POTS ON THE PERIPHERY: CERAMIC ANALYSIS OF RIM SHERDS FROM TWO SINGLE MOUND SITES IN THE VICINITY OF MOUNDVILLE, ALABAMA

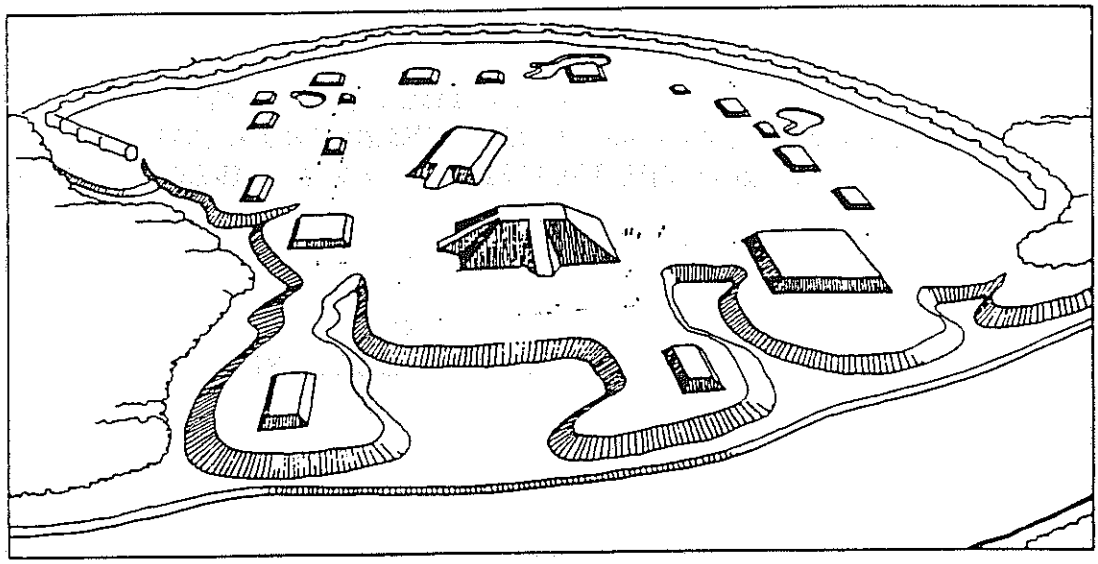
BY
LAURA R. HOLLAND

A Thesis

Submitted to the Division of Social Sciences
of New College of the University of South Florida,
in partial fulfillment of the requirements for the degree
of Bachelor of Arts in Anthropology

Under the Sponsorship of Anthony P. Andrews

Sarasota, Florida
April, 1995



Map of Moundville from Black Warrior River (Morgan 1980: 115).

This thesis is dedicated to the former residents of Moundville.

PREFACE

This thesis is the culmination of two summers of fieldwork and two months of lab analysis. In the summer of 1990, I participated in the Alabama Museum of Natural History's field program, under the direction of visiting professor Paul Welch, of Queens College, CUNY. The mound site being excavated that summer was of particular interest to Welch. It was a single Mississippian mound in close proximity to the great site of Moundville and presumably under Moundville influence. While much research had been undertaken at the main site of Moundville, knowledge of Moundville phase sites in the area remained sketchy.

The site is registered in state files as 1Tu56, and is known more affectionately by the landowner and others as Hog Pen Hill. Previous excavations at the site were limited to shovel testing and one exploratory 1x1m unit. Our primary research objective was to determine the mound's function and role in the larger economy of the Moundville chiefdom.

At the end of the first season, I knew I wanted to learn more about Moundville and the surrounding area. I also wanted to know more about Dr. Welch's research questions and results. What was the mound used for by Native Americans, and how would he be able to tell?

To my surprise, I received a letter from Welch in the fall of 1991 inviting me back for another season in summer of 1992. I gladly agreed to another season. Only six

of us went into the field this second summer, all of the others being students of Welch's at Queens or from Oberlin, where he taught previously. I immediately began looking for a niche, something constructive that I could do to add to the results of the project.

Ceramics became the answer. I learned through Welch that John Blitz, writing a recent dissertation on another single mound site in Alabama, questioned some long-standing theories in his ceramic analysis. I decided to try to replicate Blitz's work and compare results. In order to provide a true comparison, I wanted to analyze ceramics from Moundville itself and at least two outlying sites. This proved too large-scale for the scope of the current project, but remains a possibility for the future. I instead decided to compare the ceramics from the Hog Pen Hill site with the ceramics from one other single mound south of Moundville, the White site. Both of these ceramic samples I then compared to Blitz's data. The following paper is the result of my efforts.

Acknowledgments

First, this thesis would not have been possible without the patience, guidance, and encouragement of my advisor, Tony Andrews. Thank you Tony, for believing I could do it, and for giving such wonderful Anthro--bacci ball parties.

Writing this thesis has enabled me to make contacts in Alabama archaeology for which I am very thankful. Paul Welch gave me the idea and offered hours of helpful explanation as I struggled through the analysis. Eugene Futato provided access to the White site artifacts at Moundville, and it is my hope that a copy of my thesis can go in the library there. Thanks to John Hall, Rosa Newman, Brown Hawkins and everyone at

the Alabama Museum of Natural History for encouraging my interest in archaeology and being such good friends for so many years. Other friends without whom this would not have been possible include Katherine, Jim, and Kim for making it through all those summers lighting lanterns and toting garbage on top of doing good archaeology.

I am especially thankful to all the friends I have had the pleasure to meet at New College. Thanks to Amanda, Renee, Dana, and Karen for being fabulous roommates and strong women. To all of the second court posse, I know it was long ago, but I'll never forget second year. Thank you Nathan for hours of table-checking and encouragement, the sign of true friendship. And very special thanks are due to Kalin, for being there to the bitter end and providing not only the best support but also the most fun distractions.

Last year I met some wonderful people at Earth Search, Inc., and I'm very thankful to Jill Yakubik for letting me do fieldwork for a profit, for once, and for encouraging me to come back and conquer the beast. Thank you Rosalinda, Kathy, and Donna for being there and for knowing how to party. And very special thanks to Jim for listening to my frustrations and providing an anchor of support. I'm so glad I met you. I only hope that one day I can give you back as much as you've given me.

My family deserves thanks for encouraging me to follow my dreams, and have my very own "thing". Thank you Gran, for years of support. The check's in the mail.

Mom, you are the strongest woman I know. I want to be like you when I grow up. Thanks for always listening, and for giving me "coping skills". But mostly, thanks for that trip to the Red Mountain Museum. That's when I really knew.

TABLE OF CONTENTS

FIGURES AND TABLES

ABSTRACT

Archaeologists have found ceramics to be one of the most useful types of artifacts available to aid in the understanding and interpretation of past cultures because of their widespread use and durability, as well as their expressive potential and variation. This thesis is the result of two summers of archaeological fieldwork at a single mound satellite site of the Mississippian mound complex of Moundville, Alabama. Two months of subsequent ceramic analysis and comparison with a sample from another single mound site equidistant to Moundville provided the data for this work. Ceramic refuse from different social contexts are compared in an attempt to expose patterns in prehistoric lifeways and mound-village relationships in particular. Rim diameter (roughly, vessel size), vessel shape, and vessel function are presented for the two samples. The study is modeled after recent research by John Blitz at the site of Lubbub in western Alabama, and data from the two sites were compared with Blitz's results. Interesting parallels emerged as the result of this exercise, but certain differences in the samples offer exciting directions for future research and provoke interesting questions about the sites' roles as peripheral focal points for power within the Moundville chiefdom.

A. P. Andrews
Professor of
Anthropology

CHAPTER I

INTRODUCTION

The site of Moundville is located approximately fifteen miles south of the modern city of Tuscaloosa on the Black Warrior River in Alabama. It is the second largest mound complex in North America, and 22 mounds remain intact at the site, which is now a state park. Much excavation has been conducted at Moundville over the last century, but only in the last few decades have we begun to fill in some gaps as to how Moundville itself operated as a complex chiefdom.

Paul Welch, director of two seasons of fieldwork at satellite sites of Moundville, is interested in the economy of complex chiefdom societies. By investigating several outlying sites of Moundville he hoped to shed light on Moundville's larger political and economic influence over the surrounding river valley. By comparing his results with data from other research, a still larger picture emerges.

Other research that I found interesting was conducted by John Blitz at the Lubbub site on the Tombigbee River. Blitz wrote about other aspects of the site, but his ceramic theory was of particular interest to me. He tested a theory of ceramic distribution, and had a near ideal situation to do it in. His ceramic samples came from easily separable contexts, and he compared mound and village samples to try to determine mound use. His theory was that certain ceramic vessel shapes and sizes would

differ from mound to village because of different needs or uses. He expected a household or village context to display the widest range of sizes, because of the variety of ceramic uses and activities in a domestic context. Similarly, a mound context would be expected to yield a larger number of specialty vessels, such as serving vessels for feasts, and larger vessels for community meals. In fact, specialized activities conducted on the mound, whether ritual, political, or economic, should hypothetically be reflected in the ceramic sample.

Even before I knew or fully understood the results of Blitz's study, I wondered if his hypothesis could be applied to other contexts, and how it could be tested and replicated. It is a danger to assume that certain assemblages will necessarily follow certain patterns, and my research became even more exciting when I realized that it wouldn't necessarily turn out how I expected it to. In fact, it turned out nothing like the simple application I thought it would be.

The following is a brief explanation of my methodology, and my attempt to model my experiment after Blitz. I began by looking for two samples to compare, and this posed immediate problems. Hog Pen Hill's midden area was located on the mound itself, and no outlying village area was extant or investigated either year I did research there. All of the surrounding area is currently plowed field, and has been for at least 100 years. I began to look elsewhere for comparison.

Welch's work at the White site, another satellite of Moundville, led me to believe that a cross-site comparison was possible. The White site is roughly located as far south of Moundville as Hog Pen is north. Actual fieldwork at the site was unnecessary, as the

artifacts from Welch's previous investigations were housed at Moundville in the storage facilities. I analyzed those ceramics over Christmas break in 1992.

Interested in comparing my results with the sample of ceramics actually recovered from Moundville, I called Jim Knight at the University of Alabama. He informed me of the great size of the Moundville sample, and that much work was needed to ready the sample for analysis. I determined that comparison to be outside the scope of the present study. My experiment is therefore expandable, and would greatly benefit from further samples for comparison.

Equipped then with three data sets from Lubbub, Hog Pen, and White sites, I began the long process of sorting through data and learning about applicable statistics programs. In the process of working with the ceramics, I became aware first hand of the danger of human inconsistencies and slight differences in perception between individual researchers. By replicating as closely as possible the steps taken by Blitz and strictly following the sorting guidelines laid down for Moundville by Vincas Steponaitis, I attempted to minimize error. The following paragraphs outline this thesis.

The second chapter focuses on Moundville's cultural prehistory and explains the rise and fall of the Moundville chiefdom. Because the Moundville Phase sites are not all contemporaneous, a description of changing settlement patterns is provided in this chapter. Moundville reached its height around 1350-1400 AD. At that point in time, it was simply the most successful of what began as several smaller independent sites. Moundville, partly because of its superior location, dominated the river valley and

surrounding sites. The site also functioned as a creative center, with Moundville influenced art found on the Gulf coast and in surrounding states.

Chapter III is a brief overview of the history of research at Moundville. Because of its size and proximity to the Black Warrior River, Moundville is a highly visible site, and one that attracted attention as early as the mid-1800's. I explain in this chapter the themes of research at Moundville over the years, in order to give the reader some sense of the scope of Moundville archaeology. Important also is the background information on the surrounding sites, especially Hog Pen and White. I will explain my involvement with two seasons of excavation at Hog Pen, and the main research objectives from those seasons. Paul Welch is responsible for the planning and interpretation of those two summers, and has applied his knowledge and interest to the economy of complex chiefdoms.

Chapter IV will turn away from general background and will focus on a particular approach to ceramic analysis, type-variety systems. The development of this methodology has greatly influenced ceramic analysis at Moundville. I will describe methods employed to organize and analyze ceramics at Moundville in the past. I will also present a general description of the ceramic sample.

My methods are outlined in Chapter V, as well as the statistics I employed. My data are presented in chart and table form in this chapter, but a more detailed presentation is in the appendices. I present an interpretive and speculative section which addresses the possible implications of my research.

Conclusions and final remarks are presented in Chapter VI. While my results greatly differ from the findings of Blitz, some interesting similarities presented themselves. It is my hope to provide raw data for future research with this thesis. I mention possible directions and interesting possibilities for further comparisons and approaches in the final chapter.

CHAPTER II

CULTURAL HISTORY OF MOUNDVILLE

The site of Moundville is located in West-Central Alabama on the East bank of the Black Warrior River approximately fifteen miles south of the city of Tuscaloosa (Fig. 1). At the time of its height, Moundville controlled the surrounding 240 square mile area (Peebles 1978b:5). The Moundville phase sites are dispersed over 75 river miles, with Moundville holding a central location (Fig. 2). Approximately five percent of the 300 acres covered by Moundville proper has been excavated.

Location and size of surrounding villages was dependent in large part on the productivity of the nearby land, as well as "administrative factors" (ibid: 15). As is made clear on the map of Alabama's physiographic regions in Figure 3 , Moundville is situated in an auspicious location with an abundance of both floral and faunal resources. The site sits on the Hale-Tucsaloosa county line. It is said that one can see farther north and south from the site's bluff on the east bank of a bend of the Black Warrior River than any other bend in the river. The nearby Fall Line Hills separate the predominately oak-hickory forests to the north from the pine forests to the south. These forests together with the rich floodplain vegetation supported much deer and turkey (Steponaitis 1983: 4-6).

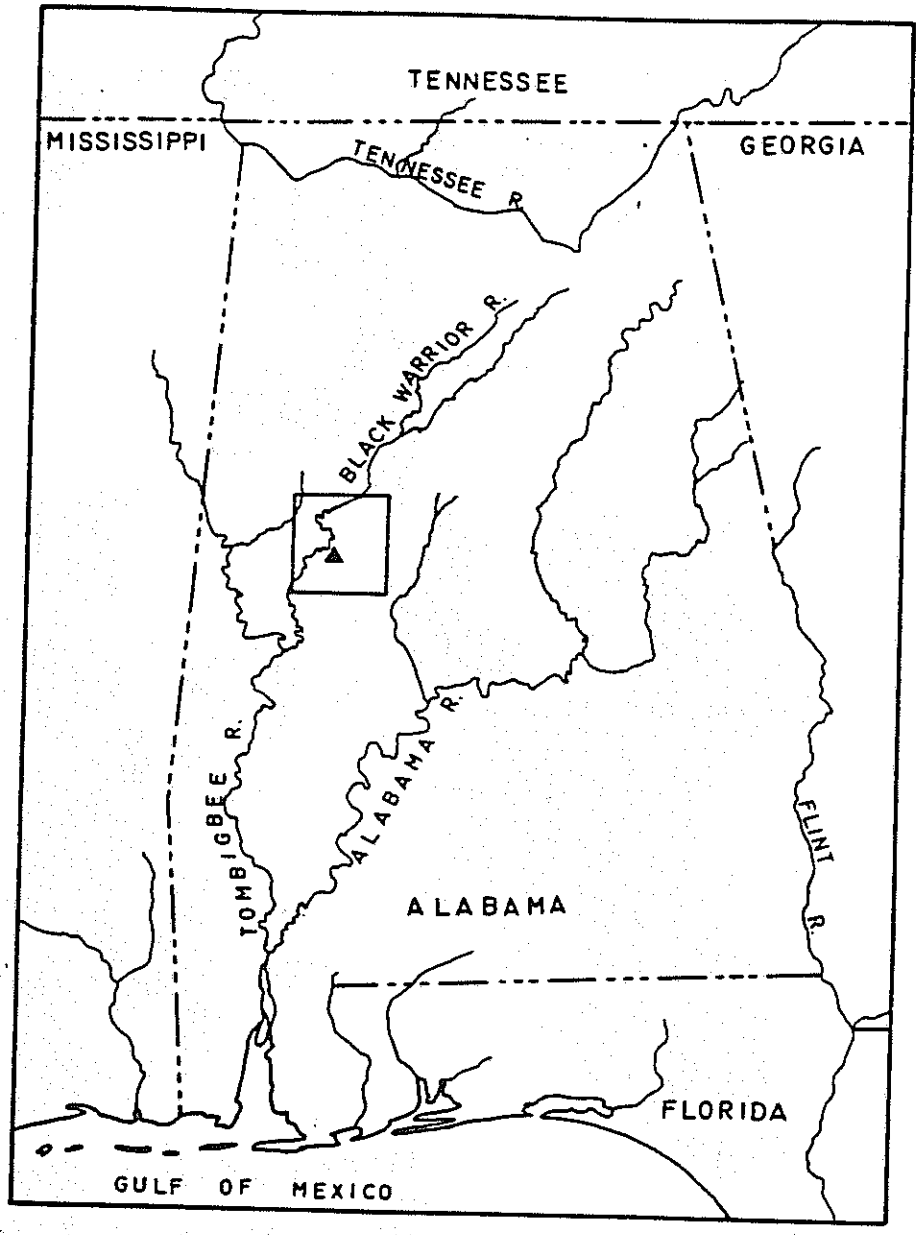


Figure 1. Location of the Moundville Chiefdom (Welch 1991: 24)

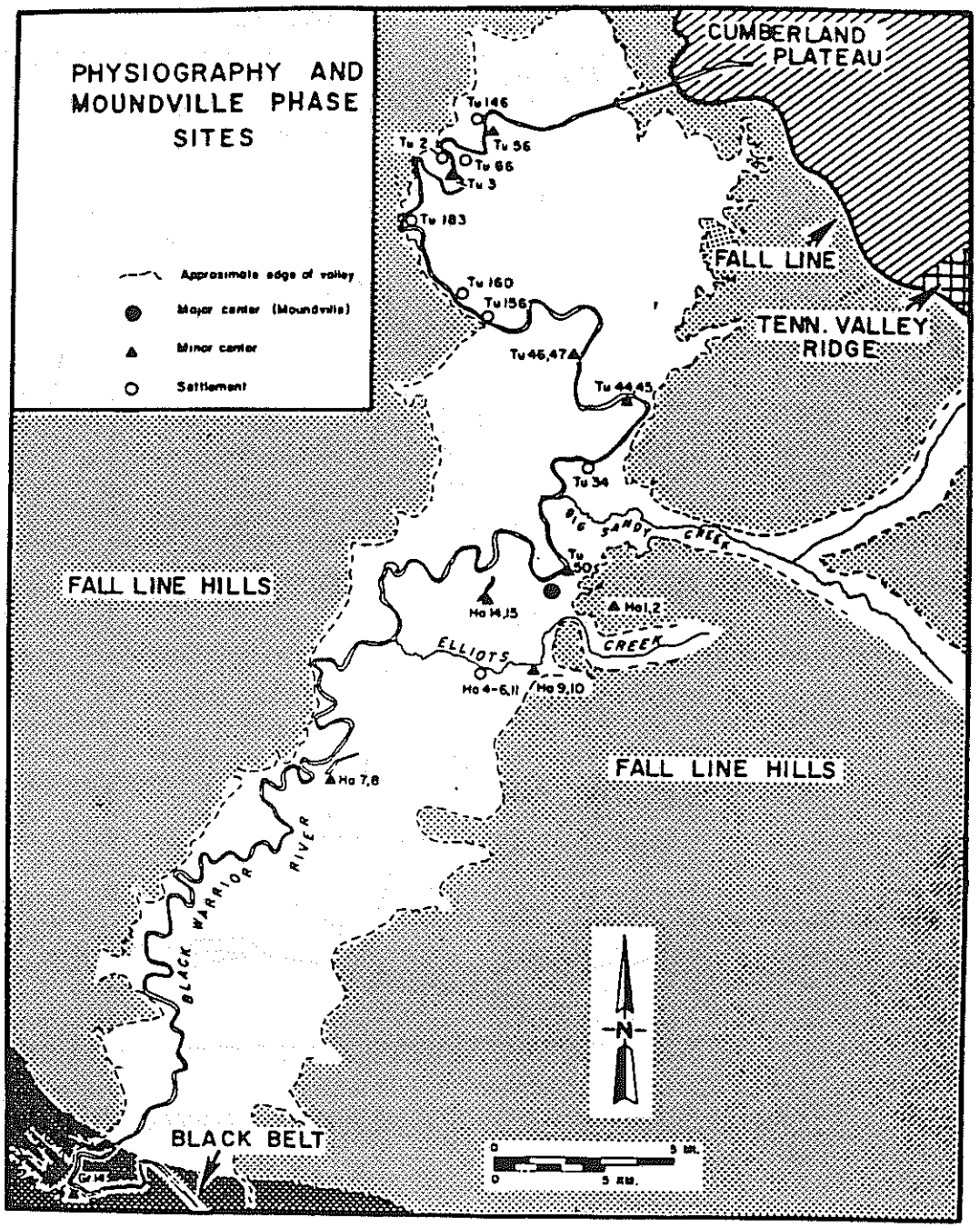


Figure 2. Moundville Phase Sites Along the Black Warrior River (Welch 1991: 25)

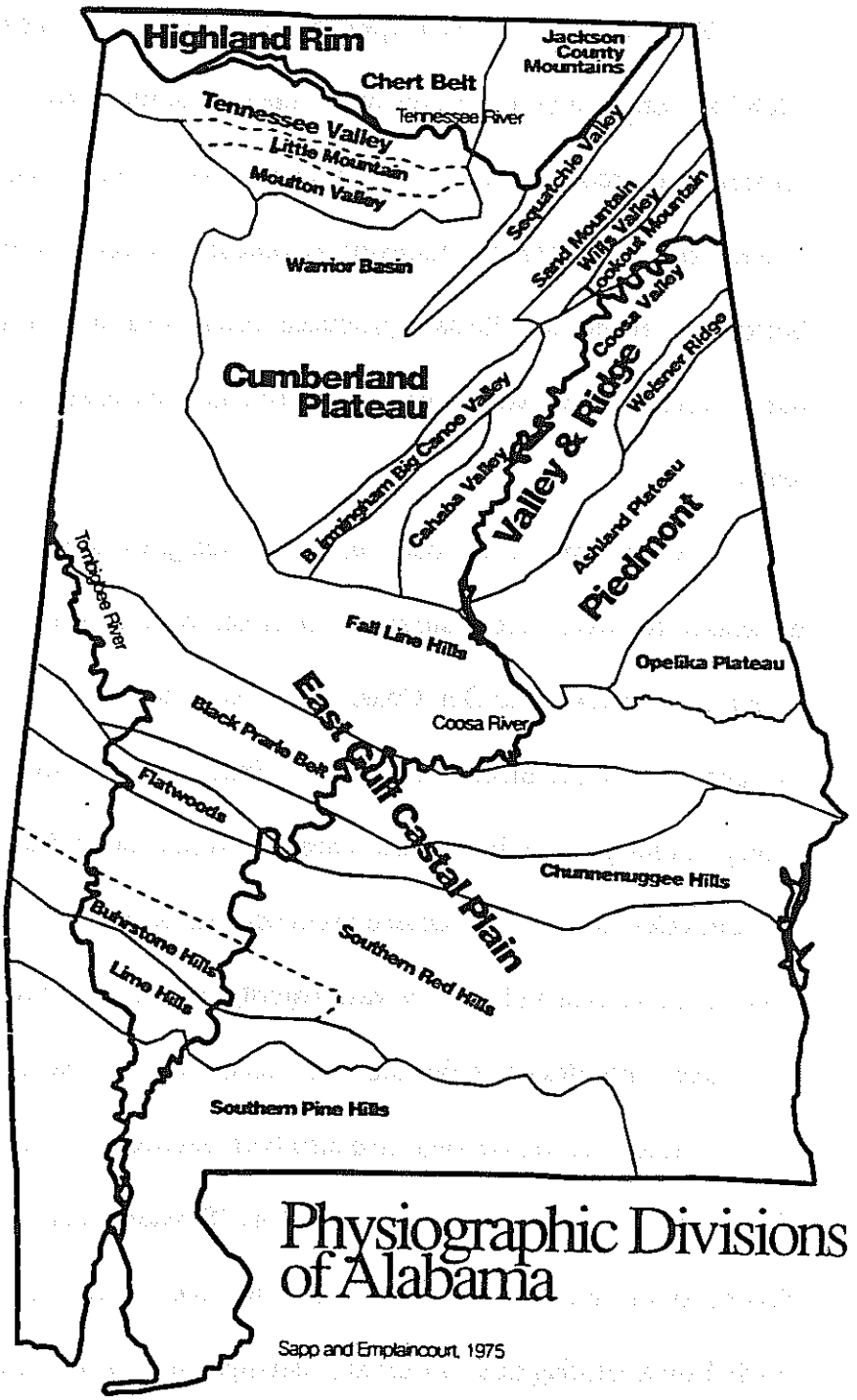


Figure 3. Physiographic Divisions of Alabama (Sapp and Emplaincourt 1975)

There are at least seven types of oak represented in this transitional area (Powell 1988:7). Scattered outlying sites were reflective of the relative fertility of the surrounding catchment basin. Also important was a reliable source of water, and all Moundville phase sites had "unrestricted access to water" (Peebles 1978:411). In fact, borrow pits at Moundvillle have produced fishing gear in excavations, indicating their use as stocked, man-made lakes. There are four such lakes at the site which still hold water.

In part owing to its location, Moundville grew larger than its peer sites and dominated the river valley, and sites that exhibit Moundville styles or influences can be found as far south as the Gulf Coast. There is a cluster of Moundville Phase sites south of Tuscaloosa in the Black Warrior River Valley, and another in the Tennessee River Valley. Much pottery from south Alabama and northwest Florida has been described as "Moundville-derived". "Standard utilitarian wares" varieties Warrior Plain and Moundville Incised make up the vast majority of ceramics found at or near Moundville Phase sites. Peebles has estimated their predominance to be around 90% (1978: 370).

Moundville phase sites have also been defined on the basis of the presence or absence of certain items characteristic of the "Southern cult". Also termed the Southeastern Ceremonial Complex, this "religious" system is expressed as common symbolism appearing in art forms at Mississippian sites across the Southeast. The symbols include the "weeping eye", bilobed arrow, cross, swastika, and crossbones, among others. The symbols are commonly placed on oblong copper gorgets, stone

palettes, and effigy pipes, as well as ceramic vessels (Griffin 1967:190; Peebles 1978: 371; Walthall 1980: 194).

Terminal Woodland Period (A.D. 900-1050)

According to Peebles, the Moundville Phase most probably grew out of the West Jefferson Phase, which in turn probably grew out of the McKelvey Phase.[1] Both of these generative phases are Late Woodland in time period. (Peebles 1978: 372).

In late Woodland times, a transition was beginning which would ultimately result in a more sedentary existence in West Central Alabama. A West Jefferson "village" from this time period was located just west of the central plaza at Moundville (ibid.; Powell 1988: 8). This small community left refuse in the form of ceramics, which were grog tempered[2], and other household trash.

Moundville I Subphase (A.D. 1050-1250)

Corresponding with the transition from "Woodland" to "Mississippian" lifestyles is the gradual dependency upon maize as a diet staple. This occurred over the two

---

[1]

	Tennessee Valley	Tombigbee
AD 1000 (Late Woodland)	McKelvey, Flint River Phases	Miller III
AD 500 (Late Middle Woodland)	Copena Phase	Miller II
AD 100-300 BC (Early Middle Woodland)	Colbert Phase	Miller I

In the Black Warrior River Valley, the McKelvey Phase overlaps with the West Jefferson Phase at AD 900. This is the transition to what is called Early Mississippian (Walthall 1980: 111).

[2] Ceramics from the Woodland period were predominately grog tempered, which means that they were strengthened by adding fired clay bits, often older broken pots, to the wet clay before firing. Occasionally this process of tempering utilized sand as the strengthening agent, and pre-Woodland pottery often was fiber-tempered as well.

hundred year period between 900 and 1100 A.D. The majority of the single-mound centers (including Moundville itself) were built during this transition (Peebles 1979: 2-3).

