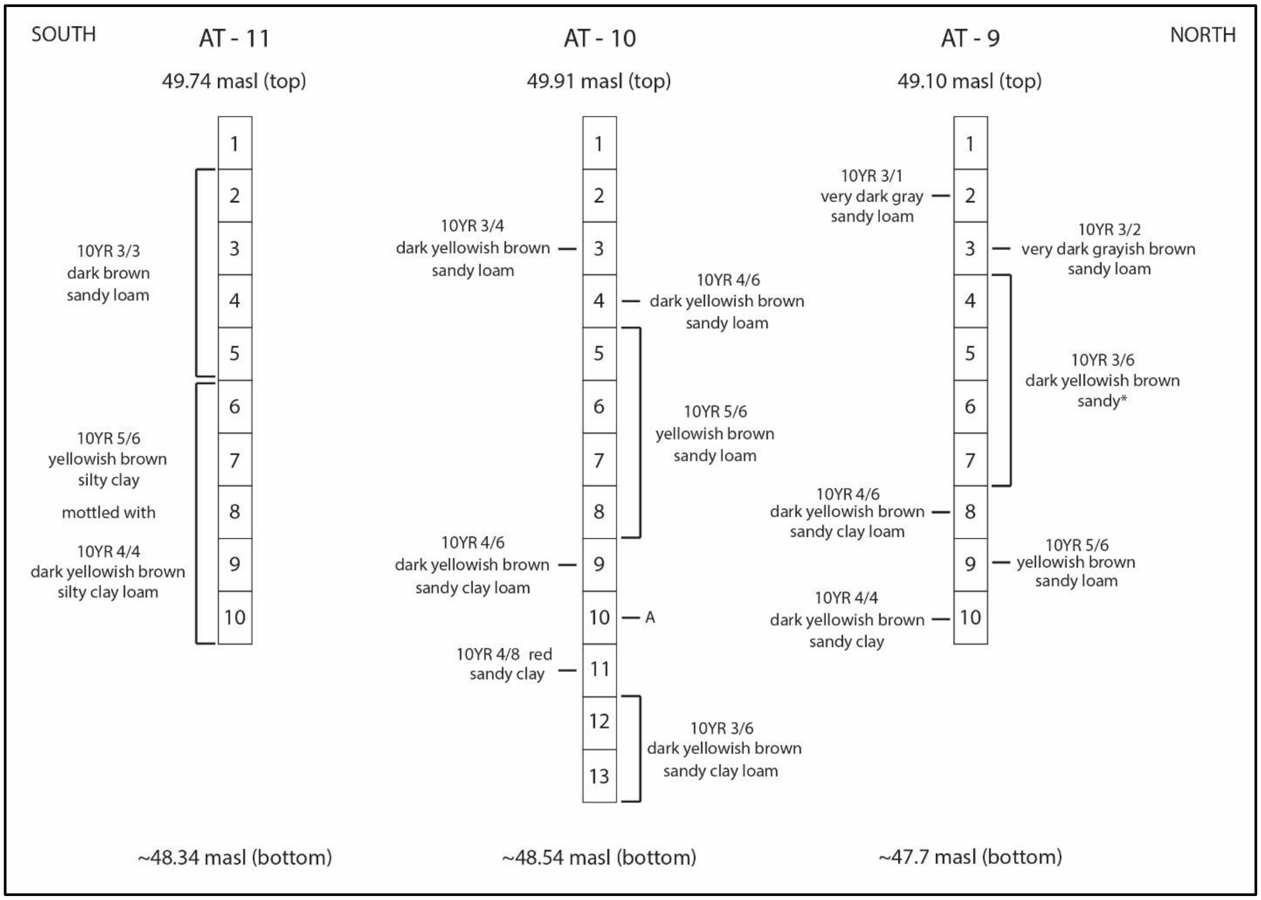

Figure A.4. Soil descriptions for bucket auger tests 9, 10, and 11, east flank, Mound P.

The zone of soil recorded for Bucket Auger Test 10, labeled as “A” in Figure A.4 encompassing bucket 10, contained multiple soil textures and colors. It was a heavily mottled matrix with: (10YR 3/6) dark yellowish brown sandy clay loam; (10YR 4/4) dark yellowish brown sandy clay loam; and (10YR 4/6) dark yellowish brown sandy clay loam.

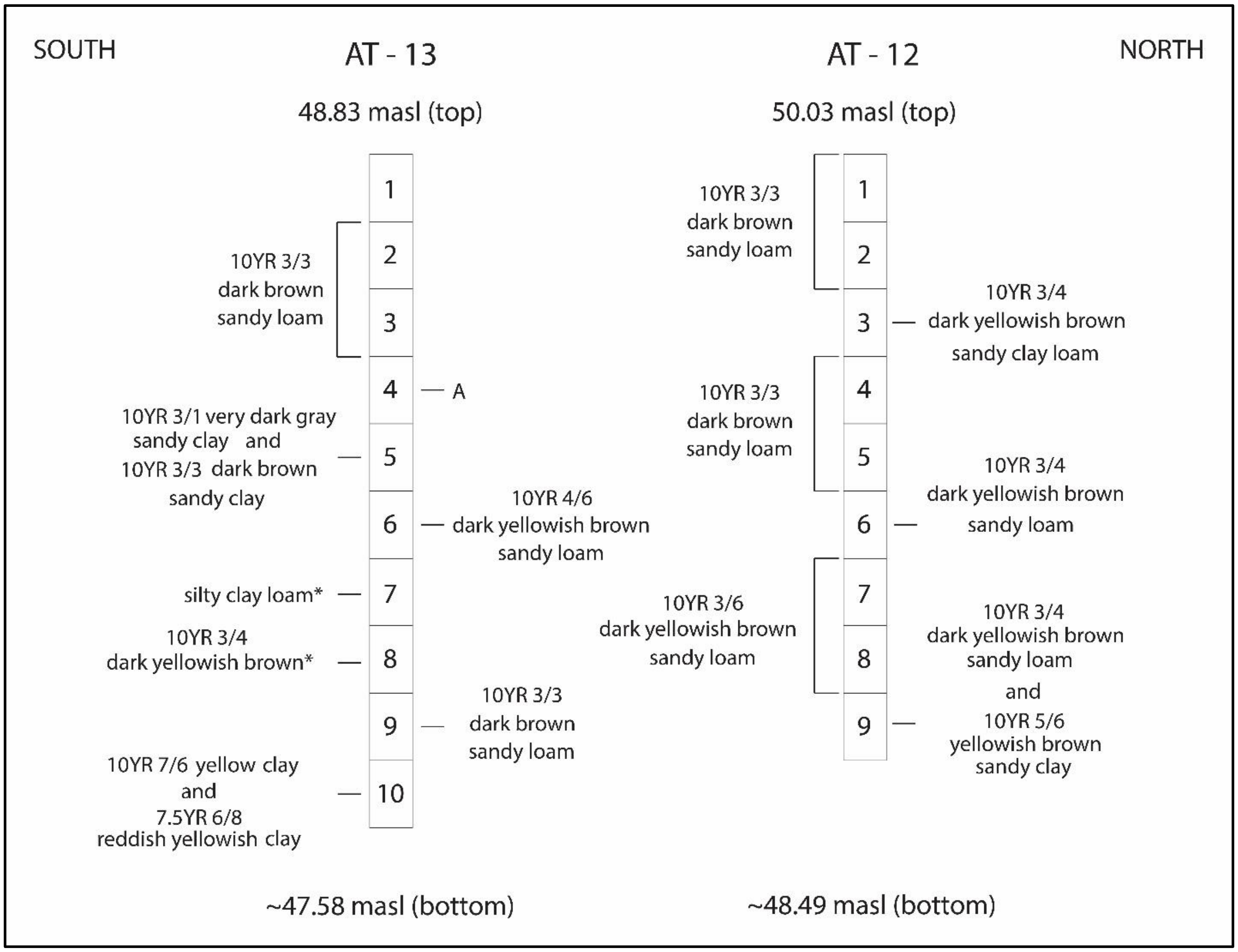

Figure A.5. Soil descriptions for bucket auger tests 12 and 13, east flank, Mound P.

The zone of soil recorded for Bucket Auger Test 13, labeled as “A” in Figure A.5 and including bucket number four of the subsurface test. It was a heavily mottled soil zone of: (10YR 7/6) yellow clay; (2.5YR 5/8) red clay; (10YR 3/1) very dark gray sandy clay loam; and (10YR 3/3) dark brown sandy clay loam.

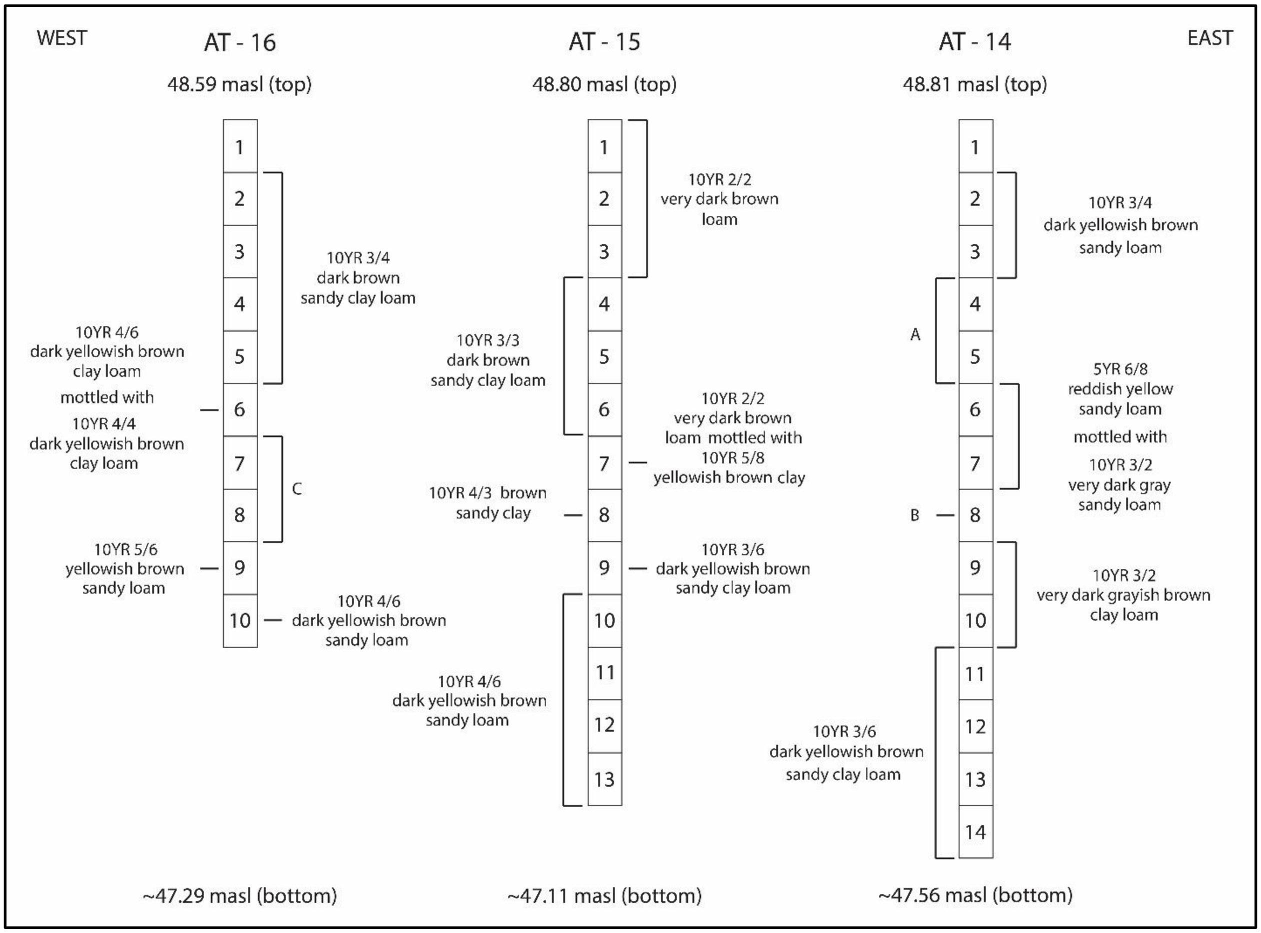

Figure A.6. Soil descriptions for bucket auger tests 14, 15, and 16, south flank, Mound P.

The zone of soil recorded for Bucket Auger Test 14, labeled as “A” in Figure A.6, including buckets four and five, contained multiple soil textures and colors. It was a heavily mottled zone of: (10YR 3/4) dark yellowish brown sandy loam; (5YR 5/6) yellowish red sandy clay loam; and (10YR 4/6) dark yellowish brown sandy loam. The zone of soil recorded for Bucket Auger Test 14, labeled as “B” in Figure A.6, represented by bucket number 8, was similarly heavily mottled. This included: (5YR 6/6) reddish brown sandy clay loam; (10YR 3/1) black sandy clay loam; and (10YR 7/6) yellow sandy clay loam. The zone of soil recorded for Bucket Auger Test 16, labeled as “C” in Figure A.6 which is represented by buckets seven and eight, was a soil zone of (7.5YR 6/6) reddish yellow clay, mottled with (10YR 7/6) yellow clay, and (10YR 4/4) dark yellowish clay.

APPENDIX B

HUMAN BURIALS

Human Skeletal Remains from Mound P

This will provide a brief discussion of two burials identified during excavations in Unit 1 at the base of the west flank of Mound P. Identification of human bone in the field and field notes was done by F. Lindsey Gordon and Brandon Thompson of the Alabama Museum of Natural History, Office of Archaeological Research on the 16^{th} of October, 2012.

Burial 1 was a single adult oriented north-south and placed in a circular or oval-shaped burial pit located along the north profile of Unit 1 intruding from Level 15. The burial feature fill was (10YR 3/4) dark yellowish brown soil and measured 49 cm north-south by 66 cm east-west, but the northern portion of the feature extended past the limits of the excavation unit. The individual was exposed only to the extent needed to confirm the presence of in situ human remains and thus age, sex, stature, and pathologies were not recorded or observed. The preservation of the individual's remains was observed as fair. Any complete or fragmented artifacts associated with the remains were not analyzed and were returned to the feature along with all associated soil upon completion of recording by Thompson.

Burial 2 was a single individual (adult?) placed in a burial pit oriented north-south along the south profile of Unit 1 and intruding from Level 15. The burial feature fill was (10YR 3/2) very dark grayish brown sandy clay loam and the exposed portion of the feature measured 19 cm north-south by approximately 68 cm east-west, but the full extent of the grave was unknown because it continued beyond the limits of the excavation unit. The individual was exposed only to the extent needed to confirm the presence of in situ human remains and thus age, sex, stature, and pathologies were not recorded or observed. The preservation of the individual's remains was observed as fair to poor. Any complete or fragmented artifacts associated with the remains were not analyzed and were returned to the feature along with all associated soil upon completion of recording by Thompson.

Once the burials were identified, all excavation on Unit 1 terminated. The remains of the individuals from burials 1 and 2 were covered in Muslin and all associated soil and artifacts recovered prior to the identification of the *in situ* human burials were returned in accordance with the research design (see discussion, Chapter 3). Engineers redesigned and reduced the size of the footing for the staircase so the burials were not disturbed. The individuals were then covered with their associated soil and secured with a wooden, plywood-covered frame to avoid any disturbance from machinery. A second wooden frame marked the place for the staircase footing and the protective boxes were then covered with backfill to further avoid any impact from construction.

APPENDIX C

POTTERY CLASSIFICATION

Pottery Types and Varieties

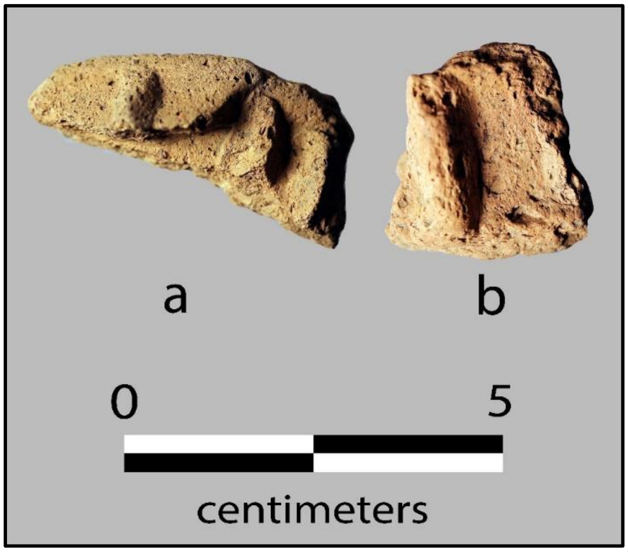

Figure C.1. Alabama River Applique jar collars from multiple contexts, Mound P.

Alabama River Appliqué is defined on the presence of a mode of decoration and the distinct lack of tooled decoration (cf. Steponaitis 1983a:71), being somewhat of an anomaly in the local typology (Cottier 1970; Jenkins 1981; Knight 2010; Sheldon 1974). This pottery type is characterized by modeled plain or notched appliqué strips of clay that are added or modeled onto the shoulders of Standard Mississippian Jars (Figure C.1), often having been placed parallel to the lip, but sometimes being placed as single or crossing oblique strips (Cottier 1970:23-24; Jenkins 1981:60-61; Knight 2010:19-20; Sheldon 1974:205-206). The temper, vessel production, surface finish, hardness, and color are the same as Mississippi Plain (ibid), so the presence of the appliqué strips on the collar of a jar is necessary to identifying and classifying this type. It is probable that the production of appliqué strips around the collars of burial urns (i.e., jars) in the Alabama, Black Warrior, and Tombigbee river valleys was related to some degree of influence from people making the stylistically similar ceramic type Campbell Appliqué, found in Nodena Phase contexts in the Central Mississippi Valley as burial urns (Chapman and Anderson 1955;

Jenkins 1981:61-62; Morse and Morse 1998:290; Phillips 1970:61-62; Sheldon 1974). During the late Mississippian, jar handles started to decrease in size while simultaneously increasing in the number placed around the collar of a jar, losing their functionality in the process (Knight 2010:20; Steponaitis 1983a:118). However, it was this stylistic shift to smaller, more frequent diminutive handles that was the likely antecedent to appliqué strips that lost their functionality as handles completely, becoming a solely decorative imitation of a previously functional element (e.g., Blitz 2015).

Alabama River Appliqué is a relatively late pottery type that is diagnostic of the Moundville IV phase, which dates from A. D. 1520-1650 (Knight 2010:17) or extending a little bit later than that from A. D. 1520-1690 (Steponaitis and Scarry 2016:9-13). Regardless of the timing of the end of the Moundville IV phase in the Black Warrior Valley, the beginning has stayed constant, beginning within the last two decades of the Mississippi Period, 19 years prior to the start of the protohistoric in central and west-central Alabama. The timing of this phase is important to clarify since the modes of decoration that characterize the pottery type Alabama River Appliqué have been recovered in archaeological contexts that also include late Mississippian diagnostics (Knight 2009:27; Regnier 2014:60-62; Solis and Walling 1982:65), indicating that while the height of the decoration's popularity materialized as burial urns (e.g., Sheldon 1974) after European incursions into the Southeast, the production of modeled appliqué strips did begin in the Tombigbee, Alabama, and Black Warrior river valleys prior to European interactions (Jenkins 1981:60-61; Sheldon 1974:205-206). On a broader scale, this is important because it means that when de Soto marched through a portion of the Black Warrior, he was encountering Moundville IV phase villages, not Moundville III phase single mound sites and their attendant farmsteads (Knight et al. 1999:7). If this end date for the Moundville III-

Moundville IV boundary holds up, it has important implications for the timing and causes of the social changes terminal Mississippian societies were experiencing throughout the fifteenth and sixteenth centuries.

Bell Plain is defined as shell-tempered pottery that has a burnished surface without engraved or incised tooled decoration (Knight 2010; Steponaitis 1983a). The key diagnostic attribute for Bell Plain is the presence of burnished surfaces, which are often (but not always) dark gray to black. The temper size can be slightly variable and is typically fine shell, but larger shell tempering and some small grog particles are also present in this type. Further, all painted or slipped pottery was classified as Bell Plain (Knight 2010:22). Sherds from bowls and plates, as well as some jars, are classified as Bell Plain. Here, as with the other plain super type Mississippi Plain (below), local varieties were not used since both of these types are ubiquitous across the Southeast and distinguishing local from non-local Bell Plain or Mississippi Plain cannot be accomplished (e.g., Knight 2010:22, 26-27). Bell Plain dates from the Moundville I through the Moundville IV phases.

