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European Contact, Burial Behavior, Health, and Diet: A Case Study from Starkville, Mississippi

S. Homes Hogue, Suzanne Bufkin, and Heather Rushing

Two postcontact secondary burials recovered in the 1970s and 1980s from two Starkville, Mississippi, subdivisions are compared with other burial sites in the area. Radiocarbon dates obtained for the sites demonstrate a later date for secondary burials in the region, although primary burials continue to be used. Demographic profiles of the secondary burial populations indicate a bias toward young males for this burial type, which may reflect increased conflict in the area, associated with European contact. Carbon isotope values obtained from several burial samples provided evidence for the increased use of maize in the diet at the later sites.

Introduction

This paper presents the analysis of two secondary multiple burials recovered from the Plantation Homes and Rolling Hills subdivisions located in the northern quadrant of Starkville, Mississippi, in Oktibbeha County. In the 1970s ground disturbance generated by the construction of the Oktibbeha County Hospital and the proximate Plantation Homes and Rolling Hills subdivisions led to the discovery of several archaeological sites in this locality. One of these sites, commonly referred to as Plantation Homes, 22-Okt-509, was discovered in June 1970, after bulldozer disturbance in the area exposed human skeletal remains. Richard Marshall, then of Mississippi State University, observed the skeletal remains in what appeared to be a multiple secondary burial. Although disturbed, each individual present in the grave could be differentiated as a bundle burial. Sites were discovered in the adjacent Rolling Hills subdivision several years later in 1974, when construction in the area led to the disturbance of numerous primary and secondary burials. Additional burials continued to be discovered in the area, with the last one recovered in 1983. Since grave goods of European origin were found associated with several burials, the Rolling Hills archaeological complex has traditionally been perceived as representing the Contact period (Atkinson 1979; Hogue et al. 1995). The skeletal remains recovered from both the Plantation Homes and Rolling Hills subdivisions were stored at Mis-
sissippi State University until June 1995, when they were analyzed as part of the Native American Graves Protection and Repatriation Act.

Radiocarbon dates on material from two sites located in the Rolling Hills subdivision place the occupation of the area around A.D. 1650 to 1670 (Hogue et al. 1995). The dated sites contained no European trade goods, but other sites in the area did, suggesting an even later settlement. According to historical records, a group known as the Chakchiuma may have occupied the general locality from 1697 to 1718, but information on earlier occupation of the region by this group is sparse (Adair 1968; Atkinson 1979:69). The Plantation Homes multiple burial, while it did not contain European trade goods, was originally thought to be contemporaneous with the sites associated with the Rolling Hills area (Richard Marshall, personal communication), placing it well within the period of European contact.

This study aims to address specific questions concerning the burials recovered from the Plantation Homes subdivision and more general questions involving the relationship of the Plantation Homes and Rolling Hills sites with each other and earlier sites. The first problem to be addressed is the temporal placement of the sites. What is the date of the Plantation Homes site, and how does this site fit chronologically with the adjacent Rolling Hills secondary and primary burials and nearby sites? Does the presence of multiple secondary burials in the research area represent a migration by a new group, such as the Chakchiuma, into the region, or do the secondary burials reflect culture change created by European contact? A discussion of secondary burial patterns will be presented, followed by demographic analysis comparing the Plantation Homes burial with a secondary multiple burial, the 1983 Mass Burial, previously analyzed from Rolling Hills (Hogue et al. 1995). This latter investigation includes the use of mortality profiles to better document changes in mortality possibly associated with European contact. Finally, the importance of maize in the diet will be considered. Attempts will be made to understand the results of this research in the context of the postcontact period. To address the broad effects of European contact, comparative data from two prehistoric and two postcontact sites excavated in the area will be included. These include Lyon’s Bluff, 22-Ok-520 (Marshall 1985); South Farm, 22-Ok-534 (Hogue and Peacock 1995); 22-Ok-595 (Hogue et al. 1996); and a burial cataloged as RH-6 from Rolling Hills. Because of the small sample sizes of the skeletal series included in this research the conclusions presented here are considered preliminary at best. It is hoped that the information acquired during this endeavor can be used in the development of working hypotheses to guide future research.

Site Descriptions and Chronology

The first question to be addressed in this study is the chronological placement of the sites. All radiocarbon dates were obtained from Beta Analytic, Inc. In most cases charcoal samples and diagnostic artifacts were not associated with the burial units. For this reason human bone samples were used for radiocarbon analysis except in the cases of 22-Ok-534 and 22-Ok-595, where charcoal recovered from feature fill was used. The multiple secondary burial recovered from Plantation Homes contained six individuals. Samples from one individual were submitted for radiocarbon dating. This resulted in calibrated radiocarbon dates of A.D. 1505, 1595, and 1620 (Beta 92179; 360 +/- 70 B.P.,) averaging 1573 ± 60 years, with a temporal range at one sigma of A.D. 1450 to 1645.

Three burial series used in this study are associated with the Rolling Hills area. First, two radiocarbon samples of human bone were submitted for the 1983 Mass Burial from Rolling Hills (Hogue et al. 1995). Calibrated dates were A.D. 1655 and A.D. 1670, providing an average of A.D. 1663 for the site with a temporal range at one sigma of A.D. 1650-1675. Eight individuals were recovered from this multiple burial (Hogue et al. 1995).

The second Rolling Hills burial site, identified as a farmstead (22-Ok-595), had a calibrated radiocarbon date of A.D. 1660 (Beta 71928; 240 +/- 70 B.P.) with a one sigma range of A.D. 1640 to 1680; another sample, less reliable due to its small size, yielded calibrated dates of A.D. 1530, 1550, and 1640 (Beta 73554; 320 +/- 110). The average for all of the dates from 22-Ok-595 is A.D. 1595 ± 64 years (Hogue et al. 1996). Two burials were recovered from the site, one an adult male and the other a subadult (Hogue et al. 1996).

During the construction of the Rolling Hills subdivision, five single primary interments were recovered. The association of these burials with a cemetery or farmstead is unknown. One of these burials, recovered as RH-6 (Atkinson 1977, field notes) is also included in this study, as it was the only burial of its type that contained diagnostic artifacts useful in dating. The individual was identified as a male, aged around 40 at the time of death. Blue glass seed beads of type IIA7 (Brain 1979:103) were associated with burial RH-6. This bead has a temporal range of 1600-1836 with a mean date of 1737 (Brain 1979:103).

Two prehistoric sites located in Oktibbeha County, 22-Ok-520 and 22-Ok-534, are included in this study. Interments at both sites consisted of primary burials, usually in the flexed position. The longest-occupied of the two sites is Lyon’s Bluff (22-Ok-520), a Mississippian village site located approximately twelve miles north of Starkville. The site was excavated by Richard Marshall in the 1960s (Marshall 1985). Radiocarbon
When their chief is dead they go into the woods to bury him, just as in the case of an ordinary man, some on one side, some on the other, the relatives of the deceased accompanying the convoy and bearing in their hands a pine stick lighted like a torch. When the body is in the trench all those taking part throw their lighted torches into it in the same way, after which it is covered with earth. That is what the entire ceremony is confined to. It is true that it continues more than six months longer for the relations of the dead and for his friends, who during all that time go almost every night to utter howls over the grave, and on account of the difference in their cries and voices form a regular charivari. These ceremonies, as I have said, are common to the chiefs and the people. The only difference which marks the first is that at their head is planted a post on which is cut with the point of a knife the figures they have worn painted on their body during life (Bushnell 1920: 108).

The passage describes what could be interpreted as a primary single interment rather than a secondary multiple burial. Descriptions of Choc- taw and Chickasaw burials are also given here to provide information on the burial customs of nearby groups.

Choc-taws

It has been well documented that the Choc-taws interred their deceased as secondary burials (Adair 1968; Bartram 1792; Bushnell 1920; Swanton 1931). Although there are discrepancies in the descriptions of specific practices associated with Choc-taw burials (Galloway 1995: 300), one common practice when a person died was to erect a scaffold adjacent to the town. The corpse was then placed on the scaffold and lightly covered with a cloth; the body remained in this state to be viewed by friends and relatives until the flesh had decomposed. A medicine man or bone picker (male and female) carefully removed the flesh from the bones, washed and dried the bones, and placed them into a container which was then deposited into a bone (charnel) house, a special building found in each Choc-taw village. On the appointed funeral day, all families of the village reported to the bone house to gather their relatives' chests. Slowly they proceeded to a place established for burial and placed the containers, in order of seniority, in the form of a pyramid, which was then covered with earth, forming a mound. After the solemn procession, the relatives of the deceased returned to the village, where they celebrated the "feast of the dead" (Bushnell 1920: 94-95; Bartram 1973). The Choc-taw burial practice suggests the use of secondary multiple burials, but a mound rather than a subterranean pit such as those observed in the study area contained the individuals.
Chickasaws

Although most of their customs and culture were similar to the Choctaws, the Chickasaws tended to follow a different method of burial. Both Bushnell (1920: 105-106) and Romans (1961: I, 71) noted that the Chickasaws “bury their dead almost the moment the breath is out of the body, in the very spot under the couch on which the deceased died, and the nearest relations mourn over it with woeful lamentations.”

Jesse D. Jennings, with the National Park Service under the Works Progress Administration, excavated four historic Chickasaw villages in the “Chickasaw Old Fields” area of northeastern Mississippi during the summer of 1939 and the summer and fall of 1940 (Jennings 1941: 155-226). Jennings located a total of forty-eight burials indicating a variety of mortuary customs including bundle [11], flexed, semiflexed [21], and extended burials [3], and multiple interments containing both primary and secondary burials [4]. The burials usually occurred inside the dwellings; burials were recorded in thirteen of the houses found. Of the twenty-one semiflexed burials, only one was reported to be outside the dwelling. Burials, oriented to the east, had been placed in shallow pits lined with slats, canes, and bark, and were often covered with the same type of materials. Unfortunately, Jennings does not comment on the number of individuals present in the multiple interments containing secondary bundle burials, so comparisons of this burial type with those observed in the Rolling Hills and Plantation Homes excavations must be limited.

None of the burial descriptions obtained from ethnohistorical data fit the pattern of subterranean multiple secondary burials observed at the Plantation Homes and Rolling Hills sites, prompting a search for other explanations for the pattern. It is possible that the bundle burials are an indication that the individuals had died away from the village, perhaps in warfare. Adair claimed that when a Chickasaw individual died away from the village other members of the tribe would erect a scaffold, somewhat similar to those used by the Choctaws, on which they would place the deceased (1968: 180-181). When the body had decomposed, the tribe would gather the bones for proper burial; they used the same ceremonies for the bones as they would if the bones were still covered with flesh (see also Bushnell 1920: 106-107; Swanton 1926-27: 229). Johnson et al. (1994: 431) shared the same idea as Adair. Basing their thesis on Jennings' 1941 excavations, as well as fourteen bundles found at the Meadowbrook site (22-Le-912), they suggested that bundle burial was used by the Chickasaws as a result of warfare or death away from the village. Several of the burials recovered from the Meadowbrook site were multiple secondary bundle burials, but no more than three individuals were present in each

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Table 1. Minimum Number of Adult Individuals.

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If status is an important factor for burial at the Rolling Hills and Plantation Homes sites, it is useful to examine this interpretation in light of Binford’s thesis that an individual’s status during life is reflected in the behavior associated with their death (i.e. burial) (1971). In general, Binford maintains that if no differential burial treatment is afforded to members of a community then an egalitarian society is probably reflected.
However, differential burial treatment indicated either by the presence of "valuable" grave goods and/or a combination of burial patterns (primary, secondary, single, multiple, and/or urn, as well as spacial placement) may reflect status differences within the group (Binford 1971; Brown 1971; Peebles 1971). Clearly, more time, effort, and organization is associated with secondary burial behavior when compared to primary interments, and such burial practices have been associated with high status members of a community (Galloway 1995: 292, 301–303). In addition to multiple secondary bundle burials, several primary burials were also recovered from the Rolling Hills area (Atkinson 1979), but only one was identified as an adult male (RH-6); the others (six in all) represented subadults and young female adults. For this reason, it does not appear that achieved status was a condition for primary burial in the study area, but rather some other factor is affecting the burial pattern associated with an individual.

For now the secondary multiple burials characteristic of the study area cannot be explained. Previous studies based on ceramic analysis (Atkinson 1979) suggest that neither the Choctaws nor the Chickasaws occupied the Starkville area during the time period in question. Ethno-historical data seems to document the presence of the Chacchiuma in the area by the late 1600s, and they presumably arrived earlier. The radiocarbon dates for the Plantation Homes burial indicate the presence of a new burial pattern in the area as early as 1573. Perhaps the cultural response to the increased mortality brought about by new European disease is the adoption of a new burial pattern, as Galloway (1995) suggests for the Choctaws, or is a response to death away from a village.

**Demographic Profiles**

Each skeletal element recovered from Plantation Homes was inventoried to confirm the minimum number of individuals contained in the grave. This inventory included noting whether bone elements paired in the human body were from the right or left side and the percentage of the element preserved. Determination of the minimum number of individuals involved recording this inventory for adults and subadults. At least five adults are represented in the burial sample by five mandibles (Table 1). Additionally, a subadult is also represented by postcranial skeletal elements, suggesting the presence of at least six individuals in the multiple burial (Table 2). Unfortunately, bone representation and preservation in bundle burials is affected by the secondary burial process. Smaller, less dense skeletal elements are more likely to be lost during the decomposition process and before final interment. The disturbance of the site by bulldozer activity and archaeological recovery no doubt led to the loss of bone elements as well.