Around 1050 A.D., the West Jefferson site located at Moundville expanded and construction of a mound was begun. Several other single mounds were constructed in the surrounding area and the general population began to exhibit Mississippian traits. These included using mussel shell for tempering pottery, building mounds, and using a number of mediums for expressing a more symbolic art style. The four single mound sites were roughly equal in size. The general population lived in clustered villages around these sites. It is during this subphase that Hog Pen Hill appears as a regional center. Based on burial practices, Peebles sees a genealogical ascription of rank in Moundville I.

Steponaitis dates Moundville I from A.D. 1000 to A.D. 1250. Welch designates it as a fully Mississippian phase based on the presence of shell-tempered ceramics, "maize dependency, architectural style, platform mound construction, and ranked social organization" (1990: 211). At the beginning of the Moundville I phase, the single mound centers mentioned above were nucleated villages; during Moundville I several single mounds were constructed at these village centers, dispersing villagers out into the countryside.

Moundville II Subphase (A.D.1250-1400)

Moundville II and III cover a span of 300 years, and the middle 100 years is referred to as the "zenith of social complexity". During this period, Moundville proper

reached 120 ha in size. Four more mounds were constructed during this subphase at Moundville. These are Mounds C, D, H, and F. This information is as of 1978, and since then an earlier date for the onset of construction of some of the other mounds may have been obtained.[3] Although there is no evidence that Mounds I, J, K, L, M, or T were under construction during this time, there is evidence that the site was already largely planned (Peebles 1978b: 10-12). There were cemeteries with Moundville II artifacts both north of Mound R and south of Mound M, as well as near Mounds C and D. During this phase there are not only more people living at the main site of Moundville, but there is also a pronounced variation in the burial practices employed at the outlying sites.

Also during this time, some shifting or movement of minor centers occurs. 1Tu56 moves to 1Tu3; 1Tu7 moves to 1Tu46,47; 1Tu42 is established; and 1Ha14,15 is constructed (Fig. 4). At this point, the population estimate of the sphere of influence of Moundville is over 10,000 people. Roughly one third of these people resided at Moundville itself, on either side of the palisade wall, construction of which began during this period (ibid.).

Moundville III Subphase (A.D. 1400-1550)

This time period saw the construction of all other mounds at Moundville, as well as the completion of the palisade wall around the site. Residences lined the outer area between the mounds and the palisade. Several settlements were clustered outside the

[3] Especially Mound Q, as there have been several seasons of excavations there in the last five years.

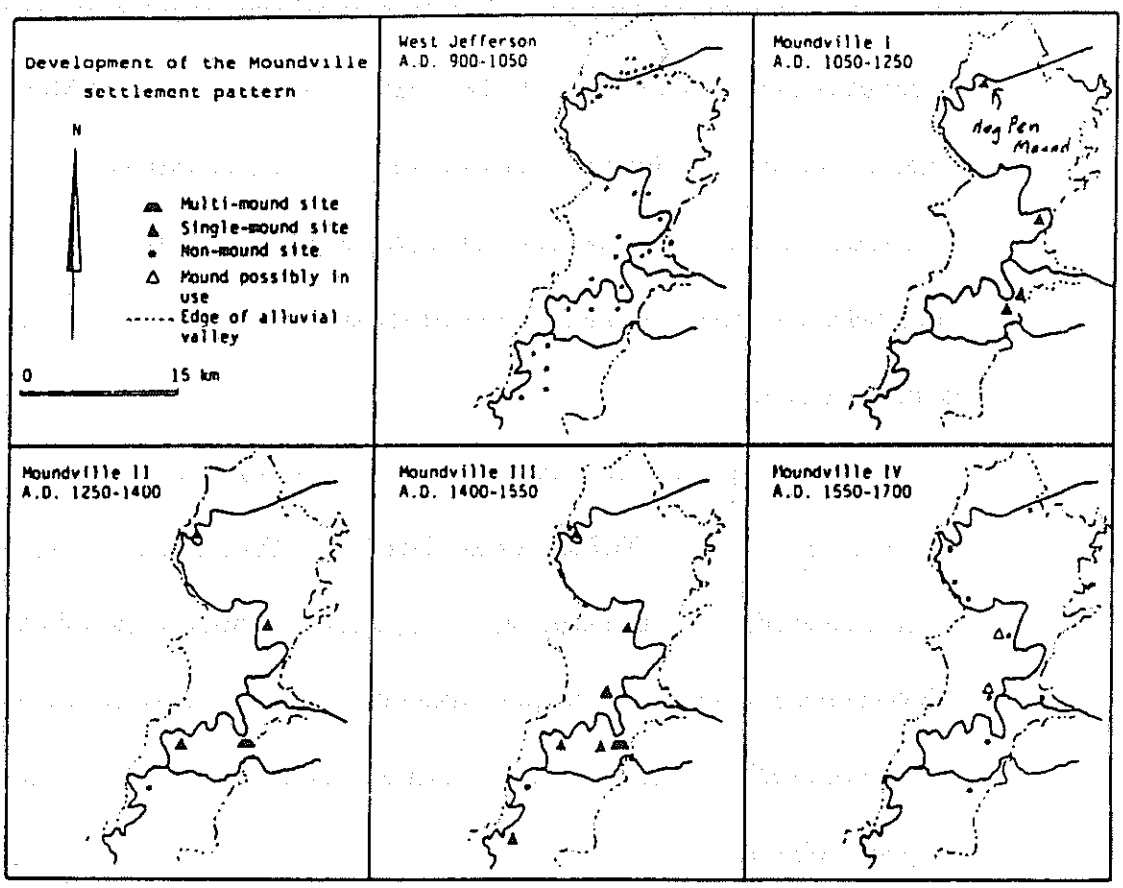


Figure 4. Chronological Sequence of Moundville Phase Sites Along the Black Warrior River (Welch 1991: 32)

palisade. Altogether, the population has been estimated at 3000 for the main site and immediate vicinity during this time. It has also been noted by Peebles that the northern mounds closer to the river are larger and exhibit much more ornate burials than the more southerly mounds. Larger, probably more public or ceremonial structures are also found in and around these northern mounds. The areas of craft specialization and manufacture are shown in Figure 5.

Not only were certain areas reserved for certain functions, but the site also seems to be divided into east and west halves by pigment colors in grave contexts. Animal effigies in ceramic contexts were also divided in space, and Vernon Knight mentioned that mounds opposite each other in the circle seem to have been used for similar purposes (personal communication, July, 1992). It is tentatively believed that mound usage alternated between elite residence and burial uses from mound to mound, and through time on the same mound.

Sometime between 1450 and 1500 A.D. the number of people living at Moundville began to decline. People gradually began dispersing away from the local single mounds as well, and lived in scattered villages. By the time of DeSoto's journey through the Southeast in the mid-1500's, none of the mounds in the Moundville area were being utilized (Walthall 1980: 226-27).

It is clear that the elite at Moundville were dependent to some degree on the labor force provided by the commoners. There appears to be a sharp decline in trade of exotic goods to Moundville around this same time period. If the elite depended on

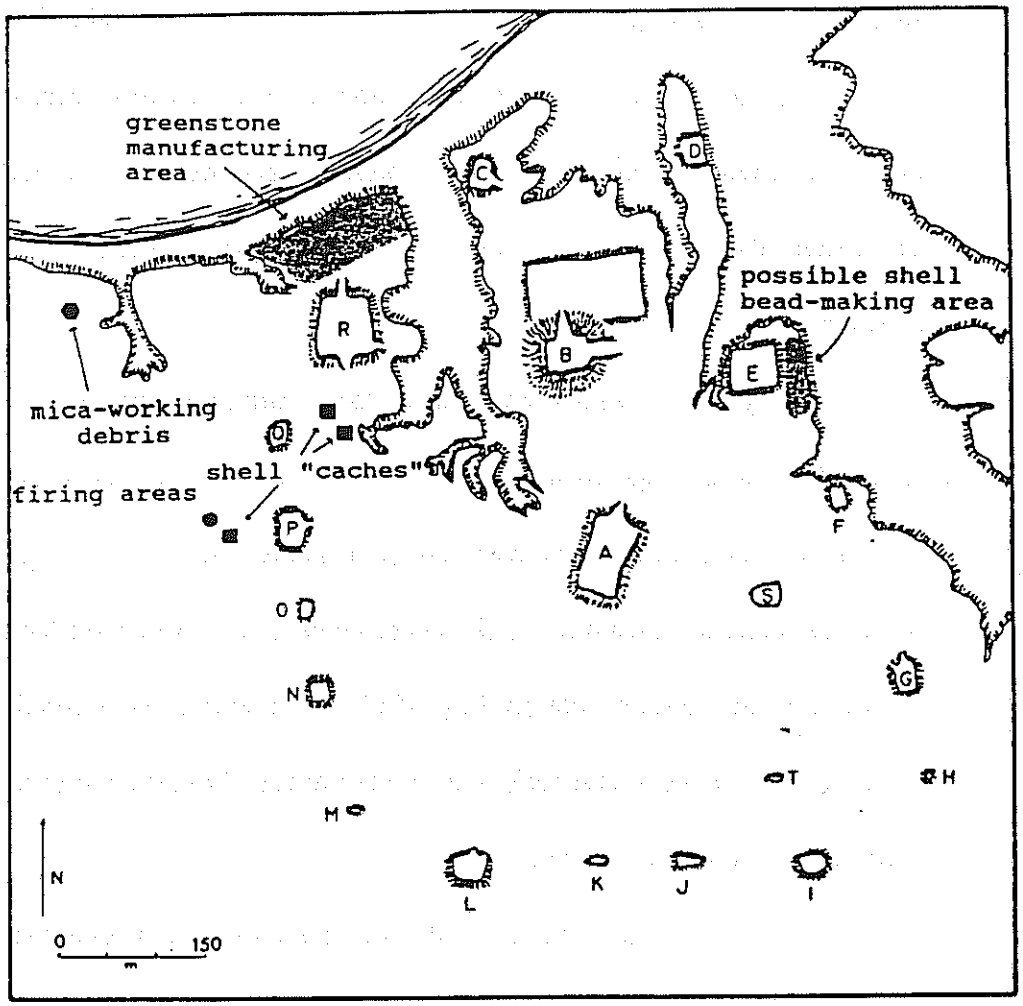


Figure 5. Areas of Craft Specialization and Manufacture at Moundville (Welch 1991b: Figure 7)

exotic materials for power and control, a breakdown in trade networks -- either because of competition or decline of "supplying societies"-- would have potentially been enough to collapse the ranked infrastructure. There also may have been problems with both population pressure and climatic change (Powell 1988:11).

Moundville IV Subphase (A.D. 1550-1700)

Some scholars refer to a fourth Moundville phase during the protohistoric period. This time period is also known as the Alabama River Phase during which the chiefdom of Tascaluza was centered on the Alabama River and commanded much of the river valley. The Alabama River Phase exhibits its own pottery and other artifact styles, most notably large lidded funerary urns made to hold flexed burials. A small number of Alabama River Phase artifacts have been uncovered in the vicinity of Moundville, but there is no evidence that the site was being utilized as a center at that time.

Caleb Curren's book on the protohistoric period makes note of no more than six Alabama River Phase vessels found on the site, most of which were uncovered in burial contexts. Curren makes an argument for protohistoric occupation of the site; if so it was very limited (Curren 1984: 121-22).

CHAPTER III

PREVIOUS INVESTIGATIONS

Scattered references were made to Moundville by travelers or curiosity seekers throughout the 1800's. Most of these reports are brief notes as to the estimated size and shape of the mounds, and their relationship to any number of "permanent" or "semi-permanent" landmarks nearby. Those visitors who conducted actual fieldwork are discussed below.

Professor Nathaniel T. Lupton, a chemistry professor at Southern University at the time of his fieldwork and later president of the University of Alabama from 1871-1875, wrote a letter of explanation of his research at Moundville in 1869. He was asked by the secretary of the Smithsonian Institution, Joseph Henry, to report on the 'Indian mounds on the Warrior River' in 1869 (Steponaitis 1983b: 128). His account is interesting because of his mention of several features no longer visible at the site. A "large, irregular breastwork" was located at the south end of the plaza. This was probably a low earthwork that supported the palisade wall, which enclosed the site on the three sides away from the river. At the time the site was occupied, the palisade consisted of a high defensive lumber wall with regularly spaced turrets. By the 1900's, the palisade was visible only as a soil discoloration. Also, four mounds are mentioned

which are no longer extant -- one off the SW corner of the site, one off the SE corner, and two off the NW corner. These mounds probably were leveled through many years of farming. Three mounds now referred to as "T", "C", and "D" were not mentioned in Lupton's report (Steponaitis 1983b:129-131).

Professor Lupton also dug into Mound O and determined it to be a burial mound constructed in three stages (Steponaitis 1983b:130,141,156). This may be the first planned excavation on the site. He helped to begin an interest in Moundville that persists to the present day. The artifacts that he recovered were sent to the Smithsonian, and several letters that he wrote to that institution are all that remain of his fieldnotes. He was followed by others wise enough to take descriptive notes, looking for information as well as artifacts.

James D. Middleton, a field agent for Cyrus Thomas of the Bureau of American Ethnology, visited Moundville in 1882 (Steponaitis 1983b: 133). He described each mound and gave a brief list of artifacts found on or near each. Middleton did not excavate, but did send surface collections back to the Smithsonian. He also made a map of the site, although it was inferior in accuracy to Lupton's map. Of interest is his description of Mound B, which he said had a "distinct step in the profile" which is much less noticeable today, but indicates terracing (Steponaitis 1983b:135-6). Unfortunately, Middleton's report did not get published in Cyrus Thomas' massive 1894 work on sites in the eastern United States, but is kept on file at the Smithsonian (Middleton 1882).

Both Lupton and Middleton provide valuable descriptions of the state of the mound complex then known as the Mounds at Carthage, or the Prince mounds after the landowner at the time. The site and the town of Carthage have since been renamed Moundville. Many of the mounds had been plowed severely at the time of their visits, and both make mention of that fact. These investigations were preliminary and descriptive in nature, but nonetheless called attention to what would later be recognized as the second largest Mississippian mound complex in North America.

Clarence B. Moore conducted excavations at Moundville in 1905 and 1906. He visited many mounds in the Southeast, surveying for the Academy of Natural Sciences of Philadelphia. He tested mounds along the Black Warrior River between the modern cities of Tuscaloosa and Eutaw (40-50 miles) during the same year that he first visited Moundville. All artifacts from the expedition were sent to that institution, except for what Moore considered type duplicates, which were sent to Phillips Academy Museum in Andover, Massachusetts (Moore 1905: 140-141).

Moore opened all twenty major mounds at Moundville, keeping fairly reliable records (and sometimes maps) of his test unit locations, and some of the more "interesting" artifacts he found. These were almost always mortuary goods, including whole pots, stone paint palettes, pipes, and "chunkey-stones". Although skeletal remains recovered by Moore were all described as "badly decayed" and fragmented, certain specimens were retained and analyzed. Moore also sent ceramic samples to be

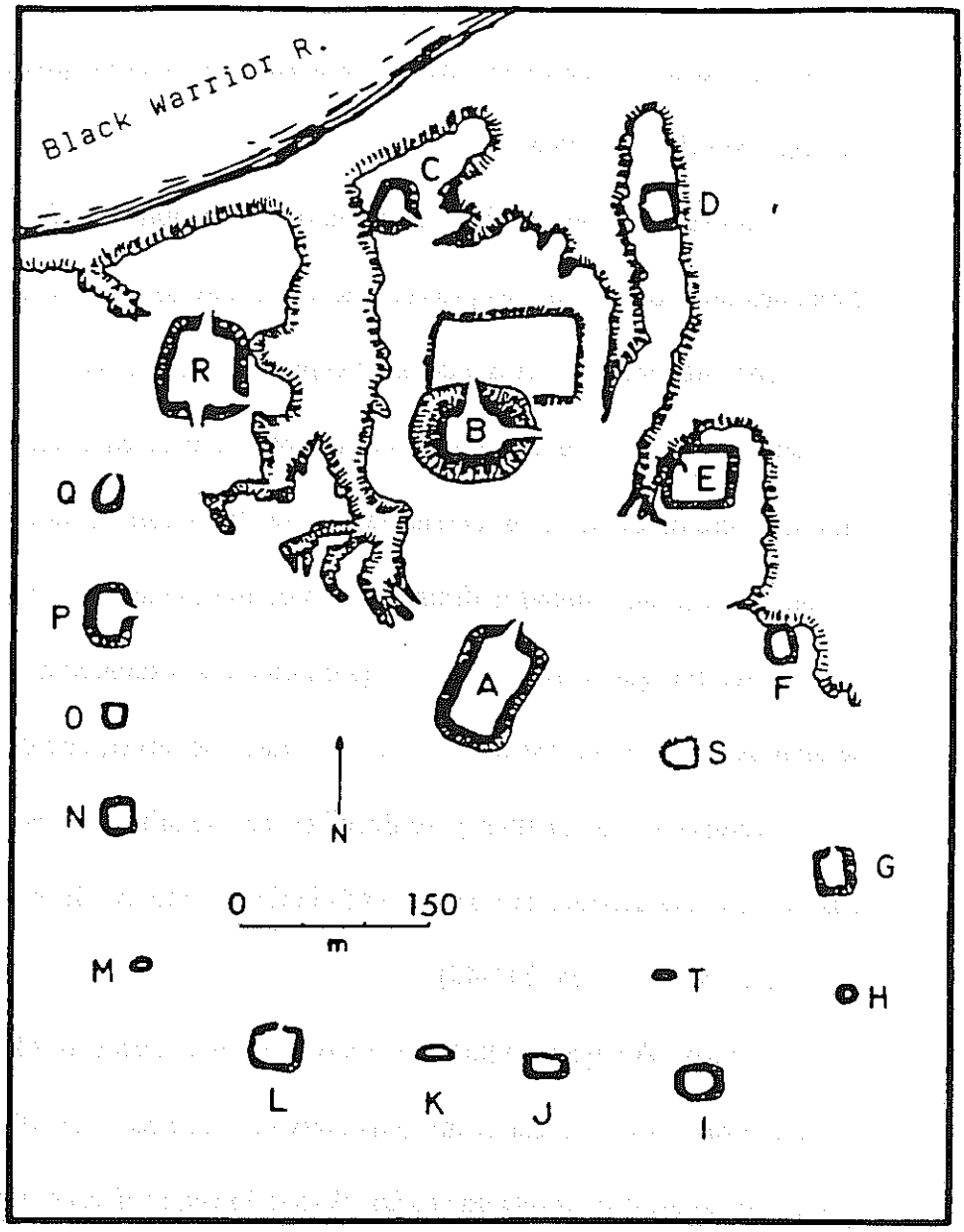


Figure 6. The Moundville Site (C.B. Moore 1905: 129)

analyzed, in order to determine the nature of the black coating present on much of the serving ware (Moore 1905:140).

Moore produced the first published map of Moundville from his work there, and it remains the most commonly printed map of the site to this day (Fig. 6.; Moore 1905:128). Moore's report is a detailed explanation of his work, down to a description of each individual vessel extracted. Moore noticed in his excavations that many of the mounds were constructed in several stages, and "as a point of interest", Moore decided to compare ceramics found in distinct layers of fill of Mound C. Unfortunately, he did not recover enough vessels to provide good data for comparison, and so offered no ceramic interpretation. He was on the right track, however, and did apply the general idea of comparison to an attempt to decipher the use of the mounds. He included for this purpose descriptions of other mounds in the Southeast which he had visited and excavated (Moore 1905: 241-43).

Moundville received little attention between the time of Moore's excavations and the further involvement of the University of Alabama in the 1920's and 1930's. This renewal of interest is largely due to Dr. Walter Jones, professor and director of the Alabama Museum of Natural History. Jones and one of his students, David DeJarnette, began fieldwork at Moundville in 1929 with the aid of other workers from the museum. Work continued until 1938 with the help of the Civilian Conservation Corps. During this time period the extent of the site outside of the mound area was delineated. (Walthall 1980: 11). Beginning in 1930 the Alabama Museum of Natural History conducted a

survey of the floodplain, visiting all known outlying sites, and keeping a site file at the University of Alabama. Field notes from projects are stored at Moundville.

Dr. Jones became personally involved in a conservation effort to save Moundville, and helped to purchase farmland occupied by the site. Once Jones and the University of Alabama owned the site, plans to make it more accessible to the public were initiated. In 1938, after thorough excavation of the area to be impacted, public roads were built, as well as a museum (Walthall 1980: 11).

By far, the Alabama Museum of Natural History and C. B. Moore have conducted the most fieldwork at Moundville (Welch 1990:209). Moore concentrated on mortuary information, while DeJarnette and relief workers focused on "the non-mound area". These efforts, while monumental, lacked strict stratigraphic control and rarely involved such intensive recovery techniques as screening, thus severely limiting the value of the results (Welch 1990: 210).

The next survey of any size in the Black Warrior River Valley was not conducted until the 1970's. Jerry Nielson and Ned Jenkins (1973) conducted a survey for the National Park Service as part of the preliminary work for the building of the Gainesville Lock and Dam. This consisted of small surface collections at many of the outlying sites. John Walthall also surveyed a 6 ha section of the floodplain and valley. Christopher Peebles' Moundville project visited several outlying sites in 1984, conducting surface collections and limited mound testing (Welch 1990:210). Lawrence Alexander (1982) provided another "intensely surveyed" 4.45 square kilometers. "Professional and

avocational archaeologists have covered much of the remaining floodplain" (Welch 1990: 210). In short, settlement pattern research in this area has been piecemeal. While the majority of the river valley has been covered by surveyors, no extensive excavations were conducted during this time period.

Of these settlement survey pioneers, Christopher Peebles, has added the most to our knowledge of the Moundville chiefdom. He distinguished between "local communities", "local centers", and a regional center at Moundville (Peebles 1971: 68). Peebles' study depended not only on residence patterns and statistical analysis, but also on ethnographic comparison.

Since the early 1980's the University of Alabama has been conducting a field school at Moundville. Directed by Vernon J. Knight, the school has focused on Mound Q in recent years, and is comparing its function with other mounds immediately adjacent to the plaza.

Lubbub Creek (1901, 1979-80)

The site of Lubbub Creek is located on the Tombigbee River in the West-central Alabama, 53 km west of Moundville (Blitz 1993:2). It is the only thoroughly excavated mound along the central portion of that river (Welch, 1990: 207). The proximity of Lubbub to Moundville can be seen in Figure 7. A single mound center with a surrounding village area (Fig. 8), Lubbub exhibits traits similar to other Mississippian

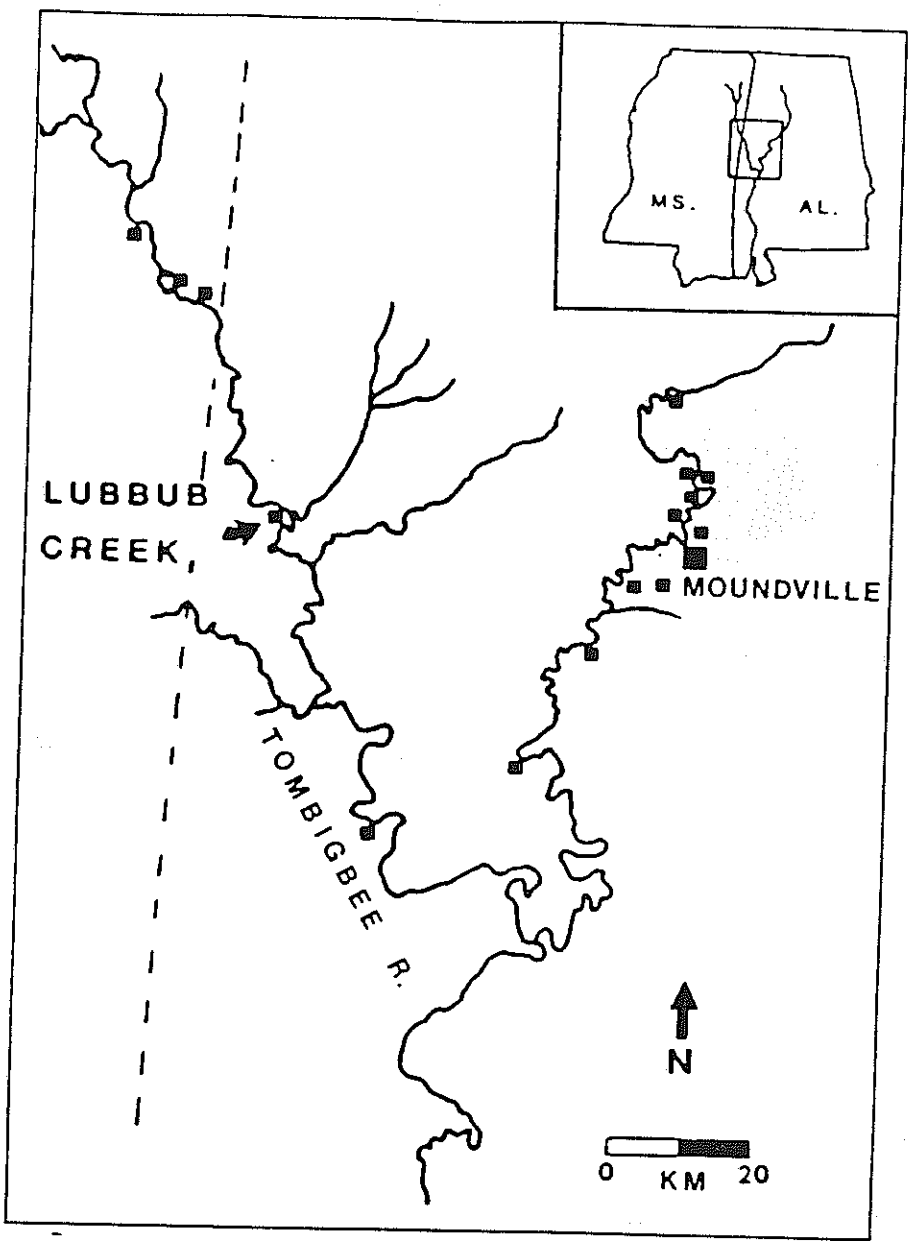


Figure 7. Proximity of Lubbub to Moundville (Blitz 1993: 32)

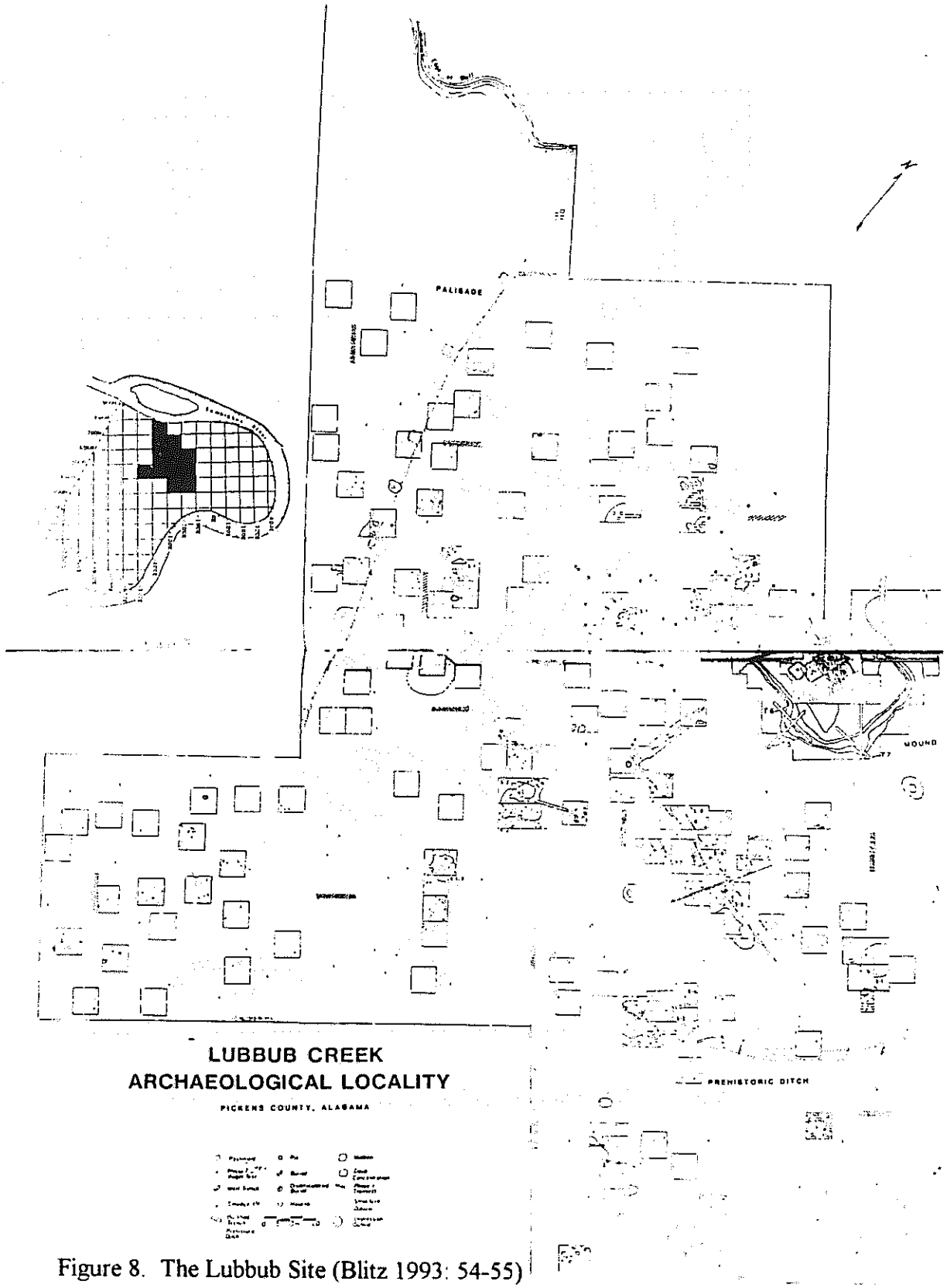


Figure 8. The Lubbub Site (Blitz 1993: 54-55)

sites, including those near Moundville. But Lubbub Creek is located on the periphery of Moundville's influence, and therefore was not part of the Moundville chiefdom.

