

SOME PRELIMINARY CHRONOLOGICAL AND TECHNOLOGICAL NOTES ON MOUNDVILLE POTTERY

During the summer of 1978, the University of Michigan Museum of Anthropology began a field program aimed at investigating the Moundville phase, a well-known Mississippian manifestation in west-central Alabama (Peebles 1971, 1978; McKenzie 1966). A major part of this field program was devoted to the study of existing archaeological collections from the Moundville site itself. The largest such collection is now housed at Mound State Monument in Alabama, having been gathered over a period of some 20 years of excavation by the pre-war federal relief programs and the Alabama Museum of Natural History (Peebles n.d.a, n.d.b).

Our main focus in going through the Mound State Monument collections was on the ceramics, particularly on the complete or nearly complete vessels. Over the course of the season approximately 900 vessels were measured and/or photographed, of which about 630 could be assigned to definite burial contexts. Our immediate objectives in collecting these data were fourfold: 1) to arrive at a comprehensive formal description of the Moundville phase ceramic assemblage; 2) to formulate a detailed ceramic chronology for the Moundville phase; 3) to elucidate some of the technological aspects of Moundville phase ceramic production; and, 4) to look at the patterns of inter-regional exchange in ceramics and to see how these patterns changed through time.

Once these goals are achieved—especially those relating to chronology and inter-regional exchange—we should be in a much better position to understand the processes by which the politically complex societies in this area developed, and later reverted to simpler forms of organization. The reader should bear in mind, however, that the various lines of research alluded to above are only in their very beginning stages. Hence, this paper is meant to be an interim report of work that is still in progress. The results to be presented below are preliminary in nature, and any conclusions drawn from them should be considered tentative.

Formal Description of Ceramic Assemblage

The ceramic typology traditionally used to describe the Moundville phase ceramic assemblage was initially presented by DeJarnette and Wimberly (1941) more than 35 years ago, and later was somewhat elaborated by McKenzie (1964, 1965, 1966). Their typology basically consists of six types: Warrior Plain, Moundville Incised, Moundville Black Filmed, Moundville Filmed Incised, Moundville Filmed Engraved, and Moundville Engraved Indented.

This well-known and long-standing typological scheme has unquestionably proved to be a useful analytical framework in past studies, and its status as a major contribution to the understanding of southeastern prehistory remains secure. However, in my own work I have found it useful to diverge from this scheme in two ways. First, I have adopted a type-variety nomenclature similar to the one introduced by Philip Phillips (1970) in the Lower Mississippi Valley. Sec-

ond, I have decided to drop the attribute of "black filming" as a criterion for *defining* types. The latter change was made for several reasons, one of which had to do with difficulties in characterizing how "black filming" was to be consistently recognized. Surface color on Moundville vessels varies along a continuum from dark to light, and so it does not lend itself easily to discrete categorization. Moreover, it is not uncommon to find burnished bowls and bottles whose shape and decoration are clearly local in style, but which are too light in color to be easily accommodated in any of the traditional "black filmed" types. The most economical solution to these problems has been to regard "black filming" as a mode that cross-cuts a series of types and varieties, which are defined without reference to color. (Some technological aspects of black filming will be discussed in a subsequent section of this paper.)

Given these considerations, I have classified the Moundville assemblage using the four types outlined below. Each of these types is further subdivided into several varieties, which are briefly described in the Appendix.

1) *Mississippi Plain* includes all undecorated vessels tempered with shell. Vessels with burnished surfaces (some formerly considered Moundville Black Filmed) and those with unburnished surfaces (formerly Warrior Plain) are now recognized as two separate varieties.

2) *Moundville Incised* includes shell tempered vessels with unburnished surfaces that are decorated with a series of incised arches. Three varieties of this type have been recognized in the Moundville assemblage.

3) *Carthage Incised* includes shell tempered vessels with burnished surfaces that are decorated with a broad, "trailed" incision. The six varieties of this type subsume most of the vessels that were formerly classified as Moundville Filmed Incised, along with some vessels that would not have been classified as such due to their light color.