<table>
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<th>Bone Element</th>
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<tr>
<td>Humerus</td>
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<td>Radius</td>
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The determination of age and sex is problematic when analyzing disturbed secondary burials. Before analysis, attempts were made to match postcranial and cranial materials to individuals, using bone coloration and robusticity. Unfortunately this technique is not very reliable, so multiple procedures were employed to provide corroborative evidence for age and sex whenever possible (Bass 1987; White 1991).

The results of this analysis suggest the possible presence of one female and three male adults in the Plantation Homes group. The ages at the time of death for the males include one between 20 and 30 years, one over 35 years, and the third over 40 years. The female was determined to be beyond age 35 at death. Information on age and sex for the fifth adult could not be identified. The mean age calculated for the adult sample recovered from the Plantation Homes burial was 37.5 years. The one subadult present in the group was aged 7 to 8 years.

Interestingly, the demographic data obtained for the Plantation Homes burial sample are similar to the Rolling Hills 1983 Mass Burial (Hogue et al. 1995). The mean age of adults for the latter sample was 35 years, compared with the 37.5 years averaged for Plantation Homes. Additionally, of the seven adult individuals identified, one was a female and five were males. One subadult aged around eight years at the time of death was also present in this sample. Comparing the male mortality profiles from the Rolling Hills 1983 Mass Burial with those from Plantation Homes indicates that males over 30 represent a large percentage of the individuals.

The high representation of adults and males in both of the multiple burials raises some interesting questions. If both sites represent postcontact occupations, are more males dying due to the effects of European diseases present during this time or due to conflicts with other tribes or possibly Europeans? Additionally, do the mortality profiles reflect differential treatment of certain members of the group, specifically males? To investigate these questions, mortality curves from the Plantation Homes and Rolling Hills sites were compared with the two prehistoric Mississippian sites, 22-Ok-534 and 22-Ok-520, previously described in
this paper. Unfortunately, the small size of the prehistoric skeletal series and multiple burial populations limit the conclusiveness of interpretations presented.

Studies have shown that the expected pattern of mortality for underdeveloped (Third World) and prehistoric populations includes high death frequencies between the ages of 0 and 10 years, with death rates decreasing through time, and then rising again after age 40 (see Buikstra 1976: 22–23; Cohen 1989; Dobyns 1983; Hogue 1988; Storey 1992). In other words, mortality is generally greatest among the young and the very old. This mortality pattern exists for the two prehistoric Mississippian populations from 22-Ok-534 (South Farm site) and 22-Ok-520 (Lyon’s Bluff), where the highest mortality is observed in the 0 to 10 and over 40 age groups (Figure 1). In contrast, the Plantation Homes and Rolling Hills samples show high mortality in the 30–40 age group. To increase the sample size of the multiple burial population, the number of individuals present in the age groups at these two sites were combined and then compared with the prehistoric samples (Figure 2). Again there was high mortality among the members of the population between ages 30 and 40.

Research on postcontact period populations in the Southeast and elsewhere has shown that adult mortality is significantly greater between the ages of 20 and 40 (Hogue 1988; Verano and Ubelaker 1992) when compared with the members of the population over 40, due to the impact of European diseases and other disruptions associated with contact. Comparing corresponding data for the three study populations illustrates a similar trend for the combined Plantation Homes/Rolling Hills sample, where almost a third more adults died before age 40 than after (Figure 3). Although the populations are too small to test for significance, the high adult mortality between ages 20 and 40 suggests possible disruptions in the health of the population.

Mortality curves were then computed just for males for all sites to detect if differences in mortality continued to be found (Figure 4). Again, the highest mortalities for males in the prehistoric samples were in the 40+ category. This pattern does not hold for the multiple burials; instead, male mortality is equally high in the 30–40 and 40+ age groups. It is expected that the same pattern would appear if the multiple burials were combined to increase sample size.

The determination of differential burial treatment for certain members of the population is more difficult to answer using the information gathered from the burials themselves, especially since no grave goods were present. The similarities between the Plantation Homes and Rolling Hills multiple burials seem to show a bias toward younger males. Additionally, as mentioned earlier, primary burials recovered from the Roll-
ing Hills area are identified more with subadults and young female adults. Historical accounts of differential burial for certain members of a community are documented in the Southeast. Adair describes what could be a Choctaw secondary multiple burial practice where the defleshed bones were collected and deposited “to lie along side his kindred-bones” (1968: 183). Differential burial of warriors and chiefs has also been described in the literature (Gilbert 1948; Wilson 1986). Additional investigations of other primary and multiple secondary burials in the area are considered necessary before such patterns can be suggested for the Plantation Homes and Rolling Hills burials.

**Diet**

Carbon isotope analysis of bone collagen provided information on the amount of maize present in the Plantation Homes diet. Studies have shown that $\delta^{13}C$ values (carbon 13 values) of human collagen from pre-agricultural groups fall below -19.0/o, while values above -19.0/o indicate the presence of C4 plants in the diet (Ambrose 1987; Buikstra 1992; Buikstra and Milner 1991; Chisolm 1989; Price 1989; Schoening 1989; Schoening et al. 1990; Schwarcz et al. 1985). C4 plants in the southeastern U.S. are cultigens such as maize and chenopod. In northeast Mississippi, maize is the only C4 plant identified archaeologically in Native American sites (Rafferty 1994).

The three Plantation Homes samples submitted for analysis yielded some interesting results. Carbon 13 values computed for the female individual measured -20.3/o, suggesting that maize had not been consumed regularly by this individual, if at all. The male samples, on the other hand, measured -11.7, -14.3, and -14 for $\delta^{13}C$ values, providing evidence for the use of maize in the diet. These latter figures were then used in an equation devised by Schwarcz et al. (1985) to detect the percentage of dietary carbon originating from C4 plants. The results showed that 51% of the dietary carbon in the males’ diet was from maize. When values obtained for the entire population are used in the equation, only 39% of the dietary carbon is attributed to maize. Comparisons were then made with other sites where $\delta^{13}C$ values were available. The sites included the South Farm site (sample included two males at -16.5 and -13.8, and one female at -14.3; Hogue and Peacock 1995), 22-Ok-595 (sample included one female at -15.4; Hogue et al. 1996), the Rolling Hills 1983 Mass Burial (sample included one male, -12.2, and one female, -10.4; Hogue et al. 1995), and the historic primary burial, RH-6 (male, -12.8), recovered from the Rolling Hills area.

The dietary percentages calculated for the two farmstead sites were around 34% for both sites (Figure 5). This suggests that farmstead inhabitants were enjoying a diverse diet characterized mostly by naturally
available foods, a pattern that appears to be unchanged from the Mississippian through the Contact period (Hogue and Peacock 1995; Hogue et al. 1995). In contrast, $\delta^{13}C$ values obtained from the postcontact Rolling Hills 1983 Mass Burial sample and RH-6 indicated that the percentage of dietary carbon from maize was 57% and 54.6%, respectively. This higher percentage of dietary carbon indicates an increase in maize dependency for the later groups. For the Plantation Homes sample only 39% of the dietary carbon was obtained from maize consumption. Apparently, the Plantation Homes occupants were on the whole less dependent on maize than the adjacent later Rolling Hills inhabitants. However, a much greater dependency on maize is demonstrated when just the samples obtained for males are considered. Several interpretations could explain these variations. The differential use of maize in the diet could reflect temporal differences between the two sites. Maize use may have become more important to inhabitants in the area as contact with the Europeans increased. Status differences could also be used to explain the observed differences in maize use. Although the demographic profiles of the individuals buried at the two sites are similar, some members of the community may have had greater access to maize than others. The lack of extremely low consumption of maize in the diet of the Plantation Homes female reflects this possibility. Again, much more information is needed from the area to support these conclusions.

Summary and Conclusions

Five adults and one subadult were present in the multiple bundle burial excavated at Plantation Homes. The cultural identity of the groups that used multiple secondary burials in the Starkville area remains unknown. Ethnohistorical descriptions of burial patterns of identified tribes known to have settled near the area do not fit the secondary multiple burial pattern observed. Perhaps, as Johnson (1994) and Galloway (1995) suggest, warfare or European diseases may account for a new burial style. Demographic profiles of the individuals were very similar in age and sex to the nearby postcontact period Rolling Hills mass burial. Comparisons made with prehistoric Mississippian sites indicate that more young adults were represented in the postcontact multiple secondary burials. This pattern has been observed by researchers elsewhere and is thought to reflect the impact of European disease and other disruptions associated with early European presence in the Americas. The bias toward adult males identified in the postcontact multiple burials may be due in part to increased conflict, in which males were more likely involved, disease, and/or differential burial of members of the community. Dietary information obtained using carbon isotope analysis of human collagen demonstrated differential maize dependency. Carbon isotope values for the Plantation Homes site indicate that this group, overall, was less dependent on maize than those occupying the adjacent Rolling Hills area. When the carbon values from the Plantation Homes male samples are considered, little change in maize use is demonstrated through time for groups associated with secondary burials. Interestingly, the sample obtained for the Plantation Homes female contained $\delta^{13}C$ values generally associated with preagricultural groups. Whether the variation in maize dependency observed for the two sites is due to temporal or status differences remains to be investigated.

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Collections

The Plantation Homes and Rolling Hills materials are stored at the Cobb Institute of Archaeology Curation Laboratory at Mississippi State University, Mississippi State, MS.

S. Homes Hogue is an assistant professor and Suzanne Bufkin and Heather Rushing are students in the Department of Sociology, Anthropology, and Social Work at Mississippi State University.

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Archeological Reconnaissance Survey of Remnant Braided Stream Surfaces in the Western Central Yazoo Basin, Mississippi

John Connaway and Sam McGahey

A reconnaissance survey of portions of approximately 475 square miles of remnant Pleistocene braided stream surfaces in the western central portion of the Yazoo Basin was carried out between 1992 and 1994. Because of the leveling of large tracts of land, along with other limiting factors such as fish pond construction, the results of this survey have been minimal at best, suggesting a very low potential for further problem-oriented research in the area. The primary purpose of this paper is to describe the survey and its limitations, to present updated information on certain cultural trends regarding Paleo/Early Archaic lithic diagnostics, and to address the paucity of site data and its effect regarding future investigations.

Introduction

During the period between the fall of 1986 and the spring of 1988, an archaeological reconnaissance survey was made of remnant Pleistocene braided stream surfaces, as defined by Kolb et al. (1968), along the eastern edge of the northern Yazoo Basin (Figure 1, shaded area at right). Emphasis was placed on Paleo/Early Archaic occupations within the approximately 500 square miles of the survey universe. Of the total 313 sites eventually recorded, 184 (ca. 58.8%) yielded Paleo/Early Archaic or possible Paleo/Early Archaic components in the surface collections. A preliminary report on this was published in Mississippi Archaeology (Connaway 1988).

As mentioned in that report, the reconnaissance level survey being carried out at that time, as well as in the present survey, follows the somewhat nebulous definition of such by the Department of the Interior. As outlined in the Federal Register, September 1983, the “reconnaissance survey” should document:

1. the kinds of properties looked for
2. the boundaries of the area surveyed
3. the method of survey, including the extent of survey coverage
4. the kinds of historic properties present in the surveyed area
5. specific properties that were identified and the categories of information collected

6. places examined that did not contain historic properties.

All of the above have been attested to, with limitations, in this report, on the completed site cards, or on the field survey maps.

Preparation of site cards and analysis and cataloging of collections from recorded sites in the eastern braided stream area were begun during the survey years, but were interrupted for slightly over three years by the emergency excavation of the Austin site in Tunica County, Mississippi. As a result, the site cards and artifact/component tabulations were not completed until 1995, along with most of the collections analysis, thus running concurrently with the survey of the western area reported here. A final analysis and report is still in preparation; data from this eastern area survey were used by Richard Stallings for his 1993 University of Mississippi master’s thesis, which set up a basis for archaeological predictive modeling in the eastern braided stream area.

As a continuation of this project in most respects and with similar objectives in mind, the Mississippi Department of Archives and History initiated an archaeological reconnaissance survey of the other more western braided stream surfaces in the central Yazoo Basin in 1992 (Figure 1, shaded area at left). Not only was much of this area unsurveyed, but it was projected that much-needed data on Paleo/Early Archaic projectile points and tool types could be extracted from the new survey universe for comparison with that from the eastern braided stream area. Due to a recent shift in emphasis from field survey to the study of private collections, to be explained presently, this survey remains ongoing.

Objectives

Survey objectives, as outlined by Connaway (1988: 44) for the eastern area, included the following:

1. to locate and define within a cultural/chronological framework as many prehistoric sites as possible within the time limitations of the survey, with special emphasis on identifying sites that may be eligible for nomination to the National Register of Historic Places

2. pursuant to the above, to locate, document, and photograph private collections which originated on sites within the survey area

3. to place special emphasis on sites, collections, or artifacts of Paleo/Early Archaic context which may pertain to research being conducted on differences in lithic technology between the eastern and western braided stream surfaces

Figure 1. Drainage map of the Yazoo Basin with braided stream surfaces shaded (after Mississippi Geological Survey relief map, 1975, and Kolb et al. 1968).
4. to attempt to ascertain the potential need for further survey within the designated area and the extent to which such survey should be carried out in order to add significantly to the cultural database already assembled, especially as pertains to the Paleo/Early Archaic study mentioned above.

These objectives have been carried over into the survey of the western area since it is basically a continuation of the study of all braided stream surfaces in the Yazoo Basin, and the objectives thus apply equally in all cases. As will be seen, these aims have been realized with much less success in the western area, where the causes and bases for limitations are quite different from those in the eastern survey area.