C. B. Moore visited the mound at Lubbub in 1901. His test excavations followed his approach at Moundville. He sank "trial holes" into the mound, which he called the "mound at Summerville" (Blitz 1993: 74). He noted exposed hearths 'here and there' (Welch 1990: 208).

Over the years damage was done by at least one landowner to the uppermost two layers of fill. In the first of two major modern excavations, Ned Jenkins "exposed a Summerville I cemetery and located the leveled mound" (Welch 1990: 207). He published his findings in 1981. Peebles led the second project in 1979-80 as part of the Tennessee-Tombigbee Waterway project in which over two hectares were excavated "in a stratified systematic unaligned sample of the site" (Peebles 1983, Welch 1990: 207). The crew cut trenches to determine the extent of the mound, removed the plowzone, mapped the mound, and excavated into the premound surface (Blitz 1993: 74).

John Blitz, a crew chief on Peebles' project, continued analysis of the site and reported his findings in several papers, including his Ph.D. dissertation. Blitz was interested in chiefdoms and social organization; he also examined the role of ceramic distribution and prestige goods in determining ranking and resource control.

Before destruction, the mound at Lubbub consisted of six fill layers, each stage consisting of a band of sand with a cap of clay for stability and possible support of

architecture (Blitz 1993:74-5). There is, however, no conclusive evidence of structures on each level. There is definitely no structure on the lowest level (Welch 1990: 209).

Lubbub has a premound ceremonial complex dating to A.D. 1000. This consists of six superimposed buildings, all paired. In premound days, the ritual area was separated from the rest of the village by a partition or fence evidenced by surrounding postmolds (Blitz 1989: 1-2).

The site is comprised of a bounded 19 ha area. There is evidence of a bastioned palisade enclosing the site on the side not bounded by the Tombigbee River. "Residences formed an arc around the mound, leaving a plaza to the east of the mound. On the south side of the mound was an inner palisade separating the residential zone from the plaza and the mound ramps" (Welch 1990: 208).

Welch believes the Mississippian emergence to be a response to Woodland subsistence stress. Along with a movement towards greater agricultural dependence on large scale field farming came technological advances in cooking and storage implements. These innovations were just part of a larger movement toward social ranking (Welch 1990: 209). The "Summerville mound" or Lubbub Creek site is an example of this change in site layout which accompanied the transition to Mississippian life.

The White Site (1905 -1983)

C. B. Moore did not overlook the White site in his travels. In fact, he visited five subsidiary sites to Moundville in 1905, the White site included. Moore dug on top of the mound to a depth of "four to five feet" (Moore 1905: 127). He did find human remains in his excavations, but was generally disappointed with the yield at the site.

In 1930-31 the Alabama Museum of Natural History field party under Walter B. Jones and David L. DeJarnette came to the White site. The purpose of their visit was the salvage of an eroding burial on the east side of the mound. Further investigation revealed 29 burials in the area. No maps or drawings were made, but notes were kept as to which artifacts were associated with which burials. The mortuary remains were either lost or discarded, but the artifacts are still on file at the Alabama Museum of Natural History in Tuscaloosa (Welch 1991:36-7).

The site remained untouched until the University of Alabama field crew, including Jerry Nielson, John O'hear, and Charles Moorehead visited in 1972-3. They collected samples from the road which crosses the site (Fig. 9), and dug shovel tests to determine the extent of the deposit. The crew realized that there was a village component surrounding the site, but made no estimate as to its extent.

In 1979, Peebles' "site survey and testing crew from the University of Michigan Museum of Anthropology (UMMA) mapped the mound and delineated site boundaries under the direction of Paul Welch. Two test units on the summit and two on the east

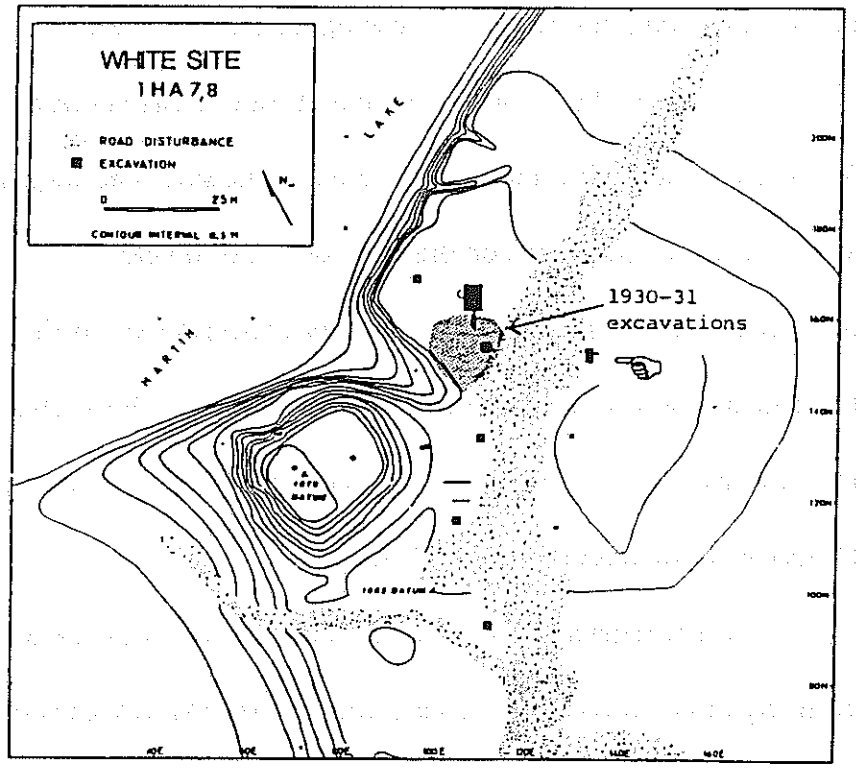


Figure 9. The White Site (Welch 1991: 41)

(☜ Indicates midden area.)

side of the mound revealed two distinct construction episodes with prepared sand floors on the initial summit (lower episode) (Welch 1991: 38).

There is a Late Woodland Period component at the White site. This earlier component covers a larger area than the later Mississippian component, but predates the mound. Through artifact analysis (more specifically ceramic stylistic dating techniques) an occupation during Moundville III times was determined for the site. There may have been some Moundville I and subsequent Protohistoric occupation, as some ceramics represent those periods, but the mound building episodes at the site are strictly bounded to Moundville III (Welch 1991:39-40).

Welch returned in 1983 to excavate 1% of the Moundville III area of occupation. This was accomplished with randomly placed 2x2m test units, followed by further delineation of any features encountered. Units were placed randomly within 10m blocks, but no units were placed on the mound summit (Welch 1991: 40-43).

The only unit yielding "unmixed Moundville -era deposits" was a 4x6m excavation of an intentional midden, or refuse area. The midden is located in the residential area of the site, but "it is not possible to specify which households in the community deposited refuse in this location" (Welch 1991: 56). This is because individual household structural remains were not able to be defined.

It was the midden area just explained that provided the sample for ceramic comparison which I utilize. Clearly residential, and located well away from the mound (see Fig. 9), the midden is a good indicator of household refuse at the site. In the

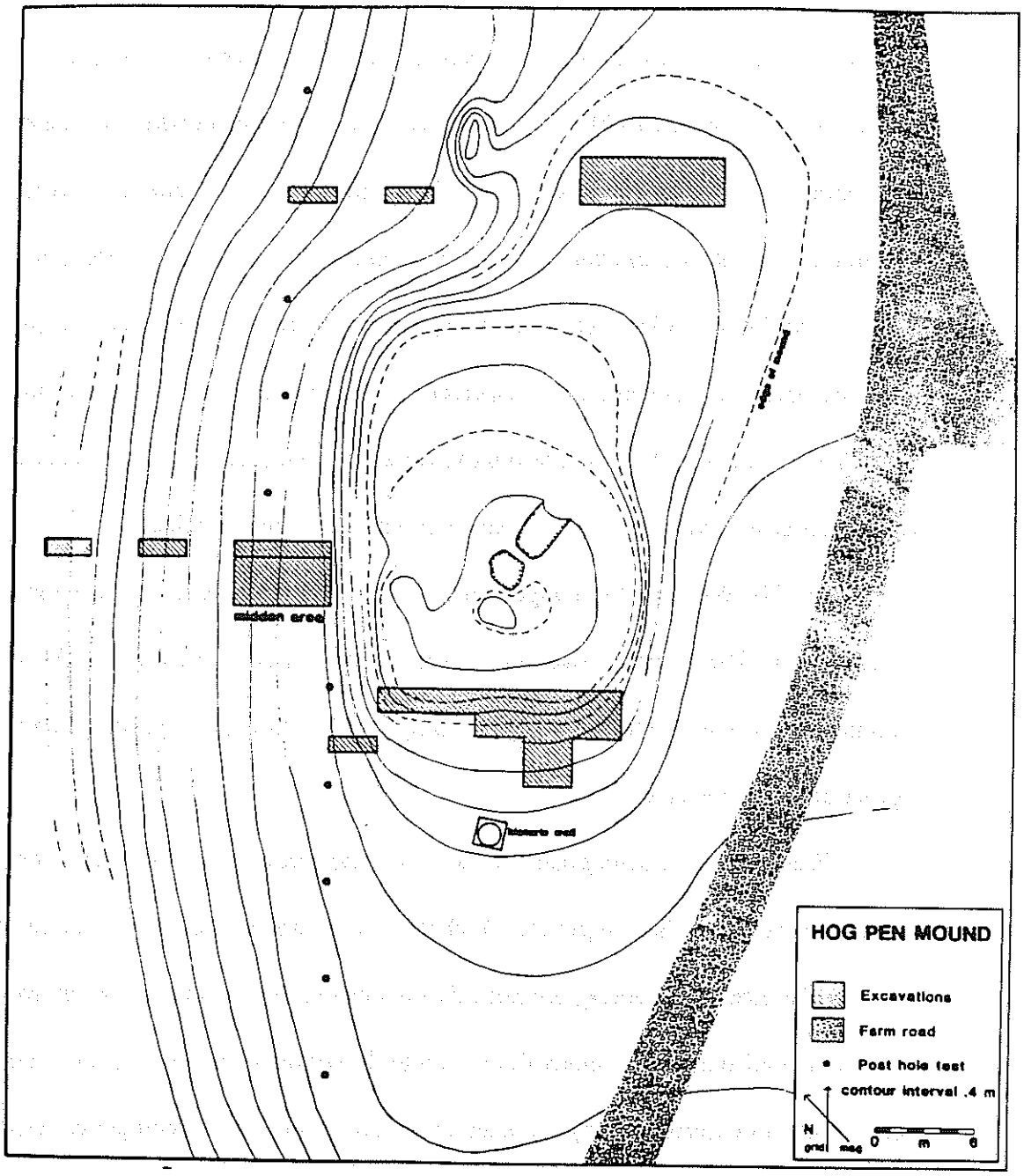
absence of available data from the mound's summit, this sample is compared to the data from Hog Pen.

Hog Pen Hill (1979-present)

One of the four sites near Moundville to display a Moundville I component is 1Tu56, better known as Hog Pen Hill. Hog Pen is located within sight of the Black Warrior River approximately fifteen miles north of Moundville, just outside of the modern city of Tuscaloosa (Fig. 10). It is a single mound site which has been partially destroyed due to the housing of hogs on the top of the mound for many years early in this century. Also, at least once heavy farm machinery was driven up onto the mound to avoid flood damage, severely eroding the southern slope in the process.

It is clear that the mound has served a variety of purposes in recent times. What remains unclear is exactly what function the mound held throughout its period of prehistoric use. Several seasons of archaeological work at Hog Pen, one in 1979 and the others in 1990 and 1992, have revealed some clues.

The 1979 season was conducted by Christopher Peebles as part of his survey of much of the Black Warrior river valley. Because of the widespread nature of the overall project, only one "telephone booth" test unit was excavated, along with some surface collection of the surrounding fields. This one meter by one meter unit was placed on the northwest slope of the mound, and it revealed the remains of an "internal, prepared clay



The Hog Pen Hill Site (Unpublished map courtesy of Paul Welch.)

hearth" (Welch 1990: 213). Also, "...shell-tempered ceramics were present in the submound soil" (Welch 1990: 213). That clay hearth was surrounded by a sandy horizontal surface believed to be a floor. These finds seemed to indicate a structure on the mound, and played an important role in subsequent excavations at Hog Pen.

Hog Pen and a handful of other single mound sites have been referred as "political and religious centers for dispersed 'neighborhoods' of farmsteads and hamlets" (Welch 1990, 212-213). It is important to note, however, that evidence is inconclusive as to what exact role those centers played in the lives of the populace.

In 1990 Welch had the opportunity to return to Hog Pen for a more thorough investigation. The Alabama Museum of Natural History needed a location for its annual summer dig, so the two teamed up, providing Welch with thirty high school and college age students as free labor.

Welch had two main goals for the 1990 field season. The first was to better determine the mound's stratigraphy. Welch opened a line of units along the northern slope of the mound. Working horizontally downward, not with the slope, he sought a "buried mound summit" or intact floor. It was determined that any intact evidence of such kind below thirty or forty centimeters would be too deep to completely expose in the allotted time, therefore it was hoped that the "summit" would be encountered within the first week or so of excavation. It was clear by the second week of digging that the desired surface actually occurred about one meter down, and that far too much fill would have to be removed to properly expose it.

Also, when shovel did strike sand, it was about twenty centimeters above where the sand around the hearth from the previous excavation would line up horizontally. The hearth was reexposed, with the hopes that the sand layers would match. The sand from around the hearth does slope up the mound, but not without interruption.

Thus, looking at the south profile of those units, one may observe a curious thing. After the sand rises approximately 25 centimeters from the hearth, a gap occurs, where the sand disappears, and a row of postholes is visible. After the postholes another erosional surface of silty wash deposits can be seen. These silty deposits are not necessarily the same as the sand, but are possibly evidence of an outside building on the same summit.

The second major goal of the 1990 season was to look for a midden deposit at 1Tu56 similar to ones located on mound slopes at Moundville. Three one by three meter units were opened in a line down (as opposed to across) the East slope of the mound. This time the excavation followed the slope. The first twenty centimeters were removed, followed by ten centimeter arbitrary levels. The uppermost unit yielded the most material, and it was there that the midden was first uncovered. The uppermost unit was later connected with the next unit down (another one by three bridged the gap) to further push the midden's boundaries.

Auger tests were done in the area surrounding the midden units to determine the extent of the midden, as time did not allow more units to be opened. While the auger tests proved it to be smaller than Welch expected, the midden boundaries were

determined. This provided Welch with enough information to warrant a return to the field in 1992.

In conclusion, the first goal of the season was not entirely met. It is still unclear what the purpose of the structure on the mound was, but in order to make any type of guess, it is necessary to take all aspects of investigation into account. For example, sometimes seasonality can be deduced from enough bone or shell material. Unfortunately, the Hog Pen sample does not even approach the size necessary for accurate results of that kind. By roughly comparing the amount of midden material removed from Hog Pen with that of a comparable mound's midden, say Mound Q at Moundville, we readily see that there is not enough refuse at Hog Pen to support residential use throughout Late Moundville I, a period of 75 to 100 years. It would be more reasonable to argue a residential use of only 20 years during that time. Or quite possibly, the mound was not residential at all, but rather served religious or civic functions. It could easily have enjoyed episodic use over most of Late Moundville I if that were the case.

I had the opportunity to be a part of this 1990 summer dig as my second New College Independent Study Project. I had attended the Museum's summer excavations for the previous five seasons, and as a veteran was working that summer for the Museum for pay. As one of three students in that position, I led a field crew of four to six students each of the four weeks of the dig.

The team excavated most of three of the mound's four slopes, and I had the good fortune to lead the crew on the East slope of the mound, roughly facing the river. We were in the uppermost midden unit, and saw much of the action for the four weeks of the project.

Welch determined that enough was found in the three midden units in 1990 to warrant a further look at the East slope. He applied for a research grant for the summer of 1992 to open two large three by three meter units adjacent to the top one by three from the 1990 dig. He invited two graduates he had taught at Oberlin and Queens College, CUNY, along with two seniors from Queens, and me to accompany him for another summer at Hog Pen.

The goal of this follow up project was simply to excavate the entire midden. this was accomplished, with some exciting finds, including a fragment of galena[4], yellow and red ochre, and one Weeden Island duck effigy vessel. The galena was probably imported from the upper Mississippi River Valley, as that is the case for all galena found so far at Moundville, and the duck effigy vessel was most likely manufactured in southern Georgia. This may indicate the presence of a high status individual or group, and the quantities of ochre seem to indicate an extensive use of pigment. This is admittedly not much to go on, however, in determining mound use.

---

[4] galena: lead sulfide occurring in lead-gray crystals, usually cubes; the principal ore of lead (Webster's); a trade item (see Fagan 1991:349-50); an exotic trade good used as a pigment. Galena cubes from Moundville have been traced to the Upper Mississippi Valley, north of St. Louis (Welch, personal communication: 1995).

CHAPTER IV

THE TYPE-VARIETY SYSTEM AND CERAMIC ANALYSIS AT MOUNDVILLE

The durability, versatility, and wide accessibility of clay as a medium has allowed ceramics to become an essential element of most societies in the world. Clay manipulation provides a direct outlet for human expression and offers a limitless variety of possibilities in terms of shapes, sizes, and decorative styles of vessels. Fired clay is a good resistor to heat stress and it preserves well, making it one of the most common artifacts at sites. Adding to the importance of the study of ancient ceramics is the central role of the medium in the daily life of most sedentary peoples (Redman 1991).

In departing on a study of a particular assemblage of ceramics, one must consider which attributes, whether physical or functional or otherwise, are relevant to the current study. Also important to remember are other researchers' interests. The availability of the material, coupled with previous research goals and techniques, will shape the decisions made by the current researcher. In any case, a working and acceptable typology is necessary before any comparison or analysis can be performed (Sinopoli 1991: 43-44).

There are several ways to arrange or classify ceramic data in order to render it more manageable. The first method of ceramic classification is termed the "intuitive" approach, and simply consists of piling sherds with observably similar attributes. This grouping method is based on the analyst's discrimination of observable general

descriptive features but may not produce absolute types based on exclusive criteria. Criteria for type definition could therefore change between types, making replication of one researcher's work potentially quite difficult.

W. A. Ritchie and R. S. MacNeish, for example, developed a classification system for Owasco pottery from New York State in the 1940s (1949). Their unstated rules for type definition were accepted until Robert Whallon attempted in 1972 to outline and verbalize them. Whallon's study resulted in the "tree classification" system for Owasco pottery, in which attributes are tested for in sequence, with each level examining a single variable (1972: 15). Such systems for classification as Ritchie and MacNeish's are better suited for grouping chronological sequences and other general questions than explaining stylistic or technological differences. For answering more specific questions, a more specific set of criteria must be used within the system of classification (Sinopoli 1991:120).

The type-variety system of analysis was first proposed by Wheat, Gifford, and Wasley in 1958. Their data base was pottery from the Southwestern United States and emerged as a response to a growing number of individual researchers' classification schemes in the large region. For decades, archaeologists had named and described differentiations in ceramics, but a widely accepted terminology was not agreed upon. By simply offering the terms "type", "variety", "type cluster" and "ceramic system", Wheat, Gifford and Wasley were verbalizing a previously unstated hierarchy in ceramic groups, without placing too strict rules on the definition of those terms. Here types and varieties should be spatially and temporally restricted, but the diagnostic traits used to

distinguish between types could vary depending on the ceramic assemblage. Type clusters and larger ceramic systems are broader groupings which bound cultural areas, further enabling researchers to describe and compare data across regions (Gifford, Wheat, and Wasley 1958: 34-37).

In the context of type-variety identifications, "vessel shape, production techniques, and details of vessel morphology are not considered" (Sinopoli 1991: 53). Instead, three main variables are used: tempering material, surface treatment, and decorative motifs. Through explicit definition and definite time and space specifications, the type-variety method of classification is much more replicable than previous efforts such as Ritchie and MacNeish's.

In the end, it is not as important how one arrives at the typology, but rather whether it is replicable and statistically verifiable, whether intuitive or analytic in gross nature. Techniques should be relative to individual data sets and their particular quirks (Sinopoli 1991: 45-6).

The development of a typology can only work if one assumes a distinct relationship between "ceramics and political, social, or culture history" (Arnold 1985:1). Early studies of ceramics in the context of social organization used ethnographic analogies to make assumptions about social interaction and stylistic distribution. J. Deetz (1965), J. Hill (1970), and R. J. Whallon (1970) explore the relationships between human interaction and stylistic similarities in ceramic assemblages. It was assumed for the most part for these studies that "pottery making was a household industry" (Sinopoli 1991: 120). Clusters of individual style and production technique

were recognized as the result of shared learning patterns. This interpretation resulted in the important recognition that "ceramics could be used to consider intra and intersite social variation, that there could be more to ceramic analysis than defining regional culture areas or chronological sequences" (ibid.: 120).

The concept of a ceramic "type", according to Deetz (1967: 45: 9), is supposedly synonymous with the potter's "ideal" or "mental template". This theory arose out of the Boasian conception of mentalism. The ceramic type was compared to the phoneme as the "basic unit of description", both being composed of features.

That potters work from a set of "ideal attributes" for a pot has been challenged by the more recent work of P. Steadman (1980). Steadman lends more credence to a person's natural "motor" tendencies in determining the end result of a pot than an abstract ideal. It has also been suggested that potters in general use larger visual breakdowns such as vessel shape or supposed function rather than single attributes which may tend to be more stylistic (Arnold 1985: 7-8).

In the 1960s an attempt was made to address the role of environmental effects on ceramic variability. Termed 'ceramic ecology' by Matson (1965), this approach caught on and was utilized by many researchers throughout the 1970s and 1980s.

More than any other concept, the deep-seated belief in the "interrelatedness of culture" is the backbone paradigm for the entire feasibility of ceramic inference. Because ceramics are accepted as being an integral part of culture, they can be expected to reflect changes in that culture. By studying the ceramic assemblage from an area, one can infer through this theory many "non-ceramic" aspects of that culture. In this way, ceramics

can be used for "social and cultural reconstruction" of past societies (Arnold 1985: 10-11). According to Arnold, less attention needs to be placed on craft technique and artistic detail and more needs to be drawn to the "ecology of crafts", or the relationship between ceramics and other aspects of culture.

In Carla Sinopoli's work on trade of Roman utilitarian and fine-ware vessels, she finds that the different classes of vessels clearly reflect differing social contexts. Preferential access to fine wares is cited as a signifier of elite status. Also, she interprets the standardization of style in such fine wares as indicators of the "cohesiveness of the aristocracy" (Sinopoli 1991: 121).

The most likely use of pottery involves food in some way, whether in the context of cooking, storage, or serving. We have a strong sense of what type of vessel is appropriate for use in different social and culinary contexts today. Much is expressed through our choices or use of certain vessels, as indicating status, ritual, or particular symbolic dining contexts. "Both the differentiation of foods and of the access to specific foodstuffs and the varying social contexts of preparation and serving affect and determine the nature of the significance of variability in the vessels used" (ibid.: 123).

The greatest variety of classes of ceramic vessels is generally thought to be found in a household context. This variety reflects the larger number of daily tasks performed by vessels in a domestic rather than in a ritual setting. Much of the recent work at Moundville has focused on the identification of ritual vs. domestic contexts, and their significance.

Ceramics at Moundville

The type-variety system is integral to my research, and a regional classification of Moundville ceramics has already been defined (Steponaitis 1983). When Vincas Steponaitis wrote the definitive book on Moundville ceramic analysis, he used two samples. One was comprised only of whole vessels, the vast majority of which were unearthed from burials at Moundville. The other was a sherd sample taken from two excavations north of Mound R directed by Margaret Scarry in the summers of 1978 and 1979. The 1,812 usable sherds were exhumed from two 2x2m units taken down to subsoil level (Steponaitis 1983: 9-14).

Steponaitis's work was "intended to clarify some of the observed variability in the Moundville assemblage, and also to serve as the basis for the future technological comparisons with culturally related assemblages, both across space and through time" (Steponaitis 1983: 17). He suggests that many stylistic changes are actually technological advances, and attempts a chronology based on Scarry's strictly stratigraphically controlled excavations.

It would be easy to describe in detail the clay and tempering materials used in forming the ceramics as well as actual building methods, but that has been accomplished exhaustively elsewhere (ibid.: 18-45; Rice 1987: 31-166).

In categorizing and measuring my samples of pottery from Hog Pen and the White site, I have followed Steponaitis's rules of classification of Moundville ceramics. It is important to note that while the types and varieties in the system are polythetic in

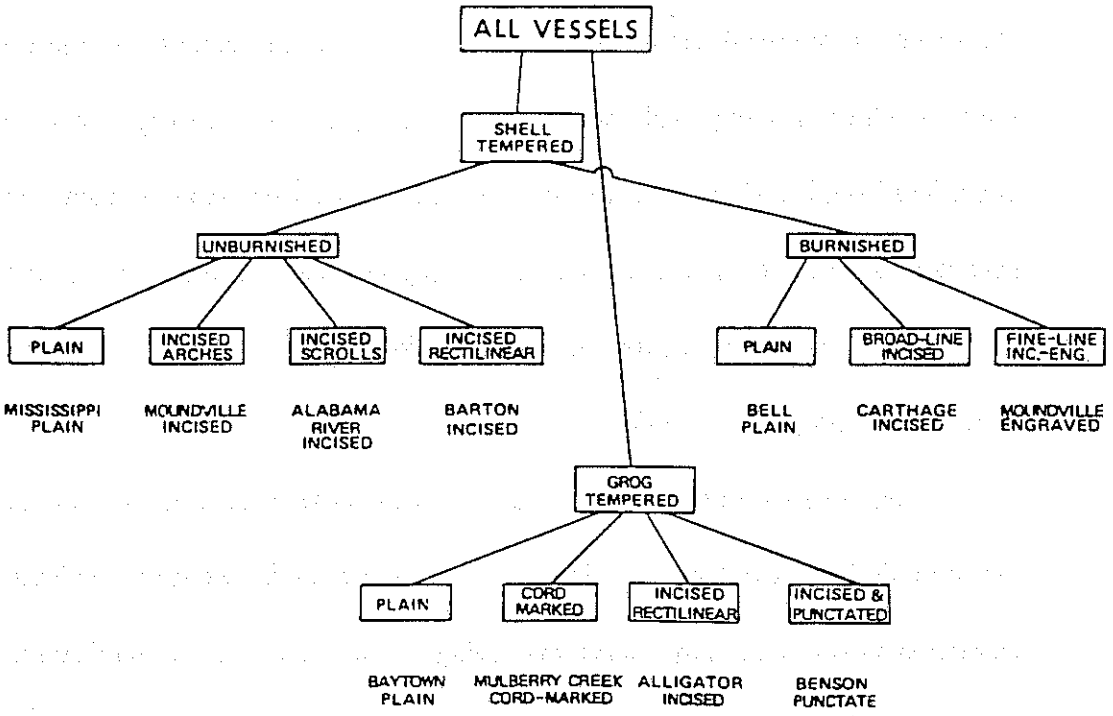


Figure 11. Tree-Classification Chart for Moundville Ceramics (Steponaitis 1983: 51)

nature, and therefore "cannot be strictly defined by specifying a set of necessary and sufficient conditions for membership" (Steponaitis 1983: 48), they do follow an internal set of criteria in the process of classification. The "tree-classification" chart which groups all Moundville ceramics has been reproduced as figure 11.