4) *Hemphill Engraved* consists of shell tempered vessels with burnished surfaces that are decorated with engraving or fine, dry-paste incision. The seven varieties so far defined include some light colored vessels in addition to those which formerly fell under the rubrics Moundville Filmed Engraved and Moundville Engraved Indented.

In the present scheme, all types are defined on the basis of temper, surface finish, and tooled decoration. Red painting, when it occurs, is simply counted as a mode that cross-cuts these types.

Chronology

Based on a preliminary seriation of grave lots of whole vessels, three ceramic periods can be recognized within the Moundville phase. For the purposes of the present paper only, these periods can be referred to as Moundville I, Moundville II, and Moundville III. As

yet, no direct dates are available on the graves which make up this sequence. However, based on the estimated time range for the entire occupation at Moundville, and on dates for comparable material in eastern Mississippi (Marshall 1977), I would assign the following guess dates to each of the periods:

Moundville I A.D. 1100-1250
 Moundville II A.D. 1250-1400
 Moundville III A.D. 1400-1550

The ceramic complex associated with each of these periods will be discussed below, and is presented in summary form in Table 1.

Moundville I. The characteristic bottle form of this early period is the ovoid, pedestalled bottle (e.g., Moore 1905: Figs. 129, 130). Decoration on these bottles is relatively uncommon; when it does occur, the decoration is usually engraved in a very dry or fired paste. A typical motif is the 3 line running scroll with areas of excision (Hemphill Engraved, *var. Elliotts Creek*). Appearing late in Moundville I (and continuing into the subsequent phase) is another pedestalled bottle form, somewhat wider and more angular in profile. Such bottles are often decorated with 4-10 line vertical scrolls; the lines making up these scrolls are incised in a dry paste and are usually about 1 mm wide (Hemphill Engraved, *var. Tuscaloosa*; e.g., Moore 1905: Fig. 39).

The distinctive bowl forms dating to Moundville I are the hemispherical bowl with lug and rim effigy (e.g., McKenzie 1966: Fig. 11c), the restricted bowl, and the shallow flaring rim bowl (e.g., McKenzie 1966: Fig. 7). Decoration on these bowls is generally carried out with a broad "trailed" incision, at least 1.5-2.0 mm wide. The Mound Place motif, a band of 3-4 lines parallel to the lip, often occurs on the hemispherical bowls with effigies (Carthage Incised, *var. Akron*); the arch motif occurs on restricted bowls (Carthage Incised, *var. Summerville*); and zones of oblique parallel incisions ("chevrons") are sometimes placed on the interior of flaring rim bowls (Carthage Incised, *var. Moon Lake*).

Jars of this period usually have two handles, but occasionally they exhibit four. The typical decoration on these jars is the arch motif of Moundville Incised (most commonly *var. Moundville*).

Table 1. Chronology of decorated types and varieties (type and variety descriptions are given in the Appendix).

TYPES/VARIETIES	MOUNDVILLE PERIODS		
	I	II	III
Moundville Incised, <i>var. Moundville</i>	X		
<i>var. Carrollton</i>	X		
<i>var. Snows Bend</i>	?	?	
Carthage Incised, <i>var. Akron</i>	X		
<i>var. Summerville</i>	X		
<i>var. Moon Lake</i>	X	?	X
<i>var. Carthage</i>			X
<i>var. Foster</i>			X
<i>var. Poole</i>			X
Hemphill Engraved, <i>var. Elliotts Creek</i>	X		
<i>var. Tuscaloosa</i>	+	X	
<i>var. Maxwell's Cros.</i>		X	
<i>var. Havana</i>		X	X
<i>var. Hemphill</i>		+	X
<i>var. Taylorsville</i>			X
<i>var. Wiggins</i>			X

