CONTENTS

Archaeological Survey and Testing within a Five Kilometer Radius of the Old Hoover Platform Mound in the Big Black River Valley  
Karl G. Lorenz 1

Geographic Information Systems: A Tool for Evaluating Historic Archaeological Sites  
Frederick L. Bruier, G. Ishmael Williams, and W. Fredrick Limp 43

Review: Winterville: Late Prehistoric Culture Contact in the Lower Mississippi Valley  
James B. Griffin 64

Review: Tunica Archaeology  
David Morgan 73
This paper summarizes the results of survey and test excavations at the Old Hoover Mississippi period platform mound (22-Ho-502) and two farmsteads (22-Ho-650 and 22-Ho-651) located in the upper Big Black River valley of Holmes County, Mississippi. The survey focused on a five kilometer (3 mile) radius around the mound and recorded 32 prehistoric non-mound sites with temporal components ranging from the Paleoindian through Mississippi periods. Test excavations on the platform mound yielded evidence for three structural building levels and at least eight distinct mound loading episodes beginning around the middle 13th century A.D. and ending sometime after the middle 15th century A.D. Additionally, one of the upland farmsteads (22-Ho-650) yielded evidence of a single set post structure dating to the 14th century A.D. Ceramic, lithic, botanical, and faunal data are presented from these investigations, and comparisons are made with other Mississippi period sites in the Southeast.

Introduction

Archaeological and ethnohistorical evidence from southeastern North America points to wide variation in sociopolitical complexity during the late prehistoric through historic periods. Archaeological research on the Mississippi period (A.D. 900-1600) in the Southeast has emphasized investigations of three-tiered settlement hierarchies characterized by multiple mound centers (see Brain 1969; Fowler 1978; Peebles 1978, 1983; Steponaitis 1978, 1983; Williams and Brain 1983). In contrast, very little emphasis has been placed on a simpler two-tiered Mississippi period settlement system characterized by a single mound center with surrounding hamlets and farmsteads (see Peebles [ed.] 1983; Rolleston 1976). Settlement data for such smaller systems, including site distribution, site sizes, and functional differences between sites (as defined by artifact assemblages and feature types), must be collected and examined for a better understanding of factors that contributed to the observed variation in Mississippi period sociopolitical complexity.
Figure 1. The study area.

Table 1. Big Black River survey: prehistoric site data. Simple sequential site numbers are temporary.

(Key: PI=Paleoindian, EA=Early Archaic, MA=Middle Archaic, LA=Late Archaic, EW=Early Woodland, MW=Middle Woodland, LW=Late Woodland, MS=Mississippi)
The research discussed in this paper involves the archaeological investigation of a two-tiered settlement system in the upper Big Black River valley in Holmes and Attala Counties in Mississippi. In contrast to the three-tiered settlement systems of the Yazoo Basin and Black Warrior valley, settlement patterns in the Big Black valley as a whole represent the simpler two-tiered configuration. This pattern is characteristic of the Plaquemine cultural tradition exemplified by the Mississippi period settlement pattern reported by Rolingson (1976) in southeastern Arkansas. Only two platform mounds, located 35 miles apart, are known for the entire Big Black valley, Pocahontas (22-Hi-500) and Old Hoover (22-Ho-502). In the summer of 1989, the University of Illinois archaeological field school conducted a survey within a five kilometer radius of the Old Hoover mound and a test excavation on the mound summit. Last summer’s research expanded on previous fieldwork, which involved subsurface testing of archaeological remains from two Mississippi period farmstead sized (<0.75 hectares) sites (22-Ho-650 and 22-Ho-651) located within the five kilometer radius of the mound (Lorenz 1986). The mound was topographically mapped and a small test unit excavated on the mound to establish stratigraphy and chronology in the upper mound levels (Lorenz 1989). Investigations at both the mound and the farmsteads yielded valuable data concerning settlement organization in the upper Big Black valley.

In this paper, I will first provide a brief background of previous archaeological research in the region. Next, I will give a preliminary accounting of the overall results of the survey, focusing on settlement data from surveyed sites exhibiting a Mississippi period component. In addition, I will describe the results of the test excavation on the Old Hoover platform mound and suggest that these results provide a chronological framework within which activities of nearby Mississippi period sites can be interpreted. I will then present the results of test excavations from the two Mississippi period upland farmsteads. Finally, although my research in the Big Black valley is still in progress, I will offer suggestions concerning possible settlement characteristics of two-tiered settlement systems, based on survey and test excavation data.

Previous Research in the Region

Until recently, the only archaeological work conducted in the Big Black valley focused on the lower reaches of the river valley about forty miles from the present study area. These investigations included non-stratigraphic excavations of burial mounds conducted in the 1920s (Ford 1936) and limited salvage excavation at the Pocahontas platform mound (Rucker 1976). Using these data, Shaffer and Steponaitis (1983) hypothesized that the platform mound center of Pocahontas rose to prominence and reached its peak of political influence between A.D. 1000 and 1200. After this period, they detected a decreased presence of exotic trade goods interred in burial mounds, which may signify a decrease in political centralization. Based on a comparative seriation of decorated ceramics with the radiocarbon dated deposits from Lake George in the Yazoo Basin, Steponaitis (1989) has designated phase names during the Mississippi period for the Pocahontas region: Dupree phase (A.D. 1000-1200), Chapman phase (A.D. 1200-1350) and Smith phase (A.D. 1350-1500).

Early research in the upper reaches of the Big Black was confined to survey by Ford and Chambers in the late 1920s. Old Hoover mound and its adjacent habitation area to the east were indeed surveyed, but because of the predominant presence of coarse grog and grit-grog tempered ceramics collected from the habitation area, Ford assigned both Marksville and Deasonville components to the mound and associated habitation area. No later periods were recognized by Ford for the mound. While there are Middle Woodland and Late Woodland components represented in the habitation area adjacent to the mound, our recent work has determined that the mound is solely attributable to the Mississippi period and the habitation area contains a small Mississippi period component.

Survey

The Big Black River is a tributary of the Mississippi River and flows in a southwesterly direction for approximately 155 miles (260 km) through the North Central Hills and Jackson Prairie physiographic regions. Four physiographic zones are contained within the study area: bottomlands, river terraces, upland stream valleys, and upland interfluves. In the study area, the Big Black River possesses an active floodplain about 2 miles wide, characterized by seasonally inundated bottomlands with mixed oak-hickory-cypress forests (Cross et al. 1974). The river terraces are only about 1/4-3/4 mile wide, and are located about 10-15 feet above the active floodplain. The upland hills are characterized by yellow clay loam soils with steep slopes and high rounded hills forested with mixed hardwoods and pines. The silty
loams of the river terraces and the upland stream valleys provide some of the only areas suitable for cultivation (SCS n.d.).

The design of the archaeological survey in the study area was theoretically motivated to locate the semi-permanent residences of the hypothesized support population for the Old Hoover platform mound, located on the first terrace of the Big Black River. In order to locate habitation sites of a horticulturally adapted people, I chose to focus on a stratified random sample of the four physiographic zones, with extra weighting on the river terraces as the most likely areas of level, well-drained rich silty soils best suited to cultivation. Field transects were walked 10 meters apart within the cultivated fields on the river terraces. Based on the analysis of other Mississippi period settlement patterns in the Southeast (Brown 1985; Rolingson 1976; Williams and Brain 1983), I chose a five kilometer radius around the mound as the hypothesized sustaining area for the mound (see Figure 1).

Survey Results

We have now completed survey of over 1100 acres (445 hectares) of land located primarily on the western terrace and upland stream valleys of the Big Black River. Thus, with 50% survey coverage, we have located 32 prehistoric sites (Figure 1) representing 66 temporal components as determined by temporally diagnostic lithic and ceramic artifacts (see Table 1). The following components were represented: 1 Paleoindian, 4 Early Archaic, 5 Middle Archaic, 18 Late Archaic, 4 Early Woodland, 3 Middle Woodland, 14 Late Woodland and 19 from the Mississippi period. Of the 26 sites assigned temporal components, over 80% of them were multicomponent sites, and 73% of all sites possessed a Mississippi period component.

Site sizes were determined by limits of artifact scatters and ranged from .08 to 7.5 hectares, with a mean of 1.45 hectares. There does not appear to be any apparent relationship between site size and the number of temporal components, but it is interesting to note that 85% of the sites were less than 2 hectares in size, with 1-5 temporal components. The large percentage of small, multi-component sites suggests that throughout prehistory in the Big Black valley, group sizes were never very large, yet particular site locations were preferred for reoccupation over at least the last eight to ten thousand years. Approximately 1260 ceramic sherds were collected, with the majority representing coarse grog and grit-grog tempered plainwares characteristic of the Late Woodland Baytown period. About 17% of these sherds were coarse shell and shell-grog tempered plainwares diagnostic of the Mississippi period. Decorated sherds were quite rare in our surface collections, with only a few sherds being assigned known types from Phillips' (1970) Lower Mississippi Valley classification: Larto Red (5), Coles Creek Incised (3), Parkin Punctated (1), Avoyelles Punctated (2), and Leland Incised (2).

In order to define the nature of a two-tiered Mississippi period settlement pattern, settlement data were analyzed for the 19 sites with

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Size (hectares)</th>
<th>% Shell Tempered</th>
<th>Distance to Mound (meters)</th>
<th>Dist. to Nearest Miss. Site (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.38</td>
<td>1.3</td>
<td>4825</td>
<td>625</td>
</tr>
<tr>
<td>5</td>
<td>6.39</td>
<td>3.8</td>
<td>3725</td>
<td>1000</td>
</tr>
<tr>
<td>6</td>
<td>.70</td>
<td>72.2</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>8</td>
<td>.70</td>
<td>8.4</td>
<td>450</td>
<td>150</td>
</tr>
<tr>
<td>22-Ho-502</td>
<td>1.20</td>
<td>13.9</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>10</td>
<td>.69</td>
<td>20.0</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>13</td>
<td>.91</td>
<td>50.0</td>
<td>2475</td>
<td>175</td>
</tr>
<tr>
<td>14</td>
<td>.77</td>
<td>100.0</td>
<td>2475</td>
<td>175</td>
</tr>
<tr>
<td>15</td>
<td>1.63</td>
<td>100.0</td>
<td>750</td>
<td>200</td>
</tr>
<tr>
<td>16</td>
<td>1.63</td>
<td>64.4</td>
<td>1350</td>
<td>200</td>
</tr>
<tr>
<td>17</td>
<td>.34</td>
<td>100.0</td>
<td>900</td>
<td>375</td>
</tr>
<tr>
<td>18</td>
<td>1.29</td>
<td>2.1</td>
<td>4100</td>
<td>625</td>
</tr>
<tr>
<td>21</td>
<td>.48</td>
<td>100.0</td>
<td>5000</td>
<td>1000</td>
</tr>
<tr>
<td>23</td>
<td>.83</td>
<td>25.0</td>
<td>1550</td>
<td>350</td>
</tr>
<tr>
<td>24</td>
<td>.91</td>
<td>16.5</td>
<td>1000</td>
<td>350</td>
</tr>
<tr>
<td>27</td>
<td>.33</td>
<td>5.2</td>
<td>1600</td>
<td>200</td>
</tr>
<tr>
<td>30</td>
<td>.08</td>
<td>100.0</td>
<td>2125</td>
<td>400</td>
</tr>
<tr>
<td>22-Ho-650</td>
<td>.21</td>
<td>54.8</td>
<td>4330</td>
<td>350</td>
</tr>
<tr>
<td>22-Ho-651</td>
<td>.75</td>
<td>62.0</td>
<td>4445</td>
<td>350</td>
</tr>
</tbody>
</table>

Table 2. Sites exhibiting Mississippi Period diagnostics. Simple sequential site numbers are temporary.
shell tempered pottery (see Table 2). Due to the difficulty in distinguishing surface collected Mississippi period grog tempered plainwares (i.e. Addis Plain, var. Addis) from the finer varieties of Baytown Plain from the earlier Coles Creek period, I chose to use the presence of shell tempering as a distinguishing criterion for assigning a Mississippi period component. In some cases, the low percentage of shell tempered pottery suggests that some sites were less intensively occupied than others during the Mississippi period. When comparing a sample limited to sites with greater than or equal to 15 shell tempered
sherds (6 out of 19 total sites), the mean site size of 0.9 hectares was noticeably smaller than the mean from the entire sample of surveyed sites (N=32). Of the Mississippi period sites located in the study area, the mean distance from Old Hoover mound was 2319 ± 1663 meters, while the mean distance between the small non-mound Mississippi period sites in the study area was 296 ± 153 meters. These settlement pattern data suggest that non-mound Mississippi period sites from the Big Black valley were on average smaller than sites from earlier periods. They were widely dispersed, with no apparent clustering around the mound, and yet appeared to be spaced fairly close to one another.

**Test Excavations on Old Hoover Mound**

In order to examine the role of the Old Hoover platform mound in the larger Mississippi period community inhabiting the dispersed farmstead and hamlet sized sites, test excavation on the mound was necessary to determine mound construction and occupation sequences. In this way, a chronological framework could be established to relate particular mound occupation episodes to activities occurring in the habitation area next to the mound, as well as at the small non-mound farmstead sites.