All types are grouped primarily by paste composition, which largely refers to tempering agent. The next grouping is by surface finish, and finally by additional tooled decoration. Highly specialized decoration, for example the depiction of a representational motif, further discriminates between sherds otherwise alike in paste, etc. Other variables include surface color, vessel morphology, and the addition of molded appliqué or other secondary shape features to a vessel (see Fig. 12 for vessel shapes). Each of these attributes can stand independently of the original three considerations (ibid.: 48). See Appendix A for charts used to distinguish varieties based on surface decoration.

Therefore, in walking through the process of classification, one must make a series of discriminations based on sherd attributes. While these distinctions are theoretically straightforward, sometimes it is an individual researcher's opinion which determines whether a sherd shows signs of burnishing, for example.

In my research, I followed Steponaitis's system of classification exactly. Sherds which were unable to be identified based on surface finish criteria were described as well as possible (i.e. shell-tempered eroded, or unclassified incised). An explanation of the lab procedure is available in the following chapter.

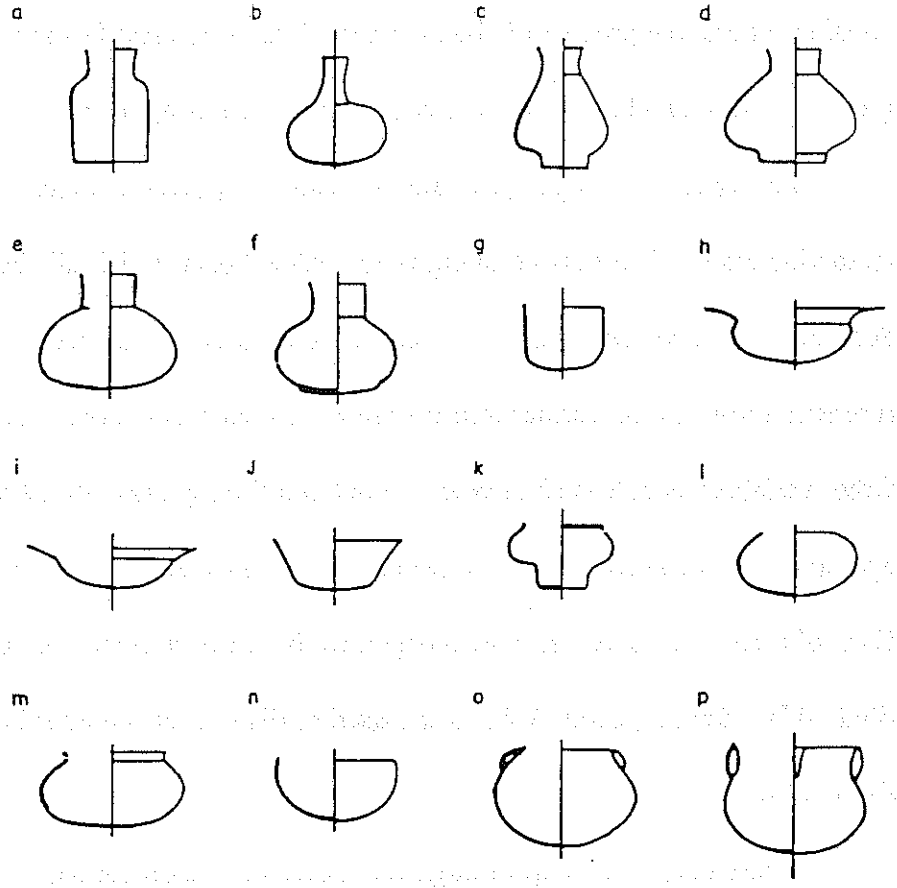


Figure 12. Basic Shapes: (a) cylindrical bottle, (b) narrow-neck bottle, (c) slender ovoid bottle, (d) subglobular bottle with pedestal base, (e) subglobular bottle with simple base, (f) subglobular bottle with slab base, (g) cylindrical bowl, (h) flaring-rim bowl (deep), (I) flaring-rim bowl (shallow), (j) outslanting bowl, (k) pedestaled bowl, (l) restricted bowl, (m) short-neck bowl, (n) simple bowl, (o) neckless jar, and (p) standard jar.

Figure 12. Basic Vessel Shapes (Steponaitis 1983: 67)

CHAPTER V

VESSEL FUNCTION AND SOCIAL FUNCTIONS: CERAMIC ANALYSIS AND RESULTS

Problem

The preceding chapters have been an attempt to familiarize the reader with the background and general scope of the present work. For over one hundred years, archaeologists have worked to piece together a view of life in the pre-contact Southeastern United States. Moundville and other paramount centers in the region have received much attention, but centers could not be sustained as such without smaller, local polities and their surrounding farmsteads.

Single mound sites and farmsteads exemplify stratification, and are a necessary part of any chiefdom society. Through innovative techniques of analysis and comparison of these sites, it is possible to illuminate a much more complex and interactive view of daily commerce in the Moundville chiefdom.

The work conducted by John Blitz at Lubbub Creek illuminates interactions between residents of a single mound site and those living in the surrounding farmsteads. By examining ceramic and other artifact distributions across differing social contexts, Blitz addresses the possibility of "preferential access" to craft items (Blitz 1993:3, 136). Blitz did not find what he considered to be a significant difference between mound and village samples in terms of vessel shapes, decoration, or function (serving vs. cooking).

He did find, however, that vessels from the mound represented a much smaller range of sizes, leaning towards the large end of the scale. Vessels from the village contexts (farmsteads off the mound) covered a larger range of sizes, reflecting the much larger variety of uses of pottery in a domestic setting (Blitz 1993:93-96).

Paul Welch, working at the White site, a single mound site closer in proximity to Moundville than Lubbub Creek, theorized that a residential midden present at the site was shared by both elite and commoner households. This theory was based partly on the ceramic makeup of the midden, combined with the assumption that preferential or restricted access to certain items was the case at the site (Welch 1990:56-57).

Both of the above researchers are concerned with the tangible results of human activity and interaction in the context of a chiefdom economy. It is a general assumption that a ranked society will exhibit restrictions on access to high status articles. What remains to be shown is whether articles which researchers perceive to be of high status (i.e. those which require more effort to produce than others) are in fact unevenly distributed across the archaeological record. Also of interest is whether vessel size ranges reflect specific ritual or ceremonial mound use (i.e. feasting or communal storage).

Procedure

It is with these research questions in mind that I began this project. As previously mentioned, I conducted two seasons of excavation at Hog Pen Hill (1Tu56), a single mound site similar to but not contemporaneous with the White site (1Ha7). Under

the direction of Paul Welch, I systematically amassed data from Hog Pen Hill and the White site which I could compare with Blitz's sample from Lubbub Creek.

Blitz compares sherds from many areas of the site of Lubbub Creek. I focused on middens or refuse deposits from the two comparison sites. At Hog Pen the midden is on the mound slope, and consisted of mound refuse only. At the White site, the midden is a residential one located well off the mound itself. My intent is to compare the mound sample from Hog Pen with the mound sample from Lubbub Creek, and the residential (village) sample at White with the village sample from Lubbub. Hog Pen and the White site are also compared.

In order to prepare the ceramic samples for comparison, several steps were necessary. At Hog Pen Hill, I participated in excavation, washing, sorting, typing, and measuring the artifacts. "Sorting" refers to separating the ceramics from other artifacts present, including but certainly not limited to lithics, daub, and bone. All artifacts were weighed and counted, with the exception of daub and sherdlets which fit through a 1/4 in screen. These were weighed only.

"Typing" refers to the systematic process of differentiation between ceramic types and varieties, according to the system used by Steponaitis (Steponaitis 1983:47-75, 301-326). Because the White site sample had already been sorted, typed, and catalogued for Welch's 1990 publication and had been excavated a full 10 years before my work, it was only necessary to check the typologies present on the catalog sheets and measure and record data from the rim sherds.

Measuring rim sherds involves projecting the vessel's original shape and size prior to breakage. The sherd is held such that three points along the rim's surface form a horizontal plane. This is the position and angle of the sherd when it formed part of the larger vessel. The sherd is then flipped 180 degrees so that the same three points lie flat on the rim chart (see Fig. 13). The sherd is then manipulated along the concentric circles on the chart until a match is found between a circle and the curve of the sherd. The measurement of diameter and angle of arc present are noted. A larger angle of arc present in the sherd allows for greater accuracy in determining the diameter. When enough of the vessel's neck is present, a measurement of the neck inside diameter can also be measured.

A shape analysis form was completed for each sherd in the samples. This form provided each individual sherd with a number for designation, complete provenience, the type, variety and vessel shape represented, a measurement of orifice diameter, a note of the angle of arc present, a cross section drawing indicating the angle of the rim, and a flat drawing of the exterior of the sherd. Examples of the data sheets are presented in Appendix B. A summary of the data is provided Appendix C.

The ceramic sample was divided into village and mound samples and compared in order to illuminate any differences between the two that could provide clues as to mound use. Blitz hypothesized that ceramic samples should differ from village to mound precinct depending on "specialized ritual, political, and economic activities such as redistributive feasts, ceremonies, or large-scale storage" (Blitz 1993: 2).

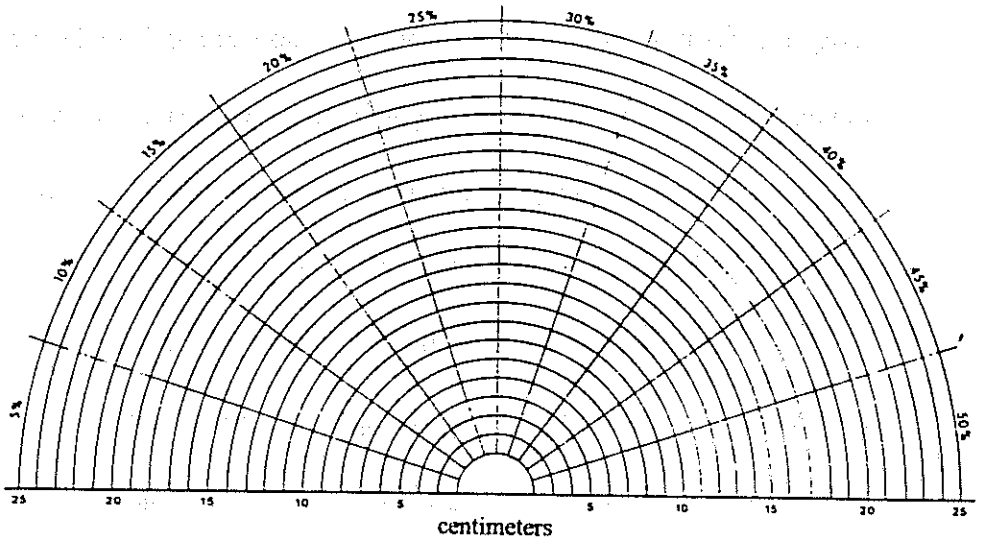


Figure 13. Rim Diameter Template (Not to Scale)

Within the Moundville ceramic sample there lies a strong dichotomy between physical attributes of vessels which serve different functions. The most common use categories for pottery are serving, cooking, and storage. The distinctive attributes for serving ware are fine shell tempering and burnished surface treatment. There are also patterns of incised and engraved surface decoration which correlate with serving vessels. Serving vessels are generally bottles or bowls.

Cooking and storage vessels tend to have thicker paste with coarse shell tempering. Generally unburnished, cooking vessels exhibit distinctive incised decoration, when decorated at all. Standard jars are the main cooking and storage vessels. Occasionally, simple hemispherical bowls can serve a cooking function.

I present ratios of serving to cooking vessel sherds within these separate contexts. This distinction is based solely on surface finish, as burnished and black-filmed finishes are not appropriate for cooking vessels. The finishes do not hold up under the stress of repeated heating and cooling that vessels are subjected to in cooking activities (Steponaitis 1983: 17-45). Serving to cooking ratios are based on the total sherd count from the three sites.

Also, a breakdown of vessel shapes is given for the sites. As vessel shape is related to vessel function, this comparison is used to back up the surface finish breakdown just explained. Because vessel shapes are most easily identifiable when portions of the rim is present, only the rim sherd samples were examined for this comparison. Chi-square tests are utilized to determine the significance of distribution of the vessel shapes across the areas in question.

Following Blitz, vessel sizes based on orifice diameter are provided. Vessel sizes are compared across all samples. In these tests, orifice diameter was the main indicator of vessel size. For size within shape comparison, jars and bowls were chosen because they represent the most agreed upon idea of functional contrast. Bottle sample sizes are rarely comparable to jar or bowl samples, and bottle shape is such that bottle rim diameters are rarely indicative of vessel size (see Fig. 12 on pg. 46).

Results

The vessel types and their frequencies in each sample are presented in Tables 2-4. Blitz used his serving to cooking ware comparison to test a hypothesis that mound activities may have included "large-group feasts", which may have in turn required a larger number of serving vessels. His null hypothesis was that there would be no difference in mound and village samples.

He failed to reject his null hypothesis. The ratios are not significantly different for the two samples at Lubbub (0.09 for the mound and 0.07 for the village). These ratios were produced by dividing the smaller number of serving vessels by the larger number of cooking vessels[5] . Hog Pen's mound sample has a serving to cooking ratio of .20, and the White site's village ratio is .24. In other words:

[5] Total sherd counts from the sites were used for this comparison. Hog Pen's sample consists of 429 serving and 2,133 cooking. White's sample consists of 3,304 serving and 13,619 cooking. Lubbub's totals are shown in Table 2.

Table 1. Serving to Cooking Sherd Ratios at the Three Sites

	Serving: Cooking			Serving: Cooking	
Hog Pen (Mound)	1:5.0	(.20)	1:11.1	(.09)	Lubbub (Mound)
White (Village)	1:4.1	(.24)	1:14.3	(.07)	Lubbub (Village)

It is clear from this exercise that the two satellite sites of Moundville in question exhibit a far greater percentage of serving ware than Lubbub. This could be due to both sites' closer proximity to Moundville. Compared to each other, the Hog Pen and White site data do not seem dramatically different from each other, although it is interesting to note that the village sample has a higher percentage of serving ware than the mound, the opposite of the data from Lubbub.

Vessel shapes are also indicative of vessel function. In general it is argued that bottles and flaring rim bowls are serving vessels, whereas jars and simple bowls are mainly used for cooking or storage. Vessel shapes for each site are presented in Tables 5-7.

The percentages of bottles, bowls, and jars from each site are similar, with some notable exceptions. Only one bottle is present in the White site sample, and only four were present at Hog Pen, compared to 34 in the Lubbub village sample and 16 in the Lubbub mound sample. Also, Lubbub shows a much larger percentage of bowls than the other two sites. In fact, the percentage of jars at Lubbub is closer in comparison with the percentage of bowls at Hog Pen and White, while the percentage of bowls at Lubbub, in the 60% range for mound and village, dwarfs the 17% and 20% range represented by Hog Pen and White, respectively.

A chi-square test was performed comparing distribution of four basic vessel shapes between sites (Tables 8-11). These are standard jars, bottles, flaring-rim bowls, and simple hemispherical bowls. The results of the chi-square test are significant: for Lubbub:Hog Pen X^2=24.82, *df*=3; for Lubbub:White X^2=36.23, *df*=3; and for Hog Pen: White X^2.=16.94, *df*=3 (Table 9-11). These results are all much higher than Blitz's of Mound:Village X^2=4.77, *df*=3. The Lubbub sample, when compared within itself, does not exhibit significant differences in distribution of major vessel shapes across contexts at a .05 level. All three comparisons listed above for the other sites, in contrast, show significant differences in distribution across contexts to a .05 (and even to a .001) level.

Seeing many similarities between the mound and village samples at Lubbub, Blitz looked at vessel size to see if size patterns would reflect social setting. It was hoped that within a social context, certain sized vessels would be more abundant. For example, a domestic context would hypothetically require the greatest number of different activities, therefore producing the greatest range of vessel sizes for each shape (Blitz 1993, 93). A more specialized context involving a greater number of people would necessarily result in a smaller variation in size, focused at the larger end of the size scale.

I present Blitz's vessel size ranges in the histograms in Table 12. Size ranges for Hog Pen and White are shown in Tables 13-14. The median orifice diameters for jars (Hog Pen = 28; White = 24) and bowls (Hog Pen = 24; White = 20) at the two comparison sites do not exhibit as great a difference as Lubbub jars (mound = 34.; village = 26) and bowls (mound = 32; village = 19). While the median sizes at Hog Pen

and White are much smaller than at Lubbub, both Hog Pen and the White site vessels do cover a wider range of sizes, with isolated outlier vessels at the large end of the scale. In fact, all samples from the comparison sites except for White site bowls show vessels larger than 45cm in diameter, which is the cut off point at Lubbub.

As a final means of comparison of ceramic variability, Blitz considered the "social implications of fineware distributions" (Blitz 1993: 132). Because the differences in ratios of decorated to undecorated sherds in mound and village samples are not great (.06 village to .04 mound), Blitz made the assumption that mound activities did not require more decorated ware. In fact, contrary to what was predicted, the village ratio was actually higher than the mound ratio. The total ceramic sample (not just rim sherds) were used in this tabulation.

Decorated/Undecorated ratios for Hog Pen and the White site are much larger than the ratios at Lubbub: .16 and .12, respectively (Tables 15-16). They are not appropriate for direct comparison with Lubbub because only vessel rim sherds were available for this comparison. The ratios are not significantly different from each other, but it is interesting that the mound (Hog Pen) sample ratio is higher than the village (White). This is what Blitz expected, but did not get in his results.

The three ceramic samples compared in this thesis reflect the variety of ceramic profiles available in the archaeological record. Comparisons between the Moundville outlying sites and Lubbub reveal vast differences in the functional, morphological, and stylistic makeup of the assemblages. Possible explanations for these differences are discussed in the concluding chapter.

Table 2. Lubbub Creek Ceramic Sample: Count and Percentage
(Blitz 1993: 131)

Type Variety	Total Count		Mound Count		Village Count	
	No.	%	No.	%	No.	%
Alabama River Applique						
var. Alabama River	67	0.119	22	0.367	45	0.09
Barton Incised						
Undetermined	12	0.021			12	0.024
var. Demopolis	3	0.005			3	0.006
Bell Plain						
var. Big Sandy	157	0.28	8	0.134	149	0.297
var. Hale	3,180	5.663	408	6.809	2772	5.526
Carthage Incised						
Undetermined	106	0.189	14	0.234	92	0.183
var. Carthage	31	0.055	4	0.067	27	0.054
var. Foster	8	0.014			1	0.002
var. Moon Lake	51	0.091	13	0.217	38	0.076
var. Summerville	1	0.002			1	0.002
Mississippi Plain						
Undetermined	93	0.166	10	0.167	83	0.165
var. Warrior	49,367	87.918	5297	88.401	44070	87.861
var. Hull Lake	24	0.004	1	0.017	23	0.046
Mound Place Incised						
Undetermined	8	0.014			8	0.016
var. Akron	72	0.128	12	0.2	60	0.12
var. Havana	33	0.059	3	0.05	30	0.06
Moundville Engraved						
Undetermined	159	0.283	28	0.467	131	0.261
var. Hemphill	72	0.128	4	0.067	68	0.136
var. Maxwell Crossing	2	0.004			2	0.004
var. Taylorville	26	0.046			26	0.052
var. Tuscaloosa	25	0.045	3	0.05	22	0.044
var. Wiggins	64	0.114	9	0.15	55	0.11
Moundville Incised						
Undetermined	483	0.86	56	0.935	427	0.851
var. Moundville	102	0.182	19	0.317	83	0.165
var. Snows Bend	108	0.192	24	0.401	84	0.167
var. Carrolton	1855	3.304	57	0.951	1798	3.585
Parkin Punctated						
Undetermined	42	0.074			42	0.074
Total	56151	100	5992	100	50152	100

Table 3. Hog Pen Ceramic Sample: Rim Count and Percentage

Type Variety	No.	%
Mississippi Plain *var. Warrior*	106	55.50%
Mississippi Plain *var. Hull Lake* (g)	5	2.62%
Mississippi Plain *var. Hull Lake* (s)	12	6.28%
Mississippi Plain *var.unspecified*	3	1.57%
Moundville Incised *var.Moundville*	3	1.57%
Moundville Incised *var.Snows Bend*	1	0.52%
Bell Plain *var. Hale*	34	17.80%
Bell Plain *var.Big Sandy* (g)	1	0.52%
Carthage Incised *var. Moon Lake*	10	5.24%
Carthage Incised *var. Akron*	4	2.09%
Carthage Incised *var. Summerville*	1	0.52%
Carthage Incised *var. unspecified*	1	0.52%
Unclassified shell tempered incised	4	2.09%
Unclassified shell and grog incised	1	0.52%
Unclassified engraved	1	0.52%
Indeterminate rims	3	1.57%
Shell tempered eroded	1	0.52%
TOTAL	191	100.0%

Table 4. White Site Ceramic Sample: Rim Count and Percentage

Type Variety	No.	%
Mississippi Plain *var. Warrior*	770	63.1%
Mississippi Plain *var. Hull Lake* (g)	11	0.9%
Mississippi Plain *var. Hull Lake* (s)	10	0.8%
Bell Plain *var. unspecified*	1	0.1%
Kinnswick Fabric Impressed	1	0.1%
Bell Plain *var. Hale*	107	8.8%
Bell Plain *var. Big Sandy* (g)	189	15.5%
Bell Plain *var. Big Sandy* (s)	4	0.3%
Alabama River Appliqued	1	0.1%
Carthage Incised *var. Akron*	8	0.7%
Carthage Incised *var. Carthage*	11	0.9%
Carthage Incised *var. Fosters*	7	0.6%
Carthage Incised *var. Moon Lake*	13	1.1%
Carthage Incised *var. unspecified*	25	2.0%
Red Painted	40	3.3%
White Painted	6	0.5%
Red on White Painted	12	1.0%
Unclassified Shell Tempered Incised	2	0.2%
Shell Tempered Eroded	3	0.2%
Total	1221	100.0%

Table 5. Lubbub Creek Vessel Shapes: Village and Mound Samples (Blitz 1993: 189)

Vessel Shapes	Village		Mound	
	No.	%	No.	%
Bottle	34	5	16	7
Cylindrical bowl	19	3	4	2
Flaring-rim bowl	108	16	46	21
Miscellaneous bowl	98	15	23	11
Outslanting bowl	52	8	19	9
Restricted bowl	18	3	6	3
Short-neck bowl	30	5	9	4
Simple bowl	125	19	32	14
Terraced rectangular bowl	5	<1	1	<1
Standard jar	173	26	65	29
Neckless jar	1	<1	<1	<1
TOTAL	663		221	

Table 6. Hog Pen Vessel Shapes: Mound Sample

Vessel Shapes	No.	%
Bottles (all indet.)	4	2.09%
Shallow flaring rim bowl	19	9.95%
Outslanting bowl	2	1.05%
Restricted bowl	3	1.57%
Simple hemispherical bowl	9	4.71%
Other bowls--Rectangular	2	1.05%
Flaring rim	1	0.52%
Other	1	0.52%
Standard jar	80	41.88%
Neckless jar	10	5.24%
Other jars--Burnished	6	3.14%
Unburnished	16	8.38%
Indeterminate shape--Burnished	6	3.14%
Unburnished	32	16.75%
TOTAL	191	100.00%

Table 7. White Site Vessel Shapes: Village Sample

Vessel Shape	No.	%
Bottles (all indet.)	1	0.08%
Shallow flaring rim bowl	3	0.25%
Outslanting bowl	0	0.00%
Restricted bowl	5	0.41%
Simple hemispherical bowl	117	9.58%
Other bowls--Short-neck	74	6.06%
Deep Flaring rim	52	4.26%
Other	21	1.72%
Standard jar	464	38.00%
Neckless jar	7	0.57%
Other jars--Burnished	15	1.23%
Unburnished	96	7.86%
Indeterminate shape--Burnished	15	1.23%
Unburnished	351	28.75%
TOTAL	1221	100.00%

Table 8. Chi-square Shape Comparison: Lubbub Mound Sample/ Lubbub Village Sample

	Lubbub/ Mound	Lubbub/ Village	Total	
SJ	65	173	238	
BOT	16	34	50	
FRB	46	108	154	
SB	32	125	157	
Total	159	440	599	
Fo	Fe	Fo-Fe	(Fo-Fe)^2	[(Fo-Fe)^2]/Fe
65	63.17529215	1.824707846	3.329559	0.052703495
173	174.8247078	-1.824707846	3.329559	0.019045127
16	13.2721202	2.7278798	7.441328	0.560673659
34	36.7278798	-2.7278798	7.441328	0.202607072
46	40.87813022	5.121869783	26.23355	0.641750245
108	113.1218698	-5.121869783	26.23355	0.231905202
32	41.67445743	-9.674457429	93.59513	2.245863109
125	115.3255426	9.674457429	93.59513	0.81157326
			X^2=	4.76612117
			df=3	not sig. at .05 level
				(not greater than 7.82)

Table 9. Chi-square Shape Comparison: Lubbub Mound Sample/ Hog Pen Sample

	Lubbub/ Mound	Hog Pen/ Mound	Total	
SJ	65	80	145	
BOT	16	4	20	
FRB	46	20	66	
SB	32	9	41	
Total	159	113	272	
Fo	Fe	Fo-Fe	(Fo-Fe)^2	[(Fo-Fe)^2]/Fe
65	84.76102941	-19.76102941	390.4983	4.607049798
80	60.23897059	19.76102941	390.4983	6.482485999
16	11.69117647	4.308823529	18.56596	1.588031817
4	8.308823529	-4.308823529	18.56596	2.234487246
46	38.58088235	7.419117647	55.04331	1.42669901
20	27.41911765	-7.419117647	55.04331	2.007479138
32	23.96691176	8.033088235	64.53051	2.692483171
9	17.03308824	-8.033088235	64.53051	3.788538268
			X^2=	24.82725445
C=.30 indicating a moderate significance			df=3	sig. at .05 level
(C is the contingency coefficient)				(greater than 7.82)

Table 10. Chi-square shape comparison: Lubbub Village Sample/ White Village Sample

	Lubbub/ Village	White Site/ Village	Total	
SJ	173	132	305	
BOT	34	1	35	
FRB	108	32	140	
SB	125	53	178	
Total	440	218	658	
Fo	Fe	Fo-Fe	(Fo-Fe)^2	[(Fo-Fe)^2]/Fe
173	203.9513678	-30.95136778	957.9872	4.697135292
132	101.0486322	30.95136778	957.9872	9.480456553
34	23.40425532	10.59574468	112.2698	4.796982592
1	11.59574468	-10.59574468	112.2698	9.681983213
108	93.61702128	14.38297872	206.8701	2.209748549
32	46.38297872	-14.38297872	206.8701	4.460042944
125	119.0273556	5.972644377	35.67248	0.299699852
53	58.97264438	-5.972644377	35.67248	0.604898784
			X^2=	36.23094778
C=.23 indicating a slightly moderate			df=3	sig. at .05 level
significance.				(greater than 7.82)

Table 11. Chi-square Shape Comparison: Hog Pen Mound Sample/ White Village Sample

	Hog Pen/ Mound	White Site/ Village	Total	
SJ	80	132	212	
BOT	4	1	5	
FRB	20	32	52	
SB	9	53	62	
Total	113	218	331	
Fo	Fe	Fo-Fe	(Fo-Fe)^2	[(Fo-Fe)^2]/Fe
80	72.37462236	7.625377644	58.14638	0.803408464
132	139.6253776	-7.625377644	58.14638	0.416445672
4	1.70694864	2.29305136	5.258085	3.080399968
1	3.29305136	-2.29305136	5.258085	1.596721084
20	17.75226586	2.247734139	5.052309	0.284600783
32	34.24773414	-2.247734139	5.052309	0.147522424
9	21.16616314	-12.16616314	148.0155	6.993025831
53	40.83383686	12.16616314	148.0155	3.624825316
			X^2=	16.94694954
C=.23 indicating a slightly moderate			df=3	sig. at .05 level
significance.				(greater than 7.82)

Table 12. Size Frequency Histograms of Lubbub Mound and Village Jars and Bowls (Blitz 1993: 94).