X - strong presence
 + - sporadic presence
 ? - questionable presence

Moundville II. In this period, the ovoid pedestalled bottle is completely replaced by the form with a wider body, exhibiting either a low pedestal (e.g., Moore 1905: Figs. 35, 37, 39, 53) or a slab base (e.g., Moore 1905: Fig. 6). Decoration on these bottles usually consists of fine dry-paste incision, what we for convenience have subsumed under the rubric of "engraving." Common motifs are the windmill (Hemphill Engraved, *var. Maxwell's Crossing*; e.g., Moore 1905: Figs. 30, 35), the vertical scroll (Hemphill Engraved, *var. Tuscaloosa*; e.g., Moore 1905: Figs. 39, 71), and a running scroll made up of 15 or more closely spaced lines (Hemphill Engraved, *var. Tuscaloosa*; e.g., Moore 1905: Figs. 37, 119). Representational or "cult" motifs also occur, but they seem to be relatively infrequent until the later portion of this period (Hemphill Engraved, *var. Hemphill*; motifs such as those in Moore 1905: Figs. 8, 21, 87, and 121 probably are found this early). Another frequent characteristic of Moundville II pottery is the presence of dimples or indentations in the vessel wall.

The simple, restricted, and flaring rim bowl forms that characterized Moundville I probably continue into Moundville II as well. There does occur a change, however, in the way these bowls are decorated. Unlike the earlier variants with the Mound Place motif, those falling within this period tend to have a much finer line width (less than 1.5 mm), and more lines making up the band (Hemphill Engraved, *var. Havana*). Also, it is during this period that the hemispherical bowl with a notched applique strip along the rim, sometimes called the "beaded rim" bowl, first begins to appear.

Four-handed jars become considerably more common, although the 2-handed forms continue to be found as well. The type Moundville Incised becomes either rare or locally non-existent. It seems that most jars during this and the subsequent period are undecorated.

Moundville III. In Moundville III times, bottles with pedestalled and slab bases mostly disappear. The typical bottle is subglobular with a simple, rounded base (e.g., Moore 1905: Figs. 84, 86, 112, 153). The simple, restricted, and flaring rim bowl forms continue in this period, and two new bowl forms are added: 1) a short-necked bowl stylistically related to the proto-historic "cazuela" form, and 2) a cylindrical or semi-cylindrical bowl with a single lug (e.g., McKenzie 1966: Figs. 5, 18; Moore 1905: Figs. 120, 124). The beaded rim bowl, which first appeared in Moundville II, attains its greatest frequency in Moundville III. It is also at this time that fish effigy bowls (e.g., Moore 1907: Fig. 27) and frog effigy jars (e.g., McKenzie 1966: Fig. 14) become common.

In regard to decoration, both fine-line engraving/incising and broad-line incising are found on bowls and bottles. The most common motif is the 3-4 line running scroll, with or without a crosshatched background (Carthage Incised, *var. Carthage*, Hemphill Engraved, *vars. Wiggins* and *Taylorville*). Also common are the engraved or incised "Southern Cult" motifs for which the Moundville ceramics are justifiably famous (Hemphill Engraved, *var. Hemphill*, and Carthage Incised, *var. Foster*). The fine-line execution continues to predominate on bowls with the Mound Place motif (Hemphill Engraved, *var. Havana*). Very late within this period, short-necked bowls are sometimes incised either with chevrons (Carthage Incised, *var. Moon Lake*), or with a step and semicircle design (Carthage Incised, *var. Poole*).

The number of handles found on jars increases again in this period. The typical jar has four, somewhat triangular strap handles (e.g., Moore 1905: Fig. 55); however, during the later portions of Moundville III, jars with 8 or even more handles become common (e.g., Moore 1905: Fig. 49).

It should also be noted that during late Moundville III times, a number of red on white vessels appear that are almost certainly local in manufacture (cf. McKenzie 1965:55).

Discussion. If my guess dates prove to be nearly correct, it would seem that most of the "Southern Cult" iconography on Moundville pottery dates to ca. A.D. 1350 or after, although some may be present as early as A.D. 1250. This iconography clearly shows some internal stylistic development, with some motifs (e.g., the bilobed arrow) being predominantly early, others being predominantly late (e.g., winged serpent, falcon, scalp), and some occurring both early and late with slight differences in execution (e.g., paired tails, hand and eye).