Carthage Incised is the local type name used for trailed-incised tooled decoration on sherds with a burnished surface finish (Knight 2010; Steponaitis 1983a). This type, like Bell Plain, is often dark gray to black in color but can be slipped red and white as well as a mode of decoration. The incisions on Carthage Incised bowls differ from those on Moundville Incised jars in their careful execution on leather-hard clay with a rounded, blunt tool, typically on the shoulders of hemispherical bowls or interior rim of flared-rim bowls (see Chapter 5). There are multiple varieties of Carthage Incised, spanning the late Moundville I through Moundville IV phases, although most varieties are diagnostic to the Moundville III phase (Figure C.2). These varieties consist of: parallel lines and festoons (Carthage Incised, *variety Akron*); interlocking

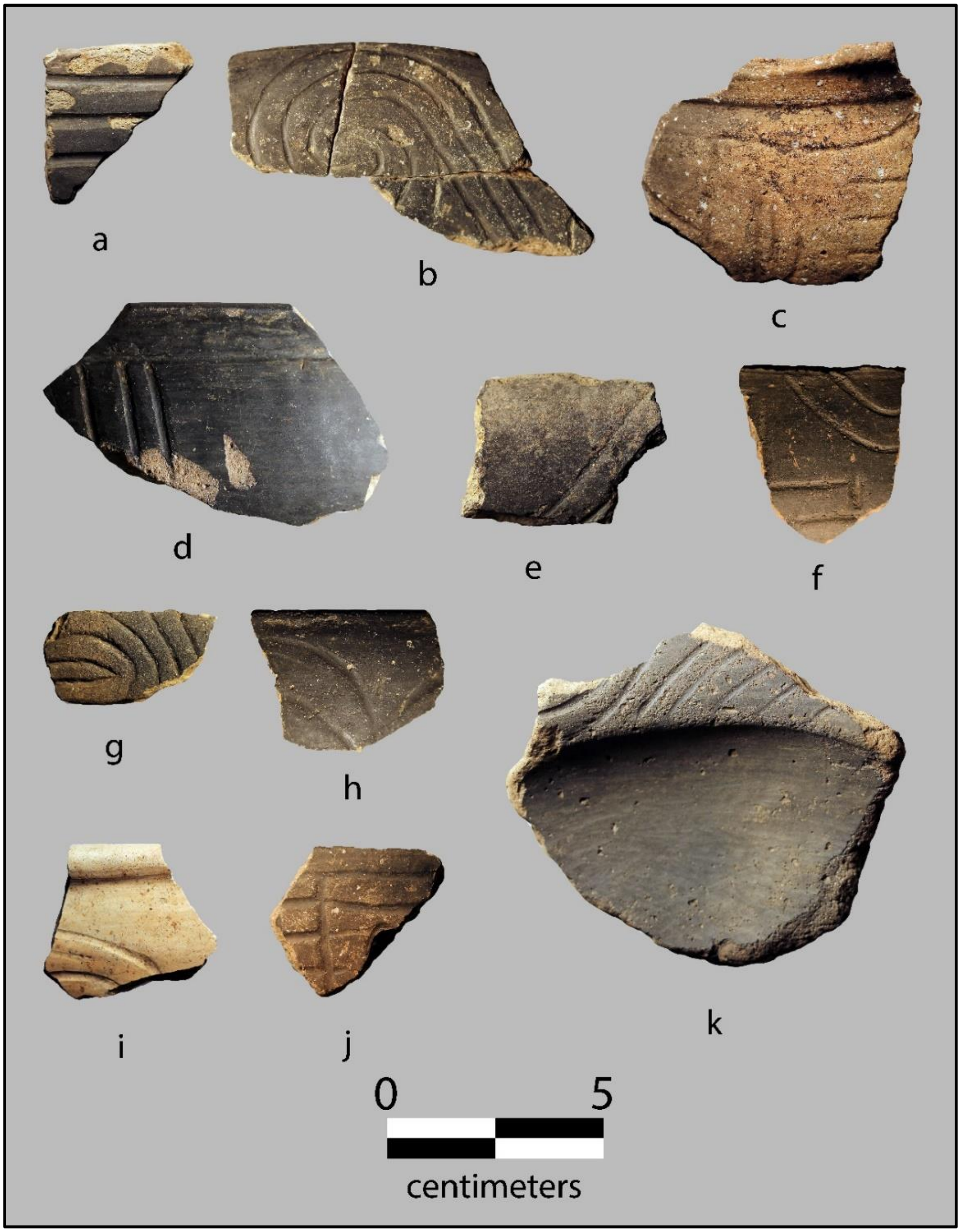

Figure C.2. Carthage Incised varieties from multiple contexts, Mound P: a) Carthage Incised, *variety Akron*, cup-shaped bowl rim; b) Carthage Incised, *variety Carthage*, flared-rim bowl rim; c) Carthage Incised, *variety Fosters*, short-necked bowl rim; d) Carthage Incised, *variety Lupton*, short-necked bowl rim; e) Carthage Incised, *variety Moon Lake*, flared-rim bowl rim; f) Carthage Incised, *variety Poole*; g) Carthage Incised, *variety Thomas*; h) Carthage Incised, *variety unspecified*, other bowl rim; i) Carthage Incised, *variety unspecified*, other bowl rim; j) Carthage Incised, *variety unspecified*; k) Carthage Incised, *variety unspecified*, flared-rim bowl rim.

scrolls (Carthage Incised, *variety Carthage*); human body parts (Carthage Incised, *variety Fosters*); chevrons (varieties *Lupton* and *Moon Lake*); terraces (Carthage Incised, *variety Poole*); and arches (Carthage Incised, *variety Summerville*). Sherds with trailed-incised tooled decoration on a burnished surface that could be classified as Carthage Incised, but where the sherd was too small, the field of design too fragmented, or carried a previously unnamed design variety were given the name Carthage Incised, *variety unspecified*.

A design that has been present in other mound contexts but classified as Carthage Incised, *variety unspecified* (Knight 2010:Fig. 4.40h) needs to be added to the roster. Carthage Incised, *variety Thomas* is a new variety and is characterized by concentric, oval-shaped or flattened loops executed on the shoulders of short-necked bowls (Figure C.2g). In the Mound P assemblage, this design is sometimes associated with painted surfaces. As a rule, the naming of new varieties should be a limited enterprise and should be restricted to previously unnamed designs that are becoming more frequent with new excavations or are thought to be temporally sensitive or spatially important (Ford 1938:263-264) based on the current research question. In the case of *variety Thomas*, both of these exceptions hold true. In keeping with my penchant for naming new varieties after important figures in the history of the archaeology of Moundville (e.g., Porth 2011a:61-62) especially after local geographical names have been exhausted, this variety is named after the efforts of Cyrus Thomas to explore the earthworks of the Eastern United States and send James D. Middleton as an agent of the Bureau of American Ethnology to the site for observations (Steponaitis 1983b). Further, it would have been just as easy to name it *variety Cyrus*, but I wanted to avoid confusion with Moundville Engraved, *variety Cypress*. Other important figures, including Nathaniel T. Lupton and Middleton, in the site's history have been the unceremonious beneficiaries of variety names, a practice that is not novel. The presence of the flattened-loops design on short-necked bowls seems to indicate that it is diagnostic of the Moundville III phase, but given the *Poole*-like rarity of the design, whether or not *Thomas* is diagnostic to the entirety of Moundville III, the early or late portions of the phase, or continues into Moundville IV are unknown.

Mississippi Plain is a spatially and temporally ubiquitous ceramic type characterized by a paste that is predominantly or entirely shell-tempered, does not have painted or tooled decoration, and sometimes exhibits a smoothed surface that can be mistaken for burnishing (Steponaitis 1983a:54). Mississippi Plain constitutes the cooking or utility pottery in many Mississippian and all Moundville archaeological contexts and thus the sherds often show signs of mechanical stress accumulated during the vessel's use-life such as abrasion marks, sooting, and fire-clouding. The key for sorting sherds of this type is the absence of burnished surfaces on shell-tempered ware. The most common vessel shape is the Standard Mississippian jar, although oversized jars and some bowls were made using shell-tempered paste without decoration or burnishing. Steponaitis (ibid) distinguished between sherds and vessels that were predominantly shell-tempered with some grog particles mixed into the paste (Mississippi Plain, *variety Hull Lake*) and paste that only included shell temper (Mississippi Plain, *variety Warrior*), the former variety being a minority in instances where it has been quantified (Steponaitis 1983a:54, 313). During the analysis of the Mound P ceramic assemblage, I followed Knight's (2010:26) lead in declining to use these local varieties since unburnished, undecorated, shell-tempered sherds are classified as "Mississippi Plain" on the regional scale, thus potentially leading to a misidentification of non-local sherds as local and vice versa.

Moundville Engraved is the local type name used for engraved tooled decoration on sherds with a burnished surface finish (Knight 2010; Steponaitis 1983a). This type, like Bell

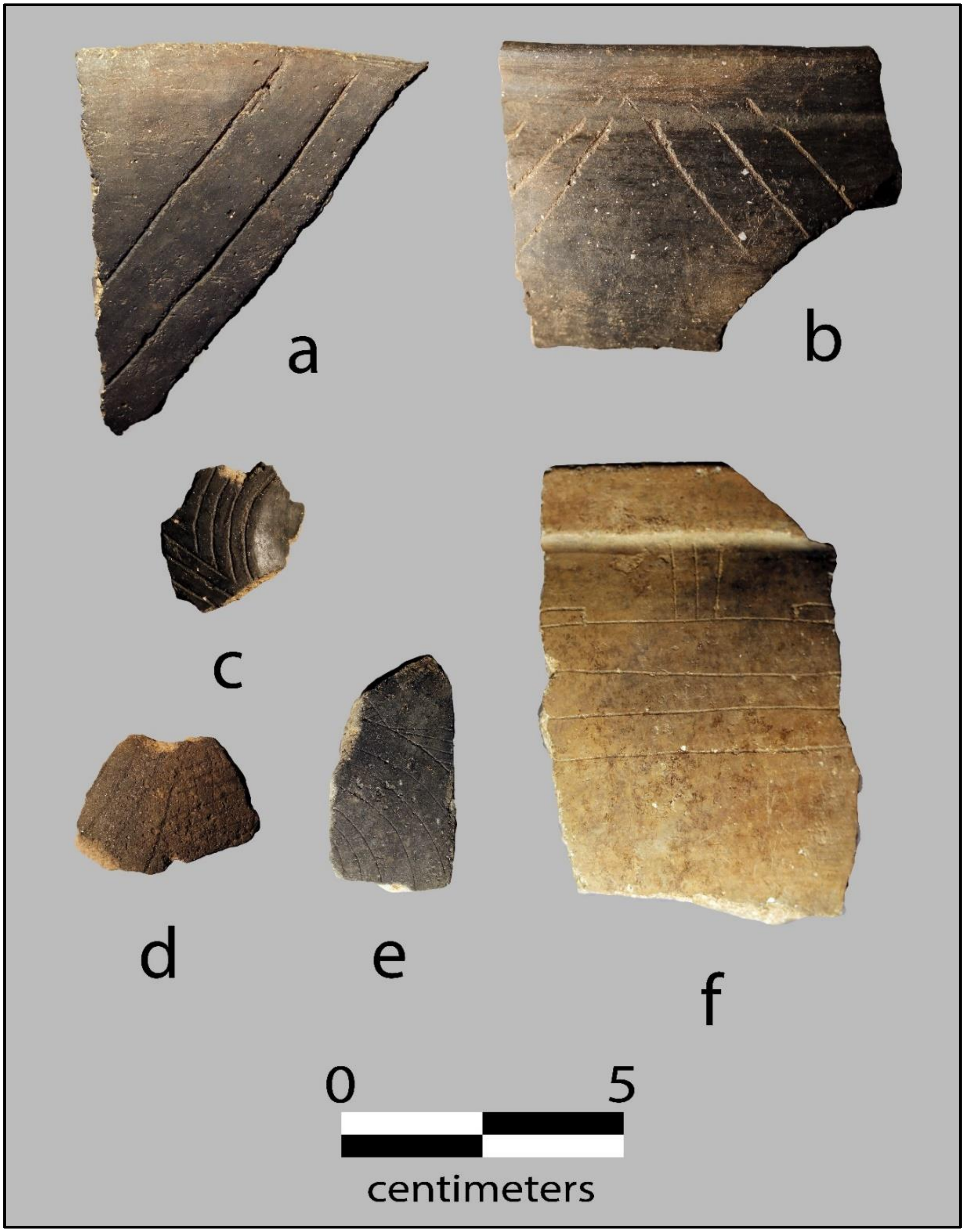

Figure C.3. Moundville Engraved varieties from multiple contexts, Mound P: a) Moundville Engraved, *variety Moon Lake*, flared-rim bowl rim; b) Moundville Engraved, *variety Moore*, short-necked bowl rim; c) Moundville Engraved, *variety Tuscaloosa*, bottle body with indentation; d) Moundville Engraved, *variety Taylorville*; e) Moundville Engraved, *variety Wiggins*; e) Moundville Engraved, *variety Jones*, white filmed short-necked bowl rim.

Plain and Carthage Incised, is often dark gray to black in color but can also be slipped red or white. Further, some Moundville Engraved varieties are combined with indented, excised, and hemagraved modes of decoration. Unlike other the burnished types, the paste on Moundville Engraved vessels is almost always fine shell- to very fine shell-tempered. The engravings on Moundville Engraved bottles, bowls, and plates was executed when the clay was dry along the body and neck of bottles, exterior and interior body of bowls, and interior body of plates (see Chapter 5), a decorative technique that sometimes resulted in line-edge chip marks or over-shoot lines. There are multiple varieties of Moundville Engraved, dating from the late Moundville I phase through the early Moundville III phase, with the potential for certain decorative motifs to persist into the late Moundville III phase (Figure C.3). These varieties consist of: center symbols and striped poles (Moundville Engraved, *variety Cypress*); rectilinear and curvilinear designs with excised areas (Moundville Engraved, *variety Elliots Creek*); parallel lines and festoons (Moundville Engraved, *variety Havana*); cross-hatched zones (Moundville Engraved, variety *Maxwells Crossing*); semicircular scallops filled with parallel lines (Moundville Engraved, *variety Middleton*); bands of horizontal and oblique lines (Moundville Engraved, variety *Prince Plantation*); chevrons (Moundville Engraved, *variety Stewart*); meandering scrolls contrasted with cross-hatched zones (Moundville Engraved, *variety Taylorville*); curvilinear scrolls (Moundville Engraved, *variety Tuscaloosa*); and interlocking scrolls sometimes accompanied by hatched or cross-hatched rays (Moundville Engraved, *variety Wiggins*). Sherds with engraved tooled decoration on a burnished surface that could be classified as Moundville Engraved, but where the sherd was too small, the field of design was too fragmented, or carried a previously unnamed design variety were classified Moundville Engraved, *variety unspecified*.

Like the addition of a new variety with Carthage Incised, new excavations and recovery of such a large sherd sample necessitate the recognition of increasingly frequent designs that may be temporally sensitive. One of these roster additions is not entirely new, but is not part of the published canon, whereas the second addition is in fact new (Figure C.3b, f). First, Moundville Engraved, *variety Jones* was recognized and named after the 2009 excavations related to the Walter B. Jones museum expansion and renovation (Porth 2011:61-62). This design is a stepped terrace common on the shoulder or upper body of short-necked bowls and sometimes associated with an overall white slip. It is the engraved counterpart to Carthage Incised, *variety Poole*, although *variety Jones* has not yet been recognized as having the alternating curvilinear festoons of the former. Further, like its incised counterpart, *variety Jones* appears to be a relatively rare design, albeit one with possibly important non-local stylistic ties (e.g., Lankford 2006), but unlike *variety Poole*, it appears in small numbers in early Moundville III contexts. The new variety is the engraved counterpart to Carthage Incised, *variety Lupton* and is hereby classified as Moundville Engraved, *variety Moore*, after Clarence B. Moore's extensive early scholarship on the site. This design consists of oblique parallel lines or chevrons on the shoulder or upper body of short-necked bowls, usually two to three in number. The presence of the engraved chevron or oblique parallel line design on short-necked bowls seems to indicate that it is diagnostic of the Moundville III phase, but whether or not *Moore* is diagnostic to the entirety of Moundville III, the early or late portions of the phase, or continues into Moundville IV are unknown.

There is one variety that is conspicuously absent from this roster because it is deserving of a more in depth discussion: Moundville Engraved, *variety Hemphill* (Figure C.4). There is sometimes confusion in the definition, classification, and identification of *Hemphill*, which often gets conflated with the Hemphill artistic style, or vice versa. Moundville Engraved, *variety*

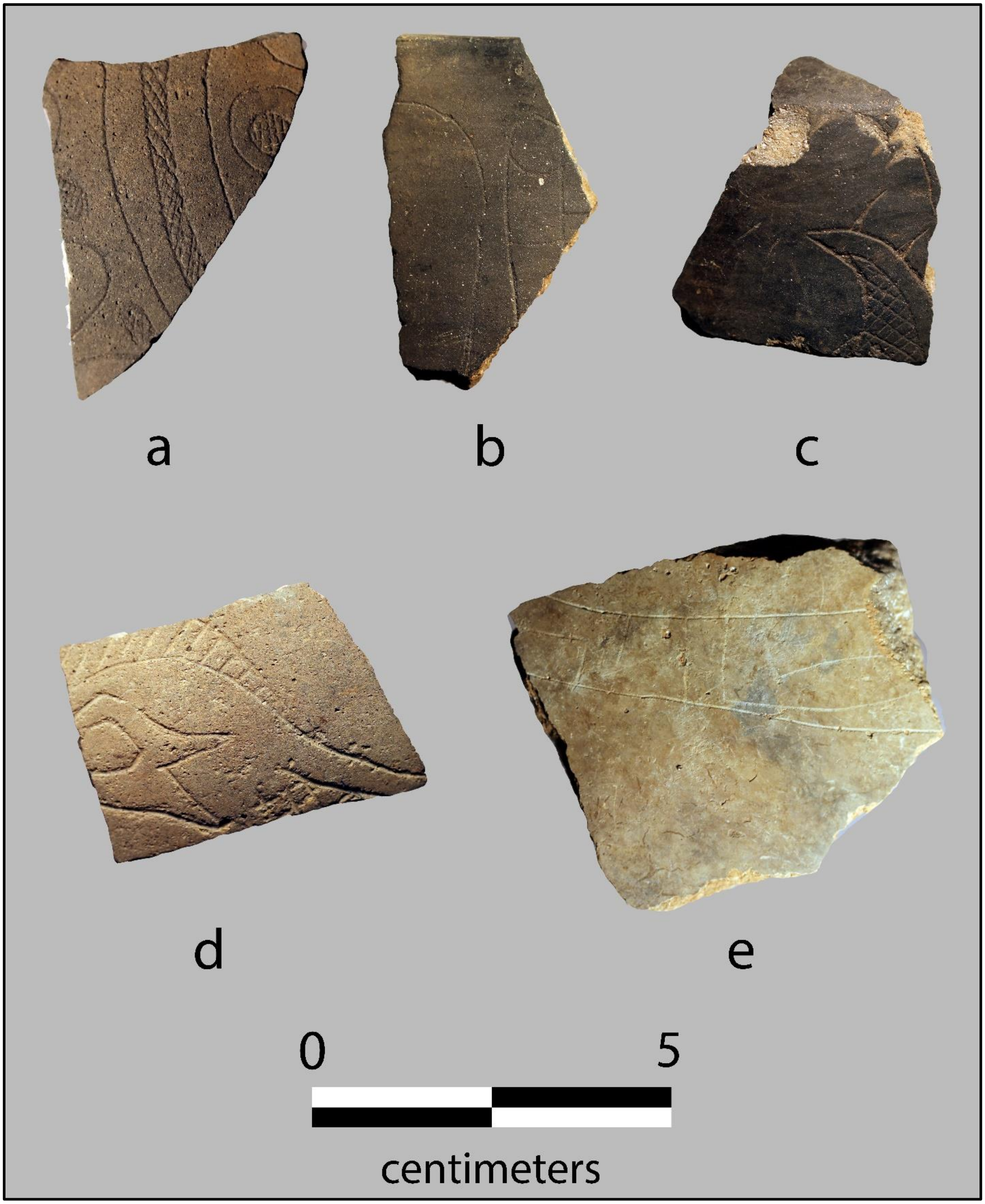

Figure C.4. Moundville Engraved, *variety Hemphill* from multiple contexts, Mound P: a) paired (turkey) tails; b) alternating hands, bottle neck; c) bird mouth with teeth, bottle shoulder; d) crested bird with forked-eye surround; e) flying serpent body, overall white slip.