Survey Universe

Both the eastern and western braided stream surfaces in the Yazoo Basin "were formed as the result of waning of the Late Wisconsin glaciation" and are of Pleistocene age, between 9,000 (lowest levels) and circa 18,000 (highest levels) years old (Saucier 1981: 22). One problem which may be encountered during a survey in these areas is veneering of older, higher surfaces by loess deposits and later, lower surfaces by floodplain or backswamp alluvium from Mississippi River meandering (Saucier 1981: 22). The surfaces that remain today represent slightly dissected deposits of Pleistocene glacial debris, the fine-grained soils of which constitute the "uppermost portions of the substratum" and "reflect a decreasing source of coarse glacial debris as well as a shallowing of stream gradients," which was followed by a meandering regime of the Mississippi and Ohio Rivers (Saucier 1968: 67). Saucier (1974: 9) designates both braided stream surfaces in the Yazoo Basin as younger terrace level 2 deposits which have less relief and dissection and have less sandy surfaces than the older deposits. They were essentially derived from the Mississippi, Missouri, and Ohio River drainages (Saucier 1974: 8). The western surface, being in one of the lowest Mississippi Valley areas, has been subject to more recent backswamp deposits (Saucier 1974: 9) that have caused problems to some extent in locating Paleo/Early Archaic sites in the area.

In general, the so-called "western braided stream" area (Figures 1 and 2) stretches north-south from the Malvina / 6 miles below Shelby/ Mergold area at the north end to the Leroy Percy State Park/Hollandale area at the south end. From west to east, it stretches from just east of Mississippi Highway 1 below Beulah eastward to the Cleveland / Boyle area in the north, from Greenville eastward to Holly Ridge in the middle, and from Leroy Percy State Park eastward almost to the Sunflower River in the south. It covers an area of approximately 475 square miles.
roughly equivalent to that of the eastern remnant, and includes portions of Bolivar, Washington, and Sunflower counties. The area is roughly 51 miles long north–south by 13 miles wide at the northern part, with two areas 5.5 and 8.5 miles wide in the southern part (see Figures 1 and 2). It encompasses portions of eighteen 7.5 minute USGS quadrangle maps (Figure 2, Table 1) and nine 15 minute updated quadrangles from Kolb et al. 1968 (Figure 2, Table 2).

Table 1. USGS 7.5 minute quadrangles (in order from west to east and north to south).

| Pace, 1969 | Shaw, 1967 | Tribbett, 1967 |
| Cleveland, 1966 | Wayside, 1970 | Midnight NW, 1965 |

Table 2. Revised USGS 15 minute quadrangles, from Kolb et al. 1968, showing the western braided stream surfaces (in order from west to east and north to south).

| Pace | Cleveland | Baird |
| Mound Bayou | Refuge | Swan Lake |
| Choctaw | Tralake | Auter |

The area east of Greenville, between Leland and Arcola in general, is split by the Bogue Phalia and Black Bayou drainages, leaving the smaller portion around Greenville relatively isolated from the major part to the east of Bogue Phalia. Heavy silting from the Bogue Phalia drainage probably accounts for the fact that much of the braided stream surface is being covered over in this area, if not scourred away by stream meandering. The eastern edge of this braided stream remnant is delineated by the Sunflower River drainage, which presumably had the same effect, leaving the present surfaces essentially sandwiched between the two meander belts.

More specifically, there are several smaller areas somewhat separated from the main one, each having its own set of bordering or dissecting drainage systems. With this in mind, and with reference to the 15 minute quadrangle maps depicting the distribution of alluvial deposits (Kolb et al. 1968), listed in Table 2, the survey universe can be described more precisely as follows.

As shown in Figure 1, a small portion of the braided stream surface at the northwest end (Pace and Choctaw 15° quadrangles) is cut off from the main central portion by Bradford Bayou and Snake Creek, which run into Bogue Phalia about three miles south of the town of Pace (Choctaw 15° quadrangle). This small subsection is approximately 16.5 miles long (NNE–SSW) and 8 miles in maximum width (ESE–WNW).

Aside from this small separate part, the main surface at its north end is bordered on the west by the upper ends of Bogue Phalia, Dry Bayou, Half Moon Bayou, Jordan Bayou, Clear Creek, Bee Bayou, and numerous old abandoned Mississippi River channels (Pace and Choctaw 15° quadrangles). It is bordered on the east by Jones Bayou, Indian Bayou, and Porter Bayou, a few miles west of the Sunflower River (Mound Bayou and Cleveland 15° quadrangles). Also in this area, Bogue Phalia begins its southward flow through the middle of the main central part of the braided stream surface. At the Bolivar/Washington county line, the surface is only about 11 miles wide.

Moving south from this county line (Tralake and Baird 15° quadrangles), the main portion of the area, still cut by Bogue Phalia, as well as Six Mile Bayou, is bordered on the west primarily by Deer Creek and on the east by several old Mississippi River abandoned channels occupied by various minor creeks, and by the Sunflower River. The southern portion of the braided stream surface terminates on the Swan Lake and Auter 15° quadrangles. Here it is bordered on the west by an abandoned river course and on the east by Four Mile Lake and the Sunflower River floodplain, and is dissected by Black Bayou, Deer Creek, Bogue Phalia, and the lower end of Six Mile Bayou. A couple of small areas, as shown in Figure 1, are somewhat isolated by this dissecting off the southwest end of the main surface, but are considered here as essentially part of the main central section.

Moving back northwest to the area just southeast of Greenville, there is another small section (Figures 1 and 2) that is cut off from the main part by channels of Black Bayou and its tributaries and by Deer Creek. This divide is approximately 6 miles wide (Tralake 15° quadrangle), leaving the subsection near Greenville (Refuge and Tralake 15° quadrangles) relatively isolated. This area is approximately 10.5 miles long (N–S) and from 2 miles wide (E–W) at its northern end to 5.5 miles wide near its southern end.
Method

As stated in the preliminary report on the eastern braided stream survey (Connaway 1988: 51), "the reconnaissance survey is designed to characterize a region's historic properties, and techniques involved might include anything from 'windshield or walk-over surveys' to special 'random, stratified, or systematic' sampling." The surveys of both braided stream surfaces have utilized the former methods for the most part, as well as using informants for site locations. The eastern area survey primarily used the informant method because of the circumstances brought on by the nearby full-time assistance of a local collector and MAA member, Howard Mize, as explained in the previous report (Connaway 1988: 51). This worked quite well because most of the land surface remained basically unaltered, and sites were thus reasonably intact. The circumstances of the western area survey were quite different. It lacked the informant assistance previously provided, but the main difference was the extensive land alterations encountered, which precluded in large part the use of anything but "windshield" survey and some occasional "walk-over" surveys in limited areas.

As with the previous survey, the locations and boundaries of the western braided stream remnants were transferred from the revised maps of the alluvial valley of the Yazoo Basin (Kolb et al. 1968) to USGS 7.5 minute quadrangle maps, which were used in the field reconnaissance for site locations as well as for recording leveling, fish ponds, and other land-use data. In this case, alluvial and colluvial fans were not a factor, but floodplains/meander belts of major streams and rivers were of prime consideration and were outlined on the field maps. These areas near major streams were avoided for the most part because of suspected silting over of the earlier surfaces. Efforts were concentrated more on the braided stream remnant areas farther away from these drainages, where there appeared to be better chances of locating early sites. Previously recorded sites were marked on the field maps to avoid duplication.

A large portion of fiscal year 1992-1993 was taken up by the continuation of analysis and cataloging of the collections and completion of the site cards from the eastern braided stream survey following the Austin site project hiatus. A brief second hiatus occurred from May through July 1993, with the planning and excavations at the Hollywood site in Tunica County, Mississippi. Despite these and various other unforeseen occurrences, a substantial portion of the northern part (ca. 31.55 square miles north of Mississippi Highway 8 between Rosedale and Cleveland) and a smaller portion of the central part (ca. 6 square miles east of Greenville and Bogue Phalia) of the western survey universe (ca. 7.9% of the total survey area) were surveyed during this first season.

Only seven previously unrecorded sites were located, primarily because a very large percentage of the land, especially in the northern sector, has been land-leveled. It is estimated that approximately 23.9 square miles, or 75.8% of the 31.55 square miles surveyed in the northern part, is leveled. This does not include naturally low flat land (ca. 3.9 square miles), possibly leveled land planted in heavy wheat (ca. 2.0 square miles), or fish ponds (ca. 0.25 square miles), all of which account for another 19.5% of the surveyed area. Thus, only 1.5 square miles (4.7%) of potential site-yielding surfaces remain, and only three unrecorded sites were located in that area during the first fiscal year.

This first part of the survey, during the 1992-1993 fiscal year, was in effect an initial sampling of the upper and lower portions of the area in question, an effort to get a feel for the present condition of the land surfaces and how similar or different they might be from the previous survey universe. One alarming discovery was the extent to which land-leveling has taken place throughout the area and the concomitant likelihood that numerous sites situated on the higher elevations have been obliterated. This scenario was found to be true in the case of some sites reported by landowners in the Merigold area, as well as one of the best known, previously recorded, Paleo/Early Archaic sites in the Delta, Major Helm (22-Ws-825).

Jeffrey P. Brain (1970: 104-105), in his treatise on Early Archaic in the lower Mississippi Valley, documented Major Helm as a Dalton site, along with seven other similar sites in the area, pointing out the importance of further studies there. Sadly, except for one remaining elevation with a barn and houses on it, Major Helm no longer affords an opportunity for future investigations, a situation appearing to be more the rule than the exception, especially with regard to Paleo/Early Archaic sites. As Brain suggested more than twenty years ago, these sites are found on the higher elevations of the relict braided plain, protruding through thin strata of recent alluvium or preserved untouched by recent river action (1970: 105). Such elevations are the first to go in the land-leveling procedure. Even if untouched by river action, they are most likely now to have been touched by agricultural action.

Soils which mark the older surfaces have been described as reddish in color, and it has been found during the current survey that in many cases Pearson silty loam seems to conform to the general soil type referred to. Major Helm was mapped as Dundee silty clay loam, but the soil maps may not have been specific enough to include smaller elevations on the site. The recently discovered Jefcoat site (22-Bo-664), with Dalton/Early Archaic components, is mapped as Pearson, as are several other sites in the northern survey sector. In several cases, former sites on "reddish" soil have been reported in the northern area by landowners, but now are
only flat, light-colored spots in leveled fields. A few natural levees of this soil type have been found and walked over in both the northern and southern sectors, but no sites have been located.

During the second season, in 1994, survey continued in the northern portion and progressed into large sample areas of the central and southern portions. Slightly over 93 square miles were covered, with only 6 additional sites being recorded. Again, most of the area covered was either leveled; in flat rice fields; naturally low, flat, buckshot land (backswamp); fallow land heavily overgrown in grass and underbrush; planted in wheat, beans, cotton, or corn; flat, freshly disked; or in fish ponds, a relatively recent and growing development in land use. Very few natural levees or higher elevations which could be checked for sites were encountered, due to one or more of the above limitations. A few small areas of higher ground where access was limited were marked on the maps for future investigation when visibility would be maximal.

In many cases, the documentation effort must be diverted to artifact collections of landowners and collectors to determine the components of former sites. Thus far this has also met with little success, since many of the collections are either undocumented as to provenience or are not from sites within the survey area. During the 1992–1993 season, two major and two minor collections were checked. The minor collections (Meyer, Loper) were both negligible, falling into the previously mentioned categories. The major collection from the northern part of the survey area (Hiter) was spatially undocumented, but was primarily from within a two-mile radius of the owner’s house, so was of at least some value. It also contained a few Early Archaic artifacts. The other major collection (Fowler) was mostly documented, but contained little from within the survey area and very little Early Archaic material at all. More recently, Early Archaic materials have been recorded from the Wood and Lundy collections, both from the south central portion of the survey area. Two of the sites from which this material came have been recorded (22-Su-639 and 640) on hearsay, without being visited by the survey. Other collections, mostly small, are known, and further studies are planned.

Results

At present, the general results of the western braided stream survey have been mostly negative, affording little useful data for comparison with the more intact eastern braided stream area. In the western area, a large percentage of the land has been leveled, and most likely numerous sites have been obliterated, as opposed to the much less disturbed eastern area previously studied. Survey efforts continued into June 1994 with similar results, although at least one Paleo/Early Archaic site (22-

Bo-664) has been recently recorded. Unfortunately, even this site has no significant midden depth, being essentially restricted to the plowzone.

Of the 13 sites recorded during the entire 1992–1994 survey, 7 were in the northern portion and 6 were in the southern portion of the survey universe. A brief assessment of these follows in Table 3.