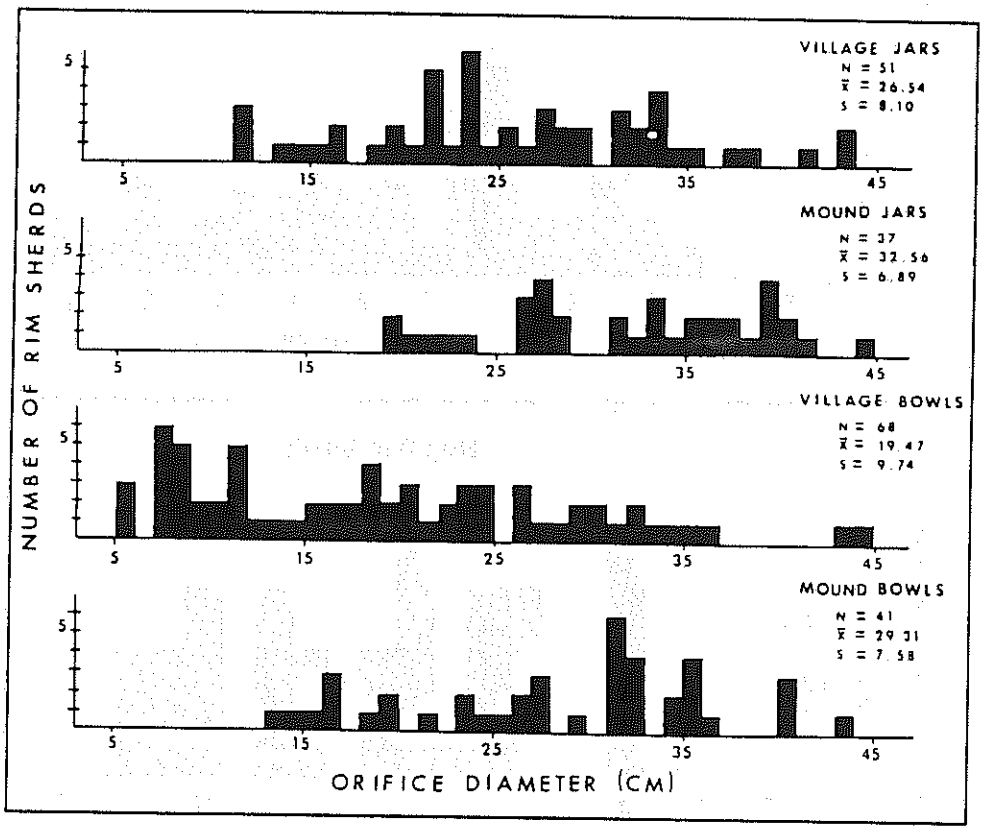


Table 13. Size-Frequency Histograms of Hog Pen Jars and Bowls

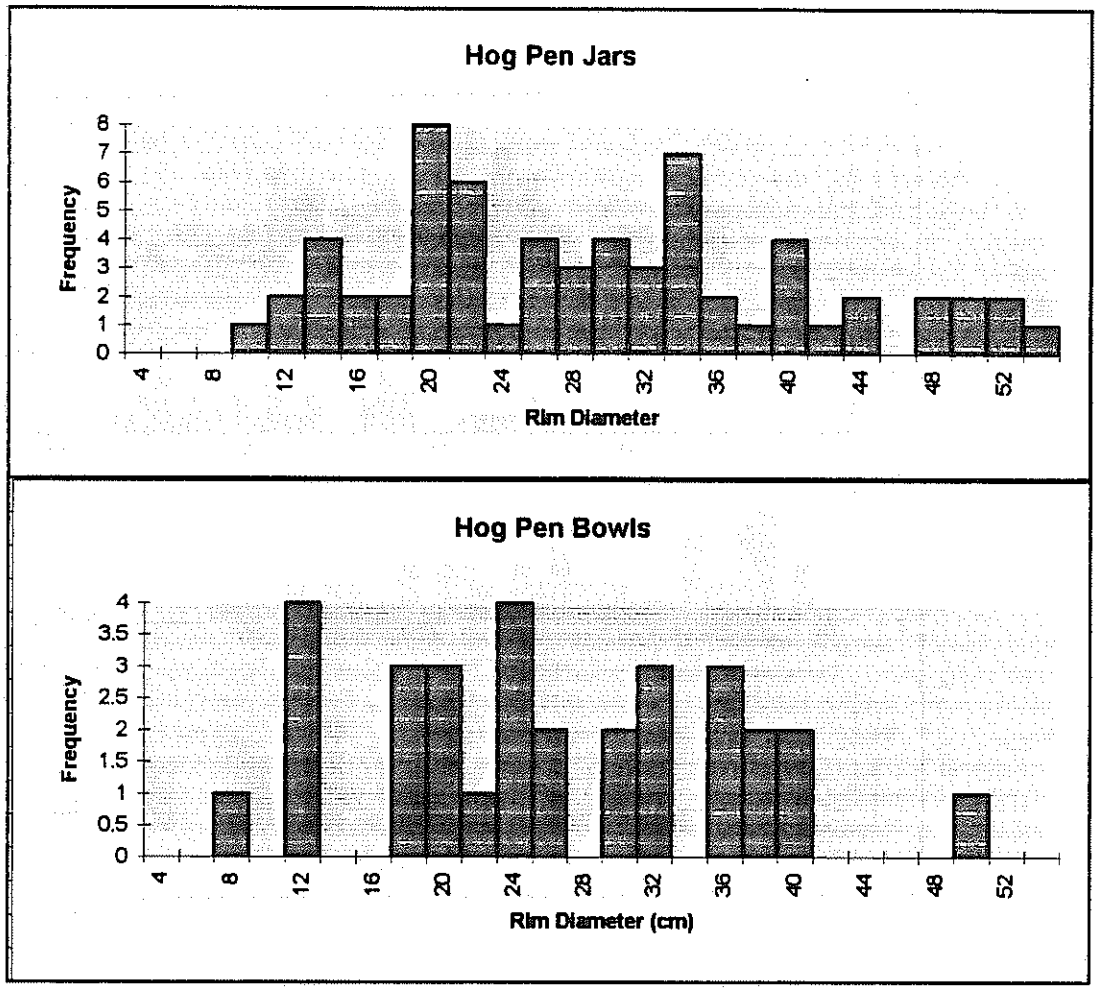


Table 14. Size-Frequency Histograms of White Site Jars and Bowls

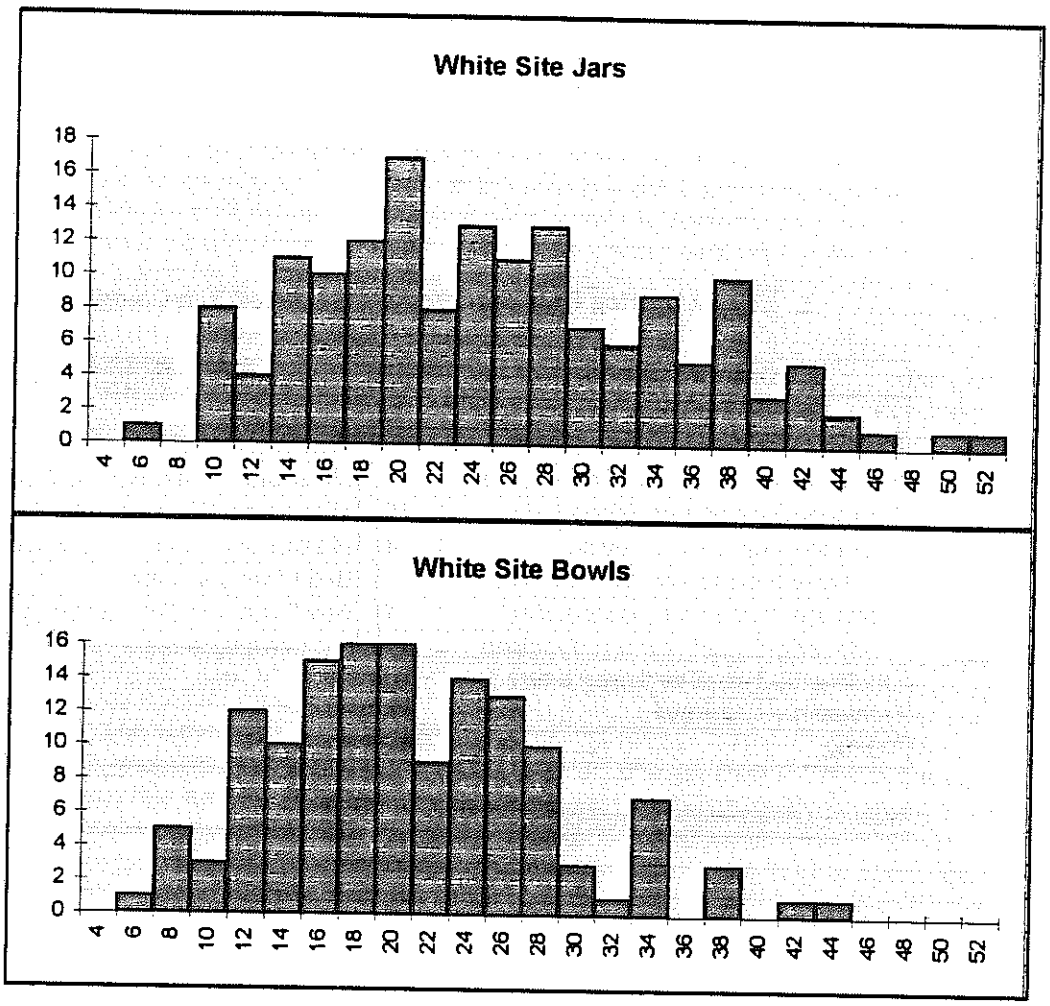


Table 15. Hog Pen Decorated/ Undecorated Rim Comparison

Decorated Sherds	No.	Undecorated Sherds	No.
Moundville Incised *var. Moundville*	3	Mississippi Plain *var. Warrior*	106
Moundville Incised *var. Snows Bend*	1	Mississippi Plain *var. Hull Lake* (g)	5
Carthage Incised *var. Moon Lake*	10	Mississippi Plain *var. Hull Lake* (s)	12
Carthage Incised *var. Akron*	4	Mississippi Plain *var. unspecified* (s)	3
Carthage Incised *var. Summerville*	1	Bell Plain *var. Hale*	34
Carthage Incised *var. unspecified*	1	Bell Plain *var. Big Sandy* (g)	1
Unclassified shell tempered incised	4	Indeterminate plain	3
Unclassified shell and grog incised	1		
Unclassified engraved	1		
TOTAL	26		164
Ratio of decorated to undecorated pottery is		0.159	

Table 16. White Site Decorated/ Undecorated Rim Comparison

Decorated Sherds	No.	Undecorated Sherds	No.
Carthage Incised *var. Akron*	8	Mississippi Plain *var. Warrior*	770
Carthage Incised *var. Carthage*	11	Mississippi Plain *var. Hull Lake*	11
Carthage Incised *var. Fosters*	7	Mississippi Plain *var. Hull Lake*	10
Carthage Incised *var. Moon Lake*	13	Bell Plain *var. Hale*	107
Carthage Incised *var. unspecified*	25	Bell PLain *var. Big Sandy*	189
Alabama River Applique	1	Bell Plain *var. Big Sandy* (s)	4
Kinnswick Fabric Impressed	1	Bell Plain *var. unspecified*	1
unclassified incised	2	shell eroded	3
Red Painted	40		
White Painted	6		
Red and White Painted	12		
TOTAL	126		1095
Ratio of decorated to undecorated pottery is .115			

CHAPTER VI

CONCLUSIONS

Description of Data

The work that John Blitz did at Lubbub is innovative in that it tests a specific theory of cultural patterns at Mississippian sites. The expected outcome, that ceramics from a mound context would differ significantly from those from a village context in amount of decoration, vessel function, and vessel morphology, was not obtained. Instead, the current theory of artifact distribution was challenged.

The data from the Hog Pen and White sites continues to challenge the accepted assumptions about artifact distribution. Both Hog Pen and White displayed a much larger proportion of serving ware than Lubbub. Patterns of serving and cooking vessels, while similar between the two newly analyzed samples, do not follow the trend between mound and village samples at Lubbub. A slightly higher percentage of serving vessels was found in the village context at the White site than the mound context at Hog Pen.

Distribution of vessel shapes differed dramatically between the two test sites and Lubbub. Internal differences between Hog Pen and White, while still significant, are much smaller than the comparison with Lubbub. It is clear that while the ceramic samples at all three sites are similar in typological aspects, large differences exist in terms of representation of certain vessel shapes and types.

Bowls, for example are more highly represented at Lubbub than the other two sites. There is also a much greater variety of bowl types. Hog Pen and White, while exhibiting a much higher percentage of serving ware, show less variety in those burnished sherd types, including a notable absence of Moundville Engraved ware.

The size-frequency histograms provide a glance at the overall vessel size ranges from the three sites. Both the Hog Pen and White samples show a wider range of sizes than Lubbub; Hog Pen does not demonstrate the bounded low end of the range that Lubbub does (>20cm for jars, >13cm for bowls at Lubbub). In fact, there is an added element present at the Moundville outliers which is not found at Lubbub -- a distinct mode of larger vessels measuring on average between 45-54cm in diameter. The Lubbub data does not include vessels over 44cm in diameter. There is as of yet no conclusive explanation for such larger vessels' use, but there is evidence of such vessels at Moundville proper (Welch 1995: personal communication).

Cultural Context

Lubbub, Hog Pen, and the White site share qualities which lend them to comparison. All three are single mound sites, and are roughly the same size in terms of surrounding village area. Although the mound at Lubbub was slightly larger than Hog Pen or White, and there was a palisade present there, there is no evidence of more than eight houses in use at any point in Lubbub's occupation (Welch 1995: personal communication).

It is the differences in the ceramic samples outlined here which present interesting challenges for interpretation. In order to make sense of the samples it is necessary to look at the larger cultural contexts for each sample. Lubbub is located well away from the powerful Moundville site, and while people at Lubbub traded and had other social contact with residents of Moundville, there is no evidence that they were under Moundville's control. There is no major multi-mound center in close proximity to Lubbub, therefore Lubbub was responsible for conducting all ritual activities for the immediate area on its mound. Lubbub also was occupied for a longer time period than the other two sites (from Late Woodland to Protohistoric times). This is a possible explanation for the greater variety of ceramic types present at Lubbub.

Hog Pen and the White site, on the other hand, existed as satellite sites to a much larger center, Moundville itself. Moundville undoubtedly had control over the ritual calendar for all surrounding sites, and routinely demanded tribute from them. At the same time, Moundville undoubtedly controlled the amounts of non-local and trade goods present at outlying sites. The mere proximity of the two test sites to Moundville explains their much greater percentages of serving and decorated wares.

The biggest difference in the samples stems from the closeness of the sites to Moundville. Moundville was simply a more complex chiefdom, and as such had more or different ritual uses for food throughout its area of influence than did Lubbub. Preliminary serving vs. cooking ratios run as high as .60 at areas of Moundville and as low as .15 for the limited farmstead data (Welch 1995: personal communication). Even

the lower number here is significantly higher than the mound ratio at Lubbub, indicating the great amount of wealth generated by Moundville as a multi-mound center.

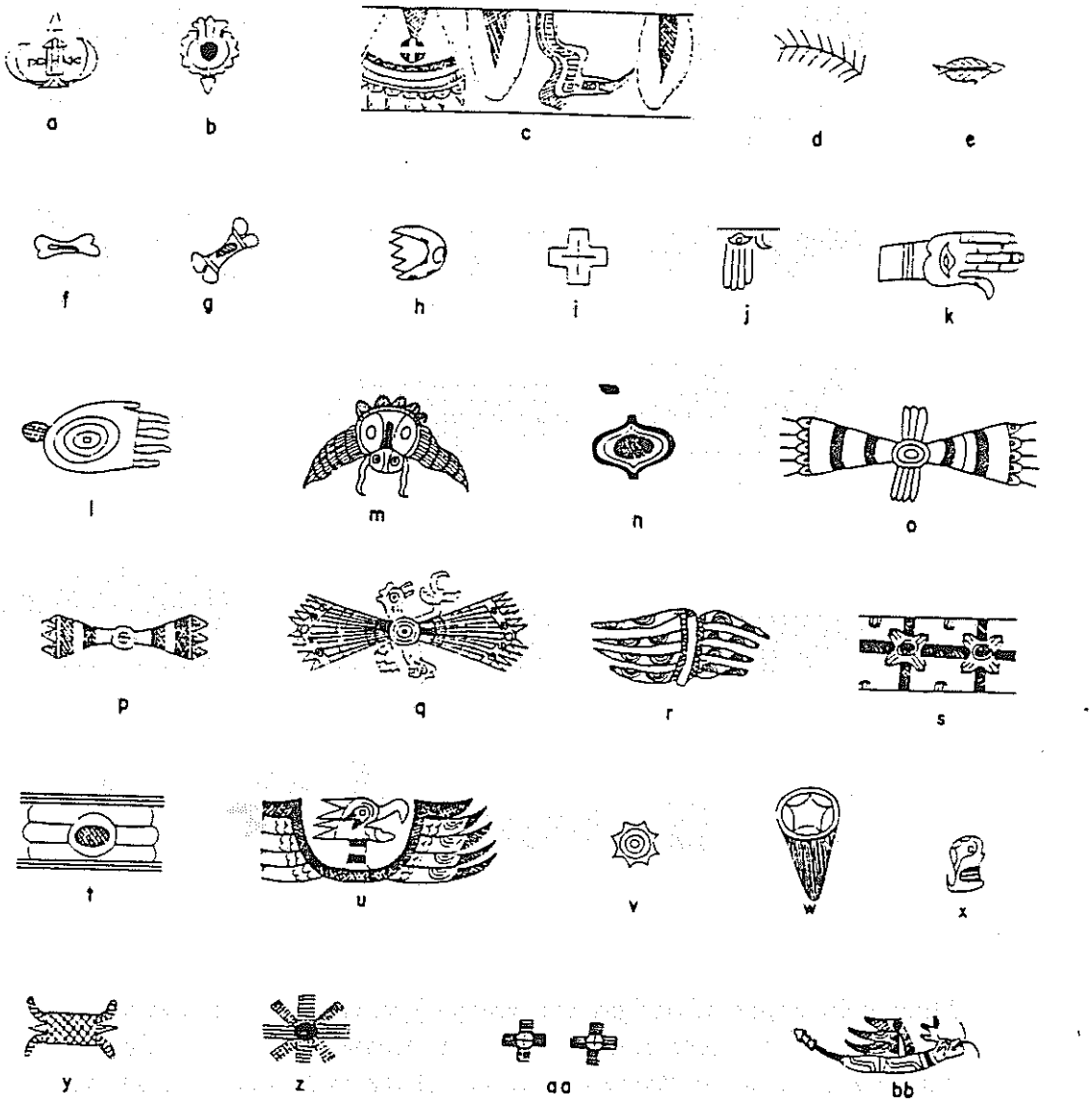
Future Possibilities

The data generated by this excercise are useful in terms of more than the current comparison. The angle of rim arc present for each sherd was noted as the rim diameters were being measured. There has been some interest (Blitz 1993: personal communication) in a possible pattern of vessel breakage by shape that would cause differing rim arcs. This speculation has not been tested for, but could be with the data amassed for this thesis as a starting point. If a relationship between arc angle present and vessel shape became evident, that pattern could be evidence for differential fragmentation, which in turn could provide a method for arriving at the minimum number of vessels in a sample.

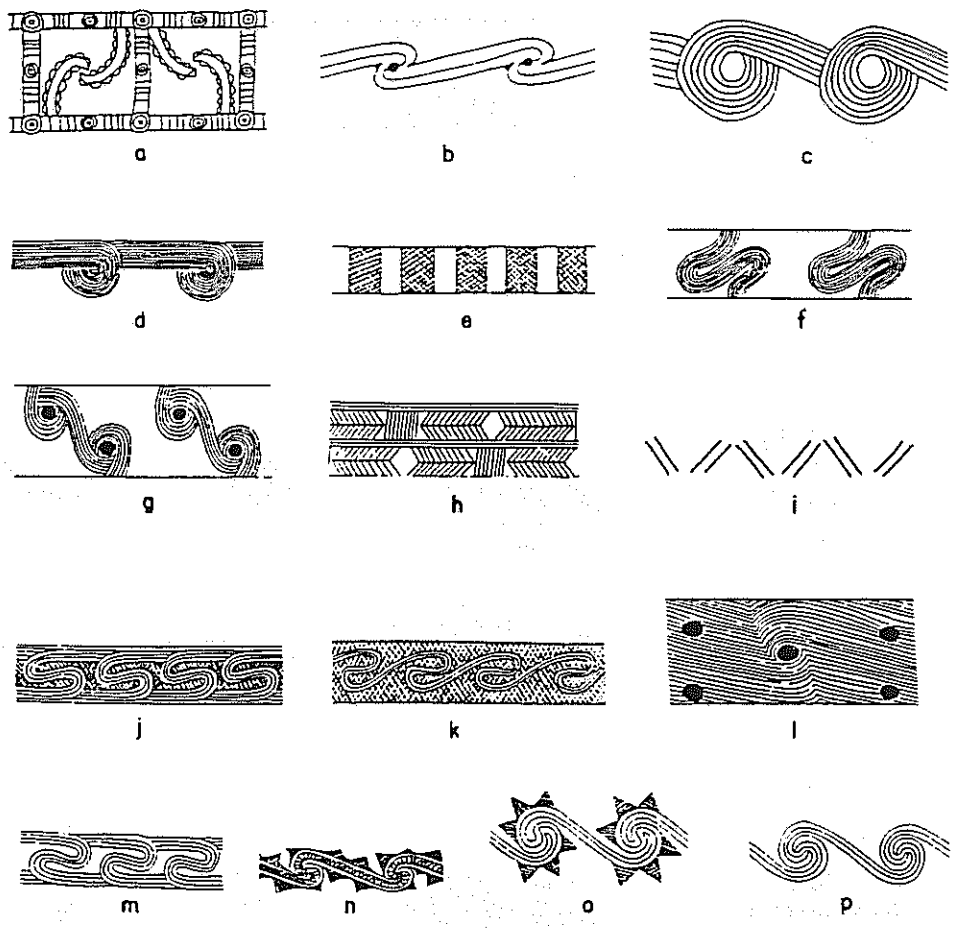
Also interesting would be the comparison of this data with similar data from other sites, including Moundville proper. The ideal situation for comparison would be another single mound site with excavated data available from differing social contexts. It is only in the past few decades that we have really begun to understand the complex workings of the Moundville chiefdom and its economy by focusing on these smaller sites. By investigating patterns in the artifact distribution within and between sites, we may shed light on the interworkings of Moundville's political influence over the surrounding river valley, and how that influence differed from other smaller chiefdoms nearby.

APPENDIX A:

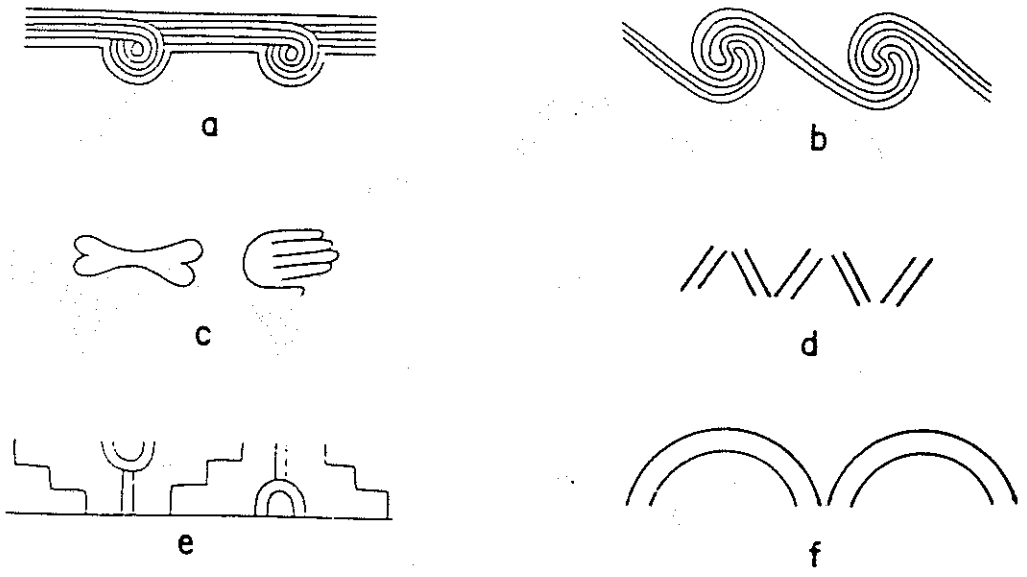
SURFACE DECORATIONS FOUND ON MOUNDVILLE VESSELS



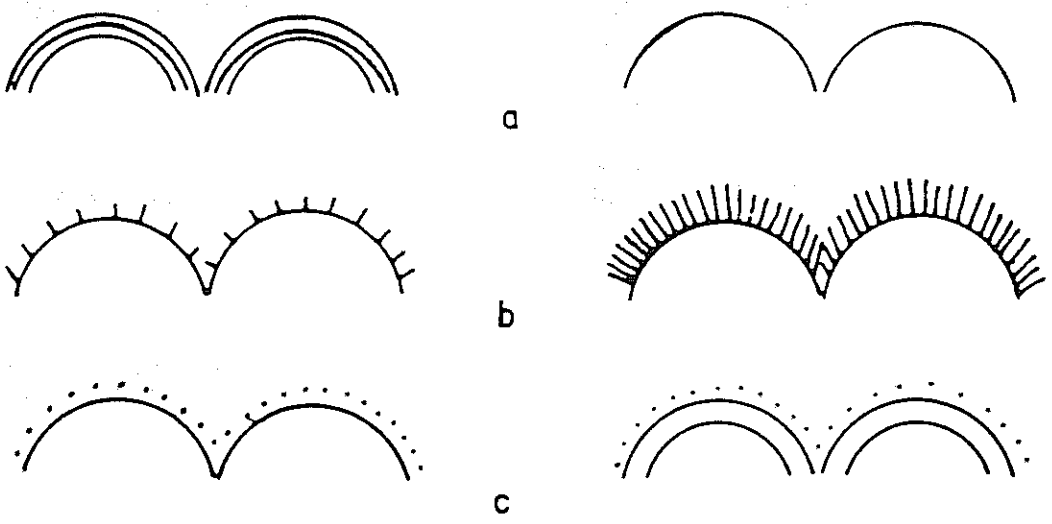
Representational Motifs: (a and b) bilobed arrow, (c) crested bird (in the round), (d) feather, (e) feathered arrow, (f and g) forearm bones, (h) forked eye surround, (i) Greek Cross, (j-l) hand and eye, (m) insect, (n) ogee, (o-q) paired tails, (r)paired wings, (s and t) radial fingers, (u) raptor, (v) rayed circle, (w) scalp, (x) skull, (y) turtle, (z and aa) windmill, and (bb) winged serpent (Steponaitis 1983: 61).



Moundville Engraved designs: (a) variety *Cypress*, (b) variety *Elliots Creek*, (c) variety *Englewood*, (d) variety *Havana*, (e) variety *Maxwells Crossing*, (f and g) variety *Northport*, (h) variety *Prince Plantation*, (i) variety *Stewart*, (j and k) variety *Taylorville*, (l) variety *Tuscaloosa*, and (m-p) variety *Wiggins* (Steponaitis 1983: 55).