Hemphill is a variety of pottery locally named after the Hemphill bend of the Black Warrior River and is characterized by engraved “free-standing or representational motifs” that are commonly found on sherds from various forms of bottles and cup-shaped bowls (Steponaitis 1983a:56). The burnished surface is almost always burnished black, but some white-slipped examples exist. The free-standing motifs that characterize the type include: birds with a serpent’s head; raptors; insects; ogees; crested birds; feathers; arrows; hand and eye; forearm bones; scalps; heads; forked eye surrounds; Greek crosses; paired tails; paired wings; radial fingers; rayed circles; turtles; windmills; and winged serpents (see Steponaitis 1983a:58-63). The sorting of *Hemphill* is not very straight forward however. Sherds that cannot be identified to another variety of Moundville Engraved (including *unspecified*) but still contain a relatively busy or complicated design are classified as *variety Hemphill*, the sole departure from what is otherwise a practice in conservative identification (Knight 2010:28-29). It is noteworthy, especially for an examination of the later phase execution of designs and motifs, that more elaborate motifs fall earlier in the sequence and more derivative or stylized forms are later (Lacefield 1995:81; Schatte 1997:100-110) potential signaling the “communalization” of symbolic imagery and meaning (Knight 1997:243). Moundville Engraved, *variety Hemphill* is also important because it is temporally sensitive, being placed in the local typology starting in the early Moundville II phase and continuing through the early Moundville III phase. In fact, it is the absence of *Hemphill* that Knight suggests is a diagnostic feature of late Moundville III contexts.

The definition of the Hemphill-style, as an art form, at Moundville has been the subject of considerable research (Brown 2004:120-121; Gillies 1998; Knight 2007; Knight and Steponaitis 2011; Lacefield 1995; Phillips 2006, 2012; Schatte 1997; Steponaitis and Knight 2004). Style can be understood as mutually exclusive artistic canons practiced among a community of artists in a geographically limited area that does not include meaning (Knight and Steponaitis 2011:201-202). Many of the motifs and themes that are represented in *Hemphill* are part of a larger, Middle Mississippian artistic tradition, often recognized as the aerially broad Southeastern Ceremonial Complex (King 2007; Knight 2006; Lankford et al. 2011; Reilly and Garber 2007; Waring and Holder 1945), that appear on objects from all media, including wood, copper, shell, and stone artifacts (Knight and Steponaitis 2011). In particular, the Hemphill-style is formally defined as being a local art style derived from the Late Braden-style (e.g., Brown 2007) that is limited to five representative themes (Winged Serpent, Crested Bird, Raptor, Trophy, Center Symbols and Bands, Bi-Lobed Arrow) and executed without overlap or interacting between elements or static figures on (primarily the body of) bowls and bottles, the conservative application of cross-hatching, and the depiction of heads in profile (Gillies 1998:93-94; Knight and Steponaitis 2011:204-205, 236-237). This definition makes up a definable local style that is distinct from engraved art found in other regions or sites connected to Moundville, such as Kogers Island, Walls and Nodena phase areas in the Central Mississippi Valley, and Pensacola culture sites along the Gulf Coast. While the use of style and stylistic analysis is more appropriate elsewhere, this discussion of *variety Hemphill* versus Hemphill-style is important because it firmly delimits the identification of the former on pottery vessels and sherds from the artistic style of the latter on various media

Moundville Incised consists of a series of varieties that are executed in a wet to damp paste on the shoulders of cooking or storage jars, the same paste and surface finish that defines Mississippi Plain. Thus, unlike the smooth and crisp edges of the lines of Carthage Incised, the lines of this type often exhibit burrs of clay. Further, rectilinear incisions are almost always V-shaped, whereas the lowest of the curvilinear incised arches were produced to be beveled

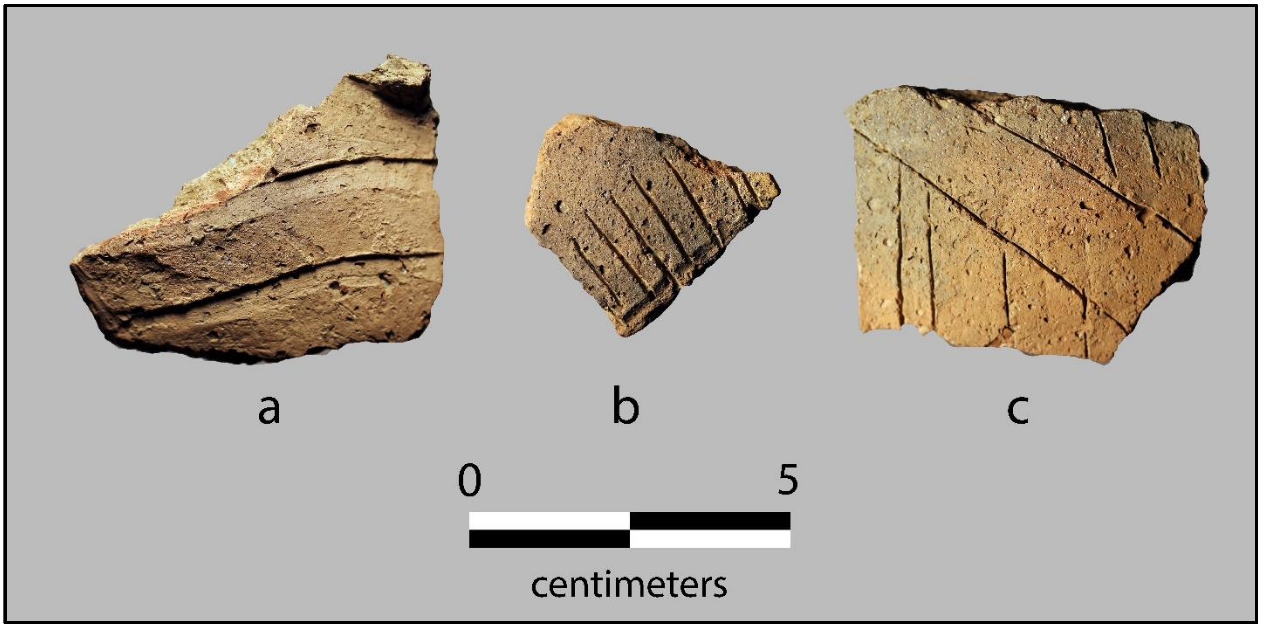

Figure C.5. Moundville Incised varieties from multiple contexts, Mound P: a) Moundville Incised, *variety Carrolton*; b) Moundville Incised, *variety Moundville*; c) Moundville Incised, *variety Oliver*.

(Knight 2010:34). The varieties of Moundville Incised date from the early Moundville I phase through the late Moundville II phase, although the type certainly continues in minimal quantities throughout the Moundville III phase (Figure C.5). These varieties consist of: arches (Moundville Incised, *variety Carrollton*); arches under parallel oblique lines (Moundville Incised, *variety Moundville*); rectilinear oblique lines (Moundville Incised, *variety Oliver*); and (rarely) arches under rows of punctations (Moundville Incised, *variety Snows Bend*). Sherds with incised tooled decoration on an unburnished surface that could be classified as Moundville Incised, but where the sherd was too small, the field of design was too fragmented, or it carried a previously unnamed design variety were classified Moundville Incised, *variety unspecified*.

The distributions of pottery types by excavation unit per level from the 2012 Mound P excavations in the following tables. Note that the quantities for units 1, 3, 4, 6, and 7 are presented in this research for the first time.

Table C.1. Pottery types per level, Unit 1, Mound P.

Type, *variety*	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 6**	**Level 8**	**Level 9**	**Level 10**	**Level 11**	**Level 12**	**Level 13**	**Level 14**	**Level 15**	**Level 16**	**Level 5**	**Level 5B**	**Level 7**	**Level 7B**	**Level 7D**	**Profile Clean-up**	**Total**
Barton Incised, *variety unspecified*								1													1
Bell Plain	3	38	25	10	33	39	58	84	107	154	57	31	67	5	1		1	30	18	3	764
Carthage Incised, *variety Akron*																			1		1
Carthage Incised, *variety Carthage*						1															1
Carthage Incised, *variety Lupton*		1							1												2
Carthage Incised, *variety Moon Lake*									1												1
Carthage Incised, *variety Poole*											1							1			2
Carthage Incised, *variety Thomas*																		1			1
Carthage Incised, *variety unspecified*		4	1	1	2			5	9	15	1	2	3					2		1	46
Mississippi Plain	20	239	106	49	179	254	201	333	458	629	251	89	249	7	7	2		155	51	17	3296
Moundville Engraved, *variety Havana*					1																1
Moundville Engraved, *variety Hemphill*		3				1	3			7	1		2				1				18
Moundville Engraved, variety Stewart										1											1
Moundville Engraved, *variety Taylorville*												1									1
Moundville Engraved, *variety Tuscaloosa*										3											3
Moundville Engraved, *variety unspecified*		6	1	1	3	3	3	4	11	6	5	3	10								56
Moundville Incised, *variety Moundville*		2	1			1			1												5
Moundville Incised, *variety unspecified*		1	2			3	3	1		5											15
Pouncey Pinched, *variety unspecified*		1						1													2
Residual types	2	7	10	2	5	18	5	14	14	6	3	4	7	1	3			10	6	1	118
Totals	25	302	146	63	223	320	273	443	602	826	319	130	338	13	11	2	2	199	76	22	4335

Table C.2. Pottery types per level, Unit 2, Mound P.

Type, *variety*	**Unit 2, Level 1**	**Unit 2, Level 2**	**Unit 2, Level 3**	**Unit 2, Level 4**	**Unit 2, Level 5**	**Unit 2, Level 6**	**Unit 2, Level 7**	**Unit 2, Level 8**	**Unit 2, Level 9**	**Unit 2, Level 10**	**Unit 2, Level 11**	**Unit 2, Level 12**	**Unit 2, Level 13**	**Unit 2, Level 14**	**Unit 2, Level 15**	**Unit 2, Level 16**	**Unit 2, Level 17**	**Unit 2, Level 18**	**Unit 2, Level 19**	**Unit 2, Level 20**	**Unit 2, Level 21**	**Unit 2, Level 22**	**Unit 2, Level 23**	**Unit 2, Level 24**	**Total**
Anna Incised, *variety Anna*														1											1
Barton Incised, *variety unspecified*		1			3			1	1																6
Bell Plain	103	83	63	131	24	176	67	121	77	113	81	59	34	86	117	199	261	114	140	152	90	36	99	91	2517
Carthage Incised, *variety Akron*						1		1									2								4
Carthage Incised, *variety Carthage*				1			1	2		1							1	1	1						8
Carthage Incised, *variety Fosters*							1						1	1			1	1							5
Carthage Incised, *variety Lupton*		1							1							2	1	1		1					7
Carthage Incised, *variety Moon Lake*				1							1										1				3
Carthage Incised, *variety Poole*											1														1
Carthage Incised, *variety unspecified*	8	6		6		13	5	13	6	8	1		1	3	8	5	15	2	4	7	4	2	4	5	126
Leland Incised, *variety Foster*															1	1									2
Leland Incised, *variety unspecified*																	1								1
Mississippi Plain	392	377	280	510	116	831	462	1312	383	387	245	134	123	271	347	447	898	315	359	375	349	110	353	232	9608
Moundville Engraved, *variety Havana*											1					1	1	1	1						5
Moundville Engraved, *variety Hemphill*	3	2	1	1		1		6	2	2	1				2	2	6	1			3		7	1	41
Moundville Engraved, *variety Jones*																1									1
Moundville Engraved, *variety Middleton*	1							2																	3
Moundville Engraved, *variety Moore*																			1						1
Moundville Engraved, *variety Stewart*								2		1	1				1		1	1							7
Moundville Engraved, *variety Taylorville*			1					1																	2
Moundville Engraved, *variety Tuscaloosa*							1			1	2								1						5
Moundville Engraved, *variety Wiggins*						1				1															2
Moundville Engraved, *variety unspecified*	3	9	9	8	4	5	1	16	9	5	2	2	3	1	6	4	15	3	7	12	8	2	4	4	142
Moundville Incised, variety *Carrolton*								1																	1
Moundville Incised, *variety Moundville*						1		1						1	1		1	1			1			1	8
Moundville Incised, *variety Oliver*	1									1							1			1					4
Moundville Incised, *variety unspecified*	3	4	2		2	4	1	5	4	2	4	1	2	2	1		6	3	5	5	4	2	1	2	65
Parkin Punctated, *variety Harris*																			1						1
Parkin Punctated, *variety unspecified*																1									1
Pouncey Pinched, *variety unspecified*							1			1							1		1						4
Salt Creek Cane Impressed, *variety unspecified*																		1							1
Residual types	4	4	2	1	1	3	5	28	4	4	1	2	1	7	7	4	2	4	3	8	3		1		99
Totals	518	487	358	659	150	1036	545	1512	487	527	341	198	165	373	491	667	1214	449	524	561	463	152	469	336	12682

Table C.3. Pottery types per level, Unit 3, Mound P.

Type, *variety*	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**	**Level 7**	**Level 8**	**Level 9**	**Level 10**	**Level 11**	**Level 12**	**Level 13**	**Level 14**	**Level 15**	**Total**
Alabama River Applique	1															1
Barton Incised, *variety Barton*	1	1														2
Baytown Plain, *variety Addis*		1														1
Bell Plain	64	114	150	78	121	60	62	56	55	61	49	24	8	17	5	924
Carthage Incised, *variety Akron*		1														1
Carthage Incised, *variety Carthage*	1	1	2													4
Carthage Incised, *variety Fosters*								1								1
Carthage Incised, *variety Lupton*	1						1							1		3
Carthage Incised, *variety Moon Lake*										2						2
Carthage Incised, *variety Thomas*			1													1
Carthage Incised, *variety unspecified*	11	11	5	2	6	4	5	1	2	3	3			1		54
Leland Incised, *variety unspecified*			2													2
Mississippi Plain	310	440	491	255	371	164	247	216	205	169	168	76	23	65	18	3218
Moundville Engraved, *variety Havana*						1										1
Moundville Engraved, *variety Hemphill*		2	2				3	2		1				1		11
Moundville Engraved, *variety Maxwells Crossing*				1												1
Moundville Engraved, *variety Middleton*			2													2
Moundville Engraved, *variety Tuscaloosa*						1										1
Moundville Engraved, *variety unspecified*	6	8	11	5	12	1	3	6	3	4	2					61
Moundville Engraved, *variety Wiggins*				1												1
Moundville Incised, *variety Carrollton*						1										1
Moundville Incised, *variety Oliver*						1					1					2
Moundville Incised, *variety Moundville*			2				1					2				5
Moundville Incised, *variety unspecified*		3	2		5	2	1	2	2	3	6		1			27
Pouncey Pinched, *variety Pouncey*							1									1
Pouncey Pinched, *variety unspecified*									1							1
Residual types	9	6	14	2	3	3	4	9	1	12	3	3	1		1	71
Totals	404	588	684	344	518	238	328	293	269	255	232	105	33	85	24	4400

Table C.4. Pottery types by level, Unit 4, Mound P.

	Root mat	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile clean-up	Total
Alabama River Appliqué					1							1
Barton Incised, *variety unspecified*					1		1			1		3
Bell Plain	8	6	66	131	382	451	410	514	477	429	370	3244
Carthage Incised, *variety Akron*						1						1
Carthage Incised, *variety Carthage*				1	1		1				2	5
Carthage Incised, *variety Fosters*				3	4	8	1	3	7	5	1	32
Carthage Incised, *variety Lupton*	1		1		3	3	1					9
Carthage Incised, *variety Moon Lake*				1		1	1					3
Carthage Incised, *variety Poole*								2	1			3
Carthage Incised, *variety Thomas*				1				3		1		5
Carthage Incised, *variety unspecified*			8	8	35	36	31	60	35	40	30	283
Leland Incised, *variety unspecified*								1				1
Mississippi Plain	17	21	149	370	769	1047	963	1605	1384	1264	1142	8731
Moundville Engraved, *variety Havana*							1		2	1		4
Moundville Engraved, *variety Hemphill*						2	1		4	7	4	18
Moundville Engraved, *variety Jones*						1	1			1		3
Moundville Engraved, *variety Moore*				1			1					2
Moundville Engraved, *variety Tuscaloosa*									1		1	2
Moundville Engraved, *variety unspecified*				2	5	6	12	17	13	16	11	82
Moundville Engraved, *variety Wiggins*					2	2	2		1	2	2	11
Moundville Incised, *variety unspecified*						1		2	4	2	1	10
Parkin Punctated, *variety unspecified*					4			1			1	6
Walls Engraved, *variety Walls*										1		1
Residual types				11	3	6	15	22	8	18	14	97
Totals	26	27	224	529	1210	1565	1442	2230	1937	1788	1579	12557

Table C.5. Pottery types by level, Unit 5, Mound P.

Type, *variety*	**Zone 1, Level 1**	**Zone 2, Level 1**	**Zone 2, Level 2**	**Zone 3, Level 1**	**Zone 4, Level 1**	**Zone 5, Level 1**	**Zone 6, Level 1**	**Total**
Alabama River Appliqué	2							2
Barton Incised, *variety Barton*				1				1
Barton Incised, *variety unspecified*						1		1
Bell Plain	181	352	528	865	575	172	89	2762
Carthage Incised, *variety Akron*				1				1
Carthage Incised, *variety Carthage*	1	2	8	7		5	3	26
Carthage Incised, *variety Fosters*		2	9	13	8	1		33
Carthage Incised, *variety Lupton*	1	1	5	2				9
Carthage Incised, *variety Moon Lake*		1					1	2
Carthage Incised, *variety Poole*		1		2				3
Carthage Incised, *variety Thomas*			1	1				2
Carthage Incised, *variety unspecified*	16	17	23	70	52	15	3	196
Leland Incised, *variety unspecified*		1						1
Mississippi Plain	578	975	1061	2893	1858	350	212	7927
Moundville Engraved, *variety Havana*	1							1
Moundville Engraved, *variety Hemphill*	2			1	3			6
Moundville Engraved, *variety Jones*			1				1	2
Moundville Engraved, *variety Moore*		1						1
Moundville Engraved, *variety Wiggins*	1	1	1		6	1		10
Moundville Engraved, *variety unspecified*	8	8	10	31	19	6	8	90
Moundville Incised, *variety Moundville*					1			1
Moundville Incised, *variety unspecified*	1		2	3	6	1	8	21
Nodena Red and White, *variety Nodena*							1	1
Pensacola Incised, *variety unspecified*	1							1
Residual types	2	4	11	28	29	3	1	78
Totals	795	1366	1660	3918	2557	555	327	11178

Table C.6. Pottery types per level, units 6 and 7, Mound P.