Table 3. Sites recorded during the western braided stream survey

<table>
<thead>
<tr>
<th>Site</th>
<th>Condition</th>
<th>Soil</th>
<th>Cultural Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-Bo-657</td>
<td>leveled</td>
<td>Sharkey clay</td>
<td>unknown, recent Historic</td>
</tr>
<tr>
<td>22-Bo-660</td>
<td>unlevelled</td>
<td>Dundee silt loam (Dh)</td>
<td>Woodland; Miss.; r. Hist.</td>
</tr>
<tr>
<td>22-Bo-661</td>
<td>leveled</td>
<td>Pearson silt loam (Pa)</td>
<td>L Arch., Mississippian</td>
</tr>
<tr>
<td>22-Bo-664</td>
<td>unlevelled</td>
<td>Pearson silt loam (Pa)</td>
<td>E Arch.; Wood.; r. Hist.</td>
</tr>
<tr>
<td>22-Bo-665</td>
<td>unlevelled</td>
<td>Pearson silt loam (Pa)</td>
<td>recent Historic</td>
</tr>
<tr>
<td>22-Bo-666</td>
<td>unlevelled</td>
<td>Pearson silt loam (Pa)</td>
<td>L Arch.–E Miss.; r. Hist.</td>
</tr>
<tr>
<td>22-Bk-667</td>
<td>unlevelled</td>
<td>Dundee silt loam (Dh)</td>
<td>Wood.; recent Historic</td>
</tr>
<tr>
<td>22-Ws-779</td>
<td>unlevelled</td>
<td>Forestdale silty clay (Fb)</td>
<td>L Arch.; M–L Woodland</td>
</tr>
<tr>
<td>22-Ws-780</td>
<td>unlevelled</td>
<td>Forestdale silty clay (Fc)</td>
<td>L Arch.; M–L Woodland</td>
</tr>
<tr>
<td>22-Ws-781</td>
<td>unlevelled</td>
<td>Forestdale silty clay (Fc)</td>
<td>L Arch.; M–L Woodland</td>
</tr>
<tr>
<td>22-Ws-782</td>
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<td>Woodland</td>
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<tr>
<td>22-Su-639</td>
<td>unknown</td>
<td>Alligator clay (Ac)</td>
<td>Paleo</td>
</tr>
<tr>
<td>22-Su-640</td>
<td>unknown</td>
<td>Alligator clay (Ab, Ac)</td>
<td>Early Archaic</td>
</tr>
</tbody>
</table>

As can be seen, only three of these are of any use to the Paleo/Early Archaic survey in particular, and none are considered National Register eligible. Two have been destroyed, and the rest are essentially light to medium concentrations of potsherds, a few lithics, and recent tenant house scatters. As previously mentioned, the paucity of sites seems to be in large part associated with the prevalence of land-leveling activity in the area. Few previously recorded sites were visited, attention being focused on unsurveyed surfaces.

An additional 93.25 square miles have been surveyed since 1993, but only six sites have been added to the record since then (22-Bo-664–667, 22-Su-639–640), attesting to the tremendous impact agricultural/leveling practices have had on the area. The latter two sites, in Sunflower County, have not been visited by the survey personnel, but Paleo/Early Archaic artifacts from there were recorded in the Wood and Lundy col-
lections. Some recent land-leveling has been reported in that area, so the present condition of these two sites is unknown.

Since the western area survey began in 1992, approximately 126.25 square miles, or 26.6% of the entire braided stream surface, has been checked, at least by windshield survey, with some of the remaining natural elevations walked over. Of the total area surveyed, approximately 85.4 square miles (67.6%) appear to have been leveled. Another 20.4 square miles (16.1%) is naturally low, flat ground, such as backswamp areas, where there is little likelihood of sites being present. Aside from this, there was an additional 5.1 square miles (4.0%) of land obscured by heavy wheat crops or lying fallow with thick grass and underbrush cover, another 5.8 square miles (4.6%) in fish ponds, and 0.25 square miles (0.2%) covered by residential subdivisions or trailer parks. This leaves about 9.4 square miles (7.4%) of land that was not leveled or otherwise altered or obscured, some of which had the potential for intact sites. This is the portion referred to previously as subjected to some walk-over survey, with only a few areas yielding artifacts.

The braided stream surfaces outlined on the Merigold, Lobdell, Stringtown, Greenville, Kinlock, and Midnight NW 7.5' quadrangles have not yet been included in the field survey because, with the exception of Stringtown, these were fringe areas with only small surfaces present. Attention was focused on the larger areas where more ground could be covered per map. The above tabulations do not include an additional ca. 0.75 square miles of fish ponds on the Lobdell and Stringtown quadrangles and ca. 2.5 square miles or more of residential/commercial areas in Greenville, on the Greenville quadrangle. All of these were visibly marked on the maps, but were not checked during the survey.

Especially in the northern section, where practically all of the land is either leveled or is naturally low, flat ground, most of the remaining elevations where sites might be located are knolls or natural levee remnants obscured beneath houses, barns, or farm headquarters. In a few cases, land formations could not be visually determined due to heavy winter wheat crop cover or fallow fields. To date, all of the natural elevations checked, most have been devoid of cultural materials and only eleven sites have been found. As of spring 1995, it would appear that the emphasis will have to shift more to the study of private collections rather than actual sites if the Paleo/Early Archaic database is to be refined. This shift is reflected in the following discussion by Sam McGahey on early lithics in the western study area.

Update of Early Lithic Period Diagnostics Recorded from the Western Braided Stream Surface of the Yazoo Basin

In 1987 the historical context for the Paleoindian–Early Archaic Period for the Yazoo Basin was completed. It was published along with three other regional contexts for that period in 1992 (McGahey 1992). One of the major points made in the section on the Yazoo Basin was that based on the sample of diagnostics available, it appeared quite possible that there was a cultural divide in the basin during the period under consideration. The basis for this conclusion was a comparison of the material from the two remnant braided stream surfaces. It seemed that somewhere between the eastern and western surfaces, which are only about 30 miles apart at one point, there was some kind of barrier, which had to be cultural since there were no physical barriers capable of substantially hindering movement of people and goods.

When the context was prepared in 1987, a total of 163 diagnostic artifacts of the Paleoindian–Early Archaic Period had been recorded from the eastern surface and 84 from the western surface. It was hoped that when survey work turned to the western surface, the samples of both artifacts and sites of this period would materially increase sample sizes and allow for a more confident assessment of the cultural divide hypothesis. Unfortunately, it seems that the western area has been subjected to land-leveling to a much greater extent than the eastern surface, with the result that few sites and artifacts were recorded. However, 56 additional diagnostic bifaces have now been recorded from the western surface, increasing the total from 84 to 140. In addition, twenty unifaces, one bifacial preform, and one adze have been recorded. The unifaces and the adze obviously belong to the period under consideration, but there is no way currently known to determine to which part of the period they belong. Following is a description of the diagnostic artifacts with accompanying illustrations and interpretations of the implications of the new data for the cultural divide hypothesis.

Paleoindian Period

Clovis point (?), N=1

Length: 27.6 mm (broken), Width: 33.5 mm, Thickness: 7.4 mm
Material: Mottled, gray, exotic chert, source unknown.
Figure 3A

Pelican point (?), N=1

Length: 26 mm (broken), Width: 35.6 mm, Thickness: 5 mm
Material: Glossy, black, Pitkin chert.
Figure 3B
Hinds point, N=1
Length: 18.7 mm, Width: 25.5 mm, Thickness: 6.3 mm
Material: Tan pre-loess gravel chert with reddened auricles. This color pattern commonly results from one method of heat treating. This raw material may have come from the loess hills to the east of the Yazoo Basin, where numerous streams have exposed gravel deposits.
Figure 3C

Coldwater points, N=3
Specimen 1. Length: 79.3 mm, Width: 36 mm, Thickness: 6 mm
Material: Dark gray Novaculite, semi-translucent
Figure 3D
Specimen 2. Length: 25.2 mm (broken), Width: 22 mm, Thickness: 8 mm
Material: Petrified wood, white with brown streaks. The probable source is the pre-loess gravels to the east.
Figure 3E
Specimen 3. Length: 49 mm, Width: 21.2 mm, Thickness: 5.7 mm
Material: Pre-loess gravel chert, tan
Figure 3F
Lanceolate Dalton points, N=5
Specimen 1. Length: 38.7 mm, Width: 21.3 mm, Thickness: 6.6 mm
Material: Pre-loess chert, gray
Comments: Right-hand bevel
Figure 3G
Specimen 2. Length: 43.2 mm (broken), Width: 23.4 mm, Thickness: 6.5 mm
Material: Black, glossy chert, probably Pitkin
Comments: Right-hand bevel
Figure 3H
Specimen 3. Length: 30 mm (broken), Width: 22.7 mm, Thickness: 7 mm
Material: Pre-loess gravel chert, tan
Comments: Right-hand bevel
Figure 3I
Specimen 4. Length: 17.7 mm (broken), width: 28.7 mm, Thickness: 5 mm
Material: Glossy, white, exotic chert, apparently heat treated
Comments: Right-hand bevel, or so it would appear based on the very limited length of blade edge remaining.
Figure 3J
Specimen 5. Length: 26.6 mm (broken), Width: 24.8 mm, Thickness: 6.5 mm
Material: Glossy, white, exotic chert
Comments: The classification of this specimen as Dalton is debatable. It would appear to be an advanced stage Dalton preform which had not yet been serrated. As is apparent from the illustration, it is fluted on both faces and has not been ground on one edge or has been reworked along that edge subsequent to what should
have been the final edge grinding. The fluting in and of itself does not disqualify it from being Dalton, as many Dalton points are fairly well fluted. It seems that the size of this specimen, considering its apparent preform status, is too small for Clovis, which would seem to be the only alternative to its being Dalton.

Figure 3K

Side-notched Dalton, N=2
Specimen 1. Length: 29 mm, Width: 20 mm, Thickness: 6.3 mm
Material: Cream colored chert mottled with grayish brown

Figure 4A

Specimen 2. Length: 23.5 mm, Width: 30.4 mm, Thickness: 6.8 mm
Material: The point has a seam of brown flint sandwiched between grey, mottled chert layers and shows the beginning of left-hand beveling, resulting apparently from an initial resharpening.

Figure 4B

Holland Point, N=1
Length: 42 mm, Width: 26 mm, Thickness: 6.7 mm
Material: Cream colored chert with brown and gray mottling
Comments: The Holland classification is used here with considerable uncertainty. According to Perino (1985: 187), the type is associated with the Sloan variety of Dalton point, and thirteen of them were found in Iowa in a cache with a Pike County point, a type which closely resembles Beaver Lake. This specimen appears to be unique in the area under consideration here, but based on its form, it fits the Holland type description better than any other type, and the flaking, basal thinning, and grinding certainly put it on a comparable Late Paleoindian time level.

Figure 4C

Fluted uniface, N=1
Length: 62 mm, Width: 23.4 mm, Thickness: 9 mm
Material: Tan-gray chert, pre-loess gravel
Comments: What, if any, relationship this artifact may have with the fluted point tradition remains to be seen.

Figure 4D

Early Archaic

Cache River, N=4
Specimen 1. Length: 28.5 mm (broken), Width: 26.7 mm, Thickness: 6.5 mm
Material: Pre-loess gravel chert, tan with traces of pink and a brown spot on one side

Figure 4E

Specimen 2. Length: 11 mm (basal portion only), Width: 31.4 mm, Thickness: 6 mm
Material: White-cream colored chert, probably exotic

Figure 4F

Specimen 3. Length: 7.8 mm (basal portion only), Width: 25.2 mm, Thickness: 3.8 mm
Material: Red, heat treated chert, probably pre-loess gravel

Figure 4G

Specimen 4. Length: 26.8 mm, Width: 24.4 mm, Thickness: 7.2 mm
Material: Probably pre-loess gravel chert, blue-green and cream colors banded
Comments: Mutilated end, end scraper
Figure 4H

Big Sandy, N=3
Specimen 1. Length: 24.4 mm, Width: 23.8 mm, Thickness: 6 mm
Material: Pink, heat treated chert, probably pre-loess gravel
Comments: This specimen was recycled into an end scraper.
Figure 4I

Specimen 2. Length: 18.9 mm (basal portion only), Width: 31.8 mm,
Thickness: 6.5 mm
Material: Glossy, cream-pink color, semi-translucent, apparently ex-
otic material
Figure 4J

Specimen 3. Length: 21.4 mm (basal portion only), Width: 29.8 mm,
(incomplete), Thickness: 6.8 mm
Material: Apparently Novaculite, reddish in color
Figure 4K

Decatur, N=2

Specimen 1. Length: 65.6 mm, Width: 35 mm, Thickness: 7.4 mm
Material: Cream colored chert with brown mottling, probably pre-
loess gravel
Figure 5A

Specimen 2. Length: 40 mm, Width: 25.4 mm, Thickness: 4.6 mm
Material: Probably fossiliferous Fort Payne chert, gray with white
fossiliferous inclusions
Figure 5B

Hardin, N=6

Specimen 1. Length: 40 mm (broken), Width: 24.4 mm, Thickness:
7.7 mm
Material: Tan chert, probably pre-loess gravel
Comments: This point was found on the surface of a site about two
to three miles from the braided stream surface.
Figure 6A

Specimen 2. Length: 39.3 mm, Width: 33.5 mm, Thickness: 7 mm
Material: Cream-white chert, probably pre-loess gravel
Figure 6B

Specimen 3. Length: 47.7 mm, Width: 30.2 mm, Thickness: 6.5 mm
Material: Gray, mottled, exotic chert
Figure 6C

Specimen 4. Length: 43 mm (broken), Width: 27.4 mm, Thickness:
7.8 mm
Material: Exotic, bluish-black chert with small, white specks, possi-
bly fossiliferous Fort Payne chert
Figure 6D

Specimen 5. Length: 42.6 mm, Width: 32.3 mm, Thickness: 8.4 mm
Material: Exotic chert, glossy, tan mottled with white and blue-
green, probably heat treated
Figure 6E
Specimen 3. Length: 52.6 mm, Width: 28.5 mm, Thickness: 7.3 mm
Material: Tan chert, with brown and gray mottling, probably pre-loess gravel
Figure 5E

Specimen 4. Length: 13 mm (basal section only), Width: 24.4 mm, Thickness: 6 mm
Material: Cream colored, mottled chert, probably pre-loess
Figure 5F

Geneill, N=7

Specimen 1. Length: 41.5 mm, Width: 24.6 mm, Thickness: 4.9 mm
Material: Dark gray-brown chert, probably pre-loess
Figure 6G

Specimen 2. Length: 39 mm, Width: 21.0 mm, Thickness: 4.2 mm
Material: White-cream chert, probably pre-loess
Figure 6H

Specimen 3. Length: 37.5 mm (broken), Width: 25.6 mm, Thickness: 5 mm
Material: Tan chert with one reddened basal corner (the reddening is assumed to be from heat treating), probably pre-loess gravel chert
Figure 6I

Specimen 4. Length: 34.8 mm, Width: 21.8 mm, Thickness: 5 mm
Material: Cream colored chert with some tan mottling
Figure 6J

Specimen 5. Length: 26.6 mm (broken), Width: 26.4 mm, Thickness: 6.2 mm
Material: Tan chert, probably pre-loess
Figure 6K

Specimen 6. Length: 26.8 mm, Width: 22 mm, Thickness: 6.5 mm
Material: Cream colored chert, probably pre-loess
Figure 6L

Specimen 7. Length: 36 mm, Width: 22 mm, Thickness: 8 mm
Material: Light gray Novaculite
Comments: This specimen was collected from a site two to three miles off of the braided stream surface. The type name Geneill is used for this specimen with reservations. It seems too thick for the type as represented by the others described above. Brain's type de-
scription, however, did not mention thickness at all, while placing considerable emphasis on the apparent near uniform width of his sample of twelve.