Another important point is this: The chronology outlined above should once and for all lay to rest McKenzie's (1964, 1966:49-51) idea that the Moundville phase originated with a site-unit intrusion from the Central Mississippi Valley (alias, the Northern Division of the Lower Mississippi Valley). It is now quite apparent that the Moundville ceramics with counterparts in Walls and Nodena phase assemblages—such as Hemphill Engraved, *vars.* Hemphill and Wiggins—occur only in the later stages of a long, local developmental sequence. Undoubtedly there was a sharing of ideas between Moundville and other areas, but no major migrations were involved.

Based on this chronology we can also make some statements regarding the temporal placement of the well-known Bessemer site in Jefferson County, Alabama (DeJarnette and Wimberly 1941). Judging from the ceramics illustrated in the site report (DeJarnette and Wimberly 1941: Figs. 64, 65), it appears that much, if not all, of the mound construction at Bessemer took place during Moundville I times, as indicated by the presence of an ovoid pedestalled bottle (Mississippi Plain, *var.* Hale), a flaring rim bowl with incised chevrons (Carthage Incised, *var.* Moon Lake), and a hemispherical bowl with the incised Mound Place motif (Carthage Incised, *var.* Akron). The evidence therefore suggests that Bessemer and Moundville were contemporaneously occupied in the early part of the sequence, but that Bessemer was abandoned by the time the Moundville site reached its greatest size and political importance.

Ceramic Technology

Now let us return to a subject which was brought up earlier, that is, the nature of the "black film" on Moundville ceramics. It has traditionally been maintained that "black filming" is the result of an organic paint applied to a vessel's surface. This idea was first proposed by C. B. Moore (1905:140) more than seventy years ago, based on both visual and chemical evidence:

... the Moundville ware, except in the case of cooking vessels, is almost invariably covered with a coating of black, more or less highly polished on the outer surface. This coating was not produced by the heat in firing the clay, but was a mixture intentionally put on by the potters. Scrapings from the surface of a number of

vessels were furnished by us to Harry F. Keller, Ph.D., who, by analysis, arrived at the conclusion that the black coating on the earthenware is carbonaceous matter. . . . From its appearance and chemical behavior, Dr. Keller concludes that it must have been applied in the form of a tarry or bituminous matter which, upon heating out of contact with air, was converted into a dense variety of carbon. Doctor Keller is of the opinion that a mixture of soot and fat or oil might produce the effect, though the numerous lustrous particles resembling graphite rather suggest the carbonization of a tar-like substance.

Considerably later, F. R. Matson did a series of experiments on black filmed sherds from the Gunterville Basin that led him to a similar conclusion:

An examination of a group of Moundville Black Filmed sherds showed that several of them had an oxidized core buff to salmon in color, while other pieces with gray cores had an oxidized area at one or both surfaces. Upon the surfaces themselves, covering the light area, appeared the black film. That this film could not have been produced while the vessels were being fired was indicated by the oxidized region just beneath it . . .

It would be possible to obtain such a black surfacing either by using a slip containing iron which when fired under reducing conditions would produce a black iron oxide coating, or by applying an organic paint that a reducing atmosphere would carbonize (quoted in Heimlich 1952:29).

Matson's experiments adequately demonstrated that the dark surface color was not the result of an iron oxide paint or slip; therefore, in part by process of elimination, he concluded that the color had to be due to an organic paint (Matson quoted in Heimlich 1952:30-31). Furthermore, he argued that the paint had to be applied with a *second* firing, because the initial firing which produced the oxidized core in these sherds would at the same time have oxidized (i.e., burned off) any organic paint on the surface.

Although these arguments have gained some acceptance over the years, they are not as convincing as they would appear to be at first glance. The conclusions of both Keller and Matson rested on the dubious premise that the carbonaceous matter on the surface could *only* have been the residue of an organic paint applied before firing. Only by taking this premise for granted could Matson have argued reasonably for the necessity of a second firing in order to obtain a dark surface over an oxidized core.