Type, *variety*	**Unit 6**				**Unit 7**	**Total**
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Alabama River Appliqué					2	2
Bell Plain	9	80	22	17	27	155
Carthage Incised, *variety Fosters*		1		1		2
Carthage Incised, *variety unspecified*	1	7	3		1	12
Mississippi Plain	47	242	65	51	119	524
Moundville Engraved, *variety Havana*		1				1
Moundville Engraved, *variety Hemphill*		1		1	1	3
Moundville Engraved, *variety Middleton*			1			1
Moundville Engraved, *variety unspecified*	5	4			1	10
Moundville Incised, *variety unspecified*		1			2	3
Residual types	1			1	5	7
Totals	63	337	91	71	158	720

Modes of Decoration

Painted decoration is defined as any intentional manipulation of surface color through a variety of techniques that are not included in the local typology (Steponaitis 1983a:63). At Moundville, the deliberate alteration of interior and exterior surface colors on bowls, jars, bottles, and plates is achieved by: firing the vessel in a reduced-oxygen atmosphere to produce an overall or zones of black coloration; applying an overall clay slip to achieve red or white; using red pigment to fill in engraved lines (hemagraving); or by free-painting red or white designs over an overall black, red, or white background (Knight 2010:43-46; Steponaitis 1983a:63-64, 129). The dendrogram in Figure C.6 illustrates the sorting process for sherds with painted decoration, with the understanding on the part of the reader that this should be amended and expanded with new collections. The variety of painted decoration has continually expanded for the last few decade (e.g., Knight 2010:43), so an explanation of how this is applied to the Mound P assemblage is necessary. If a sherd is observed as having red and white painted decoration, but there is no indication that one color was placed over the other, then that mode of decoration is recorded

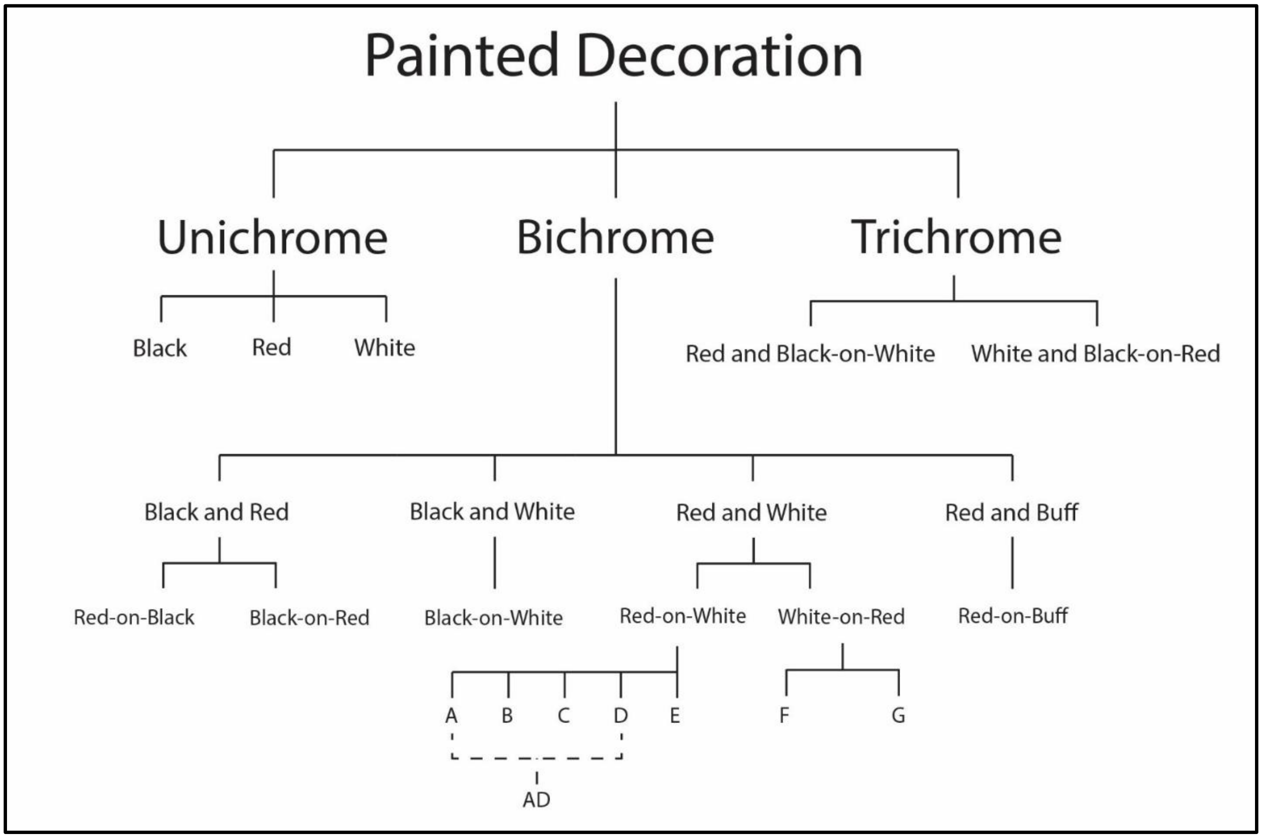

Figure C.6. Dendrogram for modes of painted decoration, Moundville.

as "red and white." Sherds classified as such often had one surface slipped white and the opposite surface slipped red or less frequently, had contrasting panels of red and white color that were painted directly on the body of the sherd. Painted decoration that could be determined as having an overlapping relationship, but the design or placement of the paint could not be determined due to an abraded surface or the diminutive size of the sherd, they are simply categorized as "black-on-white," "white-on-red," or the appropriate color combination without a further classifier. This example provides a basis to move forward with a more detailed description of unichrome, bichrome, and trichrome painted decoration at Moundville as observed from the mound flank middens of Mound P.

Unichrome painted decoration is present in ceramic assemblages as an overall red or white slip, but more frequently as overall black coloration, a technical process of oxygen reduction that is discussed in detail by Steponaitis elsewhere (1983a:25-27). Within the Moundville classification system, pottery that has an overall red or white surface treatment is identified as "filmed," a misnomer that warrants a little clarification since the appropriate technical terminology for this surface finish is "slipped" (Steponaitis 1983a:24). Slip consists of a liquid clay suspended in water that has particular mineralogical qualities that turn desired colors (i.e., white or red) when oxidized in a fire with the appropriate levels of heat and oxygen (Rice 1987:149-150). Slipping is the process of submersing the vessel, pouring slip over the vessel, or wiping the surface of the vessel with slip to achieve this vibrant effect (ibid). These methods can result in uneven coating or filled pores in the vessel body and effect the mechanical characteristics and overall decorative effect of the slip. Slips of overall red and white are also used as a background color for bichrome and trichrome painted decoration.

Bichrome painted decoration combines two of the colors commonly found in Moundville ceramic assemblages (i.e., black, buff, red, or white). In these assemblages, black and white, black and red, as well as red and buff bichrome painted decoration are present with relatively limited variation, whereas red and white bichrome pottery is quite variable. It is likely that the red-on-buff painted pottery found within Moundville ceramic assemblages is related to the St. Francis Basin in the CMV (Knight 2010:45) and the type Carson Red on Buff, which is characterized by thick red pain applied over the light buff shell-tempered surface of mortuary bowls and bottles (Phillips 1970:62-63). This mode of painted decoration was very rare in the Mound P assemblage, occurring only twice on the western flank and recorded as a local type and mode of decoration, not as a nonlocal type (e.g., Knight 2010:45). Black and red bichrome pottery was originally identified by Steponaitis (1983a:64) as red zones of pigment on top of an overall black background, defined here as red-on-black. A second red and black combination, black-on-red, was produced by slipping the vessel overall-red, and then using the resist painting method to create black zones or designs, described in further detail below.

Thus far, the only observed variation of black and white bichrome painted decoration is black-on-white negative painted pottery, a multi-step process where the exterior of bottle were decorated by the method of resist painting (Shepard 1976:206-210), the same method used to decorate black-on-red and all varieties of trichrome painted decoration. Black-on-white painted decoration is characterized by an overall white slipped vessel (usually a bottle) and dark gray to black negative painted zones or designs (Knight 2010:45-46; Steponaitis 1983a:28, 64). These darker zones are produced by covering the white or red slipped portions of the vessel with fresh clay or wax so the desired image is exposed during a subsequent firing process in a reduced-oxygen atmosphere; the coverings fall away during firing or can be easily removed. The covered white or red areas are then contrasted with the newly sooted dark areas, constituting the design. There is some discrepancy in the identification of negative painted pottery, as nonlocal types names such as Angel Negative Painted and Nashville Negative Painted are often used informally to describe sherds, but those names may not be wholly appropriate since chemical analyses on black-on-white sherds has confirmed that while some are nonlocal in manufacture, others were produced locally (Neff et al. 1991; Salberg 2013). Distinguishing local from nonlocal negative painted pottery without chemical compositional analysis is extremely difficult (e.g., Knight 2010:46) and no attempt was made in the current study to classify these types. Therefore, all negative painted pottery sherds were classified as Bell Plain with the black-on-white mode of painted decoration.

The mode of bichrome painted decoration that has experienced the broadest expansion is the red and white combination. What was once a single category of “red and white” painted decoration (Steponaitis 1983a:64) was then divided into “red-on-white” and “white-on-red” modes (Knight 2010:45), where an overall red slipped vessel would be decorated with white painted designs or an overall white slipped vessel would be decorated with red painted designs. However, Knight (2010:45) observed more variation than he initially expected and he suggested that future researchers record at least seven different variations of red and white painted decoration, labeled A-G. I recorded each of these variations from the beginning of my analysis and did not find too many opportunities to expand Knight’s recommended mode classifications. If variation did occur or expansion beyond the seven labels was required, it was usually a combination of two variations and treated as such (example, A/D). Trichrome painted decoration uses a combination of three of the common pigment colors and there are two main modes. First, red painted and black negative painted pigment is applied on top of an overall white slip and second, white paint and black negative painted pigment are applied on top of an overall red slip.

Vessel Embellishments are cross-cutting decorative modes that were added to ceramic vessels as appendages, appliqué clay strips, and elaborations on rims or lips (Knight 2010:46-50). A roster of these modes of decoration proceeds below following Knight’s (2010:46-49) and Steponaitis’s (1983a:70-74) detailed discussions. *Beaded rims*, classified elsewhere as “notched rim strips” (Smith 1992:101) are not beads in the strictest sense, but rather a notched appliqué strip located at or just below the lip on the exterior of hemispherical bowls and burnished jars. Beaded rims on bowls are common in sherd assemblages and date from the late Moundville II through Moundville IV phases. *Beaded shoulders* were executed in the same fashion as beaded rims, but their placement was on the vessel shoulder and often associated with fish and turtle effigy features. As Knight (2010:47) stresses, the identification of a beaded shoulder requires the analyst to identify the decorated portion of the vessel as the shoulder, ruling out the modeled and notched strip being a beaded rim. Beaded shoulders date from late Moundville I through the early Moundville III phases. *Cutout rims* are cut from the slab sides of eccentric bowls, giving them a terraced or V-shaped profile. Cutout rims, as well as the eccentric bowls they are typically found on date from early Moundville I through the early Moundville III phase.

Folded rims are an apt descriptive term for the rounded rims of standard and oversized jar rims, where a clay extension of the vessel shoulder was folded over on the exterior of the rim. *Folded rims* are diagnostic of the early to late Moundville I phase, but could extend into the early Moundville II phase. Conversely, while *folded-flattened rims* were produced in the same manner on jars, the lip was then horizontally flattened or given an inward bevel. This rim mode dates to the early and late Moundville I phases. *Horizontal lugs* are thin, rounded projections from the lip of bowls that can be semicircular or terraced in outline and are sometimes associated with bird and beaver effigy vessels. Horizontal lugs date from the late Moundville I through the late Moundville III phases. Round, sharp-edged concave impressions into the exterior body of bottles and associated with running rectilinear or curvilinear engraving are classified as *indented*. The indented mode of decoration dates to the early Moundville II through early Moundville III phase. Simple notching on the exterior of bowl lips, but notched directly into the vessel body and not an applique strip, are notched lips. *Notched lips* possibly date to the late Moundville II phase, but are more diagnostic during the early Moundville III phase. *Scalloped rims* are rounded projections of the lip of flared-rim bowls that flare outward to give the rim a peddle-like outline. These undulating rims date from the late Moundville I phase through the early Moundville II phase.

There are some modes of decoration that are present in other collections but notably absent here, such as gadrooned bottle bodies, notched everted lips, and vertical lugs. Further, I follow Knight (2010:46) in omitting nodes, lowered lips, downturned lugs, and spouts from the analysis. The final mode of decoration is a group of vessel embellishments that is listed separately because of their naturalistic or stylized anthropomorphic or zoomorphic characteristics: effigy features. Their placement on the rims of bowls or modeling a bowl to become a creature are related to their use and the meaning of the vessel, but the classification of these embellishments is not based upon the meaning of designs, but rather it is inferred from analogy, history, and archaeological context. However, being able to recognize or acknowledge that these attributes had meaning, that their meaning was malleable and contested, and that their meaning was informed by and informed their use-life and contexts of consumption is an appropriate observation.

Effigy features are common on bowls and more rarely bottles from all Moundville contexts and date from the Moundville I through the Moundville III phases (Steponaitis 1983a). Effigy feature attributes can be divided into three broad forms: lug-and-rim effigy bowls; human head medallions; and structural-type effigies. The first group is comprised of bowls with a horizontal lug attached or molded at the lip of a hemispherical or cup-shaped bowl, complemented by a vertical rim appendage (ducks, felines, etc.) adorning the rim of the bowl directly opposite of the lug (Steponaitis 1983a:74-75). The proliferation of the term “rim rider” as a colloquial descriptive term for effigy adornos is unfortunate, as it (incorrectly) gives the impression that rim adornos were either lightly attached to only the lip of the bowl or were removable modular pieces that could be interchanged for other effigies. Second, human head medallions are common on hemispherical bowls and applied in a similar fashion to the effigy adornos from the first category (Knight 2010:49; Steponaitis 1983a:77). The difference here is that they are four in number and spaced equally around the rim of hemispherical bowls, sometimes accompanied by a beaded rim. The final kind of effigy feature transforms the entire vessel into frogs, beavers, fishes, invertebrates, and turtles through the addition of molded and appliqué legs, faces, fins, and other anatomical features of the animal. In particular, fish effigy vessels, frog effigy vessels, and appended human head medallions are important to this research due to their chronological importance for the Moundville III phase (Knight 2010:49-50).

The quantities of modes of decoration, which includes painted decoration, vessel embellishments, and effigy features, are presented in the following tables by unit, per level.

Table C.7. Modes of decoration by level, Unit 1, Mound P.

	Level 2	Level 3	Level 4	Level 6	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 7	Level 7B	Level 7D	Profile Clean-up	Total
Vessel Embellishments																	
Beaded lip									1								1
Beaded rim				1	1			2	4	1	2	2				1	14
Beaded shoulder	1	1							1								3
Cutout rim				1													1
Folded rim						2	1		1								4
Folded-flattened rim					1			1									2
Gadrooned														1			1
Notched lip							1		1								2
Scalloped rim							1										1
Effigy Features																	
Effigy feature, frog limb							1										1
Effigy feature, tail								1									1
Effigy feature, unidentified					1												1
Painted Decoration																	
Black and red-on-white						1		1									2
Black-on-red									1								1
Black-on-white					2	1						1					4
Red and black								1									1
Red filmed	2	2	1	8	7	3	5	10	12	5	3	6		8	2		74
Red filmed, interior of jar rim		1			3			2	1	1							8
Red-on-white, A					1			1									2
Red-on-white, B							1										1
Red-on-white, C					1				1						1		3
Red-on-white, D/E								1									1
Red-on-white, E	1																1
White filmed	3	1			6	1	4	6	2	1	1	2		3			30
White-on-red, G					2										1		3

Table C.8. Modes of decoration by level, Unit 2, Mound P.

Mode of Decoration	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Total
Vessel Embellishments																									
Beaded rim		1		2		1	2	10	2	1					2	3	4	1	1	3	1	1	2	2	39
Everted lip																	1								1
Folded rim				1											1										2
Folded-flattened rim			1					1					1		1		1				1				6
Horizontal lug											1								1						2
Indented		1								1	2														4
Notched lip	1						1	1						2	1		1		2	1			1		11
Notched -everted lip																	1								1
Scalloped rim	1	1					3																		5
Effigy Features																									
Effigy feature, duck adorno				1																					1
Effigy feature, duck tail										1															1
Effigy feature, feline adorno						1																			1
Effigy feature, frog limb								2	1							2									5
Effigy feature, limb						1																			1
Effigy feature, tail								1	1																2
Effigy feature, unidentified								3									1								4
Painted Decoration																									
Black and red								3			1						1					1			6
Black and red-on-white				1														1							2
Black-on-buff	1																								1
Black-on-red						2																			2
Black-on-red and white																1									1
Black-on-white, negative painted			1				1	4									1			2					9
Black filmed, interior of jar rim								1														1			2
Red and black	1																							1	2
Red and black-on-white								1			1				2										4
Red and white		1							2			1				1	1			1				2	9
Red filmed	7	7	4	16	4	13	6	43	14	7	24	8	5	9	8	18	30	10	22	21	13	5	25	22	341
Red filmed, interior of jar rim	1		1	1	1	1		6		2	2	2		1		1	1	1	2	2	1			1	27
Red-on-black																					1				1
Red-on-white, A	1					1						1							1					1	5
Red-on-white, B											1				2					1					4
Red-on-white, C							1																		1
Red-on-white, unidentified									1															2	3
Red-on-black-on-white																1									1
White filmed	3	7	3	4	1	13	3	13	7	1	13		3	2	1	2	4	1	4	4	1		2	8	100
White and black on red																							1		1
White and red						1																			1
White-on-red, F	1																								1
White-on-red, G																					1				1
White filmed, interior of jar rim						1																			1

Table C.9. Modes of decoration by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Vessel Embellishments																
Beaded rim			4	3		2		2		3						14
Folded rim		1										**1**				2
Folded-flattened rim	1	2			2		3	1	2	1			1			13
Horizontal lug												1				1
Indented		1				1										2
Notched lip		4			1		1							1		7
Scalloped rim							1			1						2
Effigy Features																
Effigy feature, frog limb				1												1
Effigy feature, unidentified										1						1
Painted Decoration																
Black and red-on-white									1							1
Black-on-red							1			3						4
Black-on-white			1											1		2
Buff-on-red						1										1
Red and black-on-white	1								1							2
Red and white		1														1
Red filmed	6	7	4	1	8	3	7	7	7	4	1	1		1	1	58
Red filmed, interior of jar rim	1															1
Red-on-black											1					1
Red-on-white, A	1		2			1			1							5
Red-on-white, D		2														2
White and red-on-white						1										1
White filmed	6	7	4	6	5	3	4	5	2	4	1	2		1		50
White-on-red, F											1					1

Table C.10. Modes of decoration by level, Unit 4, Mound P.

	Root mat	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile clean-up	Total
Vessel Embellishments												
Beaded rim			2	1	2	4	8	6	7	10	2	42
Cut-out lip						1						1
Folded-flattened rim			1				1	3		2	1	8
Horizontal lug								2				2
Notched lip								1	2	1		4
Effigy Features												
Effigy feature, duck adorno										1		1
Effigy feature, fish fin								2				2
Effigy feature, frog							1	1				2
Effigy feature, frog limb				1				4		2	1	8
Effigy feature, feline effigy					1				1			2
Effigy feature, frog/alligator					1							1
Effigy feature, human head medallion					1	1						2
Effigy feature, unidentified							1	5	1			7
Painted Decoration												
Black and red										3	4	7
Black and red-on-white									1			1
Black filmed, interior of jar rim						1				2		3
Black-on-red								1	3			4
Black-on-white			1		2	5	4	9	5	3	3	32
Red and black-on-white				4	1		2		1		1	9
Red and buff										1		1
Red and red-on-white, D							1					1
Red and white					1	3	1	2	4	2	2	15
Red filmed	4		9	17	42	49	56	65	72	77	50	441
Red filmed, interior of jar rim					3	5	4	3	7	9	4	35
Red-on-white, A				3	2	5	1	8	1	1	1	22
Red-on-white, B						1			1			2
Red-on-white, C				2	1	1	1	3	2	3	1	14
Red-on-white, E						1		1				2
White filmed	4		4	1	7	27	16	12	19	7	14	111
White filmed, interior of jar rim									1		1	2
White-on-red, F				1	1	1	1	2	2	1	1	10
White-on-red, interior of jar rim							1					1

Table C.11. Modes of decoration per level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Vessel Embellishments								
Beaded rim	3	2		6	9	1	1	22
Folded rim				1	1			2
Folded-flattened rim				1	3			4
Horizontal lug		1			1			2
Notched lip		2	1					3
Punctated lip	1							1
Effigy Features								
Effigy feature, fish fin		1			1			2
Effigy feature, frog				2				2
Effigy feature, frog anus				1				1
Effigy feature, frog limb					2	1		3
Effigy feature, tail				1	1			2
Effigy feature, unidentified		1	2		6			9
Painted Decoration								
Black filmed, interior of jar rim					2			2
Black-on-red, interior of jar rim				2				2
Black-on-red			1		1	1		3
Black-on-white, negative painted	2	1	3	19		1		26
Red filmed	13	43	50	111	67	39	7	330
Red filmed, interior of jar rim	2	9	5	17	3	1	2	39
Red-and-black				1				1
Red-and-black on white			2	11				13
Red-and-white	1	1	3	2			1	8
Red-on-white, A			7	11				18
Red-on-white, B	1							1
Red-on-white, C		1	1	1	2			5
Red-on-white, E			1	2	1			4
Red-on-white, A/D		2						2
Red-on-white, unidentified		1	1					2
White filmed	17	19	18	12	12	10	2	90
White-on-red, F				5	2		1	8
White-on-red, G		4		1				5

Table C.12. Modes of decoration by level, units 6 and 7, Mound P.