In order to gain stratigraphic information on both mound and possible structure construction sequences, I decided to locate a test

![Figure 4. Old Hoover Mound: features in Building Level 1.](image)

**Table 3. Old Hoover Mound Test Trench 2 excavation results.**

Excavation results yielded stratigraphic information that indicated at least five episodes of mound construction, with loadings ranging between 10-40 centimeters thick (Figure 3). Based on corrected radiocarbon dates the initial mound loading sequence occurred between A.D. 1264 and A.D. 1385, while the final sequence occurred some time after that, about A.D. 1447. Mound loading usually consisted of basket loads of yellow, brown, and gray silty loam. The first four loadings appear to have been capped by a hard mantle consisting of a light gray clay mixed with weathered sandstone nodules.
<table>
<thead>
<tr>
<th></th>
<th>Building Level 3</th>
<th>Building Level 2</th>
<th>Building Level 1</th>
<th>RS-1Feat. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume sampled and analyzed (liters)</td>
<td>13</td>
<td>11</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Nut Total (count and weight)</td>
<td>147(3.2g)</td>
<td>91(0.8g)</td>
<td>73(0.4g)</td>
<td>192(2.7g)</td>
</tr>
<tr>
<td>True Hickory, <em>Carya sp.</em></td>
<td>100(68%)</td>
<td>63(69%)</td>
<td>44(60%)</td>
<td>122(64%)</td>
</tr>
<tr>
<td>Pecan Hickory, <em>C. illinoensis</em></td>
<td>34(23%)</td>
<td>14(18%)</td>
<td>21(29%)</td>
<td>41(21%)</td>
</tr>
<tr>
<td>Black walnut, <em>Juglans nigra</em></td>
<td>12(8%)</td>
<td>1(1%)</td>
<td>5(7%)</td>
<td>6(3%)</td>
</tr>
<tr>
<td>Hazelnut, <em>Corylus americana</em></td>
<td>1(1%)</td>
<td>0</td>
<td>0</td>
<td>3(2%)</td>
</tr>
<tr>
<td>Acorn, <em>Quercus sp.</em></td>
<td>0</td>
<td>2(2%)</td>
<td>0</td>
<td>6(3%)</td>
</tr>
<tr>
<td>Unidentifiable</td>
<td>0</td>
<td>11(12%)</td>
<td>3(4%)</td>
<td>14(7%)</td>
</tr>
<tr>
<td>Wood Total (count and weight)</td>
<td>296(2.2g)</td>
<td>219(1.3g)</td>
<td>872(9.0g)</td>
<td>316(2.9g)</td>
</tr>
<tr>
<td>(Total examined)</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Maple, <em>Acer Sp.</em></td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Birch, <em>Betula sp.</em></td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>True Hickory, <em>Carya sp.</em></td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Pecan hickory, <em>C. illinoensis</em></td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Ash, <em>Fraxinus sp.</em></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Walnut, <em>Juglans nigra</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Oak, <em>Quercus sp.</em></td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Willow, <em>Salix sp.</em></td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Elm/Hackberry, <em>Ulmaceae</em></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Diffuse-porous</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Ring-porous</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Unidentifiable</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4. Botanical remains from the Old Hoover Mound and Rebecca Springs (RS-1) Farmstead.

Within the area of our trench we identified three separate occupation levels which were vertically separated by mound fill. A total of 1099 ceramic sherds was recovered from the test trench. From this total, 288 sherds could be assigned to the three occupational levels. The earliest level (Building Level 1) was located at the pre-mound surface and was characterized by two shallow wall trenches and three postmolds (Figure 4). One interior lithic flake and some burned daub fragments were the only artifacts recovered from all five features. The postmolds contained datable quantities of charcoal yielding an uncorrected date of $950 \pm 60$ B.P., and a corrected date of A.D. 1001 (1033, 1147) 1159* for this building level. Ceramics from the dark brown organic layer comprising the pre-mound surface consisted of Mississippi Plain, var. Big Black (8), Addis Plain, var. Greenville (7), Baytown Plain, var. Sharfitt (1), and Baytown Plain, var. unspecified (3) (see Table 3). Only one rim was diagnostic of vessel shape: one Mississippi Plain, var. Big Black simple bowl (16 cm orifice diameter) (see Appendix for description of Big Black ceramic types). Analysis of flotation samples from the organic layer has detected remains of seeds of knotweed (*Polygonum*), little barley (*Hordeum pusillum*), maypop (*Passiflora*), sunflower (*Helianthus*), maize kernels (*Zea mays*), and wood and nut shell of true hickory (*Carya sp.*) and pecan hickory (*Carya illinoensis*) (see Table 4). Faunal remains included one small

*This value was derived from a random sample of 20 pieces of wood charcoal.

Table 4. Botanical remains from the Old Hoover Mound and Rebecca Springs (RS-1) Farmstead (cont.).

<table>
<thead>
<tr>
<th>Seeds (Total)</th>
<th>Building Level 3</th>
<th>Building Level 2</th>
<th>Building Level 1</th>
<th>RS-1Feat. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean, <em>Fabaceae</em></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bedstraw, <em>Galium sp.</em></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Knotweed, <em>Polygonum sp.</em></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Little barley, <em>Hordeum pusillum</em></td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Maygrass, <em>Phalaris caroliniana</em></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Maypop, <em>Passiflora incarnata</em></td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Spurge, <em>Euphorbia sp.</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sunflower, <em>Helianthus annuus</em></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Unidentifiable</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Maize</td>
<td>33</td>
<td>18</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>No. of kernel frags.</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>No. of cob frags.</td>
<td>24</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Giant Cane, <em>Arundinaria gigantea</em></td>
<td>0</td>
<td>8*</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*This notation for reporting corrected radiocarbon dates is to be read as: earliest date (dates within range for which radiocarbon levels match sample reading) latest date.
fish bone and unidentifiable fragments recovered from flotation (see Table 5).

<table>
<thead>
<tr>
<th>Animal Taxa</th>
<th>Building Level 3</th>
<th>Building Level 2</th>
<th>Mound Loads II-IV</th>
<th>Building Level 1</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer, <em>Odocoicus virginianus</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cranial elements</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>long bones</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>foot bones</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Raccoon, <em>Procyon lotor</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mandible</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Turtle (indeterminate sp.)</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Fish (indeterminate sp.)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Unidentifiable (&gt;2mm)</td>
<td>89</td>
<td>115</td>
<td>31</td>
<td>64</td>
<td>299</td>
</tr>
<tr>
<td>Totals</td>
<td>92</td>
<td>118</td>
<td>31</td>
<td>65</td>
<td>315</td>
</tr>
</tbody>
</table>

Table 5. Faunal remains from the Old Hoover Mound.

The second occupation level was located on top of the fourth mound, and the building level consisted of a reddish-brown silty clay floor, four large postmolds (25-30 cm diameter and 60 cm deep, Features 17, 18, 19, 28), five smaller postmolds (15-20 cm diameter and 10-30 cm deep, Features 9, 10, 14, 15, 16), and a large hearth (estimated diameter 80 cm and 35 cm deep, Feature 6). The four large postmolds were aligned in a curvilinear pattern spaced 10-15 centimeters apart, forming a portion of one wall of the structure (Figure 5).

The fill from the postmolds contained 15 flakes and 11 coarse shell tempered sherds (Mississippi Plain, var. Big Black), while the hearth fill contained about 10 small flakes and 20 sherds of a coarse fossil shell tempered ware (Mississippi Plain, var. unspecified), thus representing about 95% of the sample for this ware for the entire building level. As Table 3 indicates, Mississippi Plain, var. Big Black dominated, followed by Mississippi Plain, var. unspecified and then Addis Plain, var. Greenville. Six rims were recovered and five were diagnostic of vessel shapes, including 3 simple bowls (diameters 30 cm, 30 cm, 34 cm) of var. Big Black, 1 jar (diameter 18 cm) of Mississippi Plain, var. unspecified and 1 simple bowl (diameter 20 cm) of Baytown Plain, var. Sharfie.

In addition to ceramics, the reddish-brown silty clay hearth fill contained three small fish vertebrae and several (>100) burned bone and mussel shell fragments, but the fragments were too small to make any species identifications (see Table 5). In preliminary analysis of flotation samples from the hearth, I have identified remains of maize cupules and kernel fragments, as well as nutshell from true and pecan hickories, black walnuts, and acorns (see Table 4). The identified wood taxa indicate a diverse assemblage, which includes maple, birch, hickory, ash, oak, and willow. It is interesting to note that giant cane (Arundinaria gigantea) comprised about 40% of the total wood charcoal sample. The structure on Building Level 2 does not appear to have burned, thus no datable charcoal concentrations could be sampled for radiocarbon dating.

The final building level visible in our excavation trench was located on top of a 20 centimeter thick layer of cultural fill which covered the floor of Building Level 2. Building Level 3 was characterized by a burned structure with evidence of at
least 11 structural timbers, with associated split cane and grass thatch making up the collapsed burned roof (Figure 6). One of the timbers was radiocarbon dated with a resulting corrected dating range between A.D. 1141 (A.D. 1432) and A.D. 1447. Nine of the timbers have been identified as red oak (Quercus rubra) and the other two smaller timbers are pecan hickory (Carya illinoensis). The split cane was positively identified as giant cane (Arundinaria gigantea) and the grass thatch was identified as big bluestem (Andropogon gerardii).

Building Level 3 contained six associated features, including four small postmolds (15-20 cm diameter and 10-40 cm deep, Features 5, 7, 8, 31), one large post pit (55 cm diameter and 115 cm deep, Feature 13), and a circular hearth (diameter estimated at 80 cm with depth undetermined, Feature 4). The hearth fill contained 7 shell tempered sherds in addition to a raccoon mandible. In contrast, fill from the large post pit contained over 36 shell tempered sherds (21 Mississippi Plain, var. Big Black, 10 Addis Plain, var. Greenville, 3 Mississippi Plain, var. unspecified, 1 Addis Plain, var. Addis, and 1 Baytown Plain, var. Sharfit). Also, the fill of the post pit included a phalanx and antler tip from white-tailed deer (Odocoleus virginianus).

In general, Table 3 indicates that in Building Level 3, Mississippi Plain, var. Big Black dominated, followed by Addis Plain, var. Greenville, then Addis Plain, var. Addis. Twelve rims were recovered and seven were diagnostic of vessel shape, including 4 simple bowls (diameters 20 cm, 30 cm, 30 cm, 32 cm) and 1 beaker (diameter 26 cm) of Mississippi Plain, var. Big Black, 1 simple bowl (diameter 50 cm) of Addis Plain, var. Greenville, and 1 simple bowl (diameter 22 cm) of Addis Plain, var. Addis. Analysis from flotation samples has detected evidence of maize kernels and cupule fragments; seeds of little barley (Hordeum pusillum) and maygrass (Phalaris caroliniana); nut shell from hickory, pecans, and black walnuts; and wood charcoal from true and pecan hickories, oak, ash, and elm (see Table 4). The maize kernels and cob fragments appear to be of the 12-rowed variety. Even though the structure indicated by the features in Building Level 3 did indeed burn, no visible wall outline was detected. Above the collapsed roof debris of burned daub and charcoal, an Addis Plain, var. Addis animal

![CM diagram](image)

Figure 6. Old Hoover Mound: features in Building Level 3.

![Animal effigy pipe fragment](image)

Figure 7. Two views of an animal effigy pipe fragment (Addis Plain, var. Addis).
head effigy pipe fragment was recovered within a layer of ashy fill (Figure 7).

Table 6. Vessel shapes and sizes (estimated from rim orifice diameters) from Old Hoover Mound excavations.

<table>
<thead>
<tr>
<th>Ceramic Type</th>
<th>simple bowls</th>
<th>standard jars</th>
<th>beakers</th>
<th>bottles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi Plain, var. Big Black</td>
<td>11(16-52cm)</td>
<td>6(12-22cm)</td>
<td>1(26cm)</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Mississippi Plain, var. unspecified (fossil shell)</td>
<td>0</td>
<td>1(18cm)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Addis Plain, var. Addis</td>
<td>1(22cm)</td>
<td>0</td>
<td>0</td>
<td>1(8cm)</td>
<td>2</td>
</tr>
<tr>
<td>Addis Plain, var. Greenville</td>
<td>5(&gt;16-50cm)</td>
<td>1(24cm)</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Bell Plain, var. unspecified</td>
<td>1(28cm)</td>
<td>1(18cm)</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Baytown Plain, var. Sharfti</td>
<td>2(16-20cm)</td>
<td>0</td>
<td>1(32cm)</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Baytown Plain, var. unspecified (sandy)</td>
<td>1(40cm)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>21(16-52cm)</td>
<td>9(12-24cm)</td>
<td>2(26-32cm)</td>
<td>1(8cm)</td>
<td>33</td>
</tr>
</tbody>
</table>

The fifth mound loading sequence was characterized by a yellowish-brown silty loam and appeared to truncate the ashy fill, but no associated occupation level was present in the trench. Perhaps a structure was built on top of this loading outside the limits of the trench. This would mean that the last mound construction sequence took place sometime after about A.D. 1447, the upper dating limit for the burned structure on Building Level 3.

Overall, diagnostic artifacts such as ceramic rim sherds, decorated ceramics, and projectile points were quite scarce in all of the excavation levels of the test trench. Of the 1009 total sherds, only about 32 rims were diagnostic of vessel size and shape (Figure 8). The mound assemblage was dominated by serving vessels (61% simple bowls and 4% bottles) over cooking/storage vessels (32% jars) (see Table 6). The simple bowls were characterized by restricted size ranges, tending toward the larger end of the scale (N=17, X=29.88 cm ± 9.64) (Figure 9). In addition, only 15 Mississippi period, 3 Late Woodland period, and 3 Middle Woodland decorated sherds were recovered from the mound excavations, including mound loading and building levels. Of the decorated types from the Mississippi period, 6 of which were from
Building Level 3, 3 were Parkin Punctated, var. unspecified, 5 were Owens Punctated, var. unspecified, 4 were Chicot Red, var. unspecified, and 1 was Barton Incised, var. unspecified, and 1 was an unspecified sherd tempered incised sherd (Figure 10). The Late Woodland ceramics included 1 sherd of Mulberry Creek Cordmarked, var. Edwards and sherd of var. Smith Creek. All three of the Middle Woodland decorated ceramics were Marksville Incised, var. unspecified. Diagnostic lithics were small stemless Mississippi triangular projectile points (Figure 11).