It should be noted that there does exist a simple method of producing a "black film" apart from painting. This process is referred to as "smudging", which is described by Shepard (1956:88) as a "means of blackening pottery by causing carbon and tarry products of combustion to be deposited on it." A vessel can be smudged after firing, or smudging can take place *during* the process of firing itself. All it requires is a smoldering fire that burns with a sooty smoke, and a certain amount of care to ensure that the soot deposited on the vessel's surface is not burned away by direct contact with the flames.

Similarly, it is important to realize that the firing atmosphere need not remain constant during the course of a single firing. The burning of charcoal in an open firing tends to produce a neutral or oxidizing atmosphere; the burning of fresh fuel tends to produce a reducing atmosphere (Shepard 1956:217). Thus, it is quite possible to vary the atmosphere during open firing by manipulating the fuel supply and to some extent by controlling the draft.

These considerations raise the possibility that the "black filmed" wares owe their surface color not to an organic paint, but rather to a process of deliberate smudging and reduction in firing. The observed characteristics of these wares could well have been produced in a single firing and without the use of paint, if the following procedure were used: First the vessels could have been placed in a coal fire, which would oxidize both the surface and the core. Then, in the very last stages of firing, fresh fuel that burned with a sooty smoke could have been added; this fuel would have produced a reducing atmosphere and inevitably have brought about some degree of smudging. Both the reduction and the smudging would contribute to blackening the vessel, because reduction darkens the color of iron oxides in the clay, and smudging deposits carbon. As long as the reduction and smudging were of relatively short duration, their effects would be confined to the surface, and the core of the vessel wall would still remain oxidized. Exactly this kind of technique for producing blackwares has been documented among the native potters of the southwestern pueblos (Shepard 1956:88-90).

We can not as yet conclusively demonstrate that the above procedure was actually the one used in making the black filmed wares at Moundville. We can, however, show that it was indeed possible to produce the dark color in this way using locally available clays. As noted previously, a number of apparently local vessels at Moundville exhibit zones of red paint on a whitish surface, colors that could only have been achieved by deliberate firing under oxidizing conditions. Such vessels invariably have a few irregular patches on their surface where the whitish color has turned black. These patches of black are obviously not the result of painting; rather, they can only be interpreted as places where the surface was accidentally reduced and/or smudged in firing. Conversely, black filmed vessels sometimes exhibit patches of whitish color that have resulted from accidental oxidation. These observations clearly suggest that differences in surface color—from white to black—can be produced simply by varying the conditions under which the clay is fired. Additional confirming evidence has come from a series of replication experiments conducted by Ned Jenkins and Robert Lafferty of the University of Alabama (personal communication). Using clay from a single local source, they were able to produce both white and black-surfaced wares without paint just by changing the nature of the firing atmosphere.

If these ideas prove valid with further testing and experimentation, then it would seem that the surface characteristics of Moundville "black filmed" wares were produced in much the same manner as those of other dark-surfaced wares (such as Bell Plain) found elsewhere in the Southeast during the Mississippi period. Thus, there would be no technological grounds for insisting that the Moundville wares be given an entirely distinct typological status.

Inter-Regional Exchange

In regard to the subject of trade, our work in the next few months will include petrographic and chemical analyses designed to accurately identify trade wares, followed by distributional studies of these wares within and between Moundville phase settlements. For now, I can only offer some general statements concerning the non-local pottery types found in Moundville burials, and the probable sources of these types.

The most abundant group of trade vessels originated in the Middle Mississippi sub-area which stretched from the Middle Cumberland drainage in central Tennessee to the Cairo Lowland in southeast Missouri. Among the types thus far identified are Matthews Incised, *var. Beckwith* (4 jars) and *var. Manly* (1 jar), Barton Incised (2 jars), Nashville Negative Painted (4 bottles), Bell Plain (at least 13 bowls and bottles), and Mississippi Plain (at least 8 jars and 1 fish effigy bowl) (Phillips 1970).

The next most abundant group appears to have originated in the Pensacola style area situated along the Gulf coast of Alabama and extreme northwest Florida. The types thus far recognized include Pensacola Incised (1 bottle and 4 bowls), D'Olive Incised (2 shallow bowls), Mound Place Incised (3 bowls), and Mississippi Plain (at least 2 bowls) (Coblentz 1978).