	Unit 6				Unit 7
	Level 1	Level 2	Level 3A	Level 3B	Level 1
	Modes of Decoration				
Beaded rim		2		1	
Effigy feature, unidentified		1			
Notched lip			1		
	Painted Decoration				
Red filmed		7	7	2	
Red and white			1		
Red-on-white, C		1			
Red and black-on-white			1		
Red filmed, interior of jar rim		3			
White filmed	1	2	2	2	1

Modes of Vessel Shape

The selection of local clays and tempering materials used in the production of Moundville jars, bowls, plates, and bottles meant that vessels with taller, stronger walls could be produced and that these vessels could have more thermal resistance when exposed to direct or indirect fire. The properties of the paste, along with the surface finish of the vessel, generally fall along service and utility functional classifications in Mississippian assemblages, and these groups are no different at Moundville (Knight 2010:139-140; Maxham 2000:342; Steponaitis 1983a:33; Taft 1996:10-11; Welch and Scarry 1995:410-413). Utility ware is primarily standard and oversized jars, reddish-orange vessels fired in an oxidized environment that were used for cooking in direct and indirect heat and for storage. The coarse temper in the paste is more resistant to thermal stress and can expand further than service ware over direct heat without breaking, but also more susceptible to mechanical stress (Steponaitis 1983a:43-45). Conversely, service ware, the fine tempered burnished bowls, plates, and bottles were more resistant to the mechanical or tensile stress resulting from handling or dropping, but because of the fine-tempered paste, would break easier over direct heat. We must temper this binary classification with caution however, since there are several caveats that have been addressed by other researchers concerning the identification of eroded or differentially preserved burnished surface finish (Knight 2010:21-23, 139), the breakage rates, vessel sizes, and replacement rates of vessels in different contexts (Maxham 2000:342), and the wide spread distribution or lack of restriction of burnished serving ware to "elite" contexts (Knight 2010:139-140). However, frequencies of service (i.e., fine-tempered, burnished) and utility (i.e., coarse-tempered, unfinished) wares can be compared with confidence when they are from similar depositional and temporal contexts (e.g., Knight 2010:140; Maxham 2000:342).

Vessel morphology and size among ceramic sherds recovered from the Mound P assemblage were determined following previously established criteria for west-central and central Alabama (Hawsey 2015; Knight 2010: Steponaitis 1983a; Taft 1996). The Moundville vessel assemblage consists of four overarching vessel forms, each with internal variation, that can be identified by diagnostic modes of vessel shape: bottles, bowls, jars, and plates. Coarse-tempered and unburnished pottery sherds, including those that were incised while the paste is wet were categorized as *utility ware*. This includes the types Mississippi Plain and Moundville Incised. Fine-tempered and burnished pottery sherds, including those that were incised while the paste was leather hard, painted or slipped sherds, and engraved at or just before the time of firing, are categorized as *service ware*. This includes the types Bell Plain, Moundville Engraved, and Carthage Incised. These classifications did not include nonlocal or residual types. The identification of vessel morphology in sherd assemblages can present some problems without the aid of a type collection and a distinct familiarity with diagnostic modes of vessel shape.

However, given the breakage rates of bowls, jars, plates, and bottles deposited in primary mound midden contexts, obtaining useful information about vessel forms from the sherd assemblage has to be expanded beyond a reliance on rim sherds (e.g., Knight 2010:50). Therefore, archaeologists working with large sherd assemblages need to rely on “modes of vessel shape” (Knight 2010:50-53). These modes are arbitrarily defined by the analyst (*sensu* Phillips 1970:28) based on characteristic points (above) for utility in classification of pottery sherds and are defined per vessel shape below. Rim sherds that were too small, fragmented, eroded or otherwise not able to be identified as a vessel shape were classified as *unidentified*. The data for all vessel shape, size, portion, and function from non-midden and disturbed contexts is presented in Appendix C by excavation unit and level.

Bottles are “necked vessels in which the neck height is greater than 20 percent of the total vessel height, and the minimum neck diameter is less than 75 percent of the maximum body diameter” (Taft 1996:18) and this shape can be further divided into three main forms: cylindrical bottles; narrow neck bottles; and wide neck bottles (Knight 2010:51; Taft 1996:18). The identification of bottles in sherd assemblages relies upon a keen understanding of rim curvature and the body of bottles. Identifiable modes of bottle shape are: bottle necks; corner points; pedestal bases; and slab bases (Knight 2010:53). *Bottle necks* can be identified as lipped rim sherds with a small, strongly curved rim curvature and a slight (sometimes slightly flared) tapered profile. These necks connect vertically to the body of the bottle at the *bottle corner point*, which is a sherd that exhibits an oblique break at this point, as well as a distinctive thickening of clay on the interior of the sherd. This marks the area were the two portions were fused. Further, the exterior of bottle bodies were almost always slipped or burnished, but the interior is unfinished, often showing scrape marks from the thinning of the vessel walls. Bottle necks *without* the lip that exhibit a break at the rim-body union are classified as corner points. Thus, the rim sherd needs to be sufficiently large enough to judge the curvature of the neck and the nature of the break. *Bottle pedestal bases* are identified through two inflection points; one at the base-pedestal union and a second at the pedestal-body union. *Bottle slab bases* are a thickened base with a break at the base-body union. In addition to the slipped or burnished surface finishing, bottles were often engraved around the body (including the base), but sometimes around the neck as well.

Flared-rim bowls have a hemispherical body with a flattened, oblique out-flaring rim, creating a corner point that is used as a diagnostic vessel mode (Knight 2010:51-52; Steponaitis 1983a:68; Taft 1996:29-31). Two forms of flared-rim bowls are present in the overall vessel assemblage: deep and shallow bowls. Deep flared-rim bowls are "necked vessels on which the minimum neck diameter is greater than or equal to 75 percent of the maximum body diameter, the vessel height is less than 60 percent of the maximum vessel diameter, the neck is outflared, and the juncture of the neck and vessel wall is marked by a distinct break in contour" (Knight 2010:51). Conversely, shallow flared-rim bowls "are non-necked vessels on which the lower body shape is hemispherical, the rim width is greater than or equal to 10 percent of the maximum vessel diameter, the rim is flattened and outflared, and the juncture of the neck and vessel wall is marked by a distinct break in contour" (ibid). Flared-rim bowls are identified in two ways, both of which are classified as *flared-rim bowl rim*. First, the out-flared rim of the bowl usually has a wide curvature and is characterized by a finished and often decorated interior with a finished exterior (underside) of the rim that is not as finely smoothed as the interior. The second diagnostic criteria for the identification of this vessel form is the distinct break in contour formed by the body-rim corner point, which includes a portion of the concave, interior burnished body and the flattened, out-flaring rim. However, the lip of the vessel is not needed for identification in larger sherds. Decoration was executed with engraved and trailed-incised tooled lines, as well as overall red and white slips or paint. Tooled decoration was commonly restricted to the interior of the rim, while painted decoration could include the rim and the body of the vessel.

Hemispherical bowls, also referred to as “simple bowls” (Steponaitis 1983a:68-69), have a rounded, or “ellipsoidal” body with no corner point (Knight 2010:51; Taft 1996:37). The bowl body and rim form a continuous, incurvate vertical profile directly leading to a rounded or round-flattened lip, where the diameter of the lip exceeds 75 percent of the diameter of the vessel. Hemispherical bowls are identified in burnished rim sherds that are large enough to identify the vessel body contour and rule out a classification of cup-shaped bowl or flared-rim bowl. Conversely, *cup-shaped bowls* have a flattened base and straight, vertical or slightly outslanted walls (Knight 2010:51; Taft 1996:36). This form is roughly equivalent to the cylindrical and outslanting bowls defined by Steponaitis (1983a:68), but I have a preference for the term “cup-shaped bowl” over these because the bases of these bowls or the possible inflection points of the outslanting bowls are typically not readily identifiable in the sherd assemblage. The rim profiles of cup-shaped bowls are often round-flattened or flattened. Thus, distinguishing the vessel form beyond having a profile necessary for a distinction between cylindrical or outslanting bowls is rare. The difference in the profiles of cup-shaped and hemispherical bowls is similar to difference in the profiles of a typical pint glass and a quartered tennis ball, respectively, but it must be stressed that the curvature of the profile needs to be adequate to distinguish between the two bowl forms. Decorative modes on hemispherical and bowls include beaded rims and lips, effigy features, incised and engraved tooled decoration, and painting. Decorative modes on cup-shaped bowls include effigy features. Tooled decoration was executed on the shoulder and body of the bowls.

Short-necked bowls are hemispherical or oblate bowls with a slightly restricted orifice and a short, vertical neck that is less than 20 percent of the maximum vessel height (Knight 2010:52; Steponaitis 1983a:68). The production of the vertical rim is variable, but highly recognizable and diagnostic of not only the vessel form, but also the later portion of the pottery sequence. In profile, the vertical rims range from an undulating profile to a straight one that is vertical or slightly outslanting. Rims tend to be rounded, but can also be rounded with a slight taper near the lip, especially when the lip is slightly outslanting. Occasionally the short vertical rim is part of a direct and more vertical continuation from the hemispherical body of the bowl and distinguished by a single, trailed-incised line. In circumstances when the rim is broken from the body of the vessel, likely the result of the addition and molding of a separate clay coil, the rim and the body sherd with a rim scar are also classified as a short-necked bowl rim.

Restricted-neck bowls, referred to as “tecomates” elsewhere (Knight 2010:51; Taft 1996:32-35) are hemispherical or oblate bowls with an oriface diameter of less than 75 percent of the maximum diameter of the body (Steponaitis 1983a:68; Taft 1996:32). These bowls typically have thickened or direct rounded lip profiles which are sometimes slightly tapered. When they are oriented correctly, they have a diagnostic, crescent-shaped orifice curvature. Restricted-neck bowls are typically only burnished black. *Terraced-rim bowls*, which have been defined elsewhere as “eccentric” bowls (Knight 2010:51) or terraced rectanguloid bowls (Steponaitis 1983a:69) are any bowl rim with a terraced or castellated rim that is often lower on one portion of the rim than another (Steponaitis 1983a:73; Taft 1996:29). These rims are often found on slab constructed straight-sided, rectanguloid bowls but can also be found on ellipsoidal or oblate bowl forms. They are often slipped and painted, but sometimes engraved with geometric designs. *Composite bowls* are vessels where portions of two vessels have been combined, one on top of the other. These have the appearance of a squat hour glass. Burnished rims that were variable in profile but that were not large enough to distinguish between the major bowl categories or were not able to fit into one of the major shape classes, while still being large enough to identify as originating from a bowl form, were classified in the database and catalog as *other bowls*. However, since both Knight (2010) and Taft (1996) use the term “other bowls” as an analytical category that combines hemispherical, cup-shaped, and short-necked bowls, I will refer to these rims as being from “residual bowls” throughout the current research.

Plates are a neckless vessel form that falls outside of our morphological considerations for flared-rim bowls because “the vessel base is rounded continuously to the lip without any break in contour, the diameter of the lip is equivalent to the maximum vessel diameter, and the maximum vessel height is less than 50 percent of the maximum vessel diameter” (Knight 2010:51). Identification and quantification of plates in the sherd assemblage requires the presence of an internally-thickened, wedge-shaped rim (Knight 2010:52-53), where the wedge takes the shape of an inward-facing obtuse triangle with a rounded, tapered, or pointed lip in profile. Plates are commonly decorated on the interior of the plate with the type Moundville Engraved, *variety Middleton*, or a design pattern that has engraved, semicircular scallops commonly filled with engraved lines that are perpendicular to the rim (Knight 2010:29; cf. Steponaitis 1983a:331). However, without the wedge-shaped rim mode, this vessel form cannot be identified.

Standard Mississippian jars are globular vessels with a constricted neck, handles, and an out-flared rim. The height of the neck is less than 33 percent of the maximum height of the body and the minimum diameter of the neck is at least 75 percent of the maximum diameter of the body (Steponaitis 1983a:69) and the vessel height is at least 60 percent of the maximum vessel diameter (Taft 1996:25). Jars typically have thickened rounded and round-flattened lips and at least two handles that connected the lip to the shoulder of the vessel. Thus, *jar handles* are a mode of vessel shape that can be defined as flattened or rounded strips of clay that have completely detached from the vessel body. Since handles become more numerous and smaller in size through time, especially during the Moundville III phase, some care is absolutely required in their identification that requires a brief aside. As discussed in previous chapters, sherds that were sorted through one-half inch hardware mesh were quantified by weight in grams, cataloged, and set aside due to their small size and difficulty in identification. However, it was with tedious and great care that I sorted through all 1/4-1/2 inch sherds to sort out these diagnostic small jar handles. Further, since small jar handles are typically rounded and do not look like typical Mississippian jar handles, they are often mistaken for objects of fired clay, daub, bone, stone, or any number of artifact classes other than a jar handle from a Mississippian vessel. Small jar handles are extraordinarily diagnostic of the Moundville III phase and it is vital to the understanding of these misunderstood late contexts that diminutive handles be carefully sorted from all material, including less than half inch sherds. A failure by the analyst to do so inappropriately places a priority on decorative types as the sole vehicle for the purposes of chronology and demonstrates a misunderstanding of the local vessel assemblage. Having aired my caution about the misidentification of diminutive jar handles, the second mode of standard jar shape can be discussed. *Jar collars* are the point of minimum diameter at the constricted neck and are identified in the sherd assemblage in four ways, as defined in detail by Knight (2010:51).

Of note is the problem of sherds with a jar handle *and* lip or more of the jar collar. These are always classified as jar collars.

The decoration of standard jars varied through time, but there are four major areas where decoration occurred. First and earliest in the typology, the shoulders of jars were incised with rectilinear or curvilinear designs in a damp paste, leaving clay burrs along the edges of the lines. This mode of decoration defines the type Moundville Incised. Second, jar handles decreased in size, but increased in number from earlier to later phases, losing their functionality as they became smaller. Third, vertical or oblique neck fillets of clay were applied to the exterior collars of jars, a decorative mode that marks the beginning of the Moundville IV phase at Moundville. The outer edge of these fillets is often tapered to a point or slightly rounded and define the Alabama River Appliqué type. These appliqué strips are likely a stylistic derivative of the small handles that became common during the Moundville III phase. Finally, sometime in the Moundville III phase, the interior of some jar collars from the shoulder-neck inflection point to the lip was slipped or painted red. *Oversized jars* are identified as thick-walled, unfinished rims with a large orifice diameter.

The distribution of modes of vessel shape per excavation unit, by level are presented in the tables that follow.

Table C.13. Modes of vessel shape by level, Unit 1, Mound P.

	Level 2	Level 3	Level 4	Level 6	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 7	Level 7B	Level 7D	Profile Clean-up	Total
Corner point, bottle	1					2	1	2	1								7
Neck, bottle		1		1			1	1	4						1		9
Pedestal base, bottle			1														1
Slab base, bottle							1			1							2
Subtotal, Bottle	*1*	*1*	*1*	*1*		*2*	*3*	*3*	*5*	*1*					*1*		*19*
Collar, jar	3	2	1	6	10	2	11	15	27	9	2	8		1	4	1	102
Handle, jar	2	1		2	5	1	2	3	10	9	2	1		1			39
Subtotal, Standard Jar	*5*	*3*	*1*	*8*	*15*	*3*	*13*	*18*	*37*	*18*	*4*	*9*		*2*	*4*	*1*	*141*
Rim, cup-shaped bowl								1							1		2
Rim, flared-rim bowl	3				1		1	6	4			1				1	17
Rim, hemispherical bowl								1	3	1	2	2	1				10
Rim, restricted bowl											2						2
Rim, short-necked bowl	4								3			1					8
Rim, other bowl	2			3	4		3	4	8		1	5		1			31
Rim, terraced-rim bowl				1													1
Totals	15	4	2	13	5	5	20	33	60	20	9	18	1	3	6	2	216

Table C.14. Modes of vessel shape by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Total
Corner point, bottle		2	1	2		2		4	1		1				2		1		1		3	2			22
Neck, bottle	1	2	1	2		4	2	1	2	3		1	1		1		5	1	6		2		1	2	38
Pedestal base, bottle								1	1					2											4
Slab base, bottle						1											1								2
Subtotal, Bottle	*1*	*4*	*2*	*4*		*7*	*2*	*6*	*4*	*3*	*1*	*1*	*1*	*2*	*3*		*7*	*1*	*7*		*5*	*2*	*1*	*2*	*66*
Collar, jar	15	11	9	27	9	42	23	85	38	19	12	10	7	21	20	46	65	15	18	18	17	7	17	10	561
Handle, jar	5	3	1	6	1	8	7	19	13	4	2	3	1	3	7	5	17	1	8	7	2	2	2	4	131
Subtotal, Standard Jar	*20*	*14*	*10*	*33*	*10*	*50*	*30*	*104*	*51*	*23*	*14*	*13*	*8*	*24*	*27*	*51*	*82*	*16*	*26*	*25*	*19*	*9*	*19*	*14*	*692*
Composite bowl/bottle																			1						1
Neck, hooded bottle							1																		1
Rim, cup-shaped bowl				1		1		1								2	1	2			2				10
Rim, flared-rim bowl	2	5	3	14	2	7	2	10	7	7	4			3	8	10	12	6	2	5	5	3	1	2	120
Rim, hemispherical bowl	2	1	1	5		4	6	12	5	2				2	2	4	9	2	1	4	2		2	2	68
Rim, other bowl	3	3	2	8	2	11	7	27	10	2	6	1		4	5	5	5		6	8	6	2	2	1	126
Rim, oversized jar		1					1	1																	3
Rim, plate	1							2																	3
Rim, restricted bowl				2											1	1	1			1	1		1		8
Rim, shallow bowl															1	1									2
Rim, short-necked bowl	1	1					2	2	2	1			2	1	1	2	2	2	1	2			1	1	24
Totals	30	29	18	67	14	80	51	165	79	38	25	15	11	36	48	76	119	29	44	45	40	16	27	22	1124

Table C.15. Modes of vessel shape by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Corner point, bottle	1	2		1	2	1	1	1		1	3			2		15
Neck, bottle			1	2	1		1			4		1				10
Slab base, bottle					1											1
Subtotal, Bottle	*1*	*2*	*1*	*3*	*4*	*1*	*2*	*1*		*5*	*3*	*1*		*2*		*26*
Collar, jar	11	19	18	8	17	13	13	8	11	4	6	7	3	2	1	141
Handle, jar	2		4	3	2	2	3	2			1	1		1		21
Subtotal, Standard Jar	*13*	*19*	*22*	*11*	*19*	*15*	*16*	*10*	*11*	*4*	*7*	*8*	*3*	*3*	*1*	*162*
Collar, oversized jar		1			1				1							3
Rim, cup-shaped bowl		1		1							2	1				*5*
Rim, flared-rim bowl	4	6	4	2	1			4	3	5	2			1		*32*
Rim, hemispherical bowl		3	3	3		2				2						*13*
Rim, other bowl	1	2	3	1	6		6	3		1	2		1	1		27
Rim, restricted bowl	1				1				1							*3*
Rim, short-necked bowl	3	1	2	1		2	1							1		*11*
Totals	*23*	*35*	*35*	*22*	*32*	*20*	*25*	*18*	*16*	*17*	*16*	*10*	*4*	*8*	*1*	*282*

Table C.16. Modes of vessel shape by level, Unit 4, Mound P.

	Root mat	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile clean-up	Total
Corner point, bottle				1	1	3	4	7	8	4		28
Neck, bottle				1	2	5	3	6	2		3	22
Shoulder, bottle											1	1
Subtotal, Bottle				*2*	*3*	*8*	*7*	*13*	*10*	*4*	*4*	*51*
Handle, jar	1		5	6		36	32	53	29	28	31	221
Collar, jar		2	11	17	33	50	60	100	49	68	51	441
Subtotal, Standard Jar	*1*	*2*	*16*	*23*	*33*	*86*	*92*	*153*	*78*	*96*	*82*	*662*
Neck, hooded bottle										1		1
Rim, cup-shaped bowl						1	3		1	1	1	7
Rim, flared-rim bowl			1	15	33	30	21	15	31	41	20	207
Rim, hemispherical bowl			2	2	2	3	10	9	11	10	2	51
Rim, other bowl					14	15	19	30	5	14	7	104
Rim, restricted bowl					3	6	4	2	6		1	22
Rim, short-necked bowl	1		2	4	9	9	13	9	10	6	8	71
Rim, terraced-rim bowl						2						2
Slab base, bowl/bottle						1		2	1	2	1	7
Totals	2	2	21	46	97	161	169	233	153	175	126	1185

Table C.17. Modes of vessel shape by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Corner point, bottle	1	2	1	16	7	1		28
Neck, bottle	1	1	10	7	4	1	2	26
Subtotal, Bottle	*2*	*3*	*11*	*23*	*11*	*2*	*2*	54
Collar, jar	34	57	59	165	78	25	18	441
Handle, jar	4	23	31	63	29	6	1	139
Subtotal, Standard Jar	*38*	*80*	*90*	*228*	*107*	*31*	*17*	580
Rim, cup-shaped bowl	2			2	2			5
Rim, flared-rim bowl	5	28	37	51	54	20	9	211
Rim, hemispherical bowl	3	2		6	13	2	1	27
Rim, restricted bowl	1	6	14	9	5	2	2	39
Rim, short-necked bowl	2	10	16	24	14	3	1	69
Rim, eccentric bowl							1	1
Rim, other bowl	11	2	13	39	11	2	2	80
Totals	64	131	181	382	217	62	35	1072

Table C.18. Modes of vessel shape by level, units 6 and 7, Mound P.