Carthage Incised designs: (a) variety *Akron*, (b) variety *Carthage*, (c) variety *Fosters*, (d) variety *Moon Lake*, (e) variety *Poole*, and (f) variety *Summerville* (Steponaitis 1983: 53).



Moundville Incised designs: (a) variety *Carrollton*, (b) variety *Moundville*, and (c) variety *Snows Bend* (Steponaitis 1983: 57).

APPENDIX B:

SELECTED EXAMPLES OF VESSEL SHAPE ANALYSIS DATA SHEETS

Vessel Shape Analysis

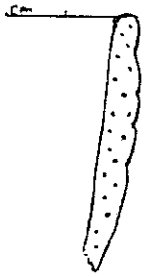
Sherd No. 14 Site no. 1Tu56

Type variety Carthage Incised Akron Provenience 62N/12E L3

Lot (FS) no. 5

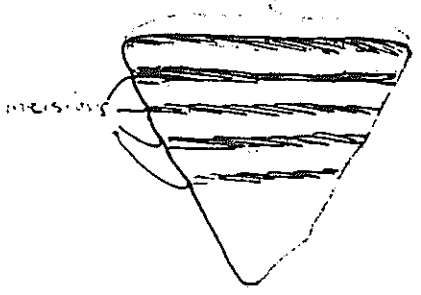
Vessel shape

Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	X
Short-neck bowl	
Standard jar	
Necked jar	
Other	



Rim ~~diameter~~ radius (cm) 6.5±.7 Angles of arc 15°

Neck inside diameter (cm)



Sherd No. 31 Site no. 1Tu56

Type *variety* Miss Pi Warrior Provenience 62N/12E

Lot (FS) no. 5

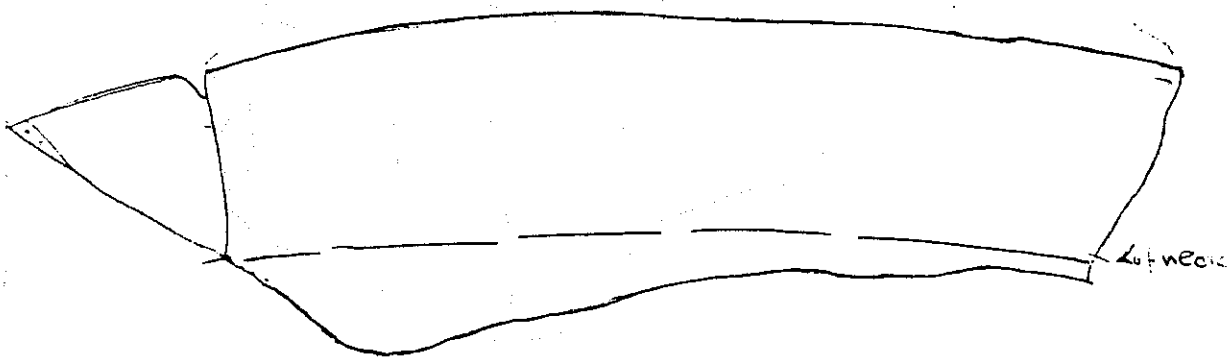
Vessel shape

Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	
Standard jar	X
Neckless jar	
Other	

Rim ~~diameter~~ radius (cm) 17.5-18.5 Angles of arc 60°

Neck inside ~~diameter~~ radius (cm) 15-17

Lip flat



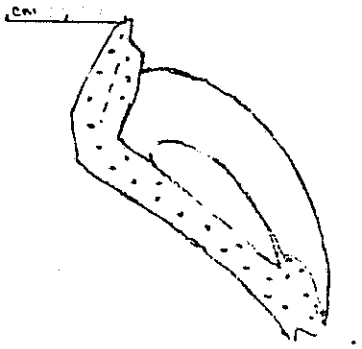
Sherd No. 32 Site no. 1Tu56

Type *variety* Niua Pl. Warrior Provenience 162N/12E L3

Lot (FS) no. 5

Vessel shape

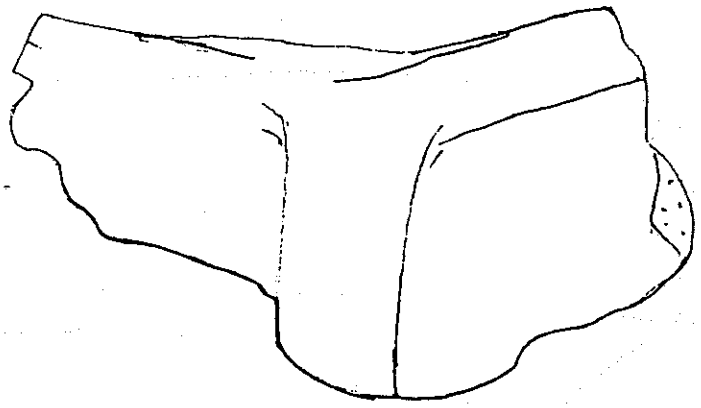
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	
Standard jar	
Neckless jar	X
Other	



Rim ~~diameter~~ radius (cm) 14-15 Angles of arc 40°

Neck inside ~~diameter~~ radius (cm) 3-14

ext flat



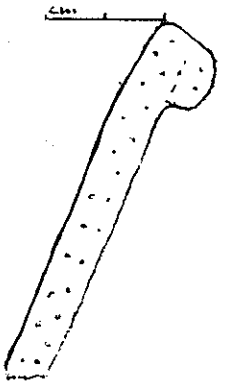
Sherd No. 82 Site no. 1Tu Sa

Type *variety* Miss Pl Warrior Provenience 62N/15E L. 3

Lot (FS) no. 6

Vessel shape

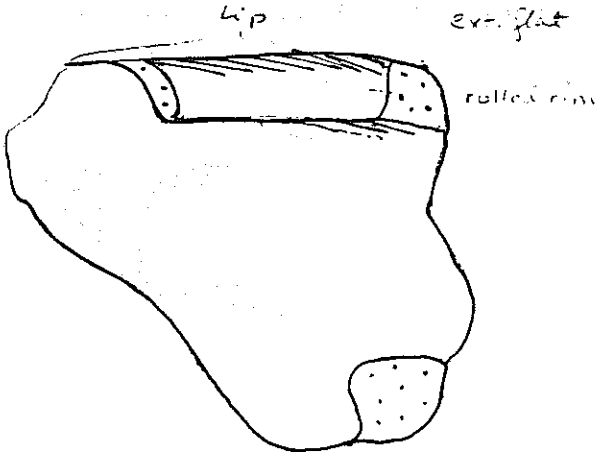
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	X
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	
Standard jar	
Neckless jar	
Other	



Rim radius (cm) 13-18

Neck inside radius (cm) _____

Angles of arc 20°



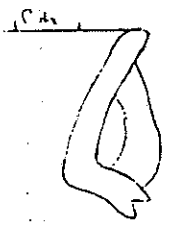
Sherd No. 319 Site no. 141-T

Type *variety* Miss Pl Illamar Provenience 162N/.5E

Lot (FS) no. 127

Vessel shape

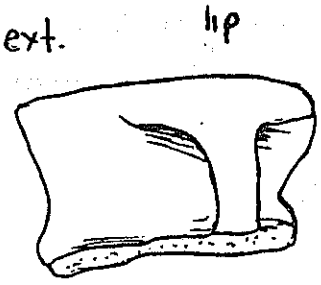
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	
Standard jar	X
Neckless jar	
Other	



Rim radius (cm) 6-7.5

Neck inside radius (cm) 4.5-5.5

Angles of arc 30/40



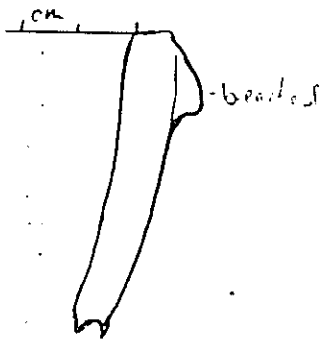
Sherd No. 648 Site no. 1Ha7

Type *variety* Bell Pl. Hale Provenience 164N/105E

Lot (FS) no. 109

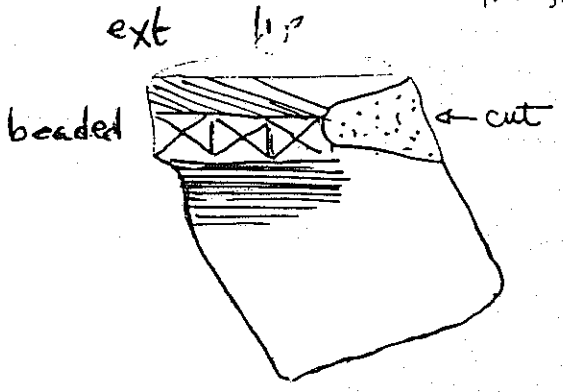
Vessel shape

Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	x (beaded)
Short-neck bowl	
Standard jar	
Neckless jar	
Other	



Rim radius (cm) _____

Neck inside radius (cm) 10-12.5 orifice measured Angles of arc 15



Vessel Shape Analysis

Sherd No. 894 Site no. 11Ha1

Type *variety* Carthage Incised (Carthage) Provenience 100-110/0SE

Lot (FS) no. 97

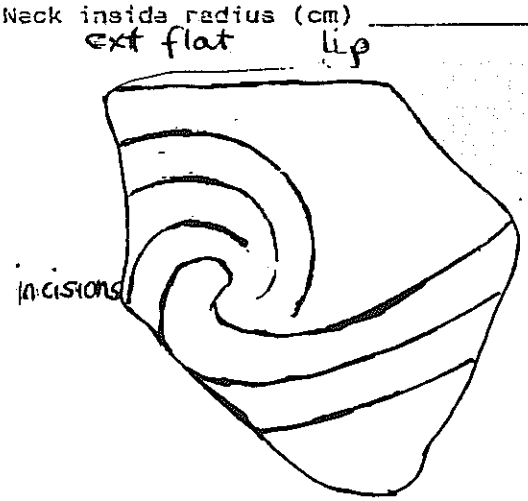
Vessel shape

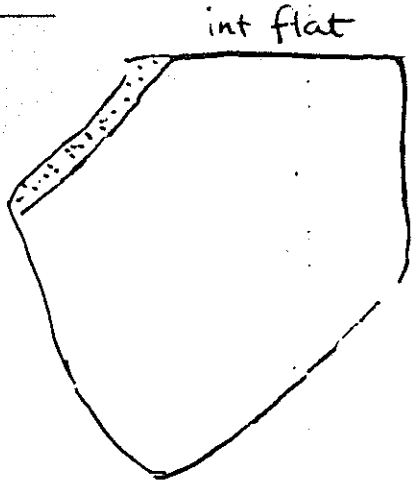
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	X
Short-neck bowl	
Standard jar	
Neckless jar	
Other	

Rim radius (cm) 7.5-8.5

Neck inside radius (cm)

Angles of arc 30





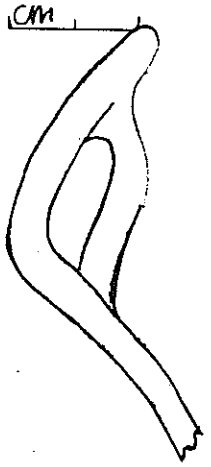
Sherd No. 960 Site no. 1Ha7

Type variety Miss Pl Warrior Provenance 162N 105E

Lot (FS) no. 166

Vessel shape

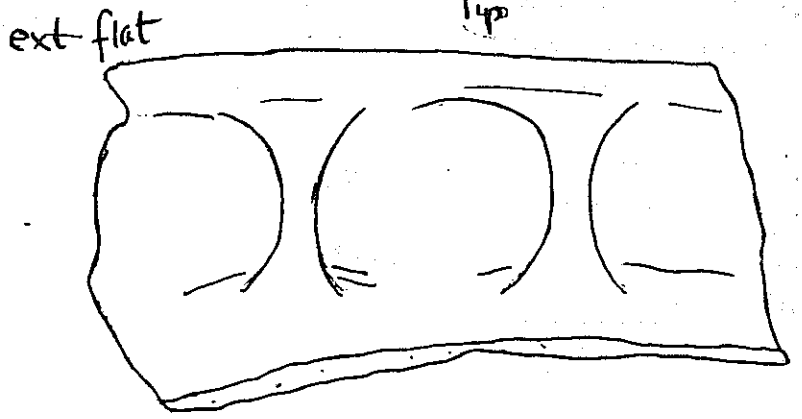
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	
Standard jar	X
Necklese jar	
Other	



Rim radius (cm) 14-14.5

Neck inside radius (cm) 11.5-12

Angles of arc 40/45



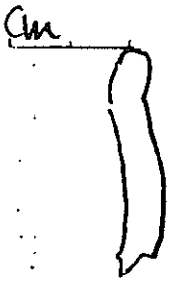
Sherd No. 1117 Site no. 1Ha7

Type *variety* no White Painted Provenience 162N/175E

Lot (FS) no. 118

Vessel shape

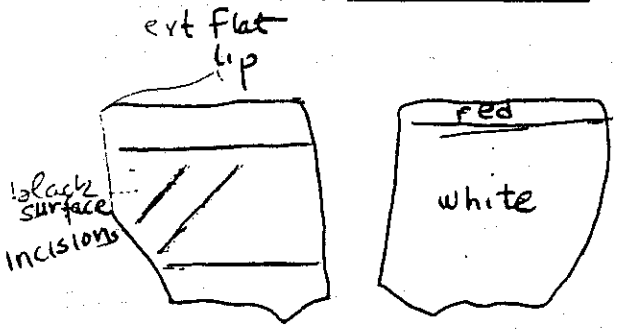
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple hemis. bowl	
Short-neck bowl	X
Standard jar	
Neckless jar	
Other	



Rim radius (cm) 7-9

Neck inside radius (cm)

Angles of arc 20



Vessel Shape Analysis

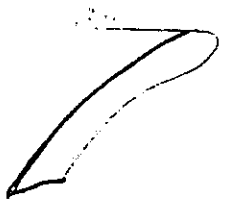
Sherd No. 1263 Site no. 11a7

Type variety Carthage Incised Carthage Provenience 164N/107.5E

lot (FS) no. 78

Vessel shape

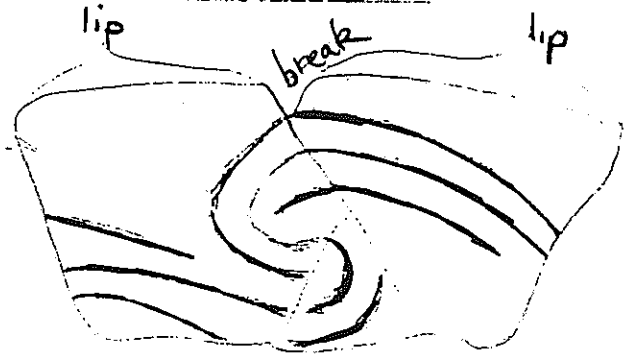
Wide mouth bottle	
Narrow-neck bottle	
Cylindrical bottle	
Deep flaring-rim bowl	X
Shallow flaring-rim bowl	
Outslanting bowl	
Restricted bowl	
Simple (semi-) bowl	
Short-neck bowl	
Standard jar	
Necklese jar	
Other	



Rim radius (cm) 13-15.5

Neck (shoulder) radius (cm)

Angles of src. 45



APPENDIX C:

DATA SUMMARY

Sherd #	Site	Unit Des.	FS Lot #	Type/Variety	Ves. Form	Rim Dia.(cm) Low-High	Midpt.	Neck Inside Diameter Low-High/Mid.	Arc Angle
1	1Tu56	62N15E	3	M.P. War.	indet.	27 - 30	28.5		15
2	1Tu56	62N15E	3	M.P. War.	SJ	13	13	10	5/20
3	1Tu56	62N15E	3	M.P. War.	SJ	32-38	35		15
4	1Tu56	62N12E	4	M.P. War.	NJ	50-54	52	46-50/48	10
5	1Tu56	62N12E	4	M.P. War.	SJ			8-15/11.5	10
6	1Tu56	62N12E	4	C.I.M. Lake	SFB	indet			
7	1Tu56	62N12E	5	C.I.M. Lake	SFB	22-30	26		5
8	1Tu56	62N12E	5	C.I.M. Lake	SFB	30-36	33		15
9	1Tu56	62N12E	5	C.I.M. Lake	SFB	28-44	36		5
10	1Tu56	62N12E	5	C.I.M. Lake	SFB	48-54	51		<5
11	1Tu56	62N12E	5	C.I.M. Lake	SFB	32-42	37		5
12	1Tu56	62N12E	5	M.P.H.L.(g)	NJ	32-42	37		10-5
13	1Tu56	62N12E	5	M.P.H.L.(g)	SJ	29-39	34		5
14	1Tu56	62N12E	5	C. I. Ak.	SB	13-14	13.5		15
15	1Tu56	62N12E	5	C. I. Ak.	SB	13-14	13.5		15
16	1Tu56	62N12E	5	M.P.H.L.(g)	OB	36-42	39		10
17	1Tu56	62N12E	5	M.P.H.L.(g)	NJ	9-13	11		5
18	1Tu56	62N12E	5	B.P.BigS(g)	NJ	16-26	21		5
19	1Tu56	62N12E	5	Und. sh. inc.	NJ	10-20	15		5
20	1Tu56	62N12E	5	B.P. Ha	SFB	36-46	41		5
21	1Tu56	62N12E	5	B.P. Ha	SJ	21-26	23.5	18-23/20.5	15
22, 23	1Tu56	62N12E	5	B.P. Ha	Rect. B.	indet			
24	1Tu56	62N12E	5	B.P. Ha	SFB	22-30	26		10
25	1Tu56	62N12E	5	B.P. Ha	SJ	16-22	19		10
26	1Tu56	62N12E	5	B.P. Ha	SFB	24-36	30		5
27	1Tu56	62N12E	5	B.P. Ha	SFB	32-40	36		20
28	1Tu56	62N12E	5	B.P. Ha	BOT	3-6	4.5		10
29	1Tu56	62N12E	5	B.P. Ha	SFB	17-23	20		15-10
30	1Tu56	62N12E	5	B.P. Ha	SB	7-9	8		20-15
31	1Tu56	62N12E	5	M.P. War.	SJ	35-37	36	30-34/32	60
32	1Tu56	62N12E	5	M.P. War.	NJ	28-30	29	226-28/27	40
33	1Tu56	62N12E	5	M.P. War.	SJ	38-44	41		10
34	1Tu56	62N12E	5	M.P. War.	SJ	44-56	50		10
35	1Tu56	62N12E	5	M.P. War.	SJ	47-53	50		10
36	1Tu56	62N12E	5	M.P. War.	SJ	27-35	31	24-32/28	10
37	1Tu56	62N12E	5	M.P. War.	JAR	36-52	44		5
38	1Tu56	62N12E	5	M.P. War.	SJ	35-46	40.5		10
39	1Tu56	62N12E	5	M.P. War.	SJ	40-56	48		5
40	1Tu56	62N12E	5	M.P. War.	SJ	30-40	35	28-38/33	5
41	1Tu56	62N12E	5	M.P. War.	SJ	indet.			<5
42	1Tu56	62N12E	5	M.P. War.	SJ	48-56	52		25
43	1Tu56	62N12E	5	M.P. War.	indet.	24-32	28		10
44	1Tu56	62N12E	5	M.P. War.	SJ	>24		>21	<5
45	1Tu56	62N12E	5	M.P. War.	SJ	26-38	32		5
46	1Tu56	62N12E	5	M.P. War.	SJ	38-50	44	36-48/42	5

47	1Tu56	62N12E	5	M.P. War.	SJ	indet.			5
48	1Tu56	62N12E	5	M.P. War.	indet.	22-26	24		10
49	1Tu56	62N12E	5	M.P. War.	SJ	indet.			5
50	1Tu56	62N12E	5	M.P. War.	indet.	indet.			15
51	1Tu56	62N12E	5	M.P. War.	SJ	indet.			<5
52	1Tu56	62N12E	5	M.P. War.	SJ	34-50	42		5
53	1Tu56	62N12E	5	M.P. War.	SJ	>24			5
54	1Tu56	62N12E	5	M.P. War.	SJ	indet.			<5
55	1Tu56	62N12E	5	M.P. War.	SJ	indet.			<5
56	1Tu56	62N12E	5	M.P. War.	SJ	indet.			<5
57	1Tu56	62N12E	5	M.P. War.	SJ	12-19	15.5		10-5
58	1Tu56	62N12E	5	M.P. War.	SJ	24-32	28		5
59	1Tu56	62N12E	5	M.P. War.	SJ	indet.			
60	1Tu56	62N15E	6	S.T.U.I.	SJ	16-22	19	14-20/17	20-15
61	1Tu56	62N15E	6	S.T.U.I.	SJ	32-38	35	28-34/31	20
62	1Tu56	62N15E	6	S.T.U.I.	SJ	indet.			
63	1Tu56	62N15E	6	M.P.H.L.(s)	indet.	indet.			<5
64	1Tu56	62N15E	6	M.P.H.L.(s)	NJ	>46			5
65	1Tu56	62N15E	6	M.P.H.L.(s)	SJ	indet.			
66	1Tu56	62N15E	6	M.P.H.L.(s)	JAR	>34			5
67	1Tu56	62N15E	6	M.P.H.L.(s)	JAR	13-16	14.5		15
68	1Tu56	62N15E	6	M.P.H.L.(s)	SJ	indet.			
69	1Tu56	62N15E	6	Un.S+G Inc.	SJ	10-14	12	8-12/10	5
70	1Tu56	62N15E	6	B.P. Ha.	SFB	29-36	32.5		10
71	1Tu56	62N15E	6	C.I. Unsp.	SB	18-24	21	17-23/20	20
72	1Tu56	62N15E	6	B.P. Ha.	BOT	7-8	7.5		15
73	1Tu56	62N15E	6	B.P. Ha.	SB	16-28	22		5
74	1Tu56	62N15E	6	C.I. Sum.	RB	16-22	19		15-10
75	1Tu56	62N15E	6	B.P. Ha.	RB	16-24	20		10-5
76	1Tu56	62N15E	6	B.P. Ha.	SB	15-21	18		10
77	1Tu56	62N15E	6	M.P. War.	SJ	21-25	23	18-22/20	20
78	1Tu56	62N15E	6	M.P. War.	SJ	32-38	35	27-33/30	15/20
79	1Tu56	62N15E	6	M.P. War.	SJ	26-32	29		10
80	1Tu56	62N15E	6	M.P. War.	NJ	28-32	30		15
81	1Tu56	62N15E	6	M.P. War.	SJ	>54			10
82	1Tu56	62N15E	6	M.P. War.	OB	26-36	31		20
83	1Tu56	62N15E	6	M.P. War.	SJ	20-26	23	15-21/18	15
84	1Tu56	62N15E	6	M.P. War.	SJ	33-43	38		10
85	1Tu56	62N15E	6	M.P. War.	SJ	24-31	27.5		15
86	1Tu56	62N15E	6	M.P. War.	SJ	18-23			10
87	1Tu56	62N15E	6	M.P. War.	SJ	21-26	23.5		10
88	1Tu56	62N15E	6	M.P. War.	SJ	indet.			10
89	1Tu56	62N15E	6	M.P. War.	SJ	14-17	15.5	11-14/12.5	10
90	1Tu56	62N15E	6	M.P. War.	SJ	14-20	17	13-19/16	10
91	1Tu56	62N15E	6	M.P. War.	SJ	indet.			
92	1Tu56	62N15E	6	M.P. War.	SJ	28-38	33		10-5
93	1Tu56	62N15E	6	M.P. War.	SJ	31-38	34.5		5
94	1Tu56	62N15E	6	M.P. War.	SJ	indet.			
95	1Tu56	62N15E	6	M.P. War.	indet.	indet.			
96	1Tu56	62N15E	6	M.P. War.	JAR	18-25	21.5		10-5
97	1Tu56	62N15E	6	M.P. War.	JAR	indet.			

98	1Tu56	62N15E	6	M.P. War.	indet.	>8			10-?
99	1Tu56	62N12E	12	Mo. I.S.B.	SJ	20-24	22	20-22/21	20/35
100	1Tu56	62N12E	12	B.P. Ha.	JAR	16-18	17	16-17/16.5	30
101	1Tu56	62N12E	12	B.P. Ha.	JAR	18-24	21	14-22/18	15
102	1Tu56	62N12E	12	M.P. War.	SJ	49-58	53.5		15-10
103	1Tu56	62N12E	12	M.P. War.	SJ	36-44	40		15
104	1Tu56	62N12E	12	M.P. War.	SJ	indet.			
105	1Tu56	62N12E	12	M.P. War.	SJ	indet.			
106	1Tu56	62N12E	12	M.P. War.	SJ	indet.			
107	1Tu56	62N12E	12	B.P. Ha.	indet.	indet.			
108	1Tu56	62N15E	13	M.P. War.	SJ	26-34	30	21-27/24	10
109	1Tu56	62N15E	13	M.P.H.L.sand	SJ	>34			10
110	1Tu56	62N15E	13	M.P. War.	SJ	20-32	26		10-5
111	1Tu56	62N15E	13	M.P. unsp. (s)	NJ	18-24 (inside)			15
112	1Tu56	62N15E	13	M.P.H.L. (s)	indet.	24-28	26		15
113,114	1Tu56	62N15E	13	Bay. Pl. Roper	indet.	indet.			
115	1Tu56	62N15E	13	M.P.H.L. (s)	indet.	8-14	11		
116	1Tu56	62N15E	17	B.P. Ha.	SFB	36-42	39		15
117	1Tu56	62N15E	17	B.P. Ha.	JAR	18-23	20.5	16-21/18.5	25-20
118	1Tu56	62N15E	17	M.P. War.	SJ	30-38	34	26-35/30.5	10
119	1Tu56	62N15E	17	M.P. War.	SJ			24-34/29	5
120	1Tu56	62N15E	17	M.P. War.	SJ	>45			10-5
121	1Tu56	62N15E	17	M.P. War.	indet.	>32			25
122	1Tu56	62N15E	17	B.P. Ha.	BOT	7-8	7.5		15
123-124	1Tu56	62N15E	17	M.P. War.	SJ	indet.			
125-127	1Tu56	62N15E	17	M.P. War.	indet.	indet.			
128	1Tu56	62N15E	17	B.P. Ha.	JAR	indet.			
129-131	1Tu56	62N15E	17	B.P. Ha.	indet.	indet.			
132	1Tu56	62N15E	17	M.P.H.L. (g)	SJ	22-30	26		20
133	1Tu56	62N15E	17	unclass. eng.	FB	24-30	27		20
134	1Tu56	62N12E	18	M.P. War.	JAR	>40			10-5
135	1Tu56	62N12E	18	B.P. Ha.	SB	20-28	24		10
136	1Tu56	62N15E	19	M.P. War.	SJ	indet.		30-42/36	5
137	1Tu56	62N15E	19	B.P ha.	JAR	19-29	24		10
138,139	1Tu56	62N15E	19	M.P. War.	indet.	indet.			
140	1Tu56	62N15E	9	M.P. War.	SJ	32-40	36		10
141	1Tu56	62N12E	14	M.P. War.	JAR	>50			10
142	1Tu56	62N12E	7	C.I.M. Lake	SFB	>38			20
143	1Tu56	65N12E	18	Mo.I.Mo.	SJ	38-42	40	34-36/35	30
144	1Tu56	65N12E	18	M.P. War.	indet.	indet.			
145	1Tu56	65N12E	18	M.P. War.	SJ	28-36	32	24-32/28	15-10
146	1Tu56	65N12E	18	M.P. War.	SJ	24-39	31.5		10-5
147	1Tu56	65N12E	18	B.P. Ha.	BOT	8			20
148	1Tu56	65N12E	18	B.P. Ha.	SFB	36-46	41		10-5
149	1Tu56	65N12E	18	B.P. Ha.	RB	10-14	12		10
150-152	1Tu56	65N12E	18	M.P. War.	SJ	indet.			
153	1Tu56	65N12E	18	M.P. War.	indet.	indet.			
154	1Tu56	65N12E	18	M.P.H.L. (s)	indet.	indet.			
155	1Tu56	65N12E	18	B.P. Ha.	indet.	indet.			
156	1Tu56	65N12E	25	Mo.I.Mo.	SJ	23-31	27	18-26/22	20
157	1Tu56	65N12E	25	M.P. War.	BOWL	18-30	24		15-10