Also present are some vessels apparently from the segment of the Mississippi Valley between southernmost Missouri and the mouth of the Arkansas River. These include three examples of Nodena Red and White (1 bowl, 2 bottles), and one jar classified as Parkin Punctated (Phillips 1970).

Two other vessels originated in the Mississippi Valley south of the Arkansas River or possibly in the drainage of the Big Black River in central Mississippi. One is a Plaquemine Brushed jar, and the other is a Leland Incised bottle (Phillips 1970).

Finally, there are several vessels from the Caddoan area, including three specimens of Holly Fine Engraved (2 bottles, 1 bowl), and one example of Spiro Engraved (a bowl) (Newell and Krieger 1949; Brown 1971).

It is interesting to note that all of the trade wares identified at Moundville come only from regions to the north, west, and south. Not a single vessel has yet been found which may have originated in the South Appalachian or Fort Walton style areas to the east and southeast.

Appendix: Abbreviated Type and Variety Descriptions

Mississippi Plain. This type includes all undecorated vessels tempered with shell. "Decoration" is here used in the narrow sense to refer to incised, engraved, punctated or painted designs. Thus, vessels exhibiting only modelled or applique embellishments are still subsumed within Mississippi Plain.

variety Hale—This variety is defined by the presence of a burnished surface. *Hale* tends to have somewhat smaller temper particles than *var. Warrior*; however, the particle size in itself is not distinctive, because the two varieties overlap quite a bit in this respect. *Hale* most commonly occurs in the form of bottles and bowls. It subsumes the previous type Moundville Black Filmed, along with numerous vessels whose surface color did not fit with the latter type (for illustrated examples, see Moore 1905: Figs. 12, 13, 69, 76, 78, 100, 129, 130, 135, 145, 150, 155; Moore 1907: Fig. 48; McKenzie 1966: Figs. 6, 7, 11c, 13, 14; DeJarnette and Peebles 1970: 97 bottom, 100 top, 114 top).

variety Warrior—This variety includes vessels which have smoothed, but not burnished surfaces. The temper particles tend to be relatively coarse, and the predominant vessel form is the jar. This variety corresponds to the old type *Warrior*

Plain, and also includes vessels that have elsewhere been classified as Alabama River Plain and Alabama River Applique (Shekton 1974) (for illustrated examples, see Moore 1905: Figs. 49, 50, 53, 154; McKenzie 1966: Fig. 4; DeJarnette and Peebles 1970: 99 top, 105, 111 top, 113 top, 114 bottom).

Moundville Incised. The designs which characterize this type consist mainly of incised arches arranged end-to-end around the upper portion of the vessel. The surface on these vessels is smoothed but not burnished, the ware being comparable to Mississippi Plain, *var. Warrior*. The present definition of Moundville Incised corresponds closely to the original definition by DeJarnette and Wimberly (1941:83). The type occurs principally on jar forms.

variety Moundville—In this variety the design is embellished with a series of short incisions radiating upward from, and normal to the arch (see McKenzie 1966: Fig. 2).

variety Carrolton—The design in this variety is made up of one or more parallel arches which occur alone, not embellished with radiating incisions or punctations.

variety Snows Bend—In this variety the design is embellished with punctations above the arch.

Carthage Incised. This type is defined to include shell tempered vessels with a burnished surface that are decorated with broad, "trailed" incisions. Typically, these incisions are from 1.5 to 2 mm wide, and are U-shaped in cross-section, having been executed when the vessel was in a leather hard state of dryness. Carthage Incised subsumes most of the vessels that had previously been described as Moundville Filmed Incised. The most common vessel forms in Carthage Incised are bottles and bowls.

variety Carthage—Vessels of this variety have designs that consist of 3-4 line running scrolls. The most common vessel forms seem to be the subglobular bottle with rounded base, and the short-necked bowl (see Moore 1907: Fig. 72; Nance 1976: Fig. 32e).

variety Akron—This variety includes bowls on which the major design is a horizontal band of 2 or more lines running parallel to and just below the lip. The band of lines is commonly embellished with loops and/or folds. The most frequent vessel form is the hemispherical bowl with rim effigy (see Moore 1905: Fig. 94; McKenzie 1966: Fig. 11a; see DeJarnette and Peebles 1970: 111 bottom).