Figure 6M

Unclassified projectile points, N=15

Specimen 1. Length: 35.8 mm, Width: 21.5 mm, Thickness: 7.4 mm
Material: Dark gray or black striped (dark gray stripes alternating with black) exotic material
Comments: This specimen has been reworked into an end scraper.
Figure 7A

Specimen 2. Length: 48.4 mm (broken), Width: 22 mm, Thickness: 7 mm
Material: White, exotic chert, resembling Crescent Quarry
Figure 7B

Specimen 3. Length: 12.7 mm (basal portion only), Width: 27 mm, Thickness: 7.2 mm
Material: White, glossy chert with some pinkish specks; the material resembles Crescent Quarry chert.
Figure 7C

Specimen 4. Length: 27 mm (broken), Width: 29 mm, Thickness: 6 mm
Material: Gray-white Novaculite
Figure 7D

Specimen 5. Length: 18 mm (broken), Width: 17.8 mm (broken), Thickness: 6.4 mm
Material: Black, glossy chert, probably Pitkin
Comments: This specimen was originally a corner-notched point and was reworked into an end scraper.
Figure 7E

Specimen 6. Length: 39.5 mm, Width: 20.4 mm, Thickness: 8.5 mm
Material: Tan to cream colored chert, probably pre-loess
Comments: This point was originally a corner-notched form and was resharpened to its current narrow blade proportions or recycled into a drill bit.
Figure 7F

Specimen 7. Length: 23.6 mm (broken), Width: 17.6 mm, Thickness: 6.6 mm
Material: Tan chert, probably pre-loess gravel
Comments: This specimen is the distal end of a right-hand beveled point. It would seem quite likely that it is Dalton, based on the strong tendency of Dalton points from the western braided stream surface to have right-hand beveling.
Figure 7G

Specimen 8. Length: 30 mm, Width: 19.8 mm, Thickness: 7.3 mm
Material: Gray-cream colored mottled chert, probably pre-loess gravel
Comments: This specimen is an end scraper worked on the proximal end of a right-hand beveled biface. Lateral edges are
smoothed. This is probably a reworked Dalton point because of the right-hand bevel.
Figure 7H

Specimen 9. Length: 44.6 mm (distal portion only), Width: 19.4 mm, Thickness: 7.4 mm
Material: Cream colored chert, presumably pre-loess gravel
Figure 7I

Specimen 10. Length: 45 mm (distal end missing), Width: 22.3 mm, Thickness: 7.4 mm
Material: Cream colored chert, presumably pre-loess gravel
Comments: This is an Early Archaic corner-notched point reworked into a drill form.
Figure 7J

Specimen 11. Length: 30.5 mm (distal portion is missing), Width: 30.4 mm, Thickness: 7.4 mm
Material: Yellow and cream mottled chert, presumably pre-loess gravel; this is a corner-notched point reworked into a drill form.
Figure 7K

Specimen 12. Length: 31.6 mm (distal end missing), Width: 20 mm, Thickness: 6.2 mm
Material: Cream colored chert, presumably pre-loess gravel
Comments: This is an Early Archaic point reworked into a drill form.
Figure 7L

Specimen 13. Length: 30.9 mm, Width: 16.6 mm, Thickness: 6.5 mm
Material: White Novaculite
Comments: This specimen appears to be a reworked (renotched) distal portion of an Early Archaic point, probably corner-notched.
Figure 7M

Specimen 14. Length: 33 mm, Width: 26 mm, Thickness: 7.7 mm
Material: Tan chert, probably pre-loess gravel
Comments: This specimen is an end scraper worked onto the proximal end of a biface. The working edge is worn smooth.
Figure 7N

Specimen 15. Length: 29 mm, Width: 21 mm, Thickness: 6 mm
Material: Dark gray, exotic chert, source unknown

Comments: This specimen was originally a corner notched Early Archaic point.
Figure 7O

Large biface fragment, N=1
Length: 48.5 mm (broken), Width: 82.9 mm, Thickness: 13 mm
Material: Blue-gray, exotic flint
Comments: This specimen represents an extremely large biface. It exhibits very well controlled biface flaking which appears to fall into the period under consideration here. The estimated total width is about 96 mm. Less can be said with certainty about the original length, but a length of about 150 mm does not seem unreasonable.
Figure 8A

"Dalton adze," N=1
Length: 22.2 mm (broken), Width: 35.7 mm, Thickness: 9.8 mm
Material: Tan chert, probably pre-loess gravel
Comments: This specimen is a fragmentary portion of a so-called
Dalton adze, which in all probability was used to some extent throughout the entire Early Archaic period as well as the late Paleoindian Dalton period.

Figure 8B

Preform, N=1
Length: 50 mm, Width: 31.6 mm, Thickness: 5 mm
Material: Tan, glossy chert apparently heat treated and probably pre-loom gravel
Comments: This specimen would appear to be an advanced stage preform for a Cache River point.

Figure 7P

Unillustrated unifaces

The bulk of the diagnostics discussed above were collected by amateur archaeologists/collectors, who usually do not collect unifaces. The one illustrated under the section on Paleoindian diagnostics was obviously collected because of its superficial resemblance to a fluted projectile point. One individual did, however, collect six unifaces, and the survey yielded 14 more (all from one site). They will not be described in detail here because they are not pertinent to the purpose of this presentation. Suffice it to say that they are all steeply beveled unifaces of what would appear (with one exotic exception) to be pre-loom gravel chert, which must have been readily available at the time the tools were made. It is usually the case that many times more unifaces are found per site than are bifaces, so there are probably numerous others on the western braided surface.

Interpretations

The primary reason for this update of data from the braided stream surface survey was to provide a basis for a further evaluation of the “cultural divide hypothesis” discussed in the previously mentioned historical context for the Paleoindian–Early Archaic Period in the Yazoo Basin. The overall picture with regard to differences in the lithic tool inventory does not appear to have changed significantly with the additional data. Of the four beveled Dalton points recorded in the additional data, all are right-hand beveled, and two other lithic specimens appear to represent right-hand beveled Dalton points which have been reworked on the proximal end into end scrapers. These facts tend to confirm the hypothesis, since previously recorded Daltons from the western surface have been predominantly right-hand beveled, and none from the eastern surface were beveled in this manner. Another interesting phenomenon which tends to support the hypothesis is that twenty-four of the fifty-six diagnostics described in the section above are of exotic material. Of those that are attributable to a source area, nine specimens appear to be of materials found to the west of the present day Mississippi River (Novaculite, Pitkin chert, and the one specimen which may be of Texas flint). The other exotics may well have come down the braided Mississippi River. Whatever the sources, of the 163 diagnostics from the eastern surface only 7.4% are exotic, as opposed to about 20% now for the western surface, so the western area appears on the basis of the currently available data to have been in greater contact with distant sources of trade material. It is unfortunate that so much of the western braided stream surface has been destroyed by land leveling, because about the only productive thing to do at this point toward understanding the early prehistory of the area is to continue to seek out those who may have provenience collections of artifacts and attempt to understand from those collections such phenomena as trade routes, recycling activity, and regional or sub-regional differences in material culture, including such problems as the still hypothetical cultural divide under consideration.

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Changes in Mobility Patterns in South Mississippi from the Late Archaic Period to Late Gulf Formational Stage: An Example from Forrest County, Mississippi

Todd McMakin

This paper presents the results of an inter-site comparison of debitage between two sites in Forrest County, Mississippi. The Jeff Parker site is a non-pottery producing Late Archaic Period site. The Robinson site dates to the Late Gulf Formational. The results of a debitage analysis indicate that, although these two sites represent base camps, the Robinson site exhibits a greater reliance on expediently made tools. This paper argues that the switch is directly attributed to a reduction in mobility at the latter site.

Introduction

Available research on variations in settlement organization in the southeastern United States indicates that populations were becoming increasingly sedentary during the Archaic and Woodland periods (Parry 1987; Parry and Kelly 1987). This decrease in mobility has been attributed to a number of factors, including the domestication of plants, increasing population pressure, and the ability to store food (Binford 1983; Smith 1986; Rafferty 1985). Unfortunately, the stepwise, rather than gradual, transition from mobile hunting and gathering to a more sedentary adaptation has not been fully explained (Rafferty 1994). A paucity of research on settlement organization in south Mississippi contributes to our incomplete understanding of settlement strategies within the region.

In order to contribute to the study of settlement organization and possibly related changes in technology, I have undertaken a comparison of lithic use strategies from two sites, one from the Late Archaic and one from the Late Gulf Formational. Parry (1987), Parry and Kelly (1987), and Seddon (1990) have proposed that changes in lithic material usage can serve as an indicator of changes in mobility. As a population becomes more sedentary, the use of locally available raw materials for expedient or situational tools may increase. The resulting debitage will reflect this shift in lithic use strategies (McMakin 1995). Two additional analyses were used in conjunction with the debitage analysis to assess the degree of reliance on a curated system: comparisons of 1) biface to flake ratios...
and 2) percentages of biface thinning flakes. The results of these analyses were tabulated and compared by way of frequency graphs and tables in order to determine whether a shift in technology occurred from the Late Archaic to Late Gulf Formational in south Mississippi.

**Lithic Use and Mobility Strategies**

A number of studies in the last thirty years have attempted to determine the relationship between lithic technology and prehistoric lifeways. Most of these studies have focused on diagnostic tools (Shott 1986; Kuhn 1994). Within the last fifteen years, debitage has been considered a useful means of determining trends in settlement organization. Although the majority of these studies have focused on the effect of lithic reduction strategies on assemblage diversity (Patterson 1979; Speth 1972; Stauble and Dunn 1982), several have addressed the relationship between lithic tool manufacture and use and mobility strategies (Andreisky 1994; Brown and Vierra 1983; Johnson 1989; Morrow 1988; Seddon 1992).

The effectiveness of using lithic debitage to address settlement variability has been debated. Binford (1979) noted that lithic use and procurement does not influence settlement patterns in modern aboriginal populations. Special trips to obtain lithic resources were not observed. Rather, lithic materials were obtained during trips to obtain other resources. If a comparison can be made to prehistoric populations here in the southeastern United States, then lithic use strategies should have little or no effect on mobility. While changes in the type of mobility may affect lithic use, the nature of lithic resources in a given area should not affect the degree of mobility.

Seddon (1990) argues that there are a number of cultural adaptations which may influence lithic use. He goes on to state, however, that differences in lithic use strategies are often associated with differing site function within a single period or shifts in technological organization between periods (Seddon 1990: 14). Parry (1987: 227) attributes to increased sedentism an increase in expediently made tools from the Archaic to Ceramic periods in the southwest.

Parry and Kelly (1987) indicate that a switch to a more expedient technology occurred across much of the Atlantic coast during the Late Woodland. They found no correlation between expedient tool use and horticulture, environmental conditions, or other technologies, and thus concluded that sedentism was the primary factor behind the change in lithic technology. They go on to state,

Among sedentary populations, portable tools would no longer have such a high degree of utility, so it is not surprising that sedentary groups throughout North America ceased to invest much effort into producing formal tools, and instead chose to emphasize expedient use of unretouched flake tools (Parry and Kelly 1987: 304).

There is a direct relationship between the organization of a settlement system and the way in which the environment is used to satisfy the needs of the population (Seddon 1992). Lithics are used by a population primarily to enhance the relationship between the population and the environment, but lithic procurement and use should not influence settlement patterns. Lithic use should instead be a direct result of settlement-subsistence activities. The nature of the settlement system is viewed as the independent variable; the degree of mobility does not result from the availability of lithic resources nor from the technology employed.

**Curated Versus Expedient Technologies**

Expedient tools, by their very nature, require less energy expenditure to produce than do curated tools. Very little training is necessary to produce tools with an expedient technology, and the result is the production of numerous potentially useful tools. Furthermore, the widespread presence of chert in local stream and river beds would have provided adequate material for expedient usage in south Mississippi. However, curated tools, such as bifaces, can serve a variety of functions, and the ability to use a tool under a number of conditions and for a number of tasks would have benefited a mobile hunter-gatherer greatly. Multipurpose tools can be used to cope with unexpected situations, thus allowing the hunter-gatherer to transport a small, flexible tool kit. Transporting raw material to be used expediently or counting on raw material to be available when needed may not be a viable solution.

In situations where material availability is limited, the use of curated tools aids in conserving material. This is especially true when non-local or exotic materials are being used. The use of a curated technology ensures that the raw material is being used to its fullest extent. Johnson (1986) notes that such a pattern is evident at Colbert Ferry, Alabama. Local cherts were used as amorphous cores due to their availability. Non-local materials, however, were used sparingly as bifaces, which can be resharpened numerous times. This allowed the non-local chert to be used to the greatest extent possible.