158	1Tu56	65N12E	25	M.P.H.L. (s)	SJ	indet.			
159	1Tu56	65N12E	25	B.P. Ha.	JAR	17-24	20.5		15
160	1Tu56	65N12E	25	C.I.M. Lake	SFB	16-22	19		15
161,162	1Tu56	65N12E	25	M.P. War.	indet.	indet.			
163	1Tu56	65N12E	25	C.I. Ak.	SB	indet.			
164	1Tu56	65N12E	25	B.P. Ha.	SFB	indet.			
165	1Tu56	65N12E	25	M.P. War.	indet.	>40			20
166	1Tu56	65N15E	77	M.P. War.	SJ	16-24	20		5
167	1Tu56	65N15E	77	M.P. War.	indet.	indet.			
168	1Tu56	65N15E	86	M.P. War.	JAR	44-52	48		20
169-171	1Tu56	65N15E	86	M.P. War.	indet.	indet.			
172	1Tu56	65N15E	86	M.P.H.L. (s)	indet.	indet.		28-36/32	10
173	1Tu56	65N15E	86	M.P. War.	SJ	indet			
174	1Tu56	65N15E	86	C.I.M. Lake	SFB	26-38	33		5
175	1Tu56	65N15E	86	C.I.M.Lake	SFB	indet.			
176,177	1Tu56	65N15E	86	B.P. Ha.	indet.	indet.			
178	1Tu56	65N15E	86	M.P. War.	SJ	indet.			
179-181	1Tu56	65N15E	86	M.P. War.	indet.	indet.			
182	1Tu56	65N15E	86	M.P.H.L. (s)	indet.	indet.			
183	1Tu56	65N15E	86	C.I. Ak.	SB	9-16	12.5		10
184	1Tu56	62N12E	10 hf	M.P. War.	SJ	53-56	54.5		10
185	1Tu56	62N12E	10 hf	M.P. War.	SJ	21-25	23		25
186	1Tu56	62N12E	10 hf	M.P. War.	SJ	18-22	20		15
187	1Tu56	62N12E	10 hf	M.P. War.	SJ			32-48/40	10
188	1Tu56	62N12E	10 hf	B.P. Ha.	JAR	20-22	21	20-24/22	20
189	1Tu56	62N12E	10 hf	Mo.I.Mo.	SJ	13-14	13.5	11	40
190	1Tu56	62N12E	10	sh. eroded	JAR	indet.			
191	1Tu56	62N15E	13	MPHL (g)	indet.	indet.			
192-193	1Ha7	162N105E	123	M.P.War	SJ	indet.			
194-214	1Ha7	162N105E	123	M.P.War	indet.	indet.			
215	1Ha7	162N105E	123	M.P.War	SJ	35-42	38.5		10-5
216	1Ha7	162N105E	123	M.P.War	SJ	40-44	42		5
217	1Ha7	162N105E	123	M.P.War	SJ	43-50	46.5		15
218	1Ha7	162N105E	123	M.P.War	SJ	indet.			
219	1Ha7	162N105E	123	M.P.War	SJ	indet.			
220	1Ha7	162N105E	123	M.P.War	SJ	18-24	21		10
221	1Ha7	162N105E	123	M.P.War	indet.	10-14	12		5
222	1Ha7	162N105E	123	B.P.Hale	SB	17-24	20.5		15
223	1Ha7	162N105E	123	B.P.Hale	Indet.	indet.			
224	1Ha7	162N105E	123	B.P.Hale	indet.	20-25	22.5		15
225	1Ha7	162N105E	123	B.P.Big S(g)	SB	10-16	13		10
226	1Ha7	162N105E	123	B.P.Big S(g)	SB	indet.			
227	1Ha7	162N105E	123	B.P.Big S(g)	NB	22-26	24	20-24	5/15
228	1Ha7	162N105E	123	B.P.Big S(g)	NB	16-24	20		5
229-231	1Ha7	162N105E	123	B.P.Big S(g)	NB	indet.		indet.	
232	1Ha7	162N105E	123	B.P.Big S(g)	JAR	12-15	13.5		10
233	1Ha7	162N105E	123	B.P.Big S(g)	indet.	26-30	28		15
234	1Ha7	162N105E	123	B.P.Big S(g)	indet.	23-27	25		10
235	1Ha7	162N105E	123	B.P.Big S(g)	indet.	17-23	20		10
236-238	1Ha7	162N105E	123	B.P.Big S(g)	indet.	indet.			
239	1Ha7	162N105E	123	B.P.Big S(g)	RB	12-15	13.5		10

240	1Ha7	162N105E	123	B.P.Big S(s)	SB	indet.			
241	1Ha7	162N105E	123	C.I.unsp.	NB	23-31	27		10
242-243	1Ha7	162N105E	123	C.I.Carthage	SB	indet.			
244	1Ha7	162N105E	123	C.I.Fosters	DFRB	36-42	39		10
245	1Ha7	162N105E	123	C.I.M.Lake	DFRB	17-31	19		25
246	1Ha7	162N105E	123	C.I.M.Lake	DFRB	28-31	29.5		20
247	1Ha7	162N105E	123	C.I.M.Lake	DFRB	24-32	28		10
248	1Ha7	162N105E	123	Red Painted	indet.	indet.			
249	1Ha7	162N105E	123	Wh. Painted	indet.	indet.			
250	1Ha7	162N105E	123	R/W Painted	SB	22-26	24		25
251	1Ha7	162N105E	123	R/W Painted	SB	6-9	7.5		10
252	1Ha7	162N105E	123	R/W Painted	JAR	28-36	32		10
253	1Ha7	162N105E	127	Red Painted	SJ	24-32	28		10
254	1Ha7	162N105E	127	Red Painted	SJ	22-30	26		10
255	1Ha7	162N105E	127	Red Painted	SJ	18-23	20.5		15
256-259	1Ha7	162N105E	127	Red Painted	SJ	indet.			
260	1Ha7	162N105E	127	C.I. Fosters	DFRB	36-40	38		20-15
261	1Ha7	162N105E	127	C.I. Fosters	DFRB	30-36	33		15
262	1Ha7	162N105E	127	C.I. Fosters	DFRB	17-33	25		15
263	1Ha7	162N105E	127	C.I.M. Lake	NB	24-28	26		20
264	1Ha7	162N105E	127	C.I.M. Lake	NB	16-20	18		10
265	1Ha7	162N105E	127	C.I.M. Lake	SFRB	24-29	26.5		5
266	1Ha7	162N105E	127	C.I.M. Lake	SFRB	11-16	13.5		10
267	1Ha7	162N105E	127	C.I. Akron	SB	12-18	15		5
268	1Ha7	162N105E	127	C.I. Akron	SB	13-17	15		20
269	1Ha7	162N105E	127	C.I.unsp.	NB	16-18	17	17-20/18.5	20
270	1Ha7	162N105E	127	R/W Painted	NB	18-22	20		15
271	1Ha7	162N105E	127	R/W Painted	NB	11			10
272	1Ha7	162N105E	127	R/W Painted	SB	indet.			
273-274	1Ha7	162N105E	127	sh. eroded	indet.	indet.			
275	1Ha7	162N105E	127	B.P. Big S (g)	NB	23-27	25		15
276	1Ha7	162N105E	127	B.P. Big S (g)	NB	32-38	35		10-5
277	1Ha7	162N105E	127	B.P. Big S (g)	NB	19-26	22.5		15-10
278	1Ha7	162N105E	127	B.P. Big S (g)	NB	28-34	31		10
279	1Ha7	162N105E	127	B.P. Big S (g)	NB	17-19	18		20
280	1Ha7	162N105E	127	B.P. Big S (g)	NB	20-26	23		15
281	1Ha7	162N105E	127	B.P. Big S (g)	NB	indet.			
282	1Ha7	162N105E	127	B.P. Big S (g)	NB	14-16	15		30
283	1Ha7	162N105E	127	B.P. Big S (g)	NB	23-26	24.5		15
284	1Ha7	162N105E	127	B.P. Big S (g)	NB	11-16	13.5		20
285-287	1Ha7	162N105E	127	B.P. Big S (g)	NB	indet.			
288	1Ha7	162N105E	127	B.P. Big S (g)	SB	24-28	26		15
289	1Ha7	162N105E	127	B.P. Big S (g)	SB	indet.			
290	1Ha7	162N105E	127	B.P. Big S (g)	SB	23-33	28		10
291	1Ha7	162N105E	127	B.P. Big S (g)	SB	18-23	20.5		15
292-295	1Ha7	162N105E	127	B.P. Big S (g)	SB	indet.			
296	1Ha7	162N105E	127	B.P. Big S (g)	SB	26-36	31		10-5
297	1Ha7	162N105E	127	B.P. Big S (g)	indet.	14-17	15.5		20
298-303	1Ha7	162N105E	127	B.P. Big S (g)	indet.	indet.			
304	1Ha7	162N105E	127	Kinn. Fab. Im.	indet.	indet.			
305	1Ha7	162N105E	127	B. P. Hale	SB	indet.			

306	1Ha7	162N105E	127	B. P. Hale	SB	indet.			
307	1Ha7	162N105E	127	B. P. Hale	SB	indet.			
308	1Ha7	162N105E	127	B. P. Hale	DFRB	indet.			
309	1Ha7	162N105E	127	M.P.H.L. (g)	SJ	11-14	12.5		10
310	1Ha7	162N105E	127	M.P.H.L. (g)	SJ	indet.			
311	1Ha7	162N105E	127	M.P.War	NJ	25-31	28		15
312	1Ha7	162N105E	127	M.P.War	SJ	22-26	24		20
313	1Ha7	162N105E	127	M.P.War	SJ	18-24	21		20-15
314	1Ha7	162N105E	127	M.P.War	SJ	35-48	41.5		15-10
315	1Ha7	162N105E	127	M.P.War	SJ	11-12	11.5		25
316	1Ha7	162N105E	127	M.P.War	SJ	24-28	26		20
317	1Ha7	162N105E	127	M.P.War	SJ	14-15	14.5		20
318	1Ha7	162N105E	127	M.P.War	SJ	20-24	22		15
319	1Ha7	162N105E	127	M.P.War	SJ	12-15	13.5	9-11/10	30/40
320	1Ha7	162N105E	127	M.P.War	SJ	26-32	29		15
321	1Ha7	162N105E	127	M.P.War	JAR	37-49	43		10
322	1Ha7	162N105E	127	M.P.War	JAR	24-37	30.5		10
323	1Ha7	162N105E	127	M.P.War	JAR	33-43	38		10
324-414	1Ha7	162N105E	127	M.P.War	SJ=44	indet			
					indet=21	indet			
					JAR=31	indet			
415	1Ha7	162N105E	133	M.P.War	SB	15-17	16		20
416	1Ha7	162N105E	133	M.P.War	SJ	30-40	35		15-10
417	1Ha7	162N105E	133	M.P.War	JAR	22-27	24.5		15
418-448	1Ha7	162N105E	133	M.P.War	SB=2	indet			
			133	M.P.War	SJ=15	indet			
			133	M.P.War	indet=14	indet			
449-450	1Ha7	162N105E	133	M.P.H.L. (s)	indet	indet			
451	1Ha7	162N105E	133	B. P. Hale	DFRB	13-17	15		20
452-453	1Ha7	162N105E	133	B. P. Hale	indet	indet			
454	1Ha7	162N105E	133	B.P. Big S (g)	BOT	6-7	6.5		35
455-457	1Ha7	162N105E	133	B.P. Big S (g)	SNB=1	indet			
	1Ha7	162N105E	133		indet=2				
458	1Ha7	162N105E	133	Red Painted	SJ	22-30	26		10
459	1Ha7	162N105E	133	Wh. Painted	SJ	indet			
460	1Ha7	162N105E	166	M.P.War	SJ	28-29	28.5	23-24/23.5	40/45
461	1Ha7	162N105E	166	M.P.War	SJ	16-19	17.5		20
462	1Ha7	164N105E	104	M.P.War	SJ	18-30	24		10
463	1Ha7	164N105E	104	M.P.War	SJ	18-24	21		10
464	1Ha7	164N105E	104	M.P.War	SJ	24-35	29.5		10
465	1Ha7	164N105E	104	M.P.War	SJ	12-17	14.5		20-15
466	1Ha7	164N105E	104	M.P.War	SJ	13-17	15		20
467	1Ha7	164N105E	104	M.P.War	SJ	indet		10	50
468	1Ha7	164N105E	104	M.P.War	JAR	indet			
469-495	1Ha7	164N105E	104	M.P.War	indet=18	indet			
					JAR=9	indet			
496	1Ha7	164N105E	104	B. P. Hale	SB	18-22	20		15
497	1Ha7	164N105E	104	B. P. Hale	SB	10-12	11		25
498-499	1Ha7	164N105E	104	B. P. Hale	SB	indet			
500-501	1Ha7	164N105E	104	B. P. Hale	DFRB	indet			
502-503	1Ha7	164N105E	104	B. P. Hale	indet	indet			

504	1Ha7	164N105E	104	B.P. Big S (g)	SNB	23-32	28.5		10
505-514	1Ha7	164N105E	104	B.P. Big S (g)	DFRB=1	indet			
	1Ha7	164N105E	104	B.P. Big S (g)	SB=4	indet			
	1Ha7	164N105E	104	B.P. Big S (g)	SNB=1	indet			
	1Ha7	164N105E	104	B.P. Big S (g)	indet=4	indet			
515	1Ha7	164N105E	104	C.I.unsp.	SB	20-32	26		10
516	1Ha7	164N105E	104	C.I.unsp.	DFRB	indet			
517	1Ha7	164N105E	109	M.P.War	JAR	23-32	27.5		10
518	1Ha7	164N105E	109	M.P.War	JAR	14-20	17		10
519	1Ha7	164N105E	109	M.P.War	JAR	21-26	23.5		10
520	1Ha7	164N105E	109	M.P.War	JAR	13-16	14.5		10
521	1Ha7	164N105E	109	M.P.War	SJ	31-45	38		20
522	1Ha7	164N105E	109	M.P.War	SJ	39-48	43.5		10
523	1Ha7	164N105E	109	M.P.War	SJ	24-35	29.5		10
524	1Ha7	164N105E	109	M.P.War	JAR	>40			5
525	1Ha7	164N105E	109	M.P.War	SJ	>46			10
526	1Ha7	164N105E	109	M.P.War	SJ	30-42	36		10
527	1Ha7	164N105E	109	M.P.War	SJ	30-38	34		10
528	1Ha7	164N105E	109	M.P.War	SJ	27-36	31.5		10
529	1Ha7	164N105E	109	M.P.War	SJ	12-17	14.5		10
530	1Ha7	164N105E	109	M.P.War	SJ	14-25	19.5		20
531	1Ha7	164N105E	109	M.P.War	SJ	30-38	34		15
532	1Ha7	164N105E	109	M.P.War	SJ	17-22	19.5		15
533	1Ha7	164N105E	109	M.P.War	SJ	11-16	13.5		10
534	1Ha7	164N105E	109	M.P.War	SJ	19-25	22		25
535	1Ha7	164N105E	109	M.P.War	SJ	19-23	21	15-19/17	30
536	1Ha7	164N105E	109	M.P.War	SJ	16-24	20		10
537	1Ha7	164N105E	109	M.P.War	SJ	15-20	17.5		10
538	1Ha7	164N105E	109	M.P.War	SJ	16-20	18		15
539	1Ha7	164N105E	109	M.P.War	SJ	17-21	19		20
540	1Ha7	164N105E	109	M.P.War	SJ	22-30	26		10
541	1Ha7	164N105E	109	M.P.War	SJ	18-22	20		15
542	1Ha7	164N105E	109	M.P.War	SJ	6-8	7		20
543	1Ha7	164N105E	109	M.P.War	SJ	20-28	24		10
544	1Ha7	164N105E	109	M.P.War	SJ	15-17	16		15
545	1Ha7	164N105E	109	M.P.War	SJ	15-20	17.5		15
546-642	1Ha7	164N105E	109	M.P.War	SJ=36	indet			
	1Ha7	164N105E	109	M.P.War	indet=44	indet			
	1Ha7	164N105E	109	M.P.War	JAR=17	indet			
643	1Ha7	164N105E	109	M.P.War	SB	13-17	15		15
644	1Ha7	164N105E	109	M.P.War	SB	indet			
645	1Ha7	164N105E	109	B. P. Hale	SB	13-15	14		5
646	1Ha7	164N105E	109	B. P. Hale	SB	18-20	19		20
647	1Ha7	164N105E	109	B. P. Hale	SB	18-22	20		15
648	1Ha7	164N105E	109	B. P. Hale	SB			20-25/22.5	15
649	1Ha7	164N105E	109	B. P. Hale	SJ	20-26	23		15
650-653	1Ha7	164N105E	109	B. P. Hale	DFRB=1	indet			
	1Ha7	164N105E	109	B. P. Hale	SB=2	indet			
	1Ha7	164N105E	109	B. P. Hale	SNB=1	indet			
654	1Ha7	164N105E	109	B.P.BigS(g)	SB	18-20	19		30
655	1Ha7	164N105E	109	B.P.BigS(g)	SB	23-29	26		20

656	1Ha7	164N105E	109	B.P.BigS(g)	SNB	17-20	18.5		15
657	1Ha7	164N105E	109	B.P.BigS(g)	SNB	30-38	34		5
658	1Ha7	164N105E	109	B.P.BigS(g)	DFRB	15-17	16		20
659-671	1Ha7	164N105E	109	B.P.BigS(g)	DFRB=1	indet			
	1Ha7	164N105E	109	B.P.BigS(g)	SB=2	indet			
	1Ha7	164N105E	109	B.P.BigS(g)	SNB=5	indet			
	1Ha7	164N105E	109	B.P.BigS(g)	indet=5	indet			
672	1Ha7	164N105E	109	AL River App.	SJ	indet			
673	1Ha7	164N105E	109	M.P.H.L. (g)	JAR	indet			
674	1Ha7	164N105E	109	M.P.H.L. (g)	indet	indet			
675	1Ha7	164N105E	109	Red/Wh. Ptd.	SNB	indet			
676	1Ha7	164N105E	109	Red Painted	SB	23-25	24		20
677	1Ha7	164N105E	109	Red Painted	SJ	32-36	34		15
678	1Ha7	164N105E	109	Red Painted	SJ	32-38	35		15
679	1Ha7	164N105E	109	Red Painted	SJ	10-12	11	7-8/7.5	20/20
680-682	1Ha7	164N105E	109	Red Painted	SJ=2	indet			
	1Ha7	164N105E	109	Red Painted	indet=1	indet			
683	1Ha7	164N105E	114	M.P.War	SB	13-15	14		20
684	1Ha7	164N105E	114	M.P.War	SJ	34-44	39		15
685	1Ha7	164N105E	114	M.P.War	SJ	18-21	19.5		20
686	1Ha7	164N105E	114	M.P.War	SJ	24-32	28		10
687	1Ha7	164N105E	114	M.P.War	SJ	16-17	16.5		35
688	1Ha7	164N105E	114	M.P.War	SJ	16-20	18		20
689	1Ha7	164N105E	114	M.P.War	SJ	28-38	33		10
690	1Ha7	164N105E	114	M.P.War	SJ	28-34	31		25
691-699	1Ha7	164N105E	114	M.P.War	DFRB=1	indet			
	1Ha7	164N105E	114	M.P.War	SJ=3	indet			
	1Ha7	164N105E	114	M.P.War	indet=5	indet			
700	1Ha7	164N105E	114	uncl. incised	indet	indet			
701-703	1Ha7	164N105E	114	B.P.BigS(g)	DFRB=1	indet			
	1Ha7	164N105E	114	B.P.BigS(g)	SB=1	indet			
	1Ha7	164N105E	114	B.P.BigS(g)	SNB=1	indet			
704-706	1Ha7	164N105E	114	B. P. Hale	SB=1	indet			
	1Ha7	164N105E	114	B. P. Hale	SNB=1	indet			
707	1Ha7	166N105E	85	M.P.War	SJ	20-24	22		10
708	1Ha7	166N105E	85	M.P.War	SJ	22-33	27.5		10
709	1Ha7	166N105E	85	M.P.War	SJ	34-36	35		25
710	1Ha7	166N105E	85	M.P.War	JAR	25-38	31.5		5
711	1Ha7	166N105E	85	M.P.War	SJ	17-23	20		10
712	1Ha7	166N105E	85	M.P.War	RB	20-24	22		10
713-722	1Ha7	166N105E	85	M.P.War	SNB=2	indet			
	1Ha7	166N105E	85	M.P.War	indet=8	indet			
723	1Ha7	166N105E	85	B. P. Hale	SNB	21-27	24		15
724-730	1Ha7	166N105E	85	B. P. Hale	SB=1	indet			
	1Ha7	166N105E	85	B. P. Hale	indet=6	indet			
731	1Ha7	166N105E	85	B.P.BigS(g)	SNB	18-20	19		15
732	1Ha7	166N105E	85	B.P.BigS(g)	SNB	17-22	19.5		10
733-738	1Ha7	166N105E	85	B.P.BigS(g)	SNB=1	indet			
	1Ha7	166N105E	85	B.P.BigS(g)	indet=5	indet			
739	1Ha7	166N105E	85	C.I.unsp.	SNB	17-20	18.5		10
740	1Ha7	166N105E	85	C.I. Carthage	DFRB	indet			

741	1Ha7	166N105E	85	Red Painted	JAR	30-38	34		10
742-743	1Ha7	166N105E	85	Red Painted	SNB=1	indet			
	1Ha7	166N105E	85	Red Painted	SJ=1	indet			
744	1Ha7	166N105E	85	M.P.War	JAR	19-24	21.5		15
745	1Ha7	166N105E	85	M.P.War	SJ	25-30	27.5		10
746	1Ha7	166N105E	85	M.P.War	JAR	16-26	21		10
747	1Ha7	166N105E	85	M.P.War	SB	9-10	9.5		25
748-759	1Ha7	166N105E	85	M.P.War	SJ=2	indet			
	1Ha7	166N105E	85	M.P.War	indet=10	indet			
760	1Ha7	166N105E	85	M.P.H.L. (s)	SJ	34-42	38		10
761	1Ha7	166N105E	85	M.P.H.L. (s)	JAR	indet			
762	1Ha7	166N105E	85	B.P. unspec.	SB	indet			
763-767	1Ha7	166N105E	85	B.P. Hale	indet=1	indet			
	1Ha7	166N105E	85	B.P. Hale	DFRB=1	indet			
	1Ha7	166N105E	85	B.P. Hale	SB=1	indet			
	1Ha7	166N105E	85	B.P. Hale	SNB=2	indet			
768	1Ha7	166N105E	85	B.P.BigS(g)	SB	indet			
769	1Ha7	166N105E	85	B.P.BigS(g)	SB	11-15	13		10
770	1Ha7	166N105E	85	B.P.BigS(g)	SFRB	17-24	20.5		15
771	1Ha7	166N105E	85	B.P.BigS(g)	indet	indet			
772	1Ha7	166N105E	91	C.I.unsp.	FRB	indet			
773	1Ha7	166N105E	91	Red Painted	DFRB	indet			
774	1Ha7	166N105E	91	Red / Wh Ptd	indet	indet			
775	1Ha7	166N105E	91	M.P.War	SJ	23-31	27		15
776	1Ha7	166N105E	91	M.P.War	SJ	18-24	21		15
777-789	1Ha7	166N105E	91	M.P.War	SJ=5	indet			
	1Ha7	166N105E	91	M.P.War	JARS=8	indet			
790	1Ha7	166N105E	91	M.P.War	SNB	12-15	13.5		20
791	1Ha7	166N105E	91	M.P.War	SNB	32-38	35		5
792	1Ha7	166N105E	91	M.P.War	SNB	indet			
793	1Ha7	166N105E	91	M.P.War	SB	11-13	12		20
794	1Ha7	166N105E	91	M.P.War	DFRB	31-39	35		15
795	1Ha7	166N105E	91	M.P.War	DFRB	15-25	20		10
796	1Ha7	166N105E	91	M.P.War	indet	30-38	34		
797-826	1Ha7	166N105E	91	M.P.War	indet=30	indet			
827	1Ha7	166N105E	91	M.P.H.L. (s)	indet	26-32	29		10
828	1Ha7	166N105E	91	M.P.H.L. (s)	indet	11-13	12		20
829	1Ha7	166N105E	91	M.P.H.L. (s)	JAR	20-24	22		15
830	1Ha7	166N105E	91	B.P.BigS(g)	DFRB	19-23	21		20
831	1Ha7	166N105E	91	B.P.BigS(g)	DFRB	indet			-
832	1Ha7	166N105E	91	B.P.BigS(g)	SNB	15-18	16.5		25
833-834	1Ha7	166N105E	91	B.P.BigS(g)	indet	indet			
835	1Ha7	166N105E	91	B.P.BigS(g)	indet	9-11	10		20
836-838	1Ha7	166N105E	91	B.P. Hale	SB=2	indet			
	1Ha7	166N105E	91	B.P. Hale	indet	indet			
839	1Ha7	166N105E	91	C.I.M. Lake	DFRB	24-28	26		15
840	1Ha7	166N105E	91	C.I.unsp.	SB	12-13	12.5		30
841-842	1Ha7	166N105E	91	C.I.unsp.	indet	indet			
843	1Ha7	166N105E	91	Red Painted	SJ	20-30	25		10-5
844	1Ha7	166N105E	91	Wh Painted	SNB	indet			
845	1Ha7	166N105E	97	M.P.War	SJ	40-48	44		15

846	1Ha7	166N105E	97	M.P.War	SJ	22-28	25		25
847	1Ha7	166N105E	97	M.P.War	SJ	25-35	30		15
848	1Ha7	166N105E	97	M.P.War	SJ	18-24	21		10-5
849	1Ha7	166N105E	97	M.P.War	SJ	37-46	41.5		5
850	1Ha7	166N105E	97	M.P.War	SJ	17-22	19.5		20-15
851	1Ha7	166N105E	97	M.P.War	SJ	16-26	21		10
852	1Ha7	166N105E	97	M.P.War	SJ	16-22	19		20-15
853	1Ha7	166N105E	97	M.P.War	SJ	14-20	17		15
854	1Ha7	166N105E	97	M.P.War	SJ	20-32	26		5
855	1Ha7	166N105E	97	M.P.War	SJ	18-26	22		10
856	1Ha7	166N105E	97	M.P.War	SJ	21-27	24		10
857	1Ha7	166N105E	97	M.P.War	SJ	20-30	25		15
858	1Ha7	166N105E	97	M.P.War	SJ	21-30	25.5		10-5
859-874	1Ha7	166N105E	97	M.P.War	SJ=16	indet			
875	1Ha7	166N105E	97	M.P.War	SB	38-49	43.5		10-5
876	1Ha7	166N105E	97	M.P.War	SB	indet			
877-889	1Ha7	166N105E	97	M.P.War	indet=13	indet			
890	1Ha7	166N105E	97	Red Painted	SJ	15-22	18.5		10
891	1Ha7	166N105E	97	Red Painted	SJ	34-40	37		15
892-893	1Ha7	166N105E	97	Red Painted	SJ	indet			
894	1Ha7	166N105E	97	C.I. Carthage	SB	15-17	16		30
895	1Ha7	166N105E	97	C.I. Fosters	DFRB	24-31	27.5		10
896	1Ha7	166N105E	97	B.P.BigS(g)	SNB	9-10	9.5		15
897	1Ha7	166N105E	97	B.P.BigS(g)	DFRB	32-38	35		10
898	1Ha7	166N105E	97	B.P.BigS(g)	SB	20-23	21.5		15
899-901	1Ha7	166N105E	97	B.P.BigS(g)	DFRB=1	indet			
	1Ha7	166N105E	97	B.P.BigS(g)	SNB=2	indet			
902	1Ha7	166N105E	97	B.P. Hale	SB	14-16	15		30
903	1Ha7	166N105E	97	B.P. Hale	SB	15-22	18.5		10
904	1Ha7	166N105E	97	B.P. Hale	DFRB	22-27	24.5		15
905-909	1Ha7	166N105E	97	B.P. Hale	SB=3	indet			
	1Ha7	166N105E	97	B.P. Hale	indet=2	indet			
910	1Ha7	166N105E	97	B.P. Hale	SNB	19-22	20.5		10
911-912	1Ha7	166N105E	97	M.P.H.L. (g)	indet	indet			
913	1Ha7	166N105E	97	M.P.H.L. (s)	SJ	indet			
914-915	1Ha7	166N105E	193	Red Painted	SJ	indet			
916	1Ha7	166N105E	193	B.P. Hale	SB	12-18	15		10
917	1Ha7	166N105E	193	B.P. Hale	SB	15-19	17		20
918-919	1Ha7	166N105E	193	B.P. Hale	SJ	indet			
920	1Ha7	166N105E	193	M.P.War	SJ	10-12	11		20
921	1Ha7	166N105E	193	M.P.War	SJ	14-16	15		15
922	1Ha7	166N105E	193	M.P.War	SJ	24-32	28		15
923-929	1Ha7	166N105E	193	M.P.War	indet	indet			
930	1Ha7	166N105E	193	M.P.War	SB	indet			
931-938	1Ha7	166N105E	193	M.P.War	SJ	indet			
939	1Ha7	166N105E	193	M.P.War	SJ	indet			
940	1Ha7	166N105E	193	M.P.War	SJ	indet			
941	1Ha7	166N105E	201	M.P.War	JAR	indet			
942	1Ha7	166N105E	207	C.I.unsp.	SNB	22-26	24		15
943	1Ha7	166N105E	207	C.I. Carthage	DFRB	20-30	25		15
944-946	1Ha7	166N105E	207	M.P.War	SB=1	indet			