Figure 9. Sizes of simple bowls from Old Hoover mound.

Controlled Surface Collections and Test Excavations at Two Farmsteads (22-Ho-650 and 22-Ho-651)

Test excavations at the farmstead and hamlet sites within the five kilometer study area are important in order to determine relative contemporaneity with the mound and the kinds of daily activities that occurred at these non-mound sites. Two Mississippi period farmsteads (22-Ho-650 or Rebecca Springs 1 [RS-1] and 22-Ho-651 or Rebecca Springs 2 [RS-2]) were topographically mapped, surface collected, and tested for subsurface cultural remains. These two sites are located about 3.75 kilometers west of the active channel of the Big Black River and about 4.0 kilometers from the Old Hoover platform mound. One test unit measuring 4 meters by 1 meter was excavated on each farmstead. A Mississippi period house structure was found in the test pit at RS-1, while the test pit at RS-2 did not yield conclusive results.

Figure 10. Mississippi period shell tempered decorated ceramics recovered from mound excavations. Includes Parkin Punctated, var. unspecified, Owens Punctated, var. unspecified, Barton Incised, var. unspecified, Pouncey Pinched, var. Patosi, and Chicot Red, var. unspecified.

Site Description

The physiographic situation of RS-1 is an upland pastured slope surrounded on three sides by steep slopes of oak-hickory-pine forest grading down to the floodplain of a small unnamed intermittent creek. Site dimensions (70 meters N-S by 30 meters E-W) are defined by the
area of the slope in pasture. Visible in the cutbank of the creek to the east of RS-1 there is a four meter thick layer of grey kaolinite clay which may have been utilized by the site occupants as a resource for ceramic manufacture.

Site RS-2 lies about 300 meters to the west of RS-1 and is situated on a grassy knoll. The site’s dimensions (150 meters N-S by 50 meters E-W) are defined by the artifact scatter, which conforms to the highest elevation contours that delineate the topmost level surface of the knoll.

![Figure 11. Projectile points, knives, and a drill and fish hook fragment recovered from mound excavations.](image)

**Controlled Surface Collections**

The farmstead site RS-1 was gridded into 40 collection squares measuring eight meters on each side. Tabulated counts of lithics and ceramics in each collection square provided the raw data to construct artifact density distribution maps of the site surface (Figures 12 and 13). Based on projectile point typologies, the Late Archaic dominates (61% or 11 out of 18) the diagnostic lithic assemblage, while the ceramic assemblage is dominated (55% or 17 out of 31) by Mississippi period shell tempered plainwares (Mississippi Plain, var. Big Black), with lesser amounts of Late Woodland period Baytown greg (30% or 9 out of 31) and grit-greg (16% or 5 out of 31) tempered plainwares. The small sherd size (2-3 cm) and lack of rims precluded any estimates of vessel sizes or shapes.

The farmstead RS-2 is about twice as large in areal extent of artifact scatter as RS-1 and was gridded into 106 collection squares measuring eight meters on each side. Results from artifact density contour mapping showed a much less dense artifact distribution compared to RS-1. A high density distribution of lithics and ceramics occurred down-slope in the extreme southeastern limits of the site (Figures 14 and 15). This clustering may be due to either the presence of a midden area or the result of erosional forces washing artifacts from up-slope and depositing them at the southern edge of the knoll.

The temporal markers for this site are based on diagnostic projectile points and temper types of the ceramic assemblage. Small triangular Mississippi period projectile point types dominate (75% or 3 out of the 4 points found), while ceramic counts point to a strong preference for the shell tempered Mississippi period plain wares (62% or 44 out of 71, distributed over 82% of the ceramic bearing collection squares, with Mississippi Plain, var. Big Black being predominant). In addition, a Late Woodland occupation is indicated by the presence of greg tempered plainware sherds (34% or 24 out of 71, distributed over 48% of the ceramic bearing collection squares). Based on surface indications, the northwest quadrant of the site gave evidence of a Late Archaic occupation, while the southeastern quadrant represented both a Mississippi period and a less intensive Late Woodland occupation.

**Test Excavations**

The excavation unit at RS-1 was located in an area with high lithic surface concentrations. Soil coring was conducted within this concentrated area and yielded a core of dark brown, charcoal flecked loamy fill located at the base of the plowzone (about 12 centimeters below the ground surface). Four levels were fully excavated down to 40 cm below ground surface. Artifacts were most plentiful in the plowzone (level 1) while the transitional zone (level 2) below it yielded sharply reduced artifact densities (see Tables 7 and 8).

Four charcoal stained features were located at the base of the plowzone in level 2. Feature 1 appeared oval in shape, with excavated dimensions of 47 cm long x 31 cm wide x 43 cm deep. The bottom and sides of the feature were lined by 2-3 cm of grey clay, in contrast to the
Figure 12. Lithic density at Rebecca Springs #1.

Figure 13. Ceramic density at Rebecca Springs #1.
yellowish brown clay matrix into which the feature was dug. All feature fill was collected for flotation recovery of floral and faunal remains and datable quantities of charcoal. Archaeobotanical remains analyzed from this pit indicated the presence of nutshell from true and pecan hickories, black walnuts, hazelnuts, and acorns, and wood charcoal from true and pecan hickory, walnut, ash, and elm, as well as maygrass seeds (Phalaris caroliniana) (see Table 4). Only small bone fragments were recovered, thus precluding identification of species or skeletal elements. A charcoal sample from Feature 1 yielded an uncorrected date of 590 ± 70 B.P. (corrected dates A.D. 1284 [1328, 1350, 1391] 1415). Artifacts from this feature included large (5-10 cm) Mississippi Plain, var. Big Black sherds, flakes, and daub nodules (see Tables 7 and 8). Two small body sherds exhibited narrow incised decoration, but sherd size was too small to assign a ceramic type or variety. Three small rims were recovered from the pit feature and one rim was found in one of the posthole features (Feature 2). The rim from the posthole was diagnostic of a small simple bowl (12 cm diameter) of Mississippi Plain, var. Big Black, but the other three rims from the pit were not large enough (1% of vessel rim) to determine vessel shapes. The combination of feature contents, dimensions, proximity to other posthole features (Features 2, 3, and 4), and radiocarbon dating suggests that Feature 1 may have originally functioned as an interior storage pit, but later served as a refuse pit. A radiocarbon sample taken from one of the postholes (Feature 3) yielded an uncorrected date of 650 ± 70 B.P. (corrected A.D. 1278 [1296, 1375] 1393). Given the overlap in standard deviations between radiocarbon dates, and the spatial relationships between the features, I would argue that the associated features were contemporaneous with a Mississippi period house structure dating between A.D. 1278 and A.D. 1415.
Table 7. RS-1 Farmstead excavation results: Ceramics.

<table>
<thead>
<tr>
<th>Ceramic Type</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi Plain, var. Big Black</td>
<td>6</td>
<td>15</td>
<td>29</td>
<td>2</td>
<td>52</td>
</tr>
<tr>
<td>Addis Plain, var. Addis</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Addis Plain, var. Greenville</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Baytown Plain, var. unspecified</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>8</strong></td>
<td><strong>17</strong></td>
<td><strong>36</strong></td>
<td><strong>3</strong></td>
<td><strong>64</strong></td>
</tr>
</tbody>
</table>

In order to trace the structure outline, a portion of plowzone was removed just north of the test unit. This resulted in the identification of a series of posthole stains that were linearly arranged (Figure 16). This alignment defined most of the eastern wall of the structure, which measured about 5.8 meters (19 feet) long. Three linearly arranged posthole stains were defined at a right angle to the southern end of the east wall, while one circular stain was defined perpendicular to the northern end of the east wall. The average distance between posthole features was approximately 55 centimeters, and posthole stain diameters ranged from 9 to 25 centimeters. A large amorphous dark brown stain flecked with charcoal (about 77 cm x 30 cm) was found within the structure outline and may indicate an interior hearth, but plowzone disturbance did not allow for feature definition.

Additional efforts to follow the extent of the northern and southern walls of the structure produced negative results. It is likely that the top portions of posthole and pit features have been destroyed by the plow, resulting in approximate dimensions for length, width and depth. The scarcity of artifacts in excavation levels below the plowzone attests to probable plow destruction of midden and/or house basin fill. The absence of midden precludes any estimates for duration of occupation. The presence of a clay-lined storage pit as well as the single set post house structure supports a hypothesis for at least semi-permanent occupation.

Testing results from RS-2 proved inconclusive. Six levels were excavated down to 60 cm below the surface, yet no artifacts were encountered below the plowzone. A small charcoal flecked dark brown stain was located within the test unit, but the stain appears to have originated from a rodent disturbed feature located beyond the limits of the test unit.

Table 8. RS-1 Farmstead excavation results: Lithics.

<table>
<thead>
<tr>
<th>Lithic Type</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Feature 1</th>
<th>Feature 2</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Flakes</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Secondary Flakes</td>
<td>24</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td>Tertiary Flakes</td>
<td>43</td>
<td>7</td>
<td>11</td>
<td>2</td>
<td>63</td>
</tr>
<tr>
<td>Debitage Totals</td>
<td>72</td>
<td>12</td>
<td>19</td>
<td>3</td>
<td>106</td>
</tr>
<tr>
<td>Biface Fragments</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Uniface Fragments</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cores</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Hematite/Sandstone</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Daub Nodules</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

**Discussion**

Based on survey and excavation results from the five kilometer study area, some settlement characteristics of the two-tiered Mississippi period community system in the upper Big Black can be described. In turn, these characteristics can be compared with other Mississippi period sites in Mississippi, Alabama, and Tennessee to determine if a common archaeological pattern is present.

**Settlement Characteristics**

Analysis of field survey data indicates that at least 19 non-mound sites with a Mississippi period component were located within a five kilometer radius of the mound, thus composing the potential support population. These sites were on average smaller than sites from earlier periods (<1 hectare). Sites were widely dispersed, with no apparent clustering around the mound, yet they appeared to be fairly closely spaced (<300 meters) relative to each other. One of these sites is located just to the east of the mound and probably represents the residences of individuals participating in mound related activities.

The mound appears to have been in use from the late 13th through 15th centuries A.D. Very little evidence was recovered in the mound excavations for subsistence activities such as hunting and farming, lithic tool manufacture, or activities related to craft production or exchange of non-local prestige goods. Maize, however, was recovered in small quantities from each building level. Based on the size of the kernels and cob fragments, maize remains were determined to be of
the 12-rowed variety similar to that found at the Deasonville site and elsewhere in Mississippi (Collins 1932:21; Cutler and Blake 1970:1-6). In view of the lack of domestic refuse or human burials and the lack of evidence for additional pit features besides the large hearths, the structures on the mound may have served a specialized ritual function much like the temples recorded in ethnohistorical accounts from southeastern tribes. In his description of the Natchez temple, Le Page du Pratz comments on the fact that the large central hearth, used to keep the perpetual fire burning, was one of the only features in a relatively simple floor plan (Swanton 1911). Data from diagnostic rims in the ceramic assemblage at the mound support the hypothesis that the structures on the mound served a specialized function. If vessel size and shape can be used as a measure of vessel function (Hally 1986; Shapiro 1984), then the large percentage of serving vessels with restricted large size ranges suggests that large group feasting (Blitz 1989) may have taken place at the mound. In addition, it is interesting to note how the Mississippian shell tempered ceramic varieties of Mississippi Plain, var. Big Black and Bell Plain, var. unspecified outnumber the Plaquemine ceramic varieties of Addis Plain, vars. Addis and Greenville in Building Level 2. In contrast, by the time period of Building Level 3, Mississippi Plain, var. Big Black is still dominant, but the Addis varieties increase in number over Mississippi Plain, var. unspecified, suggesting a renewed Plaquemine influence.

Despite the fact that ceramics recovered from this mound sequence are predominantly plainwares, a definite pattern is present. Building Level 2 most likely dates to the Chapman phase (A.D. 1200-1350), when Shaffer and Steponaitis see a reduction in exotic burial goods. The Mississippian presence in Building Level 2 corresponds to the emergence of the Lake George site as a paramount multiple mound center, which might also explain why long distance trading activities were curtailed during this phase. Steponaitis suggests that the Big Black region may have been brought under the control of the Lake George polity and thus subjected to paying tribute to the paramount center during this period. Exchange networks in the Big Black may have shifted their focus from extra-regional foreign contacts to more local regional contact with the Yazoo Basin, only 50 miles to the west. In the following Smith phase (A.D. 1350-1500), Shaffer and Steponaitis noted a slight increase in exotic burial goods in the Pocahontas region, which I suggest might be related to a decreased Mississippian presence and a renewed Plaquemine influence (with a

Figure 16. Rebecca Springs #1, Structure #1, postmold pattern.
concomitant renewal of foreign exchange networks) associated with Building Level 3 at Old Hoover. Unfortunately, no evidence of exotic goods was recovered from the Old Hoover mound excavations, but the ceramic assemblage suggests a similar pattern of increased Plaquemine influence.