An expedient technology consists primarily of a bipolar percussion technique. In most cases, no modification of the flake is necessary. This requires very little energy expenditure, but only a few flakes out of the many produced in this manner can be utilized as tools, and once a tool is used it is discarded. Thus where curated tools are costly in terms of energy expenditure, expedient technologies are costly in terms of raw material.
The Sites

The Jeff Parker (22-Fo-608) and Robinson (22-Fo-580) sites are located in Forrest County, Mississippi (Figure 1). The Jeff Parker site is located approximately 0.75 miles east of Eatonville, Mississippi, and the Robinson site is located approximately 0.75 miles north of Bateson, Mississippi. Both sites lie within the Pine Belt physiographic region. The Pine Belt of southern Mississippi is part of a larger section of pine lands that stretches from Texas eastward and northward into southern Virginia (DeLeon 1981). In Mississippi, the Pine Belt stretches from the Alabama state line west to the Pearl River. To the north, the Pine Belt extends approximately 150 miles. The majority of this area ranges between 300 and 500 feet above sea level and is characterized by a rolling landscape with small ridges breaking the monotony (Padgett and Heisler 1979). South of the Pine Belt is a 20 mile wide strip known as the Coastal Pine Meadow.

The Jeff Parker Site

The Jeff Parker site was discovered during a CRM survey by Scott and Associates in 1989. The site was later tested by an introductory archaeology class from the University of Southern Mississippi. During testing, 30 by 30 centimeter shovel tests were excavated across the site at 5 meter gridded intervals. In addition to these shovel tests, eight 2 by 2 meter test units were excavated. Diagnostic artifacts recovered from the site indicate that Late Archaic, Middle Woodland, and Late Woodland components are present. Although the Middle and Late Woodland components could not be separated, a distinct Late Archaic component was noted in the southeast quadrant of the site. Artifacts recovered from these proveniences included Kent points, which are indicative of a Late Archaic occupation.

The presence of fired clay, diagnostic stone tools, and a wide range of lithic debitage indicates that the Jeff Parker site served as a residential occupation of more than temporary duration. Based on distinctions listed by Carlson (1979: 216-218), a base camp is identified by the presence of a broad range of tools, debitage, and features; a lengthy occupation span; and often special use areas within the site. Although no features or special use areas could be identified at the Jeff Parker site, a number of tool types were identified. Also, the complete reduction sequence is well represented at the site. This, in conjunction with the presence of fired clay, indicates that the Jeff Parker site was probably occupied as a base camp.

Figure 1. Map of southern Mississippi showing the approximate locations of the Jeff Parker and Robinson sites.
The Robinson Site

Similar to the Jeff Parker site, the Robinson site was excavated by the University of Southern Mississippi. Four 2 by 2 m test units were excavated during this testing. Diagnostic artifacts recovered included 66 pieces of plain, pinched, and punctuated sand tempered Alexander Series ceramics. In addition to these ceramics, one Morhiss-like point, one Palmillas-like point, and four Pontchartrain points were recovered. The combination of ceramics and points indicates that the site was occupied during the Late Gulf Formational Stage, between 500 B.C. and 100 B.C.

The presence of ceramics at the Robinson site indicates that food preparation, and potentially storage, occurred at the site. This, when combined with the presence of structural daub on the site, indicates that the Robinson site was occupied for a fairly lengthy duration and probably served as a base camp. The full range of bifacial reduction is represented in the debitage from the site.

Study Methods

Due to a lack of floral and faunal remains or features, the present study had to be restricted to lithic materials. Following studies by Morrow (1988), Parry (1987), and Seddon (1992), an analysis of flake platform preparation was conducted. I have argued that as populations become increasingly sedentary, the reliance on fully curated tools will decrease if raw material is available in sufficient quantities (McMakin 1995). Also, as the reliance on curated tools decreases, the percentage of prepared platforms will likewise decrease. By comparing the percentage of prepared platforms between two sites, the relative degree of reliance on a curated technology can be discerned. This, in turn, can be an indicator of degree of sedentism. If no discernable change in platform preparation is noted, then it may be inferred that lithic materials are being used in like manner between the two sites. If a change is noted, then it may be inferred that the two sites represent differing lithic technology systems and thus differing settlement types.

The first analysis followed that of Parry and Christenson (1987). In analyzing the materials from Black Mesa, Arizona, they defined four platform categories: cortex (cortical), flat, faceted, and crushed. The platform of a cortical flake still contains the original raw material cortex (weathered surface). A flat platform contains no cortex or ridges of flake removal. Faceted platforms show evidence of previous flake removal while the platform was being prepared, evidenced by the presence of facets or small ridges. A crushed platform is usually a result of a hard hammer percussion technique and is typically little more than a small ridge that looks much like a facet. Faceted platforms are typically indicative of platform preparation. Flat platforms may or may not be indicative of purposeful removal. Cortical platforms are produced in large numbers in both curated and expedient technologies, but are usually held as indicative of expedient technologies. This study focused primarily on faceted and cortical platforms. A total of 1,571 flakes from the Robinson site and 547 from the Late Archaic component of the Jeff Parker site was examined. Only flakes with the proximal end intact were analyzed.

The second analysis consisted of a comparison of the percentage of biface thinning flakes in both collections. Biface thinning flakes are a direct result of biface reduction. Thus the percentage of biface thinning flakes is an excellent indicator of reliance on a curated system.

The third and final analysis was a comparison of tool to flake ratios between the sites. The total numbers of tools and flakes were tabulated for the Robinson site and the Late Archaic component of the Jeff Parker site.

Expected Settlement Trends

Late Archaic

Although Archaic, Gulf Formational, and Woodland research is starting to increase in the Pine Belt of southern Mississippi, little is known about the relevant settlement patterns. It has been widely held that the Archaic Period witnessed a gradual increase in population pressure and sedentism in the Southeast (Bense 1994; Rafferty 1994; Smith 1986). These studies use such indices as increases in storage pits, house floors, middens, and burials as examples of increased sedentism. However, the exact nature of this change has been debated. Although the Archaic Period represents a continuing adaptation, the Late Archaic Period may be different. As post-Alithermal resources became more predictable, populations expanded and previously underutilized geographic areas were used. It is likely that the settlement system mirrored these changes as people adopted a more settled lifestyle. The rate and nature of this change is unknown.

Gulf Formational

The Gulf Formational Stage (defined by Walthall and Jenkins 1976) serves as a transition from the Late Archaic to the Early Woodland Period, from 2500 B.C. to 300 B.C. The Gulf Formational Stage begins with the introduction of fiber tempered pottery along the Southern Atlantic seaboard (Walthall 1980). Little evidence for the Early Gulf Formational (2500–1200 B.C.) has been recovered to date in southern Mississippi. The Middle Gulf Formational (1200–500 B.C.) witnessed the introduction of
Wheeler and Bayou LaBatre ceramics in the Deep South. The Late Gulf Formational (500–300 B.C.) is associated with the introduction of Tchefuncte and Alexander ceramics in the Deep South and the final disappearance of fiber tempered wares. The true nature of settlement organization along the Gulf Coastal Plain during the Gulf Formational is unknown, but there is some indication that populations were becoming more sedentary at least by the Late Gulf Formational Stage. Such evidence as an increase in site size with the accumulation of dense middens along the Gulf Coast is cited as an example of this change (Milanich and Fairbanks 1980).

Results

Table 1 presents the results of the platform analysis. Of the flakes from the Jeff Parker site, 17.8 percent were faceted, and 24.3 percent of those from the Robinson site were faceted. A $\chi^2$ analysis (df = 1) indicated that this difference is significant at $p \leq 0.001$. Figure 2 presents the analysis of the platforms from the Jeff Parker and Robinson sites. The $\chi^2$ analysis indicates that there is a statistically significant difference in the ratios of faceted flakes from the two sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Faceted</th>
<th>Cortical</th>
<th>Flat</th>
<th>Crushed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robinson</td>
<td>281</td>
<td>309</td>
<td>711</td>
<td>270</td>
<td>1,571</td>
</tr>
<tr>
<td>Jeff Parker</td>
<td>133</td>
<td>86</td>
<td>239</td>
<td>89</td>
<td>547</td>
</tr>
</tbody>
</table>

The results of the biface thinning flake analysis indicated that a higher percentage of biface thinning flakes was present on the Late Archaic component of the Jeff Parker site. Of the 547 flakes examined from the Jeff Parker site, 171 biface thinning flakes were tabulated (31.2 percent). Of the 1,571 flakes scored for the Robinson site, 277 were biface thinning flakes (17.6 percent). This difference was once again compared by a $\chi^2$ analysis, which indicated once again a significant difference at $p \leq 0.001$ (df = 1). The presence of larger numbers of biface thinning flakes at the Jeff Parker site may be an indication that its population relied more heavily on curated tools than is indicated at the Robinson site.

The results of the tool frequency analysis were similar. A total of 2,698 flakes (including those missing the proximal end) was recovered from the Robinson site. The total number of flakes recovered from the Late Archaic component at the Jeff Parker site was 925. There were 18 bifaces in the Robinson collection and 14 in the Jeff Parker collection.

Figure 2. Graphs showing the results of the platform analysis.
Table 2 presents the results of the tool frequency comparisons. If all flakes are tabulated for each site, there is a ratio of seven tools to every 1,000 flakes at the Jeff Parker site. The ratio at the Robinson site is 15 tools to every 1,000 flakes. A greater reliance on curated tools is thus indicated at the Jeff Parker site. The greater number of flakes per tool at the Robinson site may be an indication that the people at the Robinson site were relying more heavily on an expedient technology.

Table 2. Results of the tool/flake ratio comparison.

<table>
<thead>
<tr>
<th>Site</th>
<th>Total Flakes</th>
<th>Tools</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robinson</td>
<td>2,698</td>
<td>18</td>
<td>7 tools/1,000 flakes</td>
</tr>
<tr>
<td>Jeff Parker</td>
<td>925</td>
<td>14</td>
<td>15 tools/1,000 flakes</td>
</tr>
</tbody>
</table>

Conclusions

It has been suggested that populations were becoming more sedentary from the Archaic to the Woodland Period. As the climate became hotter and dryer during the Altithermal, resources became more predictable and the population began to increase. Although studies on settlement shifts in south Mississippi are rare, available evidence from surrounding regions would seem to indicate that populations were indeed becoming more sedentary throughout the Archaic and Woodland periods.

The results of the three analyses presented here indicate that there was a greater reliance on curated tools at the Jeff Parker site than at the Robinson site. If a correlation can be made between raw material usage and degree of sedentism, then it may be inferred that populations were becoming more sedentary from the Late Archaic Period into the Late Gulf Formational Stage in the Pine Belt of south Mississippi. This supports the prevailing view that a general trend toward a more settled adaptation occurred throughout the prehistoric continuum. However, additional studies of this nature are necessary to verify this assumption. It is possible that the Jeff Parker and Robinson sites represent occupations during different seasons, for different durations, or for different resource utilization. This research has utilized only one aspect of technology that may change in response to differing settlement organization. Future investigations would benefit from evidence from features, house floors, larger numbers of artifacts, or faunal and floral remains.

Acknowledgments

Thanks are extended to Dr. Edwin Jackson of the University of Southern Mississippi, Hattiesburg, for his assistance and for allowing me to use the collections from these two sites. Thanks are also due to Dr. Eric Poplin of Brockington and Associates, Inc., Mt. Pleasant, SC, for his edits and comments. I would also like to thank Dr. Marie Danforth for her review of my statistics. Lastly, I thank Carol Poplin and Katherine McMakin for their help with graphics.

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Reviewed by Tristram Kidder

The relationship between archaeology and geology is rarely as close as it is in the Lower Mississippi Valley (LMV). From the pioneering days of scientific research in both fields there has been a remarkably strong and fruitful collaboration between practitioners in the two disciplines. For archaeologists the integration of geological data into their research has been beneficial because it allows us to place human behavior in a broader context. Furthermore, by fully understanding the nature of human interaction with the active and ever changing landscape we can measure and better understand the actions humans have undertaken that are outside of our need to adapt to external environments.

Since the early days of scientific archaeology we have relied heavily on concepts, ideas, and chronologies derived from geology. Most notably archaeologists have been influenced, directly or indirectly, by Fisk’s 1944 synthesis of the geology of the Lower Mississippi Valley. This work set forth the basic ideas and underlying structure for understanding the geology of the LMV over the next fifty years. Of course Fisk wasn’t always correct, and in many regards, especially in terms of chronology building, he was frequently wrong, but his legacy is embodied in several generations of archaeological research. Fisk’s synthesis, however, wasn’t really a collaborative or multidisciplinary publication. The relationship between archaeology and geology that was derived from Fisk’s monograph was decidedly one way: archaeologists consumed the geology, but the geology wasn’t informed by the archaeology.

The publication under review here changes the relationship, placing archaeology on a reasonably even footing with geology, and even giving us occasional star billing. But this work is destined to be a classic for reasons far more compelling than how it uses archaeology. This newest synthesis of LMV geology is broad ranging in scope, scale, and chrono-

logical depth; it is comprehensive in its synthesis of subject and topical matters; and it is remarkable for its attention to detail and for being multidisciplinary in spirit and fact.

Chapter 1 begins with a brief overview of past work and a short but concise summation of the “state of the art” in the field of LMV geology and geomorphology. Saucier then gives us a characteristically succinct but informative statement of the “Intent and Scope of the Present Study.” Here the author acknowledges the inevitable comparisons to Fisk’s 1944 magnum opus, but notes that “A primary difference is an attempt in the present synthesis to present geological information and concepts to an audience of not only engineers and geologists but also scientists in a broad range of disciplines.” (p. 6). Furthermore this “synthesis also takes into consideration the informational needs of those concerned with such activities as basin planning, environmental assessments and mitigation, and cultural and natural resources management” (p. 7). It is evident that from the start the author was addressing his work to a far broader audience than had been considered in any previous synthetic work of its kind.