	1Ha7	166N105E	207	M.P.War	SJ=1	indet			
	1Ha7	166N105E	207	M.P.War	indet=1	indet			
947	1Ha7	166N105E	207	M.P.War	NJ	25-31	28		15-10
948	1Ha7	166N105E	207	M.P.War	SJ	23		19	80
949	1Ha7	162N107E	42	M.P.War	SJ	indet			
950	1Ha7	162N107E	42	M.P.War	SJ	indet			
951	1Ha7	162N107E	42	M.P.War	SJ	indet			
952	1Ha7	162N107E	42	M.P.War	SJ	indet			
953	1Ha7	162N107E	42	M.P.War	SJ	indet			
954-957	1Ha7	162N107E	42	M.P.War	SJ=2	indet			
	1Ha7	162N107E	42	M.P.War	indet=2	indet			
958-960	1Ha7	162N107E	42	B.P.BigS(g)	SB=1	indet			
	1Ha7	162N107E	42	B.P.BigS(g)	SNB=1	indet			
	1Ha7	162N107E	42	B.P.BigS(g)	indet=1	indet			
961	1Ha7	162N107E	42	C.I.M. Lake	DFRB	indet			
962	1Ha7	162N107E	42	Red Painted	SJ	24-33	28.5		20-15
963	1Ha7	162N107E	42	Red Painted	SJ	21-28	24.5		10
964	1Ha7	162N107E	46	M.P.War	SJ	22-31	26.5		15
965	1Ha7	162N107E	46	M.P.War	SJ	indet			
966	1Ha7	162N107E	46	M.P.War	SJ	24-36	30		5
967	1Ha7	162N107E	46	M.P.War	SJ	32-44	38		15
968	1Ha7	162N107E	46	M.P.War	SJ	13-16	14.5		20
969-973	1Ha7	162N107E	46	M.P.War	SJ=5	indet			
974-986	1Ha7	162N107E	46	M.P.War	indet=13	indet			
987	1Ha7	162N107E	46	M.P.War	JAR(lug)	indet			
988	1Ha7	162N107E	46	B.P. Hale	SJ	13-22	17.5		10
989	1Ha7	162N107E	46	M.P.H.L. (g)	indet	indet			
990	1Ha7	162N107E	46	B.P.BigS(g)	SB	indet			
991	1Ha7	162N107E	46	B.P.BigS(g)	SB	14-20	17		10
992	1Ha7	162N107E	46	B.P.BigS(g)	SJ	12-16	14		15
993	1Ha7	162N107E	46	B.P.BigS(g)	indet	indet			
994	1Ha7	162N107E	46	C.I. Carthage	DFRB	18-25	21.5		15
995	1Ha7	162N107E	46	C.I.M. Lake	NJ	20-27	23.5		15
996-997	1Ha7	162N107E	46	Red Painted	indet	indet			
998	1Ha7	162N107E	50	Red Painted	SJ	indet			
999	1Ha7	162N107E	50	B.P. Hale	SB	32-38	35		15
1000	1Ha7	162N107E	50	B.P. Hale	indet	indet			
1001	1Ha7	162N107E	50	uncl. inc.	Toy Bowl	indet			
1002	1Ha7	162N107E	50	M.P.War	SJ	32-37	34.5		10
1003	1Ha7	162N107E	50	M.P.War	SJ	24-30	27		15
1004-1006	1Ha7	162N107E	50	M.P.War	JAR	indet			
1007	1Ha7	162N107E	50	M.P.War	indet	16-24	20		5
1008-1010	1Ha7	162N107E	50	M.P.War	indet	indet			
1011	1Ha7	164N107E	54	M.P.War	SJ	18-22	20		20
1012-1014	1Ha7	164N107E	54	M.P.War	SJ=3	indet			
1015	1Ha7	164N107E	54	M.P.War	SB	indet			
1016-1018	1Ha7	164N107E	54	M.P.War	indet=3	indet			
1019	1Ha7	164N107E	54	B.P. Hale	SB	indet			
1020	1Ha7	164N107E	54	B.P. Hale	SNB	indet			
1021	1Ha7	164N107E	54	Red Painted	SJ	indet			
1022-1023	1Ha7	164N107E	56	M.P.War	SJ	indet			

1024	1Ha7	164N107E	56	M.P.War	NJ	indet			
1025	1Ha7	164N107E	56	M.P.War	SB	indet			
1026	1Ha7	164N107E	56	M.P.War	SB	12-15	13.5		20
1027-1034	1Ha7	164N107E	56	M.P.War	indet	indet			
1035-1036	1Ha7	164N107E	56	B.P. Hale	indet	indet			
1037	1Ha7	164N107E	56	B.P.BigS(g)	DFRB	24-34	29		15
1038	1Ha7	164N107E	56	C.I.unsp.	DFRB	indet			
1039	1Ha7	164N107E	56	C.I. Akron	SB	14-18	16		30
1040	1Ha7	164N107E	56	C.I. Fosters	DFRB	indet			
1041-1043	1Ha7	164N107E	61	M.P.War	SJ	indet			
1044	1Ha7	164N107E	61	B.P.BigS(g)	SB	13-20	16.5		10
1045	1Ha7	164N107E	61	B.P.BigS(g)	indet	indet			
1046-1047	1Ha7	164N107E	69	M.P.War	SJ=2	indet			
1048	1Ha7	164N107E	69	B.P. Hale	Toy Jar	9-11	10		20
1049-1050	1Ha7	164N107E	69	B.P. Hale	SB=1	indet			
	1Ha7	164N107E	69	B.P. Hale	indet=1	indet			
1051	1Ha7	164N107E	69	B.P.BigS(g)	SB	10-14	12		20
1052	1Ha7	164N107E	198	M.P.War	SJ	9-12	11		30
1053	1Ha7	166N107E	62	C.I.unsp.	FRB	indet			
1054	1Ha7	166N107E	62	B.P.BigS(g)	indet	indet			
1055	1Ha7	166N107E	62	B.P.BigS(s)	SB	20-26	23		10
1056	1Ha7	166N107E	65	M.P.War	SJ	27-31	29		20
1057	1Ha7	166N107E	65	M.P.War	SJ	38-46	42		15
1058	1Ha7	166N107E	65	M.P.War	NJ	33-39	36		15
1059	1Ha7	166N107E	65	M.P.War	SJ	32-38	35		25
1060-1069	1Ha7	166N107E	65	M.P.War	indet	indet			
1070	1Ha7	166N107E	65	B.P. Hale	SB	indet			
1071	1Ha7	166N107E	65	B.P. Hale	SB	indet			
1072	1Ha7	166N107E	65	B.P.BigS(g)	SNB	indet			
1073	1Ha7	166N107E	72	B.P. Hale	JAR	indet			
1074	1Ha7	166N107E	226	M.P.War	SJ	indet			
1075	1Ha7	166N107E	226	M.P.War	indet	indet			
1076	1Ha7	162N107.5E	118	M.P.War	SJ(Toy)	8-13	10.5		15
1077	1Ha7	162N107.5E	118	M.P.War	SJ	15-28	21.5		10
1078	1Ha7	162N107.5E	118	M.P.War	NJ	18-25	21.5		5
1079	1Ha7	162N107.5E	118	M.P.War	JAR	32-46	39		10
1080	1Ha7	162N107.5E	118	M.P.War	SJ	18-32	25		5
1081	1Ha7	162N107.5E	118	M.P.War	SJ	32-44	38		10
1082	1Ha7	162N107.5E	118	M.P.War	SJ	22-28	25		20-15
1083	1Ha7	162N107.5E	118	M.P.War	SJ	31-36	33.5	24-28/26	20
1084-1089	1Ha7	162N107.5E	118	M.P.War	SJ=5	indet			
	1Ha7	162N107.5E	118	M.P.War	NJ=1	indet			
1090-1103	1Ha7	162N107.5E	118	M.P.War	indet	indet			
1104	1Ha7	162N107.5E	118	B.P. Hale	SB	indet			
1105-1106	1Ha7	162N107.5E	118	B.P. Hale	SB=2	indet			
1107	1Ha7	162N107.5E	118	B.P. Hale	indet	indet			
1108	1Ha7	162N107.5E	118	B.P.BigS(g)	SB	24-34	29		10
1109	1Ha7	162N107.5E	118	B.P.BigS(g)	SB	20-30	25		10
1110	1Ha7	162N107.5E	118	B.P.BigS(g)	SJ	indet			
1111	1Ha7	162N107.5E	118	B.P.BigS(g)	DFRB	24-36	30		10-5
1112	1Ha7	162N107.5E	118	B.P.BigS(g)	DFRB	16-30	23		5

1113	1Ha7	162N107.5E	118	B.P.BigS(g)	SB	18-24	21		10
1114	1Ha7	162N107.5E	118	C.I.unsp.	SB	20-28	24		10-5
1115	1Ha7	162N107.5E	118	C.I.unsp.	DFRB	indet			
1116	1Ha7	162N107.5E	118	C.I.M. Lake	SNB	indet			
1117	1Ha7	162N107.5E	118	Wh. Painted	SNB	14-18	16		20
1118	1Ha7	162N107.5E	118	Red/Wh. Ptd	SB	11			40
1119	1Ha7	162N107.5E	118	Red Painted	indet	indet			
1120	1Ha7	162N107.5E	118	Wh. Filmed	indet	indet			
1121	1Ha7	162N107.5E	121	M.P.War	SJ	32-40	36		15
1122	1Ha7	162N107.5E	121	M.P.War	SJ	39-48	43.5		10
1123	1Ha7	162N107.5E	121	M.P.War	SJ	25-34	29.5		10
1124	1Ha7	162N107.5E	121	M.P.War	SJ	15-21	18		10
1125	1Ha7	162N107.5E	121	M.P.War	SJ	13-20	16.5		10
1126	1Ha7	162N107.5E	121	M.P.War	SJ	14-20	17		10
1127-1133	1Ha7	162N107.5E	121	M.P.War	SNB=1	indet			
	1Ha7	162N107.5E	121	M.P.War	SJ=5	indet			
	1Ha7	162N107.5E	121	M.P.War	JAR=1	indet			
1134	1Ha7	162N107.5E	121	M.P.War	JAR	indet			
1135	1Ha7	162N107.5E	121	M.P.War	Beaker	indet			
1136	1Ha7	162N107.5E	121	M.P.War	SB	11-15	13		15
1137-1146	1Ha7	162N107.5E	121	M.P.War	indet	indet			
1147	1Ha7	162N107.5E	121	M.P.H.L. (g)	indet	indet			
1148	1Ha7	162N107.5E	121	B.P. Hale	DFRB	indet			
1149	1Ha7	162N107.5E	121	B.P. Hale	SB	indet			
1150	1Ha7	162N107.5E	121	B.P.BigS(g)	SNB	34-42	38		10
1151	1Ha7	162N107.5E	121	B.P.BigS(g)	RB			23-24/23.5	20
1152	1Ha7	162N107.5E	121	B.P.BigS(g)	RB	12-13	12.5	11-12/11.5	15
1153	1Ha7	162N107.5E	121	B.P.BigS(g)	SB	15-22	18.5		10
1154	1Ha7	162N107.5E	121	B.P.BigS(g)	SB	indet			
1155	1Ha7	162N107.5E	121	B.P.BigS(g)	SJ	12-18	15		5
1156	1Ha7	162N107.5E	121	B.P.BigS(g)	DFRB	indet			
1157-1159	1Ha7	162N107.5E	121	B.P.BigS(g)	indet	indet			
1160	1Ha7	162N107.5E	121	C.I.unsp.	RB	8-10	9		10
1161	1Ha7	162N107.5E	121	C.I.unsp.	indet	indet			
1162	1Ha7	162N107.5E	121	C.I. Akron	SNB	22-30	26	20-26/23	10
1163	1Ha7	162N107.5E	121	C.I. Akron	SNB	24-31	27.5		15-10
1164	1Ha7	162N107.5E	209	M.P.War	SJ	14-15	14.5	15-16/15.5	30/40
1165	1Ha7	164N107.5E	75	M.P.War	SJ	18-32	25		10
1166	1Ha7	164N107.5E	75	M.P.War	SJ	16-22	19		20
1167-1178	1Ha7	164N107.5E	75	M.P.War	SJ=5	indet			
	1Ha7	164N107.5E	75	M.P.War	indet=7	indet			
1179	1Ha7	164N107.5E	75	M.P.H.L. (g)	FRB	indet			
1180	1Ha7	164N107.5E	75	M.P.H.L. (s)	BOWL	indet			
1181	1Ha7	164N107.5E	75	B.P. Hale	SNB	18-24	21		10
1182	1Ha7	164N107.5E	75	B.P. Hale	SB	15-18	16.5		15
1183-1186	1Ha7	164N107.5E	75	B.P. Hale	SJ=2	indet			
	1Ha7	164N107.5E	75	B.P. Hale	Beaded B	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	indet=1	indet			
1187	1Ha7	164N107.5E	75	B.P.BigS(g)	SNB	21-28	24.5		10
1188	1Ha7	164N107.5E	75	B.P.BigS(g)	SNB	21-25	23		20
1189	1Ha7	164N107.5E	75	B.P.BigS(g)	SB	19-24	21.5		5

1190-1200	1Ha7	164N107.5E	75	B.P.BigS(g)	indet	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	RB=1	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	SB=1	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	SNB=1	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	SJ=3	indet			
	1Ha7	164N107.5E	75	B.P.BigS(g)	indet=5	indet			
1201-1202	1Ha7	164N107.5E	75	C.I.unsp.	DFRB	indet			
	1Ha7	164N107.5E	75	C.I.unsp.	indet=1	indet			
1203	1Ha7	164N107.5E	78	C.I.M. Lake	SNB	22-24	23		35
1204	1Ha7	164N107.5E	78	Red Painted	DFRB	15-21	18		10
1205	1Ha7	164N107.5E	78	M.P.War	SJ	48-56	52		20
1206	1Ha7	164N107.5E	78	M.P.War	SJ	30-46	38		5
1207	1Ha7	164N107.5E	78	M.P.War	SJ	38-52	45		15
1208	1Ha7	164N107.5E	78	M.P.War	SJ	37-40	38.5		20
1209	1Ha7	164N107.5E	78	M.P.War	SJ	26-36	31		15
1210-1240	1Ha7	164N107.5E	78	M.P.War	SNB=1	indet			
	1Ha7	164N107.5E	78	M.P.War	SJ=10	indet			
	1Ha7	164N107.5E	78	M.P.War	indet=17	indet			
	1Ha7	164N107.5E	78	M.P.War	JAR=3	indet			
1241	1Ha7	164N107.5E	78	M.P.H.L. (g)	indet	indet			
1242	1Ha7	164N107.5E	78	B.P. Hale	SJ	10-11	10.5	8-9/8.5	45/50
1243	1Ha7	164N107.5E	78	B.P. Hale	DFRB	21-32	26.5		10-5
1244	1Ha7	164N107.5E	78	B.P. Hale	SB	24-30	27		10
1245	1Ha7	164N107.5E	78	B.P. Hale	SB	13-17	15		15
1246-1249	1Ha7	164N107.5E	78	B.P. Hale	SB	indet			
	1Ha7	164N107.5E	78	B.P. Hale	indet=3	indet			
1250	1Ha7	164N107.5E	78	B.P.BigS(g)	SNB	17-19	18		20
1251	1Ha7	164N107.5E	78	B.P.BigS(g)	BOWL	9-10	9.5		30
1252-1261	1Ha7	164N107.5E	78	B.P.BigS(g)	DFRB=1	indet			
	1Ha7	164N107.5E	78	B.P.BigS(g)	SB=3	indet			
	1Ha7	164N107.5E	78	B.P.BigS(g)	SJ=2	indet			
	1Ha7	164N107.5E	78	B.P.BigS(g)	indet=4	indet			
1262	1Ha7	164N107.5E	78	C.I.unsp.	DFRB	27-32	29.5		15
1263	1Ha7	164N107.5E	78	C.I. Carthage	DFRB	26-31	28.5		45
1264	1Ha7	164N107.5E	78	C.I. Carthage	SNB	11-14	12.5		20
1265	1Ha7	164N107.5E	78	C.I. Akron	SNB	indet			
1266	1Ha7	164N107.5E	78	Red Painted	DFRB	20-25	22.5		15
1267	1Ha7	164N107.5E	78	Red Painted	DFRB	indet			
1268-1283	1Ha7	164N107.5E	80	M.P.War	SB=1	indet			
	1Ha7	164N107.5E	80	M.P.War	SJ=6	indet			
	1Ha7	164N107.5E	80	M.P.War	indet=9	indet			
1284	1Ha7	164N107.5E	80	M.P.War	SJ	31-36	33.5		20
1285	1Ha7	164N107.5E	80	M.P.H.L. (s)	indet	indet			
1286	1Ha7	164N107.5E	80	B.P. Hale	SNB	8-13	10.5		30-20
1287-1289	1Ha7	164N107.5E	80	B.P. Hale	SB=2	indet			
	1Ha7	164N107.5E	80	B.P. Hale	indet=1	indet			
1290	1Ha7	164N107.5E	80	B.P.BigS(g)	SNB	10-12	11		30
1291	1Ha7	164N107.5E	80	B.P.BigS(g)	SJ	10-11	10.5		30
1292	1Ha7	164N107.5E	80	B.P.BigS(g)	SB	24-29	26.5		25
1293-1300	1Ha7	164N107.5E	80	B.P.BigS(g)	SNB=6	indet			
	1Ha7	164N107.5E	80	B.P.BigS(g)	SJ=2	indet			

1301	1Ha7	164N107.5E	80	C.I.unsp.	SNB	20-24	22		10
1302	1Ha7	164N107.5E	80	C.I.unsp.	SNB	14-18	16		10
1303	1Ha7	164N107.5E	80	C.I. Carthage	SNB	15-18	16.5		15
1304	1Ha7	164N107.5E	80	C.I. Carthage	SNB	16-19	17.5		15
1305-1306	1Ha7	164N107.5E	225	M.P.War	SJ=1	indet			
	1Ha7	164N107.5E	225	M.P.War	indet=1	indet			
1307	1Ha7	164N107.5E	211	M.P.War	SJ	indet			
1308	1Ha7	164N107.5E	211	M.P.H.L. (g)	SJ	indet			
1309	1Ha7	166N107.5E	87	M.P.War	indet	indet			
1310-1335	1Ha7	166N107.5E	93	M.P.War	SB=2	indet			
	1Ha7	166N107.5E	93	M.P.War	SJ=16	indet			
	1Ha7	166N107.5E	93	M.P.War	indet=18	indet			
1336	1Ha7	166N107.5E	93	M.P.War	SJ	46-57	51.5		5
1337	1Ha7	166N107.5E	93	M.P.War	SJ	30-36	33		15
1338	1Ha7	166N107.5E	93	M.P.War	SJ	29-38	33.5		10
1339	1Ha7	166N107.5E	93	M.P.War	JAR	26-31	28.5		15
1340	1Ha7	166N107.5E	93	M.P.War	SJ	34-46	40		10
1341	1Ha7	166N107.5E	93	M.P.War	SJ	16-20	18		15
1342	1Ha7	166N107.5E	93	M.P.War	SJ	33-40	36.5		10
1343	1Ha7	166N107.5E	93	B.P. Hale	DFRB	41-49	45		10
1344	1Ha7	166N107.5E	93	B.P. Hale	DFRB	23-28	25.5		20
1345-1350	1Ha7	166N107.5E	93	B.P. Hale	SB=4	indet			
	1Ha7	166N107.5E	93	B.P. Hale	indet=2	indet			
1351	1Ha7	166N107.5E	93	B.P.BigS(s)	indet	indet			
1352-1366	1Ha7	166N107.5E	93	B.P.BigS(g)	SB=1	indet			
	1Ha7	166N107.5E	93	B.P.BigS(g)	SNB=3	indet			
	1Ha7	166N107.5E	93	B.P.BigS(g)	indet=11	indet			
1367	1Ha7	166N107.5E	93	B.P.BigS(g)	SNB	15-18	16.5		20
1368	1Ha7	166N107.5E	93	B.P.BigS(g)	SNB	16-20	18		15
1369	1Ha7	166N107.5E	93	C.I. Akron	SB	19-23	21		20
1370	1Ha7	166N107.5E	93	C.I. Akron	SB	indet			
1371	1Ha7	166N107.5E	93	C.I.M. Lake	SNB	17-19	18		20
1372	1Ha7	166N107.5E	93	C.I. Fosters	DFRB=1	indet			
1373	1Ha7	166N107.5E	93	C.I. Carthage	SNB	7-9	8		30
1374	1Ha7	166N107.5E	93	C.I. unspec.	SB	17-21	19		20
1375	1Ha7	166N107.5E	93	C.I. unspec.	DFRB	31-38	34.5		10
1376	1Ha7	166N107.5E	93	C.I. unspec.	SNB	indet			
1377	1Ha7	166N107.5E	93	C.I. unspec.	SNB	26-33	29.5		15
1378	1Ha7	166N107.5E	93	Wh. Painted	indet	indet			
1379-1380	1Ha7	166N107.5E	93	Red Painted	SJ=2	indet			
1381-1383	1Ha7	166N107.5E	93	Red/Wh Ptd.	indet	indet			
1384	1Ha7	166N107.5E	93	shell eroded	indet	indet			
1385-1389	1Ha7	166N107.5E	96	M.P.War	SJ=3	indet			
	1Ha7	166N107.5E	96	M.P.War	indet=2	indet			
1390	1Ha7	166N107.5E	96	M.P.War	JAR	14-17	15.5		
1391	1Ha7	166N107.5E	96	B.P. Hale	SJ	19-22	20.5		15
1392-1393	1Ha7	166N107.5E	96	B.P. Hale	SB=2	indet			
1394-1396	1Ha7	166N107.5E	96	B.P.BigS(g)=2	SJ=2	indet			
	1Ha7	166N107.5E	96	B.P.BigS(s)=1	BOWL	indet			
1397	1Ha7	166N107.5E	96	Red Painted	SNB	indet			

REFERENCES

Alexander, Lawrence
1982 Phase I Archaeological Reconnaissance of the Oliver Lock and Dam Project Area, Tuscaloosa, Alabama. University of Alabama Office of Archaeological Research Report of Investigations #33, Tuscaloosa.

Arnold, Dean E.
1985 Ceramic Theory and Cultural Process. Cambridge University Press, Cambridge.

Blitz, John H.
1989 Vessel Size as a Measure of Mississippian Mound Activities. Paper read at the 46th Annual Meeting of Southeastern Archaeology Conference, Tampa, FL.

1993 Ancient Chiefdoms of the Tombigbee. University of Alabama Press, Tuscaloosa.

Curren, Caleb
1984 The Protohistoric Period in Central Alabama. Alabama Tombigbee Regional Commission. Camden, AL.

Deetz, James
1965 The Dynamics of Change in Arikara Ceramics. University of Illinois Press, Chicago.

1967 Invitation to Archaeology. The Natural History Press, Garden City, NJ.

Fagan, Brian
1991 Ancient North America. Thames and Hudson, Inc., New York.

Griffin, James B.
1967 Eastern North American Archaeology: A Summary. Science 156:175-91.

Hill, J. N.
1970 Broken K Pueblo: Prehistoric Social Organization in the American Southwest. University of Arizona Anthropological Papers, 18, Tucson.

Matson, F. R.
1965 Ceramic Ecology: An approach to the study of the early cultures of the Near East. In Ceramics and Man. (F. R. Matson, ed.) :202-17 Aldine Press, Chicago.

Middleton, James D.
1882 Mounds on the Prince Plantation. Ms., Catalog #2400-Box 1, National Anthropological Archives, Smithsonian Institution, Washington, D.C.

Moore, Clarence B.
1986 Certain Aboriginal Remains, Black Warrior River. In The Late Prehistoric Southeast: A Source Book (Chester B. DePratter, ed.) :128-243. Garland Publishing, Inc., New York. [orig. 1905]

Morgan, William N.
1980 Prehistoric Architecture in the Eastern United States. The MIT Press, Cambridge, MA, and London.

Nielsen, Jerry J., and Ned J. Jenkins
1973 Archaeological Investigations in the Gainesville Lock and Dam Reservoir: 1972. Report submitted to the U.S. Department of Interior, National Park Service, Washington, D.C.

Peebles, Christopher S.
1971 Moundville and Surrounding Sites: Some Structural Considerations of Mortuary Practices. In Approaches to the Social Dimensions of Mortuary Practices. (James A. Brown, ed.) :68-91. Society for American Archaeology, Memoir 15.

1978 Determinates of Settlement Size and Location in the Moundville Phase. In Mississippian Settlement Patterns (Bruce Smith, ed.) :369-416. Academic Press, New York.

1978b Moundville from 1000 to 1500 AD as Seen from 1840 to 1985 AD. In Chiefdoms of the Americas (Robert D. Drennan, ed.) :21-42. University Press of America, New York.

1978c Moundville: Late Prehistoric Sociopolitical Organization in the Southeastern U.S. Paper presented at the annual meeting of the American Ethnology Society, Vancouver, Canada.

1979 Excavations at Moundville, 1905-1951. University of Michigan Press, Ann Arbor.

Powell, Mary Lucas
1988 Status and Health in Prehistory: A Case Study of the Moundville Chiefdom. Smithsonian Institution Press, Washington and London.

Redman, Charles L.
1991 Forward. In Approaches to Archaeological Ceramics by Carla M. Sinopoli :v-vi. Plenum Press, New York.

Rice, Prudence M.
1987 Pottery Analysis: A Sourcebook. University of Chicago Press, Chicago.

Sinopoli, Carla M.
1991 Approaches to Archaeological Ceramics. Plenum Press, New York.

Steadman, P.
1980 The Evolution of Designs. Cambridge University Press, Cambridge, MA.

Steponaitis, Vincas P.
1983 Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville. Academic Press, New York.

1983b The Smithsonian Institution's Investigations at Moundville in 1869 and 1882. Mid-Continental Journal of Archaeology 8:127-60.

Walthall, John A.
1980 Prehistoric Indians of the Southeast. University of Alabama Press, Tuscaloosa.

Wheat, Joe Ben, James C. Gifford, and William W. Wasley
1958 Ceramic Variety, Type Cluster, and Ceramic System in Southwestern Pottery Analysis. American Antiquity 24: 34-47.

Welch, Paul D.
1990 Mississippian Emergence in West Central Alabama. In The Mississippian Emergence (Bruce D. Smith, ed.) : 197-225. Smithsonian Institution Press, Washington and London.

1991 Moundville's Economy. University of Alabama Press, Tuscaloosa.

1991b Monopolistic Control Over Goods and the Political Stability of the Moundville Chiefdom. Paper presented in a symposium, "Approaches to Mississippi Period Economy in the Southeastern U.S.," 56th Annual Meeting of the Society for American Archaeology, New Orleans, LA.

Whallon, R., Jr.
1972 A New Approach to Pottery Typology. American Antiquity 37: 13-33.