	Unit 6				Unit 7	Total
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Collar, jar		8	2	4	3	17
Handle, jar	1	7	1		3	12
Subtotal, Standard Jar	1	15	3	4	6	29
Rim, hemispherical bowl				1		1
Rim, flared-rim bowl		1	3		1	5
Rim, short-necked bowl		1	1	1		3
Rim, other bowl		4	2	1	2	9
Rim, plate			1			1
Totals	1	21	10	7	9	48

APPENDIX D

MINERAL AND STONE DATA

Unmodified Stone

Table D.1. Quantity of unmodified stone by level, Unit 1, Mound P.

	Level 2	Level 4	Level 5	Level 5B	Level 6	Level 7D	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Profile Clean-up	Total
Sandstone, Brown or Ferruginous Pottsville	13		1		10	1	10	10	18	11	19	5	3	34	2	137
Sandstone, Fine Gray Micaceous Pottsville			2									2	1	1		6
Tabular Ferruginous Sandstone	1				1		4	4	1	5				1		17
Ferruginous conglomerate			8					1			2			1		12
Ferruginous concretion	27	1	5	7	14		28	5	8	18		1		11		125
Pebble	18	9	8		63	3	25	8	17	31	80	43	97	41		443
Limestone			1													1
Conglomerate			1													1
Limestone gravel	6				1		3	1	6	5			2	1		25
Unidentified metamorphic rock							1									1
Totals	65	10	26	7	89	4	71	29	50	70	101	51	103	90	2	768

Table D.2. Weight (g) of unmodified stone by level, Unit 1, Mound P.

	Level 2	Level 4	Level 5	Level 5B	Level 6	Level 7D	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Profile Clean-up	Total
Sandstone, Brown or Ferruginous Pottsville	73.4		1.5		153.2	3.7	171.0	135.9	134.5	146.8	182.7	60.7	33.6	245.4	176.6	1519.0
Sandstone, Fine Gray Micaceous Pottsville			6.0									12.2	5.6	1.7		25.5
Tabular Ferruginous Sandstone	0.8				0.7		39.2	40.2	8.9	28.5				2.4		120.7
Ferruginous conglomerate			93.4					1.5			26.9			12.5		134.3
Ferruginous concretion	37.1	2.0	2.7	8.0	22.3		59.1	10.2	39.4	30.0		3.7		20.6		235.1
Pebble	18.0	19.0	4.0		46.8	14.4	47.0	9.1	42.0	72.0	194.6	109.3	222.6	52.9		851.7
Limestone			3.1													3.1
Conglomerate			0.7													0.7
Limestone gravel	17.3				0.7		8.1	2.7	41.8	31.8			7.1	1.7		111.2
Unidentified metamorphic rock							1.0									1.0
Totals	146.6	21.0	111.4	8.0	223.7	18.1	325.4	199.6	266.6	309.1	404.2	185.9	268.9	337.2	176.6	3002.3

Table D.3. Quantity of unmodified stone by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile Clean-up	Total
Sandstone, Brown or Ferruginous Pottsville	3	20	6	21	4	20	3	24	19	4	6	2	3	6	4	16	23	3		14	7		2	1		211
Sandstone, Fine Gray Micaceous Pottsville	1			1			1	2	2	1			1			1		3		2			1	1		17
Tabular Ferruginous Sandstone						4	7	10		3			1	3		4	1	2		9	2		4	1	1	52
Ferruginous conglomerate		1						2												2	3					8
Ferruginous concretion		4	4	8	95	3		58	23		165		14			9	146	5			6		1			541
Pebble	5	29	2	42	23	68	30	90	4	17	25	12	8	19	7	23	19	15	24	87	58	7	27	13	4	658
Cobble						5	1	4		1	1				2	1	8	2	1			1	3			30
Limestone								2		1	1															4
Conglomerate																										
Limestone gravel																										
Unidentified metamorphic rock																										
Petrified wood																				2	4					6
Chalk									1																	1
Totals	9	54	12	72	122	100	42	192	49	27	198	14	27	28	13	54	197	30	25	116	80	8	38	16	5	1528

Table D.4. Weight (g) of unmodified stone by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile Clean-up	Total
Sandstone, Brown or Ferruginous Pottsville	65.9	194.8	54.2	185.6	60.7	266.9	11.4	195	225.3	36.2	37.6	15.2	44.7	88.7	146.2	308.9	667.8	31.3	97.4	443.3	60.1		9.6	23.9		3270.7
Sandstone, Fine Gray Micaceous Pottsville	4.5			0.3			1.2	178.3	19.4	5.1			32.9			29.9		11.1		4.4			5.9	0.5		293.5
Tabular Ferruginous Sandstone						36.4	29.9	48		20.2			7.7	13.7		256.6	91.8	3.1	3.7	60.5	8.8		14.3	3.1	3.8	601.6
Ferruginous conglomerate		51.5						26												60.1	18.7					156.3
Ferruginous concretion		12.3	9.2	21.2	106.1	2.8		103.2	56.5		377.5		55.4			18.2	161.4	23.5			5.9		3.6			956.8
Pebble	15.9	59.9	8.3	41.2	47.2	126.1	67.3	176.6	9.1	63.9	41.5	24.1	17.7	38.6	21.3	49.6	28.8	36	69	192.2	131.5	12	72.2	30.8	10.3	1391.1
Cobble						62.5	67.8	125.2		9.1	7.4				55.5	20.3	212.6	70.6	7			55	69			762
Limestone								4.2		11.1	1.7															17
Conglomerate																										
Limestone gravel																										
Unidentified metamorphic rock																										
Petrified wood																				8.1	4.5					12.6
Chalk									7.3																	7.3
Totals	86.3	318.5	71.7	248.3	214	494.7	177.6	856.5	317.6	145.6	465.7	39.3	158.4	141	223	683.5	1162.4	175.6	177.1	768.6	229.5	67	174.6	58.3	14.1	7468.9

Table D.5. Quantity of unmodified stone by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Sandstone, Brown or Ferruginous Pottsville	9	20	21	47	49	19	16	15	11	9	14	5		3	2	240
Sandstone, Fine Gray Micaceous Pottsville		2	1	4		1	2	2								12
Tabular Ferruginous Sandstone	6	5	9		4	2	4	14	6	9	4	1	3			67
Ferruginous conglomerate				1	1					2						4
Ferruginous concretion		2		147	48	6	1	16	2	54	27	9	1		6	319
Pebble	10	73	68	201	91	65	73	80	41	56	33	28	7	14	15	855
Petrified wood	2	1	2	1												6
Totals	27	103	101	401	193	93	96	127	60	130	78	43	11	17	23	1503

Table D.6. Weight (g) of unmodified stone by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Sandstone, Brown or Ferruginous Pottsville	103.0	255.2	161.4	129.1	151.1	177.2	188.6	234.2	102.3	96.0	168.7	61.4		47.2	40.1	1915.5
Sandstone, Fine Gray Micaceous Pottsville		12.3	1.4	3.4		1.9	28.1	59.6								106.7
Tabular Ferruginous Sandstone	32.6	32.3	39.1		19.8	1.6	24.1	56.3	24.3	55.4	19.1	16.2	2.9			323.7
Ferruginous conglomerate				6.6	4.9					22.2						33.7
Ferruginous concretion		9.9		104.4	36.8	12.9	1.4	10.0	9.7	54.3	23.5	33.0	5.7		9.7	311.3
Pebble	20.1	194.5	135.8	241.2	108.7	102.8	143.1	126.2	83.1	80.4	77.9	41.4	34.2	24.2	19.5	1433.1
Petrified wood	1.9	0.2	1.3	2.2												5.6
Totals	157.6	504.4	339.0	486.9	321.3	296.4	385.3	486.3	219.4	308.3	289.2	152.0	42.8	71.4	69.3	4129.6

Table D.7. Quantity of unmodified stone by level, Unit 4, Mound P.

	Root mat	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**	**Level 7**	**Level 8**	**Level 9**	**Profile Clean-up**	**Total**
Sandstone, Brown or Ferruginous Pottsville		1	10	27	99	138	146	179	112	69	54	835
Sandstone, Fine Gray Micaceous Pottsville					1	3	5		5	6	2	22
Tabular Ferruginous Sandstone	1			5	12	17	22	37	24	8	12	138
Tabular Ferruginous Shale							1	1				2
Ferruginous conglomerate			2				1		2	1	2	8
Ferruginous concretion	2		2	329	200	532	192	352	331	183	46	2169
Pebble	17	45	241	357	400	872	1043	1425	1199	1255	1129	7983
Cobble			1		221		5	2		4	5	238
Petrified wood					1						2	3
Coal					1							1
Unidentified								1	2			3
Totals	*20*	46	256	718	935	1562	1415	1997	1675	1526	1252	11402

Table D.8. Weight (g) of unmodified stone by level, Unit 4, Mound P.

	Root mat	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**	**Level 7**	**Level 8**	**Level 9**	**Profile Clean-up**	**Total**
Sandstone, Brown or Ferruginous Pottsville		2.3	83.6	441.6	1010.7	1538.2	980.9	1603.5	755.5	1913.2	1216.4	9545.9
Sandstone, Fine Gray Micaceous Pottsville					2.8	19.7	22.9		11.2	40	8.9	105.5
Tabular Ferruginous Sandstone	0.2			27.5	12.6	52.4	60	86.6	95.5	74.9	230	639.7
Tabular Ferruginous Shale							0.1	0.2				0.3
Ferruginous conglomerate			6.7				15.7		32	11.9	20.5	86.8
Ferruginous concretion	3.5		1.4	220.6	140.2	320	148.6	202	186.4	109	30.6	1362.3
Pebble	24.7	42.5	209.4	331.8	476.8	1037.7	1174.7	1590.3	1656.4	1535.8	1297.6	9377.7
Cobble			17.1		154.1		103.9	123.4		69.2	109.5	577.2
Petrified wood					0.7						48.4	49.1
Coal					6.9							6.9
Unidentified								36.7	70.4			107.1
Totals	*28*	44.8	318.2	1022	1804.8	2968	2506.8	3642.7	2807.4	3754	2961.9	21858.5

Table D.9. Quantity of unmodified stone by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Sandstone, Brown or Ferruginous Pottsville	18	63	50	166	110	12	7	426
Sandstone, Fine Gray Micaceous Pottsville	3	7	1					11
Tabular Ferruginous Sandstone	4		3	19	24	2	2	54
Tabular Ferruginous Shale	2	3						5
Tabular Ferruginous Siltstone					5			5
Ferruginous conglomerate		4		2				6
Ferruginous concretion		435	30	167	126	107	11	876
Pebble	101	733	962	2543	1499	580	333	6751
Cobble	5	3	3	14	9	13		47
Petrified wood		2		1				3
Unidentified					1			1
Fossil, cirnoid stem				1				1
Totals	*133*	1250	1049	2913	1774	714	353	8186

Table D.10. Weight (g) of unmodified stone by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Sandstone, Brown or Ferruginous Pottsville	373.7	598.9	943.9	3099.7	1904.3	78.5	249.7	7248.7
Sandstone, Fine Gray Micaceous Pottsville	27.4	18.8	2.9		5.2			54.3
Tabular Ferruginous Sandstone	60.4		21.0	183.6	223.2	36.0	6.4	530.6
Tabular Ferruginous Shale	2.9	49.3						52.2
Tabular Ferruginous Siltstone					5.0			5.0
Ferruginous conglomerate		18.6		61.7				80.3
Ferruginous concretion		265.4	14.0	114.2	80.0	73.5	5.5	552.6
Pebble	346.2	894.2	1076.2	3083.3	1906.5	864.7	453.3	8624.4
Cobble	40.2	69.8	54.9	304.5	200.8	270.1		940.3
Petrified wood		5.7		1.5				7.2
Unidentified					23.8			23.8
Fossil, crinoid stem				0.8				0.8
Totals	*850.8*	1920.7	2112.9	6849.3	4348.8	1322.8	714.9	18120.2

Table D.11. Quantity of unmodified stone by level, units 6 and 7, Mound P.

	Unit 6				Unit 7	Total
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Sandstone, Brown or Ferruginous Pottsville	15	38	5	8	21	87
Sandstone, Fine Gray Micaceous Pottsville		1			2	3
Tabular Ferruginous Sandstone		12			5	17
Ferruginous conglomerate	1					1
Ferruginous concretion	76	259	3	4	97	439
Pebble	81	305	8	7	180	581
Cobble		1		1		2
Petrified wood		1			1	2
Unidentified		1				1
Coal		1				1
Totals	173	619	16	20	306	1134

Table D.12. Weight (g) of unmodified stone by level, units 6 and 7, Mound P.

	Unit 6				Unit 7	Total
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Sandstone, Brown or Ferruginous Pottsville	149.0	394.2	36.8	151.2	229.4	960.6
Sandstone, Fine Gray Micaceous Pottsville		30.4			1.0	31.4
Tabular Ferruginous Sandstone		24.3			11.2	35.5
Ferruginous conglomerate	4.3					4.3
Ferruginous concretion	49.2	149.6	1.1	4.3	99.6	303.8
Pebble	76.6	336.5	42.4	18.2	147.8	621.5
Cobble		32.8		14.8		47.6
Petrified wood		19.1			0.4	19.5
Unidentified		15.3				15.3
Coal		19.1				19.1
Totals	279.1	1021.3	80.3	188.5	489.4	2058.6

Minerals and Pigments

Table D.13. Quantity of minerals and pigments by level, Unit 1, Mound P.

	Level 2	Level 8	Level 9	Level 10	Level 11	Level 13	Level 15	Total
Limonite (red)	3	1	4	2		4	2	16
Limonite (yellow)					1	1		2
Totals	3	1	4	2	1	5	2	18

Table D.14. Weight (g) of minerals and pigments by level, Unit 1, Mound P.

	Level 2	Level 8	Level 9	Level 10	Level 11	Level 13	Level 15	Total
Limonite (red)	13.7	1.4	31.2	5.0		6.0	1.4	58.7
Limonite (yellow)					16.2	2.0		18.2
Totals	13.7	1.4	31.2	5.0	16.2	8.0	1.4	76.9

Table D.15. Quantity of minerals and pigments by level, Unit 2, Mound P.

	Level 2	Level 4	Level 6	Level 8	Level 9	Level 11	Level 14	Level 16	Level 19	Level 20	Profile Clean-up	Total
Limonite (red)	3	2	2		1	1		1		28	1	39
Limonite (yellow)		1										1
Muscovite mica**				p			p		p			
Galena*				1								1
Totals	3	3	2	1	1	1		1		28	1	41

*Galena specimen exhibited ground surfaces

**Muscovite mica quantified as present

Table D.16. Weight (g) of minerals and pigments by level, Unit 2, Mound P.

	Level 2	Level 4	Level 6	Level 8	Level 9	Level 11	Level 14	Level 16	Level 19	Level 20	Profile Clean-up	Total
Limonite (red)	9.5	2.2	7.9		1.2	15.5		13.5		45.8	1.8	97.4
Limonite (yellow)		8.4										8.4
Muscovite mica							0.1		1.5			1.6
Galena*				1.1								1.1
Totals	9.5	10.6	7.9	1.1	1.2	15.5	0.1	13.5	1.5	45.8	1.8	108.5

*Galena specimen exhibited ground surfaces

Table D.17. Quantity of minerals and pigments by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Total
Limonite (red)	4	2	3	3	2	1	3	1	1	1	2	23
Limonite (yellow)									1			1
Muscovite mica*		p	p									
Totals	4	2	3	3	2	1	3	1	2	1	2	24

*Muscovite mica quantified as present

Table D.18. Weight (g) of minerals and pigments by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Total
Limonite (red)	6.3	3.7	7.3	5.8	1.2	3.5	3.8	3.6	0.7	2.6	1.7	40.2
Limonite (yellow)									63.6			63.6
Muscovite mica		1.0	0.3									1.3
Totals	6.3	4.7	7.6	5.8	1.2	3.5	3.8	3.6	64.3	2.6	1.7	105.1

Table D.19. Quantity of minerals and pigments by level, Unit 4, Mound P.

	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Cle	Total
Limonite (red)	1	2	10	20	26	10	8	2	79
Limonite (yellow)	1		4	5	4	6	1	2	23
Muscovite mica*	p		p	p	p			p	
Galena**			1	1					2
Totals	2	2	15	26	30	16	9	4	104

*Muscovite mica quantified as present
**Galena cubes exhibit ground surfaces

Two specimens of muscovite mica were possibly cut; one from Level 7 and one from Profile clean-up.

Table D.20. Weight (g) of minerals and pigments by level, Unit 4, Mound P.

	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Cle	Total
Limonite (red)	2.1	12.5	11.7	29.1	17.8	7.6	32.9	6.1	119.8
Limonite (yellow)	0.8		22.9	3.5	67.6	26.3	0.2	1.6	122.9
Muscovite mica	0.0		0.6	0.0	0.3			0.4	1.3
Galena**			1.7	1.0					2.7
Totals	2.9	12.5	36.9	33.6	85.7	33.9	33.1	8.1	246.7

**Galena cubes exhibit ground surfaces

Table D.21. Quantity of minerals and pigments by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Limonite (red)	1	14	11	12	1		39
Limonite (yellow)		7	3	4		1	15
Muscovite mica*		p	p		p	p	
Galena**				1			1
Totals	1	21	14	17	1	1	55

*Muscovite mica quantified as present
**Galena cubes exhibit ground surfaces

Table D.22. Weight (g) of minerals and pigments by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Limonite (red)	4.8	34.8	26.6	30.1	1.8	0.2	98.3
Limonite (yellow)		4.4	12	1.9			18.3
Muscovite mica		0	0.2		0	0	0.2
Galena**				1.1			1.1
Totals	4.8	39.2	38.8	33.1	1.8	0.2	117.9

**Galena cubes exhibit ground surfaces

Table D.23. Quantity of minerals and pigments by level, units 6 and 7, Mound P.

	Unit 6			Unit 7	Total
	Level 1	Level 2	Level 3B	Level 1	
Limonite (red)	1	6		7	14
Limonite (yellow)				2	2
Muscovite mica*			p		
Totals	1	6		9	16

*Muscovite mica quantified as present

Table D.24. Weight (g) of minerals and pigments by level, units 6 and 7, Mound P.