Test excavations from one of the non-mound sites (RS-1) yielded an artifact and feature data indicative of a farmstead occupied on a semi-annual basis by a small group of people practicing a simple, subsistence economy. The structure size and the undecorated, utilitarian Mississippi Plain, var. Big Black, were suggest a domestic habit rather than a ceremonial function for the farmstead site. Dates from this site overlap with the occupation sequence on the mound, making it likely that the occupants of the farmstead would have interacted with the mound residents associated with the structure built on Building Level 2. Other than the shared use of Mississippi Plain, var. Big Black, the farmstead produced no evidence of economic interaction with the mound.

In comparing the botanical assemblages between the farmstead and the mound, some similarities and differences in subsistence patterns are indicated. Although maize was not present at the upland farmstead, maygrass seeds appear to have been exploited in the uplands. Maya was, however, found in each building level on the mound. Both hickory nuts and pecans were preferred by mound and farmstead residents and consumed in similar proportions (Carya spp. 65% and Carya illinoensis 20%) between the two sites. The preferred wood of the mound residents appears to have been oak, which may have been used for large building construction on the mound, as was evident from the burnt timbers on Building Level 3. The large percentage of giant cane in the hearth on Building Level 2 suggests its possible use as fuel. In contrast, the farmstead residents possibly preferred the wood of the ash tree for use as fuel.

Mississippian Period Site Comparisons across the Southeast

In order to place the upper Big Black valley into a broader southeastern context, I have compared archaeological features from both the tested platform mound and the upland farmstead with similar features found in Mississippi period sites from Mississippi, Alabama and Tennessee. The first comparison concerns the resemblance of the large log single set post structure discovered in Building Level 2 and the structures excavated in the Norris Basin (Webb 1938) and Hiwassee Island (Lewis and Kneberg 1946) of eastern Tennessee, at Chucalissa in southwestern Tennessee (Nash 1968), at the Lubbbuck Creek archaeological locality in western Alabama (Peebles et al. 1973), and at the Deasonville Site in western Mississippi (Collins 1932). In each comparative case, the structures were characterized by a large square building with rounded corners and large posts set deep and close together, with a single large hearth located in the center of the structure. Very few other features were located within these buildings except for randomly distributed incidental small postmolds. Also, neither daub nor charcoal were ever associated with these building types, suggesting that they were never destroyed by burning, but possibly dismantled one post at a time, as Webb suggests. It would appear that the curvilinear wall of the structure associated with Building Level 2 at Old Hoover Mound may in fact be indicative of the rounded corners of these large square log structure types.

Structure #1 on the Summerville mound at Lubbbuck Creek was dated by ceramic seriation to the late Summerville I period, which would place it around A.D. 1200. In addition, a radiocarbon date from Chucalissa of A.D. 1440 ± 200 years and a Hiwassee Island Dallas phase context places this structural type within the probable time range of Building Level 2 at Old Hoover. These comparisons help to demonstrate that similar patterns of building construction were present across a wide area of the Southeast.

In addition, the Old Hoover ceramic assemblage has affinities with ceramics from the Deasonville/Lake George sites in the Yazoo Basin and the Chickasaw Old Fields sites in northeastern Mississippi. The predominant Mississippi Plain, var. Big Black ceramic paste most resembles that from the Deasonville site, which is described as soft and porous with a probable vegetable additive to the shell temper (Collins 1932:16). Most of the decorative techniques resemble sherds from both the Deasonville site and the Lake George site, with pitting being the preferred technique. The fossil shell temper of the Mississippi Plain, var. unspecified from Building Level 2 appears to match Jennings' description of a historic Chickasaw ceramic type, Okibbehla Plain (1941:177). The Old Hoover fossil shell ceramics, however, are located in an undisturbed stratified deposit predating Building Level 3 (A.D. 1432), and thus may represent an earlier isolated occurrence of the use of this temper prior to its use by the historic Chickasaws.

If, however, fossil shell tempering was indeed a diagnostic cultural trait of a particular group of people, then its presence at Old Hoover
may also suggest some sort of contact or influence from a proto-Chickasaw people. Indeed, Jennings notes that the Chickasaws were known to have been confined to the North Central Hills (Jennings 1941:210). In fact, on an early map of the Southeast (Anonymous 1715), Chickasaw territory extends across the North Central Hills of Mississippi into the upper Big Black River valley.

Moreover, the Deasonville ceramic complex defined by Ford (1938) is so inclusive as to cover a range of time from Middle Woodland through the Historic period. In some cases, shell tempered pottery with red slipping or incised scrolls was defined as a marker for the Deasonville time period. In contrast to Phillips' (1970) and Williams and Brain's (1983) early Late Woodland designation for this complex, Ford was describing both Woodland and Mississippi period components for this complex. This Mississippi period component may be unique (i.e., distinct from the Yazoo Basin) to the North Central Hills and in some way related to both the Deasonville site and the Old Hoover mound.

As for comparable upland farmstead investigations in Mississippi, the LeFlore Site (22-Gr-36) and the John Jones Site (22-Ta-500) represent the only two sites in the North Central Hills where Mississippian period houses have been excavated. The LeFlore Site is located in Grenada County, along the loess bluffs overlooking the Yazoo Basin. Surface collections indicate that the most extensive occupation occurred in the Late Woodland Baytown period, with a smaller occupation during the Mississippi period (Brown 1974). A square single structure, post house measured 15 feet (4.6 meters) on each side and contained an interior hearth and closely spaced postmolds ranging from 6 to 18 inches (15-25 cm) in diameter. Although Mississippi period ceramics made up a small percentage of the surface collections, the ceramic assemblage associated with the structure resembled that of RS-1, with a predominance of Mississippian Plain, var. Neeley's Ferry sherds (Marshall 1985).

Another single Mississippi period house was recorded at the John Jones Site in the uplands of Tate County along the eroding shoreline of Arkabutla Reservoir (Connaway 1981:41-43). By contrast, this upland site is characterized by a rectangular wall trench house measuring 16.5 feet (5 meters) by 18 feet (5.5 meters). Like the RS-1 farmstead, the ceramic assemblage consisted of coarse shell tempered sherds of the Mississippian Plain type. The heavily eroded condition of the house and associated pit features did not yield many artifacts because wave action had washed away the feature fill.

**Conclusion**

In conclusion, results from survey and excavations within the study area have shed new light on both the culture history of the upper Big Black valley and some of the settlement characteristics of a two-tiered Mississippi period settlement system. The Old Hoover community appears to represent a two-tiered system of the Plaquemine cultural tradition which may have been influenced for a brief period of time either by the Mississippian polity at Lake George or by Chickasaw precursors from the North Central Hills of Mississippi. Ceramic paste and decorative techniques most closely resemble those from the nearby Deasonville site, with some affinities also with the Lake George site and with the Chickasaw Old Fields sites. Building construction techniques from the Old Hoover mound resemble the large log buildings found in Mississippian, Alabama, and Tennessee.

Both the architectural layout and the artifact assemblage suggest that the mound may have served a restricted specialized function. If restricted large vessel sizes can be used as a measure of mound activities, then the ceramic data suggests that large group feasting may have taken place on the mound.

Excavated data from the upland farmstead sites, on the other hand, suggest that, like farmsteads elsewhere in Mississippi, these sites were composed of economically self-sufficient domestic households with utilitarian plainware ceramics. The only diagnostic rim was from a small bowl, which could have been used as a serving vessel for an individual, rather than for large groups. The farmstead inhabitants probably participated in these inferred feasting activities on ceremonial occasions. No evidence, however, from either the mound or the farmsteads, suggests that the mound controlled production of or access to particular commodities.

This archaeological pattern stands in marked contrast to patterns typically found in three-tiered Mississippi period settlement systems, in which the mound centers appear to have exercised considerable economic control (Welch 1986). Perhaps two-tiered settlement systems during this period represented a less centralized form of sociopolitical organization, in which the mound centers served a socially integrative, ritual function, but not an economic function.

Additionally, Steponaitis' suggestion that the primary importance of the Pocahontas region may have occurred during the Dupree phase (A.D. 1000-A.D. 1200) appears intriguing in light of excavation results at Old Hoover. The chronological placement of Old Hoover's initial
mound construction after Pocahontas reached its peak suggests that there may have been a shift in emphasis away from the Pocahontas region upriver toward the Old Hoover mound. A Mississippian cultural presence during Building Level 2 may have been associated with the increasing political influence of the Lake George multiple mound center in the Yazoo Basin. These hypotheses remain to be tested with additional survey and excavations of habitation sites in both the Pocahontas and Old Hoover regions of the Big Black River valley.

Because the data set is still small, my conclusions are necessarily tentative at the present time. My ongoing research in this area should further illuminate the characteristics of two-tiered settlement systems. I plan to conduct additional survey and further testing of farmsteads surrounding the mound in order to gain a more complete description of farmstead activities and possible relationships with the Old Hoover mound. In addition, I plan to conduct further testing on the habitation site east of the Old Hoover mound to obtain a fuller picture of the daily subsistence activities of the mound residents. Similarly, hypotheses concerning possible dietary differences (i.e., provisioning of meat) between residents at the mound and at the farmsteads can also be tested with further excavation at both habitation sites. With these kinds of archaeological data, we can better understand internal and external factors responsible for the settlement organization of a two-tiered society which operated over two centuries from the late 13th through 15th centuries A.D. in the upper Big Black River valley of Mississippi.

Appendix: Upper Big Black Valley Ceramic Descriptions

Mississippi Plain, var. unspecified
This ware has a smoothed surface and is characterized by a hard, coarse textured grey paste tempered with large (>2 mm) particles of crushed fossil mussel shell with some grog. The fossil shell appears grey and glossy. This type was only found in Building Level 2 of the mound, and one jar rim represented the only vessel shape recovered for this type. A similar kind of paste has been described by Jennings (1941) as the historic Chickasaw type Oktibbeha Plain.

Addis Plain, var. Addis
This ware ranged from a fine to medium textured grey to black colored paste tempered with clay-grit and organic matter and was either smoothed or burnished. The animal effigy pipe fragment was made of this ceramic, as well as rims from one simple bowl and one bottle.

Addis Plain, var. Greenville
On the mound, this ware was usually second in frequency to Mississippi Plain, var. Big Black. Its surface was usually smoothed and the grey to black paste was characterized by a fine to medium clay-grit temper with organic matter and live mussel shell as minority inclusions. Rims recovered included vessel shapes of four simple bowls and one jar.

Addis Plain, var. unspecified
This ware was sometimes smoothed and possessed a fine to medium textured grey paste tempered with clay-grit and bone. No rims were recovered from the mound, thus vessel shapes cannot be determined.

Bell Plain, var. unspecified
This plainware was characterized by a smoothed and sometimes burnished surface with a compact finely textured black paste tempered with finely pulverized live mussel shell. The shell appears as tiny white specks in the black paste. Rims from one bowl with a notched rim and one jar were recovered from the mound.

Baytown Plain, var. Reed
This ware had a very coarse texture and was tempered with large clay particles (>2 mm). One decorated body sherd was made of this
characteristic paste, Mulberry Creek Cordmarked, var. Edwards. No rims were recovered.

Baytown Plain, var. Sharfit
This ware was characterized by a smoothed, medium textured paste tempered with clay-grit. Rims from two small simple bowls and one beaker of this plainware were recovered from the mound. Two sherds with this paste were decorated with cordmarking. Mulberry Creek Cordmarked, var. Smith Creek.

Baytown Plain, var. unspecified
This ware most closely resembles the Thomas or Alexander series with a very sandy medium textured paste tempered with clay-grit. A rim from one bowl was recovered. The decorated body sherds of this paste are all Marksville Incised, var. unspecified.

Barton Incised, var. unspecified
This type was executed on a Mississippi Plain, var. Big Black paste and is characterized by wet paste rectilinear incisions. No rims were recovered.

Chicot Red, var. unspecified
This ware was executed on an Addis Plain, var. Greenville paste with red slipping on both the interior and exterior of the vessel, which had a black or grey paste. Three rims of this ware were recovered from the mound fill, but they were too small to assign vessel shapes.

Owens Punctated, var. unspecified
This type is executed on pastes of Mississippi Plain, var. Big Black and var. Greenville. Decorative technique varies from randomly placed jagged punctation to uniformly spaced cane impressed punctations. No rims were recovered.

Parkin Punctated, var. unspecified
This type was executed on a Mississippi Plain, var. Big Black paste, and punctations are arranged in zoned linear patterns. No rims of this type were recovered.

Pouncey Pinched, var. Patosi
This ware was executed on a Mississippi Plain, var. Big Black paste and is characterized by vertical ridges formed from pinching with the fingers. No rims were found.

Mulberry Creek Cordmarked, var. Edwards
This type was executed on a Baytown Plain, var. Reed paste and contains random, rough cordmarking over the body of the vessel. No rims were recovered.

Mulberry Creek Cordmarked, var. Smith Creek
This type was executed on a Baytown Plain, var. Sharfit paste and contains fine cordmarking over the body of the vessel. No rims were recovered.

Acknowledgements

This research was funded in part by grants from Sigma Xi Scientific Research Society and the Graduate College and Department of Anthropology at the University of Illinois. I am especially thankful to my advisor, Tom Riley, who generously shared his research funds and his time last summer as field director. An earlier draft of this paper was presented at the 51st Annual Meeting of the Southeastern Archaeological Conference held in Tampa, Florida, 1989. I would like to express my appreciation to Sydney and Rebecca Johnson and Jack Foster for permission to conduct excavations on their property, and to Joseph Pratt, Eddie Logan, and Dennis Frate for invaluable logistical assistance during my stays in Holmes County. I am also grateful to Kathy Ayotte, Rainer Buschmann, Susan Bushur, and Greg Wolff, members of the 1989 University of Illinois Archaeological Field School, who assisted in survey, excavation, and laboratory analysis. Jeffrey Brain provided helpful advice in my efforts to describe the Old Hoover ceramic assemblage and Vincas Steponaitis kindly offered information on his research in the Big Black valley. Finally, I would like to thank Demitri Shimkin, Thomas Riley, and Kathleen Cain for their insightful comments and suggestions at several stages during the field research and preparation of this manuscript.

Karl G. Lorenz is a graduate student in anthropology at the University of Illinois at Urbana-Champaign.
References

Anonymous
1715 The Distribution of Indian Tribes in the Southeast about the Year 1715: redrew from a blueprint of the original among the British Archives. In John R. Swanton, Early history of the Creek Indians and their neighbors. *Bureau of American Ethnology Bulletin 73.*

Blitz, John H.

Brain, Jeffrey P.
1969 Winterville: A case study of prehistoric culture contact in the Lower Mississippi Valley. Ph.D. dissertation, Department of Anthropology, Yale University. [Published 1989, Late prehistoric culture contact in the Lower Mississippi Valley, *Mississippi Department of Archives and History Archaeological Report 23.*]

Brown, Ian

Collins, Henry B.

Connaway, John M.

Cross, Ralph D., Robert W. Wales, and Charles T. Traylor

Cutler, Hugh C., and Leonard W. Blake

Ford, James A.
1936 Analysis of Indian village site collections from Louisiana and Mississippi. *Louisiana Geological Survey Anthropological Study 2.*

Fowler, Melvin

Hally, David J.

Jennings, Jesse D.

Lewis, T.M.N., and M. Kneberg
1946 *Hiwassee Island.* University of Tennessee Press, Knoxville.

Lorenz, Karl G.
1986 Archaeological testing in the uplands of Holmes County, Mississippi. Manuscript on file at the University of Illinois Department of Anthropology, Urbana.

Marshall, Richard (ed.)

Nash, Charles H.

Peebles, Christopher S.

Peebles, Christopher S. (ed.)

Phillips, Philip
Geographic Information Systems: A Tool for Evaluating Historic Archaeological Sites*

Frederick L. Briuer, G. Ishmael Williams, and W. Fredrick Limp

GISs (Geographic Information Systems) and in particular GRASS (Geographic Resources Analysis Support System) have been used to accomplish legally required evaluations of over a thousand historic sites from a large federal landholding in central Texas. The use of GRASS for grappling with site significance permitted the application of a suite of formal analytical and statistical techniques for investigating variability in a large and comprehensive historic archaeological sites database. A more comprehensive management strategy employing an advanced database and automation tools offers efficient, responsible, and cost effective alternatives to conventional ways of evaluating cultural resources.

Introduction and Research Background

Over the past twelve years an inventory of archaeological resources of the Fort Hood Army Installation in central Texas has been virtually completed. To date approximately 300 square miles of the undeveloped portion of the Installation, over 90%, has been intensively surveyed as part of a gradual step by step effort. This multiphased program, through a series of surveys and other archaeological research projects, has resulted in documenting about 2300 archaeological sites, approximately half of which are historic sites. Each project was authorized and programmed as an overt management attempt to comply with legal requirements to prevent unnecessary damage by a large number and wide variety of potentially destructive Army actions.

This gradual investment in reliable archaeological information has been paying enormous dividends in at least three critical respects. First and foremost, realistic and cost effective management options have been successfully and routinely employed at Fort Hood for over a decade to avoid unnecessary archaeological destruction in ways that

*This paper should be of special interest to Mississippi readers because it demonstrates what U.S. Army training facilities are capable of doing in the way of CRM when they so choose.—Editor
are compatible with the successful execution of Fort Hood's military training mission. Secondly, the anthropological research value of the Fort Hood information has become all the more important as one realizes that similar opportunities to investigate other large regions are not likely to occur very often, particularly in regions with relatively small federal land holdings. Third, and the central focus of this paper, is the opportunity to use the Fort Hood database as an objective basis for evaluating, as required by law, a large diverse archaeological inventory for long term management purposes.

From the inception of the Fort Hood Program in 1977, a decision was made to embark upon a long range survey plan under which an archaeological inventory could be created a bite at a time. It was also decided to postpone significance evaluations of archaeological sites until it could be accomplished in the broader context of a regional database. This concept has had two necessary corollaries: (1) site by site evaluations associated with piecemeal surveys were regarded as preliminary, pending possible revision once more comprehensive information was considered, and (2) in those cases where a particular property was planned to be subjected categorically to catastrophic and irrevocable damage, conventional site evaluations were accelerated on the basis of information available at that time. In this way the process stipulated in section 106 of the National Historic Preservation Act could proceed, with appropriate mitigation measures if necessary.

The goal of our research has been to make resourceful use of selective information about all sites in order to evaluate the entire inventory objectively. There is a pressing need to eliminate unreasonable constraints on the Army's use of the land and to alleviate the heavy burden of protecting and managing all archaeological resources. The objective of focusing on the protection of a smaller number of high priority sites does not terminate the management process, but is simply an important milestone or tool for more efficiently meeting long term management commitments and establishing further protection and mitigation priorities.

Fort Hood, with financial assistance from Forces Command and the Department of the Army, cooperated with the Arkansas Archaeological Survey and the U.S. Army Corps of Engineers at both the Construction Engineering Research Laboratory and the Waterways Experiment Station to develop explicit procedures to establish a grouping of all sites into three management categories: (1) sites recommended for long term protection and preservation, (2) sites not recommended for preservation and protection, and (3) sites recommended for further investigation before inclusion in one of the two other groups.

Primary data for the Fort Hood inventory consist of an estimated 16,000 or more pages of site records. It is estimated that the fieldwork alone for producing these records amounted to over 60,000 hours of effort. This formidable effort involved many participating archaeologists and was guided by an explicit information acquisition plan described in the Fort Hood Standard Operating Procedure for Field Surveys (Briuer and Thomas 1986). As a result of this centrally orchestrated, decade-long survey, approximately 3000 site records were produced and reviewed for this particular research. Many of these records were multiple recordings; over twenty-seven percent of the sites in the inventory were recorded more than once, some as many as five times.

Because the evolution of the primary database occurred over a period of some twelve years and involved a large number of participants, concerted efforts were required to orchestrate its step by step development. Given the typical situation of changing contractors in cultural resource management, it becomes imperative that someone accept the primary responsibility for formulating and implementing long range database management goals, including responsibility for the quality of the overall database as the sum, if not more than the sum, of all its various contractor-contributed parts.

Phase One: Information Acquisition and Initial Automation

Analysis for this research was performed in three distinct phases. In the first phase all site records were reviewed. Selective information was classified and encoded in dBASE III files by individuals of the Fort Hood staff or archaeologists under contract with Texas A&M University. Most of this initial classification and preparation of dBASE files was accomplished or directed at Fort Hood.

Before discussing the criteria of site variability used in the subsequent analysis, a word needs to be said specifically about site locational information as well as the use of written records and ethnographical informants. A Geographical Information System (GIS) is a specialized database that links all data through geographical coordinates; categories of information, like site distributions, topography, and watercourses are conceptualized as "layers," a set of superimposed maps stitched together by precise grid locations. To exploit its analytical capabilities, it is critical that one has highly
reliable site location information. As survey coverage became more complete with each successive survey and monitoring project, so did the reliability and comprehensiveness of our locational information on sites. Several site monitoring projects specifically focused on sites where additional fieldwork was needed because of recording problems, poor UTM locations, inadequate or partial site mapping, or incomplete or inadequate site records.

Special laboratory projects were undertaken to grapple with problems involved in putting together the regional inventory. Over eight hundred man hours were spent reviewing all site records, maps, and aerial photos in order to correct a variety of errors associated with site numbering, recording, and mapping accomplished as part of individual survey and monitoring projects over the years. The carefully edited site records and site maps for the entire inventory were incorporated as a layer into a computer aided drafting (CAD) system called IGAS (Interdigitated Graphics Analysis System), a vector based CAD system in use at that time at Fort Hood. This automated mapping system, based on photogrammetric analysis of low altitude, high resolution air photos, had the capability of producing extremely accurate maps with a contour interval of one foot and a scale of one inch on the map to four hundred feet on the ground. With maps of this resolution we could see the relief represented by historic tombstones. All site locations, including centerpoints, site boundaries, and mutually exclusive site numbers, were digitized in the IGAS system.

Supplemental ethnohistorical and archival research was carried out to complement archaeological, environmental, and management information. A review of written historical sources was accomplished in conjunction with interviews with some seventy-one old timers who had once lived on land taken by the Army in 1942. The seventy-one informants willingly shared information about their places of residence, their families, their lifeways, and especially their community. A questionnaire and a 1936 map of the region were distributed to informants after an initial telephone or personal interview explaining the purpose of the research. At least one informant was interviewed from each of the fifty or so communities that once existed on the reservation prior to 1942.

Phase Two: Exploratory Data Analysis and Cluster Analysis

The goal of our analysis of this large regional inventory of historic sites was the formal identification of redundancy. In pursuit of this goal a wide variety of select archaeological, historical, environmental, and strictly management information was classified and automated in phase one, so that this information could be more efficiently analyzed using a GIS, a relational database manager, and other statistical tools in the subsequent phases of the research.

The essential concept of our analysis was to use a GIS and supporting statistical tools to examine a complex set of permutations of available data. Our goal was to reduce this large and complex set of variables to a finite set of discrete and objective groups or clusters of related variables from which we would select, in the final phase of the analysis, representative sites for each of the three management categories, i.e. sites recommended for long term preservation, redundant sites not recommended for further preservation, and sites for which further work is recommended before assignment to one of the two other categories. Our intent was to group historic sites on every important dimension of site variability and to combine these dimensions into multi-dimensional clusters, collapsing some seventy-two variables from seven data dimensions into a cluster of the strongest and most logical subsets of variables.

This second phase was performed at the Arkansas Archeological Survey under the direction of Dr. Fredrick Limp, Ishmael Williams, and the Survey staff. The dBASE III files prepared at Fort Hood were converted at the Arkansas Archeological Survey to a data matrix using INFORMIX software, a true relational database management system. Transferring the data from the multiple dBASE III files into the larger and more capable INFORMIX system allowed the easy integration of all data about each site into an accessible format. The Arkansas Archeological Survey had previously prepared software that also allowed them to transfer all appropriate data into a GIS for further analysis using the powerful analytical capabilities inherent in a GIS supported by other statistical tools. The GIS system used for this project was GRASS (Geographic Resources Analysis Support System), a raster based GIS and analysis package developed by the US Army Corps of Engineers Construction Engineering Research Laboratory. The statistical package employed by the Arkansas Archeological Survey team for this research was “S,” an interactive statistical language and system developed by AT&T Bell Laboratories.

The variables used to describe all historic sites in Exploratory Data Analysis and cluster analysis fall into two major categories: historic site characteristics and environmental data. The structure of the
automated database designed to describe each of the approximately 1200 historic sites consistently is listed below.

<table>
<thead>
<tr>
<th>Site number</th>
<th>Precise location</th>
<th>Area of site (square meters)</th>
<th>Chronology</th>
<th>beginning date</th>
<th>ending date</th>
<th>mean date</th>
<th>occupation span</th>
<th>Site condition</th>
<th>Presence/absence data</th>
<th>30 variables</th>
<th>Quantitative data</th>
<th>e.g. total counts of artifacts</th>
</tr>
</thead>
</table>

Table 1. Historic site characteristics.

The above site characteristics emphasize temporal, architectural and non-architectural variability. Indications of age and quantitative estimates of site size were incorporated in the database along with consistent information on the physical condition of each site. Examples of architectural attributes for domestic structures scored for presence or absence include bricks, piers, root cellars, chimneys, foundations, concrete slabs, depressions etc. Other site characteristics scored, not necessarily related to domestic structures, included but were not limited to wells, cisterns, stock tanks, dumps, windmills, domestic vegetation, water storage facilities, and counts of artifacts collected at sites.

About twenty different kinds of environmental information in digital format were also included in the data analysis. These environmental data represent about thirty different GIS layers, many of them collected and used for other purposes. Each of these layers is described and fully documented in *Ft. Hood Data Layers* (CERL 1988b), compiled by Vicky Harmon. Elaboration on the methods employed by the Arkansas Archeological Survey for the analysis of historic site characteristics and environmental information can be found in Williams et al. (1990:13-33). The environmental data groups in Table 2 approximately describe the thirty or so GIS layers used.

Table 2. GRASS environmental data layers.

This data, involving observations on some thirty-seven different environmental categories, came from several information sources. Soils data were derived from Soil Conservation Service (SCS) maps from county soil surveys. Drainage and vegetation information was digitized from the best available topographic maps (1:50,000 scale). One hundred meter DMA Digital Elevation Data (DTED) were acquired and served as the basis for calculating slope and aspect layers. Several layers related to the relative agricultural or herding potential of the landscape were also derived from formal SCS criteria used in county surveys.

The SCS data related to livestock and agricultural potential effectively classify the regional landscape into areas of relative potential productivity and marginality. We thought this to be a particularly meaningful set of GIS layers with potential for strong correlation to patterning in the sites data once analyzed, since the historic population practicing a mixed farming and herding economy would certainly not have placed equal emphasis on all areas of the landscape. It is therefore unlikely that all areas would have an equal probability of containing historic archaeological residues, because there was likely selection for the more productive areas as well as dynamic change in patterns of selection through time as farming and herding practices...
changed. Patterning with respect to marginality and productivity of the land surface will be taken up again later in this article.