variety Foster—This variety is decorated with free-standing representational motifs, usually depicting hands and long-bones. This kind of decoration has been observed to occur on the interior of flaring rim bowls, and on the exterior of short-necked bowls (see DeJarnette and Peebles 1970: 113 bottom).

variety Moon Lake—This variety is decorated with zones of parallel oblique lines, which usually occur on the interior of flaring rim bowls or on the exterior shoulder of short-necked bowls (see McKenzie 1966: Fig. 3 upper row).

variety Poole—This variety exhibits a design consisting of step motifs alternating with semicircular elements in a field that encircles the vessel. This design has only been observed on short-necked bowls (see design illustrated in Fundaburk and Foreman 1957:75, upper left).

variety Summerville—This variety is characterized by the presence of incised arches arranged end-to-end around the vessel's circumference. At Moundville, only bowls have been observed in this variety.

Hemphill Engraved. This type is defined to include shell tempered vessels with burnished surfaces which are decorated with either post-fired engraving or fine, dry-paste incision. The lines which make up the designs are always less than 1.5 mm wide, and usually are no more than 1 mm wide. Hemphill Engraved commonly occurs on bowls and bottles, and includes vessels previously classified as Moundville Filmed Engraved and Moundville Engraved Indented.

variety Hemphill—This variety is decorated with free-standing or representational motifs, most of which pertain to the iconography of the Southeastern Ceremonial Complex. These motifs usually (but not always) occur on the subglobular bottle with a simple rounded base, or on the cylindrical or semi-cylindrical bowl with a single lug (see Moore 1905: Figs. 8, 17, 21, 56, 62, 64, 84, 87, 89, 112, 114, 117, 121, 123, 146, 148, 151, 153, 156, 160; Moore 1907: Figs. 7, 9, 10, 34, 37, 39, 41, 42, 43, 45, 46, 51, 57, 60, 63; McKenzie 1966: Figs. 8b, 18, 19; DeJarnette and Peebles 1970: 99 bottom, 100 bottom).

variety Elliotts Creek—The characteristic design on these vessels is a 3 line scroll with areas of excision. It has only been observed at Moundville on ovoid pedestalled bottles (see McKenzie 1966: Fig. 8a).

variety Havana—This variety includes bowls on which the major design consists of a horizontal band of 2 or more lines running parallel to and just below the lip. The bands of lines are usually embellished with loops and/or folds. The most common vessel form is the cylindrical/semi-cylindrical bowl with a single lug (see Moore 1905: Figs. 21, 51, 73, 120; McKenzie 1966: Fig. 5).

variety Maxwells Crossing—The designs included in this variety are predominantly rectilinear, although non-rectilinear motifs sometimes do occur as secondary elements. Three classes of designs are subsumed: 1) windmill motifs, 2) vertical cross-hatched bands, and 3) horizontal bands filled with zones of vertical and oblique parallel lines. These designs usually occur on subglobular bottles with pedestalled or slab bases (see Moore 1905: Figs. 30, 35, 53, 109; Moore 1907: Fig. 12).

variety Taylorsville—These vessels have designs made up of a 3-4 line scroll superimposed on a cross-hatched background. The most common vessel forms are the subglobular bottle with a simple rounded base, and the cylindrical bowl with a single lug (see Moore 1905: Figs. 20, 86, 133; Moore 1907: Figs. 15, 19).

variety Tuscaloosa—The scroll designs which typify this variety are made up of fine dry-paste incisions about 1 mm wide. The defining motifs fall into two categories: 1) vertical scrolls made up of 4-10 closely spaced lines, and 2) running scrolls made up of 15-30 closely spaced lines. The predominant vessel form is the subglobular pedestalled bottle. The two motifs have for now been lumped into a single variety because of their similarity in execution and the lack of any observable separation in time; future work may, however, necessitate placing each motif in a separate variety (see Moore 1905: Figs. 37, 39, 71, 119; Moore 1907: Fig. 47; McKenzie 1966: Fig. 22).

variety Wiggins—This variety is decorated with 2-5 line running scrolls. Occasionally, these scrolls are embellished with fill-in crosshatching or with crosshatched triangular projections. This variety usually is found on subglobular bottles with simple rounded bases, or on cylindrical bowls with single lugs (see Moore 1905: Figs. 124, 162; Moore 1907: Figs. 66, 68, 70; McKenzie 1966: Fig. 9).

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CHANGING WOODLAND CERAMIC FUNCTIONS AND TECHNOLOGIES ON THE NORTHERN GULF COASTAL PLAIN

In 1975, a site testing project was conducted on Middle and Late Woodland sites near Selma, Alabama. The research was part of an on-going program begun with excavations at the site of Durant Bend in 1970 (Nance 1976) and continued through archaeological surveys during the summers of 1971 and 1972 (Jeter 1973). The results of the 1975 field work are contained in reports by Jeter (1978) and Nance (1978) and are partially published in an article by Jeter (1977). The project was funded by U.A.B. and the Alabama Archaeological Research Association, Inc. with matching money from the U.S. Department of Interior in cooperation with the Alabama Historical Commission.

This paper presents the ceramic analysis for five sites tested during 1975, then fits this data into a general hypothesis regarding changing ceramic technologies and functions on the eastern Gulf Coastal Plain.

The ceramic analysis is essentially non-typological in approach, and deals with the attributes of surface decoration, sherd thickness, and sherd paste color. Of the five sites studied, three are from the Middle Woodland and two from the Late Woodland period. The great bulk of the sherds examined are sand-tempered and either plain or check stamped.

Several findings emerged from the study. First, for all sites, check stamped sherd proportions tend to decrease from lower to upper levels and presumably through time. This trend is summarized in Table 1. Secondly, for all sites check stamped sherds tend to have darker paste colors than plain sherds (observations controlled using the Munsell Color Chart; see Nance 1976:57). Table 2 lists by site ratios of dark to light sherds for both plain and check stamped samples. When Late Woodland samples are compared with those from Middle Woodland sites two significant differences emerge. Late Woodland pottery is thicker (Table 3) and lighter in color (Table 2) than Middle Woodland pottery. A final result of the analysis is that for Late Woodland samples, check stamped pottery is thicker than plain ware (Table 3).

Obvious questions are: how can these trends be explained, or in terms of current Southeastern re-

search, are they even significant? The typological approach developed for Southeastern archaeology has been useful in developing regional chronologies. However, since this typology is based almost entirely on temper and the presence or absence of surface decorative techniques, other attributes generally have been ignored (with a few exceptions, such as in Wauchope 1966 and Sears 1963). As chronologies become established, perhaps the potential of other attributes and different kinds of ceramic studies can be explored. For Matson (1965), ceramics can be related functionally to other aspects of culture and to the environment. Southeastern archaeologists seem willing to take this approach in the study of lithic artifacts, letting knives and projectile points, for example, represent an index of hunting activity (Faulkner and McCollough 1973). Inquiries into changing functions of ceramics, however, are largely absent. Sherd thickness relates to the size and weight of a vessel and also to the strength of its walls. Changes in vessel size and weight could be expected with changes in settlement pattern and, specifically, duration of residence. Large vessels are difficult to transport. At the same time, a changing economy can lead to changes in various vessel functions (more or less storage relative to cooking vessels, for instance).

Another dimension of the problem is ceramic technology, and this is another matter largely unexplored in southeastern research. Aside from changes in temper or decorative techniques, how did the manufacture of prehistoric pottery change and develop? As for the study of stone tools, one cannot study changing ceramic functions without also assessing changes in manufacturing technology. Changes in vessel morphology could be due either to a new technology, new vessel functions, or both. In the last instance, functional demands might require technological changes in order to make vessels of a desired form and capability.

Returning to the data at hand, we can begin with consideration of differences in paste color, both between plain and check stamped sherds and also, in general, between the Middle and Late Woodland samples. Mentzer refired 20 sherds, five plain and five