	Unit 6			Unit 7	Total
	Level 1	Level 2	Level 3B	Level 1	
Limonite (red)	1.6	7.1		4.3	13.0
Limonite (yellow)				0.8	0.8
Muscovite mica			0.0		0.0
Totals	1.6	7.1	0.0	5.1	13.8

Flaked Stone

Table D.25. Quantity of flaked stone by level, Unit 1, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 6	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Projectile Point														
Tuscaloosa gravel					1								1	2
Expedient Tool														
Tuscaloosa gravel											1			1
Drill / Perforator														
Unidentified							1							1
Core														
Quartz								1						1
Shatter														
Blue-gray Fort Payne										1				1
Quartz	1							1	1					3
Quartzite	2				1					1				4
Tuscaloosa gravel		3						2	2				1	8
Unidentified							1						1	2
Flake														
Blue-gray Fort Payne				1		2						2		5
Tuscaloosa gravel		2	1		1	1	2			1		2	2	12
Unidentified		1												1
Tested Pebble														
Quartzite												1		1
Tuscaloosa gravel										1				1
Totals	3	6	1	1	3	3	4	4	3	4	1	5	5	43

Table D.26. Weight (g) of flaked stone by level, Unit 1, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 6	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Projectile Point														
Tuscaloosa gravel					1.2								0.7	1.9
Expedient Tool														
Tuscaloosa gravel											2.8			2.8
Drill / Perforator														
Unidentified							1.6							1.6
Core														
Quartz								4.7						4.7
Shatter														
Quartz	2.1							0.4	0.5					3.0
Quartzite	1.0				0.6									1.6
Tuscaloosa gravel		4.6						2.0	10.1				1.6	18.3
Unidentified							5.3						1.3	6.6
Flake														
Blue-gray Fort Payne				4.1		0.4								4.5
Tuscaloosa gravel		5.6	0.5		0.2	2.1	0.4						0.5	9.3
Unidentified		0.1												0.1
Tested Pebble														
Quartzite												37.8		37.8
Tuscaloosa gravel										8.2				8.2
Totals	3.1	10.3	0.5	4.1	2.0	2.5	7.3	7.1	10.6	8.2	2.8	37.8	4.1	100.4

Table D.27. Quantity of flaked stone by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile Clean-up	Total
Projectile Point																										
Fort Payne chert																								1		1
Tuscaloosa gravel						1													1							2
Unidentified									1																	1
Preform																										
Tuscaloosa gravel						1																				1
Expedient Tool																										
Blue-gray Fort Payne														2												2
Dover chert		1																								1
Tuscaloosa gravel								1								1				1				1		4
Unidentified								1																		1
Microdrill																										
Tuscaloosa gravel																					1					1
Drill bit																										
Blue-gray Fort Payne				**1**													1									2
Core																										
Tuscaloosa gravel		1		1															1		1			1		5
Unidentified								1																		1
Shatter																										
Ferruginous sandstone	1																									1
Fort Payne chert		1						1											1							3
Quartz														1				1					1			3
Quartzite		3	2	1		1		1									2									10
Tuscaloosa gravel	5					2	1	2								1		2		9	18		2	1		43
Unidentified			1	1				1												5	5					13
Flake																										
Bangor								1																		1
Blue-gray Fort Payne	1					1		4	2	3	1			1				1		1	1				1	17
Fort Payne chert																	1				1	1				3
Quartz																				1						1
Quartzite		1																								1
Tallahatta quartzite								1																		1
Tuscaloosa gravel	9	7		1		1	1	2	2		1			1			1	1	3	30	7	1	3			71
Unidentified	1									1						1		1			2					6
Tested Pebble																										
Tuscaloosa gravel		1																					1			2
Quartzite		1				1																				2
Unidentified				2																			1			3
Totals	17	16	3	7		8	2	16	5	4	2			5		3	5	6	6	47	36	2	8	4	1	203

Table D.28. Weight (g) of flaked stone by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile Clean-up	Total
Projectile Point																										
Fort Payne chert																								1.5		1.5
Tuscaloosa gravel						0.6													1.1							1.7
Unidentified									1.6																	1.6
Preform																										
Tuscaloosa gravel						14.7																				14.7
Expedient Tool																										
Blue-gray Fort Payne														2.4												2.4
Dover chert		1.0																								1.0
Tuscaloosa gravel								0.9								5.5				0.4				1.8		8.6
Unidentified								9.8																		9.8
Microdrill																										
Tuscaloosa gravel																					0.5					0.5
Drill bit																										
Blue-gray Fort Payne				0.6													1.3									1.9
Core																										
Tuscaloosa gravel		32.5		14.5															4.3		9.5			10.6		71.4
Unidentified								12.1																		12.1
Shatter																										
Ferruginous sandstone	0.3																									0.3
Fort Payne chert		0.2						2.7																		2.9
Quartz														0.3				0.7					1.7			2.7
Quartzite		2.8	0.9	0.3		3.7		4.0									25.9									37.6
Tuscaloosa gravel	3.9					2.4	7.2	11.0								0.4		2.0		29.9	0.3		3.4			60.5
Unidentified			2.5	0.4				2.6												6.3	0.8					12.6
Flake																										
Bangor								1.0																		1.0
Blue-gray Fort Payne	0.9					0.4		5.0	7.6	3.3	1.9			0.9				0.4		0.4	0.3				1.8	22.9
Fort Payne chert																	0.4		1.0		0.8	0.6				2.8
Quartz																				0.6						0.6
Quartzite		0.4																								0.4
Tallahatta quartzite								6.7																		6.7
Tuscaloosa gravel	10.8	7.1		1.3		0.7	0.4	1.6	0.9		0.3			0.7			12.0	7.6	2.0	30.2	6.7	0.6	2.2	10.6		95.7
Unidentified	0.1									0.8						0.3		0.3			0.5					2.0
Tested Pebble																										
Tuscaloosa gravel		4.9																					2.5			7.4
Quartzite		10.4				46.2																				56.6
Unidentified				5.6																			7.1			12.7
Totals	16.0	59.3	3.4	22.7		68.7	7.6	57.4	10.1	4.1	2.2			4.3		6.2	39.6	11.0	8.4	67.8	19.4	1.2	16.9	24.5	1.8	452.6

Table D.29. Quantity of flaked stone by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 14	Level 15	Total
Projectile Point														
Tuscaloosa gravel		1	1											2
Preform														
Quartz				2										2
Expedient Tool														
Blue-gray Fort Payne		1									1			2
Tuscaloosa gravel					1			1						2
Microdrill														
Blue-gray Fort Payne							1							1
Perforator														
Tuscaloosa gravel							1							1
Core														
Tuscaloosa gravel							1							1
Shatter														
Ferruginous sandstone				1										1
Quartz				2										2
Quarzite	1	1						1						3
Tuscaloosa gravel	5	3	5	1	4		2							20
Unidentified	2	1	1	1	1			1	1		1			9
Flake														
Blue-gray Fort Payne		1			2	1	1				2		1	8
Tuscaloosa gravel	5	5	3	2	4	6		3		5		1		34
Quartz					1	3								4
Unidentified			1	1	1				1					4
Totals	13	13	11	10	14	10	6	6	2	5	4	1	1	96

Table D.30. Weight (g) of flaked stone by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 14	Level 15	Total
Projectile Point														
Tuscaloosa gravel		0.7	1.2											1.9
Preform														
Quartz				6.2										6.2
Expedient Tool														
Blue-gray Fort Payne		0.6									0.4			1.0
Tuscaloosa gravel					3.3			0.7						4.0
Microdrill														
Blue-gray Fort Payne							0.7							0.7
Perforator														
Tuscaloosa gravel							1.3							1.3
Core														
Tuscaloosa gravel							4.4							4.4
Shatter														
Ferruginous sandstone				0.5										0.5
Quartz				0.8										0.8
Quarzite	0.7	2.4						1.4						4.5
Tuscaloosa gravel	4.1	7.7	8.9	0.7	1.7		3.3							26.4
Unidentified	2.1	2.0	3.9	0.1	4.0			0.4	0.7		3.4			16.6
Flake														
Blue-gray Fort Payne		0.2			1.0	0.0	0.2				2.8		1.8	6.0
Tuscaloosa gravel	3.9	5.4	1.6	0.5	1.6	8.4		1.5		2.6		0.8		26.3
Quartz					0.4	0.8								1.2
Unidentified			0.6	0.2	2.6				0.1					3.5
Totals	10.8	19.0	16.2	9.0	14.6	9.2	9.9	4.0	0.8	2.6	6.6	0.8	1.8	105.3

Table D.31. Quantity of flaked stone by level, Unit 4, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Clean-up	Total
Projectile Point											
Tuscaloosa gravel							1				1
Unidentified					1			1			2
Finished Biface											
Unidentified			1	1							2
Expedient Tool											
Blue-gray Fort Payne						1		2			3
Tuscaloosa gravel				1			1				2
Microdrill											
Tuscaloosa gravel				1							1
Core											
Blue-gray Fort Payne						1*					1
Tuscaloosa gravel					2	1					3
Unidentified								1			1
Shatter											
Fort Payne chert				1							1
Quartz						1		2		1	4
Quartzite		2		2	1		8	6	3	4	26
Tuscaloosa gravel		2	3	11	8	15	17		6	7	69
Unidentified			1		3	2		3	2	3	14
Flake											
Blue-gray Fort Payne		1				1	1			1	4
Tuscaloosa gravel	1	4	5	11	22	32	22	16	6	6	125
Unidentified			1	1	4	5	8	4	4	5	32
Tested Pebble											
Tuscaloosa gravel		1				1			2		4
Totals	1	10	11	29	41	59	58	35	23	27	294

Table D.32. Weight (g) of flaked stone by level, Unit 4, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Clean-up	Total
Projectile Point											
Tuscaloosa gravel							0.6				0.6
Unidentified					1.4			2.8			4.2
Finished Biface											
Unidentified			1.3	1.1							2.4
Expedient Tool											
Blue-gray Fort Payne						30.3		16.1			46.4
Tuscaloosa gravel				0.6			0.9				1.5
Microdrill											
Tuscaloosa gravel				0.1							0.1
Core											
Blue-gray Fort Payne						30.3*					30.3
Tuscaloosa gravel					25.1						25.1
Unidentified								4.1			4.1
Shatter											
Fort Payne chert				0.3							0.3
Quartz						0.6		1.4		0.2	2.2
Quartzite		2.1		6.5	1.8		7.2	52.9	1.0	15.6	87.1
Tuscaloosa gravel		6.2	3.2	4.5	5.4	14.9	30.5		4.2	2.3	71.2
Unidentified			0.5		2.9	1.3		3.3	2.4	4.3	14.7
Flake											
Blue-gray Fort Payne		0.2				0.5	4.8			2.2	7.7
Tuscaloosa gravel	0.8	3.8	3.5	3.8	8.3	15.9	13.4	11.5	3.6	3.7	68.3
Unidentified			0.7	0.6	3.4	1.9	8.5	4.0	2.8	5.9	27.8
Tested Pebble											
Tuscaloosa gravel		3.8				5.3			24.9		34.0
Totals	0.8	16.1	9.2	17.5	48.3	70.7	65.9	96.1	38.9	34.2	397.7

Table D.33. Quantity of flaked stone by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Projectile Point								
Blue-gray Fort Payne			1	1				2
Tuscaloosa gravel					1		1	2
Quartz	1							1
Unidentified					1			1
Finished Biface								
Tuscaloosa gravel	1			1				2
Unidentified		1						1
Expedient Tool								
Blue-gray Fort Payne				2				2
Tuscaloosa gravel	1	1		1				3
Microdrill								
Tuscaloosa gravel		1	1					2
Unidentified				1				1
Drill Bit								
Tuscaloosa gravel				1				1
Core								
Blue-gray Fort Payne					1			1
Tuscaloosa gravel			2	1				3
Unidentified			1					1
Shatter								
Blue-gray Fort Payne		1		1				2
Quartz		1						1
Quartzite	1	6	2	5	4	1		19
Tuscaloosa gravel	2	5	9	18	8	2		44
Unidentified	1	6		3	6			16
Flake								
Blue-gray Fort Payne	3	1		4				8
Quartz					1			1
Quartzite						1		1
Tuscaloosa gravel	8	8	36	24	9	1		86
Unidentified		5	2	6	5			18
Tested Pebble								
Quartzite				1				1
Tuscaloosa gravel	1		1	2	2			6
Unidentified								
Unidentified				2				2
Totals	19	36	55	74	38	5	1	228

Table D.34. Weight (g) of flaked stone by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Projectile Point								
Blue-gray Fort Payne			0.8	1.4				2.2
Tuscaloosa gravel					1.5		0.6	2.1
Quartz	8.9							8.9
Unidentified					1.5			1.5
Finished Biface								
Tuscaloosa gravel	0.7			8.7				9.4
Unidentified		1.1						1.1
Expedient Tool								
Blue-gray Fort Payne				6.7				6.7
Tuscaloosa gravel	0.5	6.7		1.8				9.0
Microdrill								
Tuscaloosa gravel		0.6	0.3					0.9
Unidentified				0.2				0.2
Drill Bit								
Tuscaloosa gravel				0.4				0.4
Core								
Blue-gray Fort Payne					6.0			6.0
Tuscaloosa gravel			25.0	4.2				29.2
Unidentified			2.5					2.5
Shatter								
Blue-gray Fort Payne		0.6		0.4				1.0
Quartz		0.3				0.2		0.5
Quartzite	1.4	5.4	2.6	2.1	9.1			20.6
Tuscaloosa gravel	2.9	3.4	14.3	23.3	13.7	0.9		58.5
Unidentified	0.6	11.9		5.0	16.0			33.5
Flake								
Blue-gray Fort Payne	3.1	1.0		3.2				7.3
Quartz					1.0			1.0
Quartzite						0.4		0.4
Tuscaloosa gravel	5.2	5.2	25.2	17.0	4.8	0.9		58.3
Unidentified		1.7	0.6	2.9	2.7			7.9
Tested Pebble								
Quartzite				23.2				23.2
Tuscaloosa gravel	66.3		10.4	47.8	44.7			169.2
Unidentified								
Unidentified				6.7				6.7
Totals	89.6	37.9	81.7	155.0	101.0	2.4	0.6	468.2

Table D.35. Quantity of flaked stone by level, units 6 and 7, Mound P.

	Unit 6		Unit 7	Total
	Level 1	Level 2	Level 1	
Expedient Tool				
Blue-gray Fort Payne			1	1
Shatter				
Blue-gray Fort Payne		1		1
Quartz		1		1
Quartzite	1	1		2
Tuscaloosa gravel		2	3	5
Unidentified		1		1
Flake				
Blue-gray Fort Payne	1			1
Tuscaloosa gravel		3	5	8
Quartz			1	1
Quartzite	1			1
Unidentified		2	3	5
Tested Pebble				
Tuscaloosa gravel		1		1
Totals	3	12	13	28

Table D.36. Weight (g) of flaked stone by level, units 6 and 7, Mound P.

	Unit 6		Unit 7	Total
	Level 1	Level 2	Level 1	
Expedient Tool				
Blue-gray Fort Payne			1.9	1.9
Shatter				
Blue-gray Fort Payne		2.6		2.6
Quartz		2.9		2.9
Quartzite	0.9	1.9		2.8
Tuscaloosa gravel		13.3	9.3	22.6
Unidentified		17.8		17.8
Flake				
Blue-gray Fort Payne	3.0			3.0
Tuscaloosa gravel		1.3	1.7	3.0
Quartz			0.2	0.2
Quartzite	0.2			0.2
Unidentified		0.7	2.1	2.8
Tested Pebble				
Tuscaloosa gravel		12.7		12.7
Totals	4.1	53.2	15.2	72.5

Ground Stone

Table D.37. Quantity of greenstone and ground stone objects by level, Unit 1, Mound P.

	Level 2	Level 4	Level 7D	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Greenstone											
Unworked shatter				1		2		1		1	5
Ground / polished chip						1					1
Palette Fragment											
Sandstone, Fine Gray Micaceous Pottsville						1	1				2
Tablet Fragment											
Sandstone, Fine Gray Micaceous Pottsville							1				1
Ground Surface											
Sandstone, Brown or Ferruginous Pottsville	1		1	1			1			1	5
Sandstone, Fine Gray Micaceous Pottsville		2			1		2	1			6
Tabular Ferruginous Sandstone								1			1
Polished Surface											
Tabular Ferruginous Sandstone					1						1
Sandstone									1		1
Totals	1	2	1	2	2	4	5	3	1	2	23

Table D.38. Weight (g) of greenstone and ground stone objects by level, Unit 1, Mound P.

	Level 2	Level 4	Level 7D	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Greenstone											
Unworked shatter				39.6		4.2		3.5		0.2	47.5
Ground / polished chip						10.5					10.5
Palette Fragment											
Sandstone, Fine Gray Micaceous Pottsville						44.0	21.4				65.4
Tablet Fragment											
Sandstone, Fine Gray Micaceous Pottsville							59.1				59.1
Ground Surface											
Sandstone, Brown or Ferruginous Pottsville	10.3		80.3	123.4			52.7			85.5	352.2
Sandstone, Fine Gray Micaceous Pottsville		8.5			14.8		13.9	24.5			61.7
Tabular Ferruginous Sandstone								47.9			47.9
Polished Surface											
Tabular Ferruginous Sandstone					62.3						62.3
Sandstone									0.4		0.4
Totals	10.3	8.5	80.3	163.0	77.1	58.7	147.1	75.9	0.4	85.7	707.0

Table D.39. Quantity of greenstone and ground stone objects by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 20	Level 21	Level 23	Total
Greenstone																				
Celt fragment				1				1	1											3
Unworked shatter	1	3		5		1	1	5	2				1						1	20
Ground/polished chip		1				2	1		2								1			7
Palette Fragment																				
Sandstone, Fine Gray Micaceous				1		1														2
Tablet Fragment																				
Sandstone, Fine Gray Micaceous						1													1	2
Small Stone Disk																				
Sandstone, Fine Gray Micaceous				1																1
Tabular Ferruginous Sandstone	1																			1
Grooved Abrader																				
Sandstone, Brown or Ferruginous Pottsville														1	1		1			3
Pitted Anvil Stone																				
Sandstone, Brown or Ferruginous Pottsville															1					1
Saw																				
Tabular Ferruginous Sandstone										1							1			2
Hammerstone																				
Quartzite								1				1		1						3
Ground Surface																				
Sandstone, Brown or Ferruginous Pottsville		1				3			1		1		3		1	2	1			13
Sandstone, Fine Gray Micaceous Pottsville										1					1					2
Tabular Ferruginous Sandstone					1			1							1					3
Sandstone																		1		1
Polished Surface																				
Tabular Ferruginous Sandstone							1													1
Unidentified, tabular ferruginous sandstone																1				1
Unidentified, quartzite pebble		1	1																	2
Totals	2	6	1	8	1	8	3	8	6	2	1	1	4	2	5	3	4	1	2	68

Table D.40. Weight (g) of greenstone and ground stone objects by level, Unit 2, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 20	Level 21	Level 23	Total
Greenstone																				
Celt fragment				52.2				60.8	51.7											164.7
Unworked shatter	2.6	7.5		36.1		0.4	3.4	12.7	15.1				6.6						1.2	85.6
Ground/polished chip		5.2				4.3	1.7		2.9								0.4			14.5
Palette Fragment																				
Sandstone, Fine Gray Micaceous				20.3		58.9														79.2
Tablet Fragment																				
Sandstone, Fine Gray Micaceous						51.3													19.2	70.5
Small Stone Disk																				
Sandstone, Fine Gray Micaceous				70.4																70.4
Tabular Ferruginous Sandstone	33.5																			33.5
Grooved Abrader																				
Sandstone, Brown or Ferruginous Pottsville														23.3	125.7		4.2			153.2
Pitted Anvil Stone																				
Sandstone, Brown or Ferruginous Pottsville															261.6					261.6
Saw																				
Tabular Ferruginous Sandstone										1.4							4.7			6.1
Hammerstone																				
Quartzite								102.6				59.2		128.8						290.6
Ground Surface																				
Sandstone, Brown or Ferruginous Pottsville		2.1				218.4			1.3		48.0		59.7		73.5	206.0	38.9			647.9
Sandstone, Fine Gray Micaceous Pottsville										15.6					34.4					50.0
Tabular Ferruginous Sandstone					10.8			49.1							10.1					70.0
Sandstone																		17.4		17.4
Polished Surface																				
Tabular Ferruginous Sandstone							2.6													2.6
Unidentified, tabular ferruginous sandstone																71.0				71.0
Unidentified, quartzite pebble		6.8	4.6																	11.4
Totals	36.1	21.6	4.6	179.0	10.8	333.3	7.7	225.2	71.0	17.0	48.0	59.2	66.3	152.1	505.3	277.0	48.2	17.4	20.4	2100.2

Table D.41. Quantity of greenstone and ground stone objects by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 8	Level 9	Level 13	Level 14	Misc.	Total
Greenstone												
Ground / polished chip							1	1				2
Unworked shatter		1		1						1		3
Small Stone Disk												
Tabular Ferruginous Sandstone						1						1
Mortar												
Sandstone, Brown or Ferruginous Pottsville			1									1
Hammerstone												
Quartzite				1								1
Ground Surface												
Sandstone, Brown or Ferruginous Pottsville		3				1	3		1			8
Sandstone, Fine Gray Micaceous Pottsville	1						1				1	3
Tabular Ferruginous Sandstone	1				1							2
Polished Surface												
Sandstone, Fine Gray Micaceous Pottsville							1					1
Tabular Ferruginous Sandstone				1								1
Totals	2	4	1	3	1	2	6	1	1	1	1	23

Table D.42. Weight (g) of greenstone and ground stone objects by level, Unit 3, Mound P.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 8	Level 9	Level 13	Level 14	Misc.	Total
Greenstone												
Ground / polished chip							0.8	1.6				2.4
Unworked shatter		0.3		16.9						1.9		19.1
Small Stone Disk												
Tabular Ferruginous Sandstone						12.5						12.5
Mortar												
Sandstone, Brown or Ferruginous Pottsville			164.7									164.7
Hammerstone												
Quartzite				37.7								37.7
Ground Surface												
Sandstone, Brown or Ferruginous Pottsville		73.7				29.2	216.3		216.5			535.7
Sandstone, Fine Gray Micaceous Pottsville	6.8						55.1				108.6	170.5
Tabular Ferruginous Sandstone	14.3				12.3							26.6
Polished Surface												
Sandstone, Fine Gray Micaceous Pottsville							1.3					1.3
Tabular Ferruginous Sandstone				148.8								148.8
Totals	21.1	74	164.7	203.4	12.3	41.7	273.5	1.6	216.5	1.9	108.6	1119.3

Table D.43. Quantity of greenstone and ground stone objects by level, Unit 4, Mound P.