<table>
<thead>
<tr>
<th>Period</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pioneer Period (1850-1860)</td>
<td>1</td>
<td>.1</td>
</tr>
<tr>
<td>Civil War/Reconstruction (1860-1880)</td>
<td>28</td>
<td>3.7</td>
</tr>
<tr>
<td>Railroad Period (1880-1900)</td>
<td>182</td>
<td>23.9</td>
</tr>
<tr>
<td>Turn of the Century (1900-1920)</td>
<td>419</td>
<td>55.1</td>
</tr>
<tr>
<td>Twenties/Depression Era (1920-1940)</td>
<td>69</td>
<td>9.1</td>
</tr>
<tr>
<td>Mid-Twentieth Century (after 1940)</td>
<td>61</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Table 3. Historic sites by time period.

The Arkansas team developed a set of small computer programs to reduce the volume and complexity of available site data by combining, subsetting, and analyzing site characteristics and environmental data. The objective of this programming effort was to build a bridge between the S statistical environment and the GIS menu-version of GRASS suitable for interactive use by non-programmers. Large data subsets, including some seventy-two historic site variables, were created as a result of merging GRASS and site characteristics information. These multi-dimensional data sets were useful for analyzing complex relationships between the environmental setting of sites and other archaeological site characteristics.

A menu version of the S statistical package was also developed for analyzing site data transported from GRASS. The menu version of S provides a user friendly interface to the powerful S analytic tools, allowing the user to perform intricate analyses involving literally hundreds of sites, each with a multitude of variables. Such analyses can be performed both quickly and efficiently, allowing one to ask and answer complex sequences of "what-if" questions that in the past would not even have been considered because of the enormous expenditures of time and effort involved.

The assessment of historic sites at Fort Hood using GRASS and the S statistical tools was designed to discover both expected and unexpected site variability by employing a formal procedure called Exploratory Data Analysis (EDA). This approach to data analysis was pioneered by Tukey (1977) and others (Hoaglin, Mosteller, and Tukey 1983). EDA uses iterative, stepwise examination and evaluation of graphic representations of data structure. These include graphic display features such as color-coded overlays and three-dimensional plots.

Rotations of multivariate relationships that tend to bring the full potential of the human brain's visual processing capabilities into the recognition of holistic patterns. It is basically an inductive approach to discover patterns in data and to gain insights as to the nature and causes of those patterns (Hartwig and Dearing 1979). The search for unexpected data patterns can be especially effective in fine grained data sets of high dimensionality like the Fort Hood database, where each historic site has many consistent data values associated with it.

Further analysis beyond Exploratory Data Analysis was basically a matter of distilling sets of related archaeological and environmental variables into a few multivariate dimensions that expressed the underlying structure of the original much larger set of variables. Then, using clustering methods available in S, sites were grouped on the basis of their formal similarities and differences. Variables for historic sites were grouped into subsets that encompassed very basic kinds of site information. After some preliminary data screening, variables...
were grouped for sites into the following seven multivariate dimensions: (1) the completeness of site documentation in terms of the availability of data for sites, size of sample, total area/number of artifacts, etc., (2) the age or chronological information on sites, (3) artifact composition and quantity, (4) morphological attributes such as presence of architectural observations and other site attributes, (5) topographical attributes of the land such as slope, aspect, and elevation, (6) the quality of the area encompassed by the site such as early vegetation productivity, wildlife support capability, agricultural potential, and crop yields, and (7) the preservation potential of the site based on known and potential impacts of military land uses threatening sites.

*Figure 2. Histogram of ending date of occupation for historic sites, including sites with zero occupation span.*

The method used to discover discrete clusters of sites is partially illustrated by the following examples, where chronological data and soils data represent just two of the seven data dimensions used in this research. These examples relate only to dimensions numbers 2 and 6 listed above, but give the reader a good idea how the clustering techniques were used for all seven dimensions. For the reader interested in a comprehensive discussion of the methods used in this research, including iterative analysis in GRASS and S statistical procedures for Exploratory Data Analysis and cluster analysis, see Williams et al. (1990) and Limp et al. (1990).

On the basis of artifacts collected and identified in the lab, some 760 of the 1,165 historic sites in the Fort Hood inventory had sufficient chronological information available for our analysis, while 405 sites lacked sufficient dating information to be included at this time. The occupation span for the region encompasses a relatively thin slice of time, about one hundred years, and is illustrated by the breakdown of sites by major time period in Table 3.

On the basis of the artifacts identified from sites, three other chronological variables can be identified for 760 sites: a beginning date (Figure 1), an ending date (Figure 2), and an occupation span in years (Figure 3).

*Figure 3. Histogram of occupation span for historic sites, excluding sites with zero occupation span.*
The three chronological variables graphically illustrated by the three histograms in Figures 1-3 provide some univariate measures and present an opportunity to discover additional patterning in the temporal dimension. In order to assess the multidimensional variation in sites, a cluster analysis was run on these three variables. The cluster analysis options chosen included Euclidean metric and average linkage techniques. Table 4 is a summary of the clusters defined using this method.

The Soil Conservation Service has classified each of the region's twenty-four soil types in terms of range productivity, grazing potential, or potential for growing certain crops such as cotton, wheat, oats, and sorghum. The SCS uses quantitative criteria for these assessments that essentially classify the landscape into marginal and productive soils.

![Figure 4. Star plot with variable labels of Bastil Fine Sandy Loam.](image)

Figure 4 shows a star plot for one of some twenty-four soil types. Each soil type is depicted as a star with radii for each of six SCS soil...
capability values. One radius represents grazing potential, while the other radii represent range productivity, cotton, wheat, oats, and sorghum potential. Long radii represent high values, no radii and short radii represent zero values and low values respectively. Figure 4 represents a very productive soil type with high values for all six soil capability values.

Figure 5. Star plot of grazing, cotton, wheat, oats, and sorghum potential and range productivity for the 24 soil types at Fort Hood.

Depicted in Figure 5 are star plots for all twenty-four soil types in the Fort Hood region. Three soil groups can be discerned: (1) productive soils with fat stars displaying high values; (2) poor soils with fragmented stars and missing or short radii indicating proportionally low capability values; and (3) stars of intermediate configuration for soils with intermediate capabilities.

Another analytical clustering technique is illustrated by Figure 6. A dendrogram was generated in S that graphically shows quantitative relationships between each of twenty-four soil types with respect to the six SCS soil capability criteria for grazing and crop potential. By inspection, one can again see in Figure 6 a very strong pattern or grouping into three distinct groups of soils. This complete linkage clustering technique is based on Euclidian distances and independently shows clustering that is sensitive to overall productivity of the twenty-four soil types. In other words, cluster number one, consisting of soil numbers 7, 22, 3, 12, 18, 13, 14 and 15, is made up of
soils rating high in all SCS measures of productivity, while cluster number two in the middle is made up of soils indicating low productivity, with cluster number three on the right side of the dendrogram having intermediate values. The highly productive soils in cluster number one make up only 16% of the region, while low productivity soils (cluster number 2) make up 61% of the region.

The clustering techniques discussed so far are examples of how 23 discrete groups or clusters of sites were formally defined on the basis of objective criteria for at least two of the seven data dimensions used in our research. In all about 200 such clusters of historic sites were eventually defined by EDA and cluster analyses of the various permutations of site characteristics, environmental data, and management data. These 200 or so clusters for seven different data dimensions became the classification criteria for partitioning and describing the Fort Hood historic site inventory.

### Phase Three: Final Considerations in Selecting a Representative Sample

In the third and final phase of this research sites were selected for the three management categories discussed previously. A heavy emphasis was placed on the seventh data dimension, incorporating impacts and threats of military land uses. This dimension effectively grouped all sites in terms of their protectability.

Quantitative data were available describing military training intensity and military training frequency from area to area on the Installation. These data were the basis for two GRASS overlays partitioning the Installation into discrete zones of differential military training use. Areas most frequently and most intensively used are obviously areas with the greatest potential threat of archaeological damage and destruction. Long term protection of sites would probably be more expensive and more difficult to implement in areas characterized by the heaviest military usage. Conversely, areas lightly used or restricted to limited training or no training should, in general, have the best preserved archaeological sites because they have been essentially out of harm’s way for over forty years. Sites located in lightly used areas or restricted areas should, in general, also have the greatest long term site protection potential. There are known exceptions to these generalizations, however, that point out an imperative need to incorporate good information on the actual condition of sites before finalizing site protection and mitigation alternatives in the future.

Table 5 groups 1,145 historic sites into six categories listed in order of increasing potential threat by military training activities.

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Description</th>
<th>Sites</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Restricted areas</td>
<td>24</td>
<td>2.1</td>
</tr>
<tr>
<td>2</td>
<td>Cantonment areas</td>
<td>54</td>
<td>4.7</td>
</tr>
<tr>
<td>3</td>
<td>No maneuver training</td>
<td>347</td>
<td>30.3</td>
</tr>
<tr>
<td>4</td>
<td>Moderate training</td>
<td>96</td>
<td>8.4</td>
</tr>
<tr>
<td>5</td>
<td>Heaving training</td>
<td>331</td>
<td>28.9</td>
</tr>
<tr>
<td>6</td>
<td>Very heavy training</td>
<td>293</td>
<td>25.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,145</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 5. Historic sites grouped by level of training frequency and intensity.

A listing of all sites that fell into each of the 200 or so clusters developed earlier as classification criteria was assembled in a master set of tables. All sites located in areas with the least threat from military activities (clusters 1, 2, 3, and 4 above) were marked in the concatenated tables (lists) of sites by all clusters. This comprehensive listing of sites by cluster was then used as the basis for selecting sites for the three management categories listed in Table 6. The primary criterion for selecting sites for protection and preservation was site preservation potential as measured by available information on the frequency and nature of military training from area to area. At the same time, representative sites were also selected from every cluster or grouping generated by the analytical procedures used in our research, such as occupation date spans in years, occupation types in terms of structures, and topographical settings.

Sites recommended for preservation are sites that would seem to have the greatest protection potential and where available data were felt to be adequate to objectively conclude that they are representative with respect to broad patterning on many dimensions of variability. We suggest that sites not recommended for further protection are typical of sites represented in management category 1, among those recommended for preservation, and can be considered redundant with respect to the formal criteria developed by this research. Finally, for those sites for which data are thought to be inadequate at present, we would recommend further study, followed by reconsideration once missing or incomplete data can be supplied to complete assessment of such sites consistent with the treatment of the rest of the historic site inventory.
Table 6. Historic sites management categories.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sites recommended for preservation</td>
<td>319</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Sites not recommended for protection</td>
<td>441</td>
<td>41</td>
</tr>
<tr>
<td>3</td>
<td>Sites recommended for further evaluation</td>
<td>303</td>
<td>29</td>
</tr>
</tbody>
</table>

This classification is not meant to be the last word on the disposition of historic sites at Fort Hood. The methods presented here are not an end product in the sense of a final administrative event or final solution to the requirement to evaluate a complex regional historic site inventory. The results of this research effort should instead be seen as a point of departure or an important management milestone in the ongoing process of constantly incorporating new and more reliable information from whatever sources possible. What this research has done is provide an essential database, the practical information management tools, and a basic rationale and method for objective inventory evaluation that needs to be upgraded and fine tuned by competent archaeological staff, preferably by archaeologists with first-hand knowledge about historic site variability in the regional inventory, who can orchestrate future efforts to incorporate new information that is not part of the current database. Future refinements must consider realistic management priorities as well as individual research priorities and commitments.

Summary and Conclusions

1. This research has employed a wide variety of information, including rigorous and intensive survey and site monitoring observations, archival records, information from living informants, environmental data, and management information, all gradually and cumulatively acquired and upgraded over a period of eleven years.

2. Using a holistic rather than a piecemeal approach to the evaluation of historic sites is like seeing the forest instead of focusing on individual trees. Many limitations and sources of error are not readily perceived until one grapples with the bigger picture of available information that clearly transcends any particular project. The resourceful consideration of all available site information is an objective impossible to attain if sites are prematurely evaluated as a series of discrete projects, not considering the larger potential database in a holistic fashion. As anthropologists we should also be concerned about conjunctions of evidence in an interdisciplinary fashion.

3. Programs that recognize the need to preserve, or if necessary mitigate, the full range of variability in the archaeological record have not been common because first, there has not been an investment in and development of databases of sufficient detail and comprehensiveness, and second, defensible methodologies to define the full range of variability have not been applied.

4. The methods used in this research have exploited readily available and well-understand automated information technology, including dBASE III, INFORMIX, a CAD system, and GRASS, supported by the S statistical package and other automation software. The use of these management tools means that applied research traditionally involving time consuming, tedious, and cumbersome analyses can be accomplished accurately and rapidly. These management tools are becoming readily available as well as user friendly.

5. Our methods have employed Exploratory Data Analysis as well as univariate, bivariate, and multivariate statistical techniques, including cluster analysis, to group and classify objectively a large and diverse historic site assemblage in ways that can be replicated, reiterated, and most importantly, improved upon in the future.

6. The tools and methods discussed in this research should insure greater flexibility in considering a wider range of cost effective and highly responsible management options that can be employed through time as advanced cultural resource management databases are developed.

7. Our approach to a more holistic evaluation strategy emphasizes the principle that given a relatively complete inventory of existing sites, if groups of sites are identified that have demonstrably shared characteristics and there are significant numbers of these in areas that will not be adversely affected, it is reasonable to allocate effort to preserve these “representative” sites and to determine that no further efforts need be expended toward the preservation of similar sites in more threatened environments. The potential exists for finding responsible ways to reduce unnecessarily expensive and destructive cultural resource management practices. There are management alternatives, clearly in the best interests of the conservation of the resource, that should also help assure high standards for archaeological research where mitigation is necessary.

8. Our attempt to formally isolate redundancy in the Fort Hood archaeological inventory of historic period sites has been presented as
a challenging research and evaluation process rather than a self-evident simplistic administrative event. Historic archaeological resources in any given region are complex historical and anthropological phenomena, potentially just as important for anthropological research as prehistoric resources. If we are to manage cultural resources responsibly for the social and scientific benefit of future generations, the complicated task of evaluating large and diverse regional inventories deserves an intellectual effort and research commitment commensurate with that potential benefit.

This paper is an expanded version of a paper read at the 51st annual meeting of the Southeastern Archaeological Conference held in Tampa, Florida, 1989.

Frederick L. Briuer is a research archaeologist with the U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS. Ishmael Williams is a research archaeologist with the Arkansas Archeological Survey and W. Fredrick Limp is the assistant director of the Arkansas Archeological Survey, Fayetteville.

References

Briuer, Frederick L., and George B. Thomas (editors and compliers)

CERL

Hartwig, F., and B.E. Dearing

Hoaglin, David C., Frederick Mosteller, and John W. Tukey

Limp, W.F., G. Ishmael Williams, and F.L. Briuer

Tukey, John W.
1977 Exploratory data analysis. Addison-Wesley, Reading, MA.
Williams, G. Ishmael, Frederick L. Briuer, and W. Fredrick Limp

James B. Griffin

The publication of this report is a long-awaited happy event for the author, the other active members of the Lower Mississippi Survey of the Peabody Museum of Harvard University, and for the Mississippi Department of Archives and History. Originally conceived by Stephen Williams and embraced by Jeffrey Brain in 1966, active fieldwork was initiated by Brain in 1967 as the Mississippi State Park Commission was finishing construction on the Winterville Mounds Historic Site. An early version of this study was completed in 1969 by Brain as his Ph.D. thesis at Yale. That study has been subsequently modified, but not substantially so since the 1970s.

While the Winterville report can be understood as a fine document of prehistoric occupations, it is best understood if read in conjunction with the report on the nearby Lake George site by Williams and Brain, which was issued by the Peabody Museum in 1983. Brain participated actively in the excavation at Lake George from 1958 to 1960 and in the subsequent laboratory and library work on the publication of that report. He thus had adequate training for the Winterville excavations and preparation of this report. As too often happens, unfortunate unforeseen circumstances held up publication of these two substantial monographs. Brain also made a major contribution to the magnificent study of Pre-Columbian Shell engravings at Spiro, Oklahoma, and other locations in the Southeast by Phillips, worked for years on the so-called “Tunica Treasure” and the history and archaeology of the Tunica, and more recently has been working actively on the unsolved problem of the Hernando de Soto route in Mississippi and Arkansas. Perhaps no other individual with the exception of Philip Phillips and Williams has spent so much time working on the prehistory of the Lower Alluvial Valley as has Brain. For these reasons, and the capable editing of Patricia Galloway, this volume may be regarded as a major contribution and an authoritative statement on the late prehistoric populations of the Winterville area and their neighbors.

Following the brief acknowledgements and introduction, the volume has a short review of the archaeology of the Yazoo region and a chapter on the physical and historical background. The bulk of the report is in the three chapters presenting excavations, features and artifacts, and phases of occupation. The presentation of these three chapters is supported by four appendices on pottery classification, sherd tabulation by unit levels, a classification of other artifacts, and finally the identification of faunal remains and their locations at the site.

The faunal identifications are by the standard Linnean terminology which inhibits understanding by a fair proportion of potential readers. Surely, if the Mass can now be performed in English, it should not now be regarded as unscientific to include the vulgar terms for animals. There is no report on floral remains; when the Winterville site was excavated flotation recovery for botanical remains was not done, and so knowledge of some of the plant foods in the diet was not recovered. In the report it is assumed that maize formed a substantial part of the food supply, but sound evidence for corn agriculture does not appear in the pre-A.D. 1200-1300 occupations at either Lake George or Winterville. Such evidence should be there.

Winterville, covering about 50 acres, is one of the largest Mississippian sites and also one of the best preserved. The surveyor’s map of Albert C. Spaulding, reproduced as Figure 17, shows the location of the several small excavation areas which were done in a period of about six months with a field crew averaging three men a day. In considering what was recovered in the excavations, readers should consider that the site was constructed by a few hundred people over about 450 years. It is a tribute to the excavation strategy that so much of the history and significance of Winterville could be reconstructed from the comparatively small proportion of the site that was excavated.

Readers of this report who have some familiarity with earlier reports on Mississippi archaeology by the Harvard Lower Valley coterie will recognize much of the terminology applied herein to the sequential prehistoric developments, as well as the ceramic nomenclature of the Cambridge classification. The major interpretive material for this site is a body of 28,856 sherds from the excavations under Brain’s direction, various surface collections, and 14 whole or reconstructible vessels. These are classified into “supertypes” of pottery wares, types of decorated vessels, and type varieties which are
differentiated on the basis of minor variations of a decorative style. Pottery forms are also identified. Groups of pottery varieties with shared characteristics of manufacture and often shared stratigraphic or other locations in the site are called ceramic “sets.” Seven sets are recognized at Winterville, five of them developed locally and two representing early Powell and late Bell Mississippian intrusions, the Powell set representing a ceramic development at Cahokia at about A.D. 1000 and the Bell set representing late prehistoric Mississippian ceramics from the Memphis area on both sides of the Father of Waters.

The major interpretive sections are the discussion, identified as the late prehistoric cultural dynamics in the Lower Valley, and the conclusions. This is the part of an archaeological report that allows the author to present his interpretations of data from the site and his view of the relationship of its society to other contemporary societies and their predecessors. These sections are generally the most interesting to prepare and read, but at the same time the most hazardous for both the writer and the reader. The writer and excavator is usually the most reliable reporter of what the excavations revealed, the features of the site, and the objects found. Aligning the new data with what is known about the prehistory of the local region is normally handled with considerable competence. However, the broad scale integration of the prehistoric societies of one area, such as the Lower Yazoo and adjacent Lower Mississippi, with other areas from 500 to over 1000 miles to the northwest and east is likely to be a less definitive statement. In the archaeological interpretations of the past there have not been, nor should there be in the future, individuals whose views can be regarded as completely correct and not subject to alteration.

This reviewer has no quarrel with the interpretation that local developments were responsible for the cultural changes from Marksville times of about A.D. 1 to A.D. 300 or so up through the Cole Creek occupations ending around A.D. 1000-1200. It should not be forgotten, however, that French Fork Incised may well have been introduced into the Lower Valley from Weeden Island along the coast from Florida and that the platform mound as a base for important communal structures may also have come from Weeden Island. Whether the platform mound of Coles Creek was derived from these of the Marksville period, which are not known to have had buildings erected upon them, or from Weeden Island, they are integrated by early Coles Creek times into platform mounds placed about plazas. The formal site configuration can be seen as reflecting an orientation of the social group toward greater cohesion under a small group of leaders who managed or manipulated the social, political, and religious activities of the society.

It is in this very latitude of Mississippi and Louisiana that this site plan first appears about A.D. 750-800. It is also apparently present near Little Rock at the Toltec site by about A.D. 800, along with a pottery complex with indications of derivation from Coles Creek to the south. In southeast Missouri, during Emergent Mississippian times, flat top mounds are known by A.D. 800-1000. Platform mounds are believed to be present at Cahokia by about A.D. 900, a date obtained on a sample from the base of Monks Mound. It must be admitted that there has been inadequate controlled excavation in the Cahokia locality to say confidently when the platform mound and its close associate first appeared at Cahokia, but it certainly now appears that these developments, reflecting societal reorganization, began earlier in middle to late Coles Creek and then moved up the Mississippi valley to the St. Louis area. Brain acknowledges the priority in Coles Creek of one of the most salient characteristics of many Mississippian sites.

In northeast Arkansas and the Cairo Lowlands of southeast Missouri, a shift of vessel forms and shell temper takes place about A.D. 800-1000, and some archaeologists in Illinois believe that shell tempering, red firing, and other features of early Mississippian pottery diffused northward to the Cahokia area. Coles Creek pottery of the Blakely variety, French Fork (?) types, and others have been identified in Cahokia area sites. Their association with native complexes is not too secure but should fall just before or after A.D. 950. Interaction between the Lower Valley and Cahokia goes back to at least 500 B.C., is quite strong in Marksville-Hopewell times, and blossoms again in middle to late Coles Creek and Emergent and Early Mississippian times.

In a recent study of Cahokia ceramics from the area excavated for the new interpretive center, George R. Holley considered relationships with external areas:

It seems likely that Coles Creek Incised-like material was imported to the American Bottom, in small numbers, during the late stages of the Emergent Mississippian period, . . . which led to cross fertilization in modes of shape and decoration between the Vicksburg and Lohman fine gruee ware vessels (Holley 1989:65).
In a later section Holley emphasized that a larger number of thin-walled Fine Line incised sherds and one specimen resembling Holly Fine Engraved appear in the Lohman phase of A.D. 950-1050. The Vicksburg set of the Winterville and Lake George reports includes French Fork Incised, Carter Engraved, Coles Creek Incised var. Blakely, and Evansville Punctated. It is associated with the Kings Crossing phase of about A.D. 1000. Examples of these southern types have been found in the American Bottom, either brought in from the Lower Valley, or some vessels may have been produced by potters copying Lower Valley styles. In addition the Baytown Plain, var. Addis (a.k.a. Addis Plain, var. Addis) has many form and mode similarities to the fine grog plain vessels of Emergent Mississippian and Powell Plain of Early Mississippian at Cahokia. Crude effigy heads on bowls of Addis Plain, Winterville report Fig. 5.12, are reminiscent of similar heads on the Monks Mound Red bowls of Emergent and Early Mississippian.

Ever since Brain recovered two Ramey Incised and four Powell Plain sherds of Cahokia manufacture at Winterville, he has, I believe, over-emphasized the importance of the contact with Cahokia, which he places at about A.D. 1175, in changing the cultural orientation of societies which bloomed while they were following the Coles Creek Tradition. It was the stimulus of Cahokia, according to Brain, that resulted in organized control of some economic resource or market, or an effort to protect a route to the Gulf resources. It introduced a strong religious orientation into the Lower Yazoo. Brain believes, as does Richard Marshall, that this event followed an earlier intrusion from northeast Arkansas or southeast Missouri into the upper Yazoo, where it is known as the Buford phase. Buford does have a clear connection to what is known in Arkansas as the Big Lake phase of A.D. 800-1000. This phase is Early Mississippian in ceramics, lithics, and house forms, is found in comparable sites in southeast Missouri, and has a dependence upon maize. At Winterville and Lake George, Brain views this and other initial contacts with Mississippian societies to the north as taking place on a practical level, introducing perhaps the wall trench rectangular house, shell tempering, round base jars, loop handles, rim adornos, and bottles. These changes he interprets as slow acculturation.

In addition to Powell and Ramey, Brain has identified some fifteen shell tempered cord marked sherds as Cahokia Cord Marked, var. Buford, and Cahokia Cord Marked, var. Montrose. I think this nomenclature is wrong. This can be regarded as a result of following too rigid a classificatory system, for Cahokia Cord Marked was described in the late 1940s. It should now be recognized that there are a great many shell tempered cord marked types that have nothing to do with the Cahokia vessels. The same fault may be found with the identification of five sherds as Old Town Red, var. Cahokia. It would be interesting to see if these specimens had paste that corresponded with vessels made in the American Bottom. Brain uses the name Baron (sic) Incised, var. Barton for a vessel found near Mound B by an amateur that is said on page 138 to be similar to one from Cahokia illustrated by P.F. Titterington in a 1938 publication. The vessel from Cahokia is a Powell Plain jar with loop handles, a polished, probably slipped surface, and is not decorated. There are no Barton Incised vessels at Cahokia. The “bean pot” with Burial 23 (Fig. 49) is with the group of Burials 9, 12, 14, and 21, which also had a cylindrical, long necked bottle, with three lobes on the body, from Burial 9. The “bean pot” is primarily associated with the Moorehead phase at Cahokia of ca. A.D. 1150-1250, while long neck bottles are very rare and probably date even later than the “bean pot.”

The suggestion is made that a fine thin shell tempered type, Mississippi Plain, var. Coker, is a imitation of Powell Plain from Cahokia by local potters at Winterville. The rolled rim of Coker is certainly similar to those on Powell and Ramey, and this interpretation may be correct. The same would seem to apply to a jar of Addis which appears to have the Powell-Ramey shoulder and loop handles found at Lake George. Cross section drawings of some of the Addis examples seem to have thin walls and are grog tempered. Such thin walled vessels appear at Cahokia in the Lohman phase of about A.D. 1000 and were present along with the thin walled Powell. Thin walled grog tempered pottery has been found at the Tawasaghy site, southeast Missouri, by James Price in an early village(??) level underlying one of the platform mounds. The interrelationships of the thin walled grog (sherd) tempered pottery with the Powell-Ramey thin walled vessels is an interesting research problem which should be pursued.

The triangular arrow point is quite widespread by A.D. 900-1000, in southeast Mississippi as well as Cahokia, and unless the lithic material has been securely identified as from the Cahokia area, triangular points in the Lower Yazoo cannot be specifically tied to the St. Louis area. The same caution should be observed in considering the appearance in the Greenville area of the wall trench house. This style of house construction is known by A.D. 900 in the Cairo lowlands of southeast Missouri, at Cahokia about A.D. 1000, in the Big Lake
phase of northeast Arkansas by about A.D. 900, in the Macon, Georgia area by A.D. 950-1050, and probably in other areas as well at the same time period.

The amount of Powell and Ramey pottery that has been recovered at Winterville is not seen by this reviewer as sufficient to support the interpretation of a strong organized contact from the Cahokia climax of the Stirling phase or early Moorehead phase. There is no question that these few examples are from the Cahokia area. I saw some of them at Winterville shortly after they were recovered. The Shell Bluff site, Shellwood, and Lake George do not have enough specifically Cahokia material to justify the claim that the undoubted interaction between the two areas produced the reorientation of cultural behavior in former Coles Creek territory.

The Cahokia interaction with their neighbors was primarily to the north, up the Illinois River as far as Peoria, up the Mississippi into northwest Illinois, southwest and southeast Wisconsin, and as far as the Redwing area of Minnesota, and to northwest Iowa and southeast South Dakota. There is a small amount of contact with the Kincade site in southern Illinois and with the Angel site in southwestern Indiana, but these appear to have been already established Early Mississippian centers. The Early Mississippian sites in western Kentucky, eastern Tennessee, and at Macon Plateau do not have specific Cahokia artifacts. Since Brain wrote his interpretation, a number of sites in the Reelfoot Lake area of northwest Tennessee have produced ceramics strongly suggesting some interaction with Cahokia during the Early Mississippian period.

Brain suggests that the first Mississippian to appear in the state of Mississippi seem to have been a small number of people who appeared at the Buford site in the eleventh century, and evidence of such early Mississippians is probably to be found at other sites including Winterville. Subsequently, according to Brain, there appeared at Winterville examples of Powell-Ramey pottery from Cahokia shortly before A.D. 1200, which helps to separate the Crippen Point phase of Coles Creek from the Winterville phase of Plaquemine. At Cahokia, Powell and Ramey are known by A.D. 1000, and these types along with other items spread north into the Peoria area and into southwest and southeast Wisconsin by A.D. 1000-1050, and close to that time as far north even as the mouth of the Minnesota River. Archaeologists working in the American Bottom believe that the major active period of Cahokian interaction was over by A.D. 1150. I wonder whether the 175 year time period for Crippen Point is not too long, and the time of arrival of prehistoric carpet-baggers from the north would go back to about A.D. 1050.

There is no question that Indian cultures of the Lower Yazoo and adjacent Louisiana areas were changing, from societies closely integrated with those farther south and to the southeast, to ones with a predominantly northern interaction. However, one of the most important cultural changes in the eastern United States in the late prehistoric period was the arrival of the bow and arrow. This innovation is known around 1 B.C. in the high plains of western Canada and northwestern high plains of the United States, especially in buffalo jumps. The bow and arrow gradually moved south into the Southwest by Basketmaker III around A.D. 600. Arrow points of the Scallorn and Alba forms probably moved into the Coles Creek areas from Caddoan country before the arrival of the plain triangular point, which was then present not only in west central Illinois but also in the eastern area of the Arkansas-Missouri state line. The introduction of the bow and arrow had a marked effect on both hunting strategies and protein procurement and also on the tactics of inter-group aggression. The earliest arrowpoints arrived in the Bayland phase from the west about A.D. 700, providing a new cultural addition which helped to produce the Coles Creek societies. The triangular arrow head which is attributed by Brain to a Cahokia introduction is known in the Buford-Big Lake time frame by at least A.D. 900. Triangular points cannot be confidently attributed to the hypothetical Cahokian proselytizers, and they almost certainly appear in the Greenville area before A.D. 1200.

I am trying to question the view that it was primarily a religious introduction from Cahokia that caused the Coles Creek societies in the Lower Yazoo and adjacent areas to turn away from their pristine Lower Valley development and become producers of material items and architectural constructions called Mississippian. These groups also did not participate very much in the importation or the manufacture of material objects called variously the “Southern Cult,” the “Southeastern Ceremonial Complex,” or the “Mississippian Ancestor Cult,” which was in full flower during the A.D. 1200-1450 period. It should also be noted that Cahokia also does not have any significant amount of these religious items, which are found predominantly in a latitudinal zone from east central Oklahoma to northern Georgia.

Brain’s important observation that major sites of the late prehistoric period were often located at the junction of a major stream and important tributaries, and that is where one finds evidence of Cahokia contact, is well taken. Most of these sites, however, were important
before the time of such northern contact. It may be doubted that the Cahokia interaction in the Lower Mississippi and Yazoo areas resulted from any large number of Cahokians merging into the southern societies, or that the appearance of Cahokian material was the result of an organized plan for economic gain, political control, or domination through a religious system, with the white skull cap wearer residing on the top of Monks Mound at Cahokia. Traders, explorers, or shamans moving along a stream would stop at important population centers because that’s where the action was. It was the already established centers that provided hospitality, hopefully, and other forms of human interaction. Such centers were unlikely to be “controlled” by outsiders unless force was used, and the evidence is simply not available to justify such an interpretation.

My view is that in the Lower Valley-Yazoo area prehistoric societies had multiple interarea cultural contacts during the A.D. 700-1000 years. In the Cairo and Eastern Lowlands of Missouri and northeast Arkansas cultural developments of a distinctive character took place as they did in Greenville and other areas further south, east, and west. Similar changes were taking place in the St. Louis area, northern Alabama, east and west Tennessee, and the Little Rock area, to name a few. Ideas and practices that developed in these several areas gradually spread; some were adopted, some were not. But the result was that at about A.D. 1000 the interacting societies were probably closer to each other in cultural behavior than they were to their ancestral societies of A.D. 400-700.

In my view, the interaction of the next 400 years, A.D. 1000-1400, was of the same general kind, heightened by increased populations, better knowledge of the location of major centers, and increasing similarity of beliefs and behavior. It is in this period that ideas and concepts developed in many areas became widespread, and societal enclaves participating in this exchange of ideas are identified by archaeologists as Mississippian. Most of the eastern United States was an interacting culture area, even though there are identifiable regional societies with distinctive flavors. I feel that Coles Creek societies contributed significantly to those further north and helped to produce the societies of Mississippian cast. In turn, the northern Mississippian societies cross-fertilized with late Coles Creek, and the recoverable materials from say A.D. 1150 or so became increasingly similar to those from Mississippian societies in much of the east. I would suggest that Brain has over emphasized the role of Cahokia in this change at Winterville and the Lower Yazoo.

Of course if Brain had been able to excavate all of the Winterville site, and several more of the area sites of the same time period, we would have a better idea of the strength of the various identifiable external influences and not have to depend upon such a pitifully small portion of the recovered data from a large prehistoric site. In the meantime, archaeologists work with what they have to formulate a scenario of what was happening in the past. It is always subject to change and is light years ahead of the myths and traditions of early Indian groups as they were recorded by various nineteenth-century scholars.

James B. Griffin is a Research Associate of the Department of Anthropology, Smithsonian Institution.


David Morgan

Tunica Archaeology is the concluding installment of Jeffrey Brain's two-volume series concerning the history (and prehistory) of the Tunica Indians. The initial volume, Tunica Treasure, was specifically concerned with describing and illustrating the impressive and historically important collection of mid-eighteenth-century European and Indian artifacts looted from the Trudeau site. The intent of the second volume, Tunica Archaeology, is to investigate the events both preceding and following the Tunica occupation at Trudeau. The information relevant to this study is well laid out and presented, the text being illustrated throughout with numerous helpful tables and figures. An introductory section provides theoretical background and presents the rationale behind employing ethnohistoric (sic) archaeology as an appropriate approach for this study.

Part One provides the historical background, employing an extensive collection of maps, pictures, and written documents to delineate the progressive movements of the Tunicas from their late prehistoric encampments in the Upper Sunflower River portion of the Yazoo Basin down the Mississippi Valley and ultimately to their present location along the Red River at Marksville, Louisiana. In Part Two, archaeology
is employed to substantiate and enhance the archival information with in-ground artifactual evidence. Excavations are reported from a series of sites, including Pierite (Marksville locus), Trudeau (Tunica Bayou locus), Angola Farm and Bloodhound (Portage de la Croix locus), Haynes Bluff, Portland, Burroughs, and Russell (Lower Yazoo locus). Surface collections are reported to in addressing the Upper Sunflower locus.

Part Three presents an ethnohistorical reconstruction in which all of the available lines of evidence are drawn together in order to achieve a more comprehensive picture of the Tunicas as they are manifest across the changing cultural, political, and geographic landscape of the past four centuries. The latter portion of this section addresses various aspects of Tunica culture—demography; religion, ideology, and ceremony; settlement patterns; artifacts and technology—to assess how each of the components operated, changed, and contributed to the continuation of the group.

Finally, based upon the evidence presented, inferences are offered as to how and why the Tunicas have managed to survive and sometimes prosper during that portion of history which witnessed the demise and extinction of the vast majority of the aboriginal groups of the Southeast.

Following the main body of the report are a series of appendices reporting the various aboriginal and European artifacts recovered during the archaeological investigations at the sites reported here. Aboriginal pottery classification consumes the majority of this section. Three new plainware varieties and seven new decorated varieties are introduced. Picking up where the Lake George report ceramic sequence left off (see Williams and Brain 1983), and based primarily on the Haynes Bluff site excavations, nine new ceramic sets are established. Two others, Yazoo 5 and Holly Bluff 2, are revised.

Interesting among the stone artifacts is an assemblage of Nodena Lanceolate projectile points, triangular knives, pipe drills, and snub-nosed end scrapers labeled the "Oliver lithic complex" and purported to be a horizon marker for the protohistoric and historic periods. The final appendix (authored by Arthur Spiess) reports the results of the faunal analysis of a single trash pit from the Trudeau site. Large mammals, including bison and white-tailed deer, proved the primary protein source in this context, although fish, domestic chicken, and even marine turtle were also identified. Annular-layer examination of several deer molars indicated that deer were taken in late winter or early spring.

Overall, Brain's presentation of the Tunica saga is a thorough and often engaging one. As he points out, the data is frequently sketchy and inconsistent. The early part of the sequence is particularly in need of further verification by way of archaeological excavation in the Upper Sunflower. The proposition that Hernando de Soto's province of Quizz-quiz can be attributed to the ancestral Tunicas is an enticing yet inadequately founded one. In addition to the Parchman and Wilsford sites noted by Brain, radiocarbon dates from Clover Hill (22-Co-625) and Flowers #3 (22-Tu-518) indicate that these sites may also be relevant to late prehistoric/protohistoric developments in the Upper Yazoo Basin (see Connaway 1981:83). As for the assertion that Charlie's Trace served as the route for Soto across the Yazoo Basin, this remains far from a settled issue (cf. Hudson, et al. 1990).

In terms of the archaeological continuum, it is particularly unfortunate that all evidence for the eighteenth-century Pointe Coupee occupation has since washed into the Mississippi River. The discovery of the main village and precinct of Grands Tonicas in the Portage de la Croix area is expectantly awaited.

Considering the importance of aboriginal potsherds in assessing ethnic identity (Winterville Incised var. Tunica is said to be the hallmark of all pre-1700 Tunica occupations), several difficulties with the ceramic presentation in this volume should be pointed out. Considering the near-overwhelming and ever-growing number of ceramic types and varieties in the Lower Mississippi Valley, it would be helpful if type name were listed whenever a varietal name is used. Further, the association of ceramic sets (and subsets), type-varieties, and phases becomes unnecessarily difficult when charts intended to elucidate these relationships omit the relevant type names (see Brain's Fig. 41). A larger number of illustrations of newly introduced varieties would also be helpful.

In terms of lithic materials, the "Oliver lithic complex," which begins to appear toward the end of the late prehistoric Parchman phase, is said to reflect a new technological pattern. Its absence among Tunica sites is proposed to be indicative of this group's lack of interest in the Indian-European deerskin trade. It is also speculated that this tool complex is attributable to groups linguistically distinct from the Tunicas. Additional evidence is required in order to adequately assess these contentions.

Finally, Harvard's persistence in exclusively employing the LMS site numbering system at the expense of the more commonly used Smithsonian Trinomial System is both puzzling and frustrating.
Would including both site numbers in future reports serve as a workable if somewhat awkward compromise?

In summary, *Tunica Archaeology* provides an intriguing insight into the challenges of a southeastern Indian group faced with the onslaught of an overwhelming European presence and the types of resource materials available to researchers for investigating the dynamics of such an encounter. As related by Brain, the Tunicas were able to rely upon their migratory disposition, entrepreneurial ability, and corporate adaptability in retaining their tribal ethnicity. Thus, this aboriginal group is traced backward in time to an ancestry of several thousand late prehistoric occupants of the Upper Sunflower area of the Yazoo Basin and forward to a present day population numbering less than 200, approximately half of whom continue to reside in Louisiana. Ultimately this story serves as a testament to the extent of domination and acculturation to which Native American cultures have been subjected by peoples of European derivation beginning in the mid-sixteenth century and continuing until the present.

*David Morgan is an archaeologist with the Mississippi Department of Archives and History.*

**References**

William, Stephen, and Jeffrey P. Brain

Connaway, John

Hudson, Charles, Marvin T. Smith, and Chester B. DePratter