Another issue that is clearly set forth in the introduction is Saucier’s concern that his work not be taken as the final or absolute word: “The synthesis hopes to achieve a balance…by presenting generally accepted concepts and also by providing a discussion of the degree of confidence in the interpretations. It strives to separate pure speculation and hypothesizing (which unfortunately is all that exists in some cases) from that which is well founded and scientifically tested” (p. 7). Saucier is addressing Fisk’s unwavering commitment to “emphatic and unequivocal” (p. 7) statements even when the data were insufficient to allow for such confidence. As Saucier notes in regard to a comparison with Fisk’s 1944 work, “some aspects of this volume may appear to be a major step backward rather than an advancement of knowledge” (p. 7). The present study exemplifies the reality of scientific advances wherein the more we know the less we fully understand.

The introduction addresses several other points, including methods and limitations, the nature of geoaarchaeological data and research, and information sources. These discussions provide the reader with a solid appreciation of how well we can understand the geology of the LMV. Readers who seek firm ground may be disappointed. The data base for this region, although voluminous, is not as solid as one would like. Saucier is open and honest about his evaluation of the data. He is quite willing to acknowledge his own role in the development of much of the interpretation of regional geology, and he is also unafraid to demonstrate that his synthesis will be less than complete because there are “known extensive data gaps” (p. 9) in the geological and geomorphological re-
ever, a problem in that we know so much more today. Saucier presents us with a well argued case for the basic sequence and chronology of major geological events, and his avoidance of absolute chronological detail is only a difficulty if you expect very precise dates for events such as individual meander belt formation or abandonment. Saucier uses archaeological data to their fullest extent in this chapter, skillfully integrating archeological and geology to present plausible sequences that can be subject to further testing.

Chapters 8–9 provide an overview of, respectively, "Tectonics and Neotectonics" and "Special Engineering Considerations." My guess is that few but engineers will turn to Chapter 9, but archaeologists might be interested in skimming Chapter 8, both for its overall content as well as the author's innovative use of archaeological data to test concepts of earthquake frequency in the New Madrid fault zone. The text concludes with a summary and assessment of "Future Research Needs." This section is useful since the author identifies weak areas and concepts that require or demand further investigation. In their 1951 publication Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940–1947, Phillips, Ford, and Griffin applauded Fisk for publishing a "magnificent series of maps" that reconstructed the channels and meander belts of the Mississippi River (1951: 259). These maps were the source of considerable utility to archaeologists who were striving to tie their sites to geological contexts and to date them by means of geochronology. Saucier's synthesis too contains maps, and in fact they are "magnificent" in their own right. I have not discussed these maps yet because they deserve their own review. Bound in a separate oversized volume, there are 28 plates, including 10 showing the "Quaternary Deposits," 10 matching maps showing "Configuration of the Suballuvial Surface," one each showing physiographic features, "Outcrops and Subcrops of Major Upland Formations," hypsometry (the configuration of the bottom of the valley), and typical cross sections of the valley, and a map index. One final map, Plate 28, represents a "Paleogeographic Reconstruction for Key Periods" covering 3,000,000 to 1,000 years B.P., in three sheets. Most archaeologists will be interested in the plates showing the Quaternary Deposits (Plates 4–14). These 1,250,000 maps are reproduced in color and with stunning detail and clarity. They are precise, detailed, and contain abundant information on the location and relationship among and between various geological features in the valley. The second map that will appeal to prehistorians is the Paleogeographic reconstruction. These maps are physically detailed, but are graphically vague; that is, they cover such large sets of time, or represent such broad interpolations of data, that they are deliberately generalized and therefore "No attempt has been made to estimate the precise location of the Mississippi River or
pay attention in my courses than to any fault of the author. Considering the quality of the research and the depth of the information presented it is a marvel that this book can be so clearly written and so jargon free. This work is destined to be a landmark study in the field of LMV geology. It is going to be immensely useful to a broad audience. Students interested in archaeology, prehistory, history, and various kinds of planning issues will find this work to be impossible to live without. Interested readers who are not specialists can learn a great deal from the volumes, and the maps alone are worth the cost of the book. The quality of the volumes is very good, and the illustrations, both in the main text and the maps are excellent. This is a classic work, and it will occupy an important place on many bookshelves for some time to come.

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Reviewed by Penelope B. Drooker

The author of this handsome and readable volume, as art history teacher and gallery director, seeks to rectify the failure of modern “New World” residents to acknowledge the accomplishments of their pre-1492 predecessors and to recognize the interconnectedness between humans and nature that she describes as forming the core of the Native American worldview:

By putting Indian art and culture into a specific geographical context, *Lost Cities of the Ancient Southeast* gives the reader a sense of place as well as an idea of the timeless beauty and technical sophistication of indigenous art and ar-
In seven well crafted chapters, the text synthesizes an extremely wide range of information, describing over two dozen important southeastern archaeological sites encompassing a combined occupation span of more than three millennia. "Beginnings" introduces the history of Euroamerican views and research on "the Moundbuilders," discusses the place in prehistoric societies of what we now call "art," and briefly describes major mound sites, associated art objects, and evolving lifeways from Late Archaic to Adena-Hopewell. "Cahokia" focuses on the largest known Mississippian ceremonial center and on important Mississippian symbols and the belief system probably associated with them. "The Warriors of Spiro" uses the amazing mortuary offerings at this Oklahoma site to explore the place of warfare in Mississippian life, as well as to introduce the distressing problem of grave robbing for profit. "The Sacred Sites of Western Tennessee" employs the Chucalissa and Shiloh sites as backdrops for discussions of chiefly costume and emblems of leadership, of formal contests including chunky and the ball game, and of changes in symbolic emphasis and artistic style from Early to Late Mississippian. Although "Sacrifice and Ceremonialism in the Lower Mississippi valley" starts off with descriptions of Coles Creek and large Early-Middle Plaquemine Mississippian sites, it concentrates on the Grand Village of the Natchez and the great site of Moundville in Alabama in order to begin discussion of "the pattern of decline that was the fate of Mississippian cities" (p. 103). In "The Cult of the Ancestors," male and female marble statues from Etowah are presented as spectacular examples of Mississippian ancestor figures, providing the focal point for a review of thinking on the importance of elite ancestor veneration and ceremonial moundbuilding among Mississippian peoples; the chapter segues to a discussion of "hybrid," "peripheral" cultures at the fringes of Mississippian influence as exemplified by the historical Creek social and political framework and the Town Creek site in North Carolina. Finally, "La Florida" describes some of the groups encountered by early Spanish explorers, some of the archaeological sites and masterful artwork with which they and their predecessors were associated, and their demise by epidemics and warfare.

O'Connor's archaeological and ethno graphic references are somewhat heavy on secondary, popularized accounts, including coffee-table volumes issued by National Geographic, the Smithsonian, Time-Life Books, and (Ted) Turner Publishing, but she also cites more scholarly overviews such as Ancient Art of the American Woodland Indians (David S. Brose et al., Harry N. Abrams, 1985) and compendia such as The Southeastern Ceremonial Complex (Patricia Galloway, editor, University of Nebraska Press, 1989), as well as a handful of archaeological site reports and some very recent art-historical interpretations of Native American culture that will be new to most archaeologists. Probably due to a lack of complete familiarity with the entire (massive) body of relevant literature, there are occasional lapses from a rounded depiction of state-of-the-art knowledge. A few examples include: apparent ignorance of the cycling theory of chiefdom-level societies; an uncritical acceptance of some now contested hypotheses such as various invasion theories of Mississippianization and the pre-Contact existence of the Creek Confederacy; and an interpretation of a single pair of Etowah "ancestor" statues, out of several actually excavated in and around Mound C, as "the founding ancestors, the Mother and Father of the people of Etowah" (p. 112). For the most part, however, this book presents a balanced and highly readable summary of reasonably current ideas in many areas of southeastern prehistoric culture.

Unfortunately, its illustrations—the heart and soul of any art-historical interpretation—provide a less balanced picture. Rather than emphasizing the achievements of a variety of vigorous and innovative individuals and groups, they echo the images evoked by the title: ancient lost cities of a dead people belonging to an eclipsed culture. Of 108 illustrations, over 40% depict sterile, unpopulated ceremonial centers/habitat areas in one of two forms: artistic photographs of preserved or reconstructed mounds surrounded by mown grass and lush vegetation (28 photos), or schematic, hard edged, bird's eye view renderings of relative sizes and locations of mounds within sites (16 drawings from William N. Morgan's Prehistoric Architecture in the Eastern United States, M.I.T. Press, 1980). The "sense of place" extolled in the author's preface (see above) is not that of contemporaneous inhabitants, but of modern viewers.

Five sixteenth- to early eighteenth-century European engravings do portray groups of interacting people, but again from a nonindigenous perspective. Most of them reinforce a theme of death, destruction, and temporal distance by their antiquated style and the subjects they depict: execution of a prisoner; a throng of armed and mounted Spaniards approaching the distant, tiny chief of Coosa; DeSoto's cruelties in Florida; and indigenous disease and curing practices. A fifth engraving does show aspects of the ball game, with an accompanying text that even ties
it to modern Busk celebrations, but this only emphasizes a general lack of acknowledgement that Mississippian peoples and practices did not simply disappear under European depredations, but survived and evolved. For example, no attention is drawn to the strong cord of formal similarity connecting Mississippian ceremonial centers, eighteenth/nineteenth-century Creek talwas and Eastern Plains campsites, and modern Square Grounds.

As for the artifacts chosen to illustrate this book, even though all are expertly crafted and most are stunningly beautiful, they contribute to the visual impression of a frozen, static culture, foredoomed to extermination. These items are overwhelmingly representational, with some 60% of the 45 objects depicting humans or humanoid figures, including 17 three-dimensional stone, wood, or ceramic figurines (some of which served as ceremonial pipes). Yet however realistically their features are portrayed, most are in static poses, and many actually represent dead people. More abstract or fantastic renderings from Late Mississippian contexts, such as human bones on a ceramic vessel, the hand and eye symbol and knotted horned serpents on a stone palette, and “spaghetti” figures and a Lick Creek style rattlesnake on shell gorgets, are presented as evidence for a “period of slow decline” after the fourteenth century, with an accompanying “watering down of the most salient aspects of Mississippian cultural patterns and a calcification of creative energies” (pp. 118–119).

Because almost no objects of daily living such as projectile points, celts, nonmortuary pottery, basketry, or small smoking pipes are illustrated, there is no sense that the people in these images ever lived and breathed. Three shell gorgets and two copper breastplates are the only objects of apparel or ornament illustrated. These are presented mainly for their engraved images, rather than for their significance as social markers within a living community. No actual items of clothing, either ceremonial (such as one of the impressively decorated Spiro mantles, or an Etowah copper headdress) or everyday (such as sandals, or skirt and shawl fabrics), are shown.

The final illustrations of Southeastern art included in the book do not portray humans, but animals: three beautiful and realistically-rendered painted wooden heads of a pelican, a sea turtle, and a deer from eleventh-century contexts at the Key Marco site in Florida. They serve to emphasize a significant subtheme of the book: the strong ties to nature of prehistoric and early historical Southeastern people, and the lessons that modern EuroAmericans should learn from those predecessors.

This volume achieves its goal of foregrounding the often overlooked exciting artistic accomplishments of pre-Contact southeastern indige-

nous peoples, but neither its purpose nor its effect are to bring these people to life. Quite the contrary.

In the end, as in the excerpt from the preface quoted at the beginning of this review, O’Connor does more than obscure the living descendants of the pre-Contact residents of the Southeast, she appropriates their history and their ancestors, while greatly simplifying actual ecological interactions:

In this nation of immigrants, we should never forget our debt to those First Americans who discovered a New World and walked lightly, century after century, on its virgin soil. The Indians are the grandmothers and grandfathers of all Americans, the old ones who have gone before. Their ancient wisdom... can provide us with the blueprint for a new American dream—a vision of the land as something to be cherished and sustained, to be venerated and cared for so that we can finally begin to live in harmony with the sacred land that we inherited from our Indian ancestors (p. 145, italics added).

“Inherit” does not begin to describe the process by which Europeans came to power in this continent. Nor is “virgin soil” an accurate depiction (for instance) the intensive maize horticulture that sustained the impressive Mississippian ceremonial centers.

This book is a beautiful, well-constructed, and gracefully written tribute to a Southeastern past seen through the lens of a very modern point of view. I advise the reader to savor its abundant gifts, but to remain skeptical of its unspoken assumptions, omissions, and simplifications.

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Reviewed by Marvin D. Jeter
With some trepidation, after waiting for years before deciding that nobody else was going to tackle the job, and under some editorial constraints, Bense recently undertook another massive project, this book about Southeastern archaeology. It is intended as a text for college undergraduates, and “as a source for the educated amateur.” She spent most of two years researching the literature and writing and ran her chapter drafts by a review committee of six experienced Southeasternists. (None of them were really active specialists in the present-day field of “Western Southeastern” or Lower Mississippi Valley archaeology, though. As will be seen, I think this resulted in some serious errors and deficiencies.)

I started reading this volume, therefore, with high hopes. Indeed, I was rewarded in a number of instances, with new data, new insights, new angles on old questions, etc. This was especially true for regions in the easternmost portions of the Southeast, where I lack experience, and where Bense and some of her committee members are on their home ground. But I have a number of problems with her treatments of the western Southeast.

In other words, I experienced the common “reviewer’s syndrome” wherein I learn a lot from the author about her home turf but catch mistakes and eccentricities when she ventures onto mine. This, in turn, invariably inspires some unresolved doubts about her ventures into other remote parts of the Southeast, such as its northern and northeastern borders, and it will be interesting to read reviews from those quarters.

Before getting into the bad news from (mainly) the western frontier, I should summarize the good news. The book does indeed succeed in its stated goal of accumulating and synthesizing, in one volume, more or less up-to-date and representative information about most of the Southeast through the entire prehistoric sequence, and most of historic time as well. The cutoff of coverage at the beginning of World War I is at odds with the usually designated “50 years old” (or World War II period) boundary for “historic” archaeology, but Bense hopes to add coverage up to the 1940s (and, perhaps, coverage of nautical archaeology) in a revised second edition a few years hence.

The overall organizational scheme is rather standardized, but straightforward and appropriate: Introduction, Geography, and History of Southeastern Archaeology, followed by chapters on cultural “stages” in chronological order. The references include many from the late 1980s and a goodly number from the 1990s, up to a few from 1993.

The illustrations are generally appropriate and of good quality. Some even approach the “beautiful” threshold, e.g., Figure 5.12, a photo of a cross-sectioned, stratified Middle Archaic pit from Bense’s own excavations at the Walnut site in northeast Mississippi. They are also abundant:

although there is unfortunately no List of Figures, I counted 100, many with multiple photos or drawings, in the text (plus a very nice photo of the author herself). Having gone through something similar, I can appreciate the tremendous hassles of juggling this many figures, and references to them, through various stages of editorial deletions and reshufflings, not to mention dealing with the annoying “permissions” procedures and paperwork necessitated by our lawyer-infested society.

A retrogressive feature, which I suppose is appropriate given the “retro” fad of these latter days, is that Bense uses the English system of measurements rather than the metric system, which most archaeologists have been using for the past two decades or more. An odd side-effect is that the captions for figures reproducing William Morgan’s schematic renderings of mound sites (e.g., Figures 7.12, 7.13, etc.) include the statement that the grid squares are “660 ft on each side.” Whence cometh this strange figure? It is not quite a sign of the Apocalypse; that would be 666 feet! Instead, it is an approximate English equivalent of the 200-meter (c. 656-foot) grid used in Morgan’s book.

Bense does a good job of succinctly explaining some past behavioral patterns and anthropological and archaeological concepts for novices, e.g., discussions and illustrations of flintknapping (pp. 39–40, Figure 4.2), pottery making (p. 110, Figure 6.2), changing functions of pits (p. 120, Figure 6.8), and the origin, nature, and development (or decline) of chiefdoms (pp. 191–195, 218–219, Figure 7.7). Some of these explanatory “asides” might better be set up in “boxes” to highlight them as digressions from the basic culture-historical narrative.

She is perhaps at her best, though, in summing up large-scale patterns of economics, demography, settlement, and site patterning for the historic periods. This is particularly noteworthy in her discussions of situations around Pensacola (pp. 295–296) and elsewhere along the Gulf Coast; and those of the Antebellum (1821–1865; pp. 316–335) and Victorian (1861–1917; pp. 335–349) periods. In particular, I perks up while reading her big-picture descriptions of economic and material culture patterns involving social classes that included my own ancestors as they moved generally westward across the Southeast during the 19th century.

The bad news, however, is that despite the team approach involving the committee of reviewers, the book contains numerous minor errors, misspellings, and “typos” (the latter two are virtually inexcusable in these days of computerized spelling checkers), and some major omissions and erroneous or at least questionable statements. As indicated above, most of these (in my view) relate to the western portions of the Southeast.

Here, space does not permit a detailed listing and discussion of the various kinds of omissions, errors, and questionable interpretations. I
have compiled such a list, though, and sent it to the author for consideration in preparing the revised second edition. It is also available (from me) to persons using the present volume.

With regard to omissions, Bense rightly notes (p. xii) that constraints on space preclude a total-coverage approach and force some selective cutting and concentrating on "representative" cases. But I think that significant amounts of space were wasted by needless repetitions (see the concluding paragraphs of this review). In any event, it may be useful to call attention here to some of the more important errors and dubious interpretations.

On p. 19, Bense states, "The vegetation cover of the Ozark-Ouachita Highlands is different from that of the Appalachian highlands. Due to dry conditions, the area is covered primarily with prairie grasses, with pine forests in the upper elevations." The second quoted sentence is erroneous on several counts: these uplands are not particularly dry (though they do contain the famous Ozark "bluff shelters," some of which are internally dry), nor dominated by prairie grasses (though they may have been during the Hysnthemal-Middle Archaic, around 5000 B.C.). They are dominated instead by often-dense forests of oaks and other deciduous trees, although pines were common in parts of the Ouachitas (not the unfortunately common misspelling, "Quachitas," cf. Fig. 2.1 on p. 12) under natural conditions, and are now dominant there due to commercial forestry. (The mistakes are repeated on p. 20.)

On p. 39, Bense erroneously states that "Chert is formed from sand deposits which, through great pressure and heat, were changed into a natural glasslike material.... The best quality cherts...are those that were made from deposits of pure, very fine-grained sand." Her description is one of pressure/thermal metamorphism; in fact, sands (or sandstones) were changed by such processes, but into quartzites, not cherts. Cherts, instead, were formed within formations of sedimentary limestones, probably by substitution of silica (derived from overlying sandy deposits) in a colloidal gel form, with induration (hardening) coming later; not by metamorphism. If cherts were metamorphic, they would not contain well-formed fossils, as they commonly do; and the surrounding limestones would also have been metamorphosed into marble.

In Figure 6.23 (p. 164), the illustrated (and by implication "typical") examples of "Late Woodland" artifacts include a French Fork Incised vessel. But LMV archaeologists tend to consider the Coles Creek (and coeval) cultures that produced such snazzy ceramics as artistically and culturally a cut above, and a bit later than, the "good gray" (or olive drab?) Late Woodland (*sensu stricto*) "plain folks with plain [and stamped/impressed] pots."

In fact, the "French Fork" pot illustrated here is from yet another step westward beyond the LMV, and away from the usual Southeastern/Midwestern Late Woodland milieu. It was actually found at the Crenshaw site on the Red River in southwest Arkansas in the Great Bend region of the Trans-Mississippi South (TMS) archaeological area, in a late Fourche Maline cultural context. Also, it is decorated primarily on the body in TMS fashion (cf. Later Caddoan vessels), rather than near the rim in the classic LMV style (Frank Schambach, various personal communications; cf. Schambach 1982: 170–172). Despite these divergences, it was illustrated by Phillips (1970: 83), without a caption or other statement of provenience, apparently as "the" primary example of LMV French Fork Incised, thus misleading many later researchers, including Bense.

This figure also illustrates a large chipped hoe made of chert from the famous Mill Creek quarries in southern Illinois. These artifacts have indeed been found on some Late Woodland sites, but they are very much more typical of Mississippian sites.

Readers of this journal may be surprised to read (p. 177) that the remarkable Lake George mound center is located in "northeastern Louisiana!" Instead, of course, it is in the Lower Yazoo Basin of west-central Mississippi, near Holly Bluff.

From my "western Southeast" perspective, I object to the characterization (pp. 255ff) of a "European Stage" covering the period 1500–1821 A.D. I prefer instead a "Protohistoric period" starting around 1500 (or somewhere between Columbus and De Soto) and ending at various times in various regions. In the LMV it can be argued continued as late as around 1700, with the establishment of more or less continuous French contacts from a base along the Gulf Coast, beginning an "Early Historic" period.

In fact, Bense soon (p. 258) does subdivide her "European stage" into two periods: "Contact" (c. 1500–1670) is essentially equivalent to our Protohistoric, and "Colonial" (c. 1670–1821) might be called Early Historic. Her criteria (p. 288) have an "eastern Southeast" bias: the founding of Charles Town (Charleston, SC) in 1670 and the annexation of Florida into the U.S. in 1821.

Similarly, the discussions (pp. 299ff) of French Colonial activities emphasize the Gulf Coastal and eastern frontier aspects, at the expense of the main stream (the Mississippi). There is no mention of the explorations of Marquette/Jolliet, La Salle, Tonti, or Iberville, Bienville, *et al.* in the LMV.

On p. 300, the reference to "Arkansas Post on the Mississippi" is incorrect. This French establishment, founded by Tonti in 1686, moved at least four times and was always fairly near the Mississippi (especially
during the French and Indian War), but it was always actually on the Arkansas River.

On the same page, Bense states that the French went “up the Coosa River into central Alabama to Fort Toulouse.” Incorrect again! They actually went up the Alabama River through central Alabama, and beyond the present location of Montgomery to that fort’s location in east-central Alabama, on the Coosa immediately above its junction with the Tallapoosa (this confluence forms the Alabama).

On p. 306, the Tunica are incorrectly stated to be a sub-group of the Choctaw. Instead, these two tribes were probably separated by Plaquemine/Natchezans in aboriginal times. Tunican is generally classed as a “linguistic isolate,” although some have claimed to see hints of rather distant connections to Muskogean languages like Choctaw. Bense cites Jeffrey Brain’s 1979 Tunica Treasure volume but not his (1988) Tunica Archaeology follow-up.

So much for specifics. I will conclude with some more general problems, inspired by reading this volume, but with some implications beyond it.

In her Preface (pp. xi–xii), Bense anticipates some criticism by noting that this is “a summary, not an encyclopedia” and is intended mainly as a textbook. She warns her professional colleagues that she is “troubled” by the facts that primary sources are often not cited, and that the literature has not been handled in the standard academic manner, to avoid clutter. My impression, though, is that the book is still needlessly cluttered, by another kind of proliferation, namely needless repetition. Also, that there are serious problems with many of the references that were chosen, and beyond that, with archaeological publication in general.

In recent decades, television, movies, and junior/senior high schools have perfected the “dumbing-down” of American youth (cf. “Beavis and Butt-Head” and “Forrest Gump”) toward complete illiteracy (but retaining enough to recognize the “iconic” hieroglyphs on fast-food cash registers keys). College textbook publishers have responded by attempting to drum the information into students’ heads, through the age-old device of repetition. Their chapters begin with previews, followed by the text, and conclude with reviews. (My “D” students seem to read only the latter.) I am reminded of an old Army sergeant’s lecture on “military teaching methods” in which he said, “Tell ‘em what you’re going to tell ‘em; tell ’em; and then tell ’em what you told ’em!”

This approach is carried to an extreme degree by Bense (probably at the behest of her Academic Press advisors). For instance, the Paleoi ndian, Archaic, Woodland, and Mississippian chapters all begin with introductory overviews. They are then broken down into Early, Middle, and Late sections. Each section has its own little introduction, main text, and (often two) concluding summary sub-sections. Finally, each chapter has its own concluding summary.

As I proceeded through the book, I found these “repeated repetitions” more and more irritating. Cumulatively, they waste a great deal of precious space that could have been put to better use (e.g., more and better citations, see below). I would like to see, in the next edition, chapter introductions pared to a minimum, internal section introductions and summaries cut out, main texts beefed up, and chapter summaries cut down to a series of one-liners; similar formats suffice for some of the better texts I have used.

As for the references themselves, there is no need for Bense to apologize (pp. xi–xii) for not using “academic” parenthetical citations within the text (to avoid distracting the non-professional readers, as she aptly remarks) and relegating them to footnotes. My problem instead is with the selection of references. In several instances, some really important, relevant, and generally widely-published references have been omitted. The real shortcoming, though, is that over and again, very much too often, the footnotes read something like, “For further information, see Doe 1990,” but upon looking up Doe in the References, one finds a grossly “underpublished” contract report: the dreaded “gray literature” of Cultural Resource Management (CRM) archaeology.

Bense discusses the “gray literature” problem on p. xii, expressing hopes that this book will help to alleviate the situation. It does indeed, as far as summarizing and broadcasting the information is concerned. But, despite the existence of a computerized National Archaeological Data Base (which she cites on p. 35), it is often a tremendous hassle, even for professionals who need to know the details, to get copies of contract reports from regions beyond one’s own. I cannot imagine any significant number of students or amateurs (Bense’s intended audience) fighting their way through the maze to get more details, even for their own regions, from contract reports (which often turn out to have been written in haste, and in less-than-sparkling style).

This is not Bense’s fault; it is the fault of the system we are all caught up in, and the dreadfully underfunded state of most CRM (and what is left of academic) archaeology. “Public archaeology,” funded by taxpayer dollars, has basically failed in its “public-ation” programs. In a better world, CRM projects would have to fund more and better publications of not only technical reports, but also “popular” summaries for interested members of the public, who ultimately pay the bills.

This problem was alleviated somewhat in the case of the Tenn-Tom projects by the publication of a popular summary volume (Brose 1991). But there is still a crying need for intermediate-level articles, more detailed than popular or textbook summaries but less so than the “gray”
technical reports on individual CRM survey projects, site excavations, etc.

The obvious places for such articles would be the state journals, such as *Mississippi Archaeology*, which are readily accessible (though not quite free) to interested members of the taxpaying public. CRM contracts should require their production by project archaeologists, and the budgets really should include line items for this kind of writing (and perhaps for page costs in journals). They would be of great interest and use, not only to amateurs and students, but also to professionals.

Bense’s text abounds with brief summaries of important sites for which such articles should be available but are not. Just focusing on northeast Mississippi, they include: Hester (p. 58), the Walnut site (p. 79) and other Middle Archaic “middien mound” sites (p. 82n); various “Miller culture” Middle Woodland sites (p. 153); Waverly