	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Clean-up	Total
Greenstone									
Celt fragment								1	1
Ground / polished chip		1			1				2
Unworked shatter			2	2	1	2		1	8
Small Stone Disk									
Sandstone, Fine Gray Micaceous Pottsville							1		1
Palette Fragment									
Sandstone, Fine Gray Micaceous Pottsville									
Tablet Fragment									
Sandstone, Brown or Ferruginous Pottsville						1			1
Grooved Abrader									
Sandstone, Brown or Ferruginous Pottsville						2			2
Whetstone									
Sandstone, Fine Gray Micaceous Pottsville								1	1
Saw									
Tabular Ferruginous Sandstone		1						1	2
Ground Surface									
Sandstone, Brown or Ferruginous Pottsville	1	1		3	1		2		8
Sandstone, Fine Gray Micaceous Pottsville						1	1		2
Tabular Ferruginous Sandstone							1		1
Tabular Ferruginous Shale			1						1
Unidentified						1	3		4
Composite Tool									
Sandstone, Brown or Ferruginous Pottsville			1						1
Ground / Polished Stone Fragment									
Tabular Ferruginous Shale				2					2
Unidentified				1					1
Totals	1	3	4	8	3	7	8	4	38

Table D.44. Weight (g) of greenstone and ground stone objects by level, Unit 4, Mound P.

	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Profile Clean-up	Total
Greenstone									
Celt fragment								38.9	38.9
Ground / polished chip		0.2			1.2				1.4
Unworked shatter			0.9	5.2	1.6			1.1	8.8
Small Stone Disk									
Sandstone, Fine Gray Micaceous Pottsville							14.3		14.3
Palette Fragment									
Sandstone, Fine Gray Micaceous Pottsville									
Tablet Fragment									
Sandstone, Brown or Ferruginous Pottsville						71.2			71.2
Grooved Abrader									
Sandstone, Brown or Ferruginous Pottsville						203.9			203.9
Whetstone									
Sandstone, Fine Gray Micaceous Pottsville								376.5	376.5
Saw									
Tabular Ferruginous Sandstone		37.6						11.6	49.2
Ground Surface									
Sandstone, Brown or Ferruginous Pottsville	15.9	31.7		149.3	2.4		30.6		229.9
Sandstone, Fine Gray Micaceous Pottsville						0.6	1.2		1.8
Tabular Ferruginous Sandstone							31.9		31.9
Tabular Ferruginous Shale			0.2						0.2
Unidentified						3.1	48.3		51.4
Composite Tool									
Sandstone, Brown or Ferruginous Pottsville			296.8						296.8
Ground /Polished Stone Fragment									
Tabular Ferruginous Shale				6.1					6.1
Unidentified				3					3
Totals	15.9	69.5	297.9	163.6	5.2	278.8	126.3	428.1	1385.3

Table D.45. Quantity of greenstone and ground stone objects by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Total
Greenstone							
Celt fragment	1			1		1	3
Ground / polished chip				1			1
Unworked shatter	2	1		4	4		11
Palette Fragment							
Sandstone, Fine Gray Micaceous Pottsville					1		1
Hammerstone							
Quartzite		1				1	2
Grooved Abrader							
Sandstone, Brown or Ferruginous Pottsville	1			3	1		5
Muller							
Sandstone, Brown or Ferruginous Pottsville			1				1
Saw							
Tabular Ferruginous Sandstone						1	1
Ground Surface							
Sandstone, Brown or Ferruginous Pottsville				2	4		6
Sandstone, Fine Gray Micaceous Pottsville							
Tabular Ferruginous Sandstone	1				1		2
Tabular Ferruginous Shale	1						1
Unidentified	1						1
Composite Tool							
Sandstone, Brown or Ferruginous Pottsville				1			1
Unidentified, petrified wood		1					1
Totals	7	3	1	12	11	3	37

The specimen classified as a piece of petrified wood is a potential saw, with a ground, rounded edge. The palette fragment is thin and ground-smooth on both faces, but does not have a circular edge.

Table D.46. Weight (g) of greenstone and ground stone objects by level, Unit 5, Mound P.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Total
Greenstone							
Celt fragment	24.5			102.5		89.0	216.0
Ground / polished chip				1.8			1.8
Unworked shatter	2.9	0.8		4.5	16.0		24.2
Palette Fragment							
Sandstone, Fine Gray Micaceous Pottsville					26.1		26.1
Hammerstone							
Quartzite		93.0				90.1	183.1
Grooved Abrader							
Sandstone, Brown or Ferruginous Pottsville	51.6			262.6	10.7		324.9
Muller							
Sandstone, Brown or Ferruginous Pottsville			71.0				71.0
Saw							
Tabular Ferruginous Sandstone						25.2	25.2
Ground Surface							
Sandstone, Brown or Ferruginous Pottsville				56.4	274.3		330.7
Sandstone, Fine Gray Micaceous Pottsville							
Tabular Ferruginous Sandstone	20.7				16.4		37.1
Tabular Ferruginous Shale	7.5						7.5
Unidentified	33.9						33.9
Composite Tool							
Sandstone, Brown or Ferruginous Pottsville				120.9			120.9
Unidentified, petrified wood		5.7					5.7
Totals	141.1	99.5	71.0	548.7	343.5	204.3	1408.1

Table D.47. Quantity of greenstone and ground stone objects by level, units 6 and 7, Mound P.

	Unit 6				Unit 7	Total
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Greenstone						
Celt fragment						
Ground / polished chip	1					1
Unworked shatter		1				1
Grooved Abrader						
Sandstone, Brown or Ferruginous Pottsville		2	1			3
Saw						
Tabular Ferruginous Sandstone			1			1
Ground Surface						
Sandstone, Fine Gray Micaceous Pottsville					2	2
Tabular Ferruginous Sandstone				1		1
Unidentified, Tabular Ferruginous Sandstone		1				1
Totals	1	4	2	1	2	10

Table D.48. Weight (g) of greenstone and ground stone objects by level, units 6 and 7, Mound P.

	Unit 6				Unit 7	Total
	Level 1	Level 2	Level 3A	Level 3B	Level 1	
Greenstone						
Celt fragment						
Ground / polished chip	0.6					0.6
Unworked shatter		1.5				1.5
Grooved Abrader						
Sandstone, Brown or Ferruginous Pottsville		75.2	7			82.2
Saw						
Tabular Ferruginous Sandstone			9.3			9.3
Ground Surface						
Sandstone, Fine Gray Micaceous Pottsville					1.3	1.3
Tabular Ferruginous Sandstone				2.5		2.5
Unidentified, Tabular Ferruginous Sandstone		23.1				23.1
Totals	0.6	99.8	16.3	2.5	1.3	120.5

APPENDIX E

FIRED CLAY DATA

Daub from Mound P

Table E.1. Quantity of daub and fired clay by level, Unit 1.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 5b	Level 6	Level 7b	Level 7d	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Profile	Total
Structural Impression																				
Daub, cane, grass, leaf, or splint impressions	11	40	27	11	1		41	48	22	55	70	67	183	257	406	139	31	1	4	1414
Daub; double whole cane impression		1																		1
Daub; single whole cane impression								2		3		2	6	10	14	4				41
Daub; split and whole cane impressions								1							2					3
Daub; split-cane impression								1		4			12	15		9	2			43
Daub; splint impression												5			1					6.0
Daub; overlapping split and whole cane impressions														2		1				3.0
Daub; parallel split and whole cane impressions																1				1.0
Daub; perpendicular split and whole cane impressions																			1	1.0
Structural Treatment																				
Daub; gritty plaster								1			2			3	1	1				8
Miscellaneous																				
Slag / fired silicate		2																		2.0
Fired clay, unidentified	4	16	4	4		1	12	9	4	28	19	29	68	80	57	28	22	3		388
Fired clay / daub, < 0.5 inch					6													3		9.0
Totals	15	59	31	15	7	1	53	62	26	90	91	103	269	367.0	481	183	55	7	5	1920.0

Table E.2. Weight (g) of daub and fired clay by level, Unit 1.

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 5b	Level 6	Level 7b	Level 7d	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Profile	Total
Structural Impression																				
Daub, cane, grass, leaf, or splint impressions	28.3	149.3	118.0	48.0	12.3		148.4	193.2	150.8	186.8	329.3	320.6	930.1	2057.6	3412.2	1108.6	138.1	2.5	61.1	9395.2
Daub; double whole cane impression		14.5																		14.5
Daub; single whole cane impression								4.6		7.7		112.1	48.9	208.1	241.3	75.8				698.5
Daub; split and whole cane impressions								6.7							18.9					25.6
Daub; split-cane impression								29.2		15.8			321.4			152.9	6.5			525.8
Daub; splint impression												24.9		165.0	8.2					198.1
Daub; overlapping split and whole cane impressions														145.0		21.2				166.2
Daub; parallel split and whole cane impressions																38.5				38.5
Daub; perpendicular split and whole cane impressions																			23.8	23.8
Structural Treatment																				
Daub; gritty plaster								8.6			22.8			24.6	79.7	15.3			36.8	187.8
Miscellaneous																				
Slag / fired silicate		0.9																		0.9
Fired clay, unidentified	16.5	57.0	13.0	13.3		13.8	49.3	127.1	18.5	106.6	56.7	129.6	334.1	528.3	515.9	127.0	67.3	18.7		2192.7
Fired clay / daub, < 0.5 inch	42.0	673.4	79.3	59.2	4.0		413.5	39.4	33.8	338.4	246.1	201.5	457.0	297.2	545.6	196.6	202.5	4.1		3833.6
Totals	86.8	895.1	210.3	120.5	16.3	13.8	611.2	408.8	203.1	655.3	654.9	788.7	2091.5	3425.8	4821.8	1735.9	414.4	25.3	121.7	17301.2

Table E.3. Quantity of daub and fired clay by level, Unit 2.

	Surface	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile	Total
Structural Impression																											
Daub, cane, grass, leaf, or splint impressions		133	116	48	124	24	221	13	414	261	108	53	36	28	35	38	39	19	500	3508	101	65	214	240	48		6386
Daub; single whole cane impression		1			3		7		1	2	3		1	1				1	6	37	1	1		6			71
Daub; split-cane impression		3	2	1	4		4	2	11	11	6	6	1	2	2		1		36	310	5	1					408
Daub; triple whole cane impressions										2																	2
Daub; whole cane and split cane impressions										1										15							16
Daub; quadruple whole cane impressions										1																	1
Daub; double whole cane impression												5				1		1		3							10
Daub; splint impression																		5									5
Daub; overlapping split-cane impressions																				1							1
Daub; overlapping whole cane and split cane impressions																			4	5							9
Daub; parallel whole and split cane impressions																			1								1
Daub; double whole cane and single whole cane impressions																				1							1
Structural Treatment																											
Daub; gritty plaster											2		1		2		3		2	35	1	1	63	51	4		165
Daub; red-and-white plaster			2						4																		6
Daub; gritty plaster and single whole cane impression											1									1			1				3
Daub; white plaster																				2							2
Daub; gritty plaster with split cane impression																		1									1
Daub; single whole cane impressions, red-painted impressions																				1							1
Miscellaneous																											
Clay coil																				1							1
Clay wad									3	1										1							5
Hearth fragment											1																1
Mud dauber nest																				1							1
Fired clay, unidentified	4	31	27	11	45	4	8	23	56	60	47	27		3	8	2	20	7	27	343	10	14	25	19	16		837
Fired clay / daub, < 0.5 inch																											
Totals	4	168	147	60	176	28	240	38	489	339	168	91	39	34	47	41	63	34	576	4265	118	82	303	316	68		7934

Table E.4. Weight (g) of daub and fired clay by level, Unit 2.

	Surface	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Level 16	Level 17	Level 18	Level 19	Level 20	Level 21	Level 22	Level 23	Level 24	Profile	Total
Structural Impression																											
Daub, cane, grass, leaf, or splint impressions		490.6	461.0	337.3	634.2	118.6	940.0	410.9	1990.6	1086.3	750.3	251.9	139.8	111.9	158.9	132.2	327.3	492.2	1868.0	16639.0	410.7	327.7	1381.6	1185.2	282.6		30928.8
Daub; single whole cane impression		3.5			30.7		47.1		23.7	6.9	58.9		3.4	5.3				4.8	16.7	251.9	6.3	26.1		65.1			550.4
Daub; split-cane impression		17.1	6.3	17.8	46.4		35.6	13.4	268.3	86.2	55.8	106.7	7.8	5.9	8.4		34.2		388.3	2543.0	53.3	9.4					3703.9
Daub; triple whole cane impressions										7.5																	7.5
Daub; whole cane and split cane impressions										9.6										137.3							146.9
Daub; quadruple whole cane impressions										12.3																	12.3
Daub; double whole cane impression												76.1				7.9		3.0		17.5							104.5
Daub; splint impression																		58.4									58.4
Daub; overlapping split-cane impressions																				11.7							11.7
Daub; overlapping whole cane and split cane impressions																			21.0	42.3							63.3
Daub; parallel whole and split cane impressions																			4.6								4.6
Daub; double whole cane and single whole cane impressions																				4.2							4.2
Structural Treatment															71.3												71.3
Daub; gritty plaster											54.0		4.2				85.3		10.3	387.3	3.2	2.6	805.7	564.6	56.1		1973.3
Daub; red-and-white plaster			6.5						94.1																		100.6
Daub; gritty plaster and single whole cane impression																				14.1			53.9				68.0
Daub; white plaster											2.0									3.7							5.7
Daub; gritty plaster with split cane impression																		51.7									51.7
Daub; single whole cane impressions, red-painted impressions																				5.5							5.5
Miscellaneous																											
Clay coil																				3.5							3.5
Clay wad									14.9	8.6										13.8							37.3
Hearth fragment											15.2																15.2
Mud dauber nest																				6.7							6.7
Fired clay, unidentified	8.6	87.6	96.4	47.7	177.6	11.3	108.8	100.3	276.1	286.0	256.1	107.0		10.4	32.7	10.8	194.9	35.7	94.6	1109.0	33.9	51.8	126.6	77.2	87.5	552.7	3981.3
Fired clay / daub, < 0.5 inch	41.6	588.8	1508.8	44.4	1071.6	188.9	881.8	458.3	1152.5	784.3	396.7	212.9	82.1	68.8	183.4	101.9	148.2	578.1	2114.4	5172.0	356.9	220.0	386.9	405.5	120.7		17269.5
Totals	50.2	1187.6	2079.0	447.2	1960.5	318.8	2013.3	982.9	3820.2	2287.7	1589.0	754.6	237.3	202.3	454.7	252.8	789.9	1223.9	4517.9	26362.5	864.3	637.6	2754.7	2297.6	546.9	552.7	59186.1

Table E.5. Quantity of daub and fired clay by level, Unit 3.

	Surface	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Structural Impression																	
Daub; cane, grass, leaf, or splint impressions	4	706	987	248	73	43	13	28	12	7	17	17	22	3	10	3	2193
Daub; single whole cane impression		5	4	3					1		1						14
Daub; split-cane impression	3	40	47	10				1	1		2		1	1			106
Daub; split and whole cane impressions			1		1						1						3
Daub; splint impression				1													1
Daub; split cane impressions, perpendicular				1													1
Structural Treatment																	
Daub; gritty plaster	1	18	15	6				1	1			1					43
Miscellaneous																	
Clay wad					1												1
Fired clay / daub, < 0.5 inch																2	2
Fired clay, unidentified	2	47	65	42	15	14	9	14	25	11	10	22	17	1	19	3	316
Totals	10	816	1119	311	90	57	22	44	40	18	31	40	40	5	29	8	2680

Table E.6. Weight (g) of daub and fired clay by level, Unit 3.

	Surface	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15	Total
Structural Impression																	
Daub; cane, grass, leaf, or splint impressions	11.9	3069.1	4494.8	1230.5	335.1	236.9	65.0	133.4	51.5	26.1	123.5	84.0	67.8	13.7	62.1	12.1	10017.5
Daub; single whole cane impression		48.4	21.7	12.9					16.1		8.6						107.7
Daub; split-cane impression	13.4	580.6	625.5	79.4				5.7	4.1		34.1		3.7	5.6			1352.1
Daub; split and whole cane impressions			19.5		9.9						5.8						35.2
Daub; splint impression				5.6													5.6
Daub; split cane impressions, perpendicular				18.1													18.1
Structural Treatment																	
Daub; gritty plaster	6.1	130.5	183.5	43.3				2.8	16.8			4.9					387.9
Miscellaneous																	
Clay wad					14.4												14.4
Fired clay / daub, < 0.5 inch	46.4	3263.2	4919.5	1468.4	539.6	496.0	209.5	354.0	110.1	126.6	142.0	122.5	128.4	8.0	33.1	3.5	11970.8
Fired clay, unidentified	46.4	168.8	215.1	166.3	61.2	50.3	30.1	67.5	180.9	54.0	52.4	83.6	80.0	8.0	66.4	34.6	1365.6
Totals	124.2	7260.6	10479.6	3024.5	960.2	783.2	304.6	563.4	379.5	206.7	366.4	295.0	279.9	35.3	161.6	50.2	25274.9

Table E.7. Quantity of daub and fired clay by level, Unit 5.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Structural Impression								
Daub, cane, grass, leaf, or splint impressions	110	801	73	32	96	5	3	1120
Daub, combination whole and split cane impression		1						1
Daub, double whole cane impression		7	1					8
Daub, multiple whole cane impression		5						5
Daub, single whole cane impression		7						7
Daub, splint impression		1						1
Daub, split-cane impression		7						7
Structural Treatment								
Daud, gritty plaster	2	14						16
Daub, multiple whole cane impression with red paint in impression		1						1
Daub, red plaster		1						1
Daub, single whole cane impression with red paint in impression		1						1
Daub, white plaster		3						3
Miscellaneous								
Fired clay, unidentified	76	138	59	194	209	18	21	715
Totals	188	987	133	226	305	23	24	1886

Table E.8. Weight (g) of daub and fired clay by level, Unit 5.

	Zone 1, Level 1	Zone 2, Level 1	Zone 2, Level 2	Zone 3, Level 1	Zone 4, Level 1	Zone 5, Level 1	Zone 6, Level 1	Total
Structural Impression								
Daub, cane, grass, leaf, or splint impressions	473.5	6111	461.4	136.7	513.3	27.7	9.4	7733
Daub, combination whole and split cane impression		28.3						28.3
Daub, double whole cane impression		559.4	75.1					634.5
Daub, multiple whole cane impression		395.9						395.9
Daub, single whole cane impression		706.6						706.6
Daub, splint impression		8.2						8.2
Daub, split-cane impression		30.8						30.8
Structural Treatment								
Daud, gritty plaster	12.2	745.2						757.4
Daub, multiple whole cane impression with red paint in impression		120.1						120.1
Daub, red plaster		2.8						2.8
Daub, single whole cane impression with red paint in impression		10.9						10.9
Daub, white plaster		35.6						35.6
Miscellaneous								
Fired clay, unidentified	306.8	810.3	195.9	980.4	1298.5	89.5	97.1	3778.5
Fired clay / daub, < 0.5 inch	194	4410.8	900.5	1321.6	1544.7	152.7	139.7	8664
Totals	986.5	13975.9	1632.9	2438.7	3356.5	269.9	246.2	22906.6

Table E.9. Weight (g) of fired clay by level, units 4, 6, and 7.

	Fired clay, unidentified
Unit 4	
Root mat	32.9
Level 1	47.6
Level 2	1123.0
Level 3	2046.7
Level 4	3006.0
Level 5	1654.2
Level 6	1752.1
Level 7	2538.1
Level 8	1936.7
Level 9	2257.7
Profile Clean-up	2530.1
Unit 6	
Level 1	737.1
Level 2	1222.5
Level 3a	29.4
Level 3b	85.5
Unit 7	7086.6
Level 1	9161.1
Total	18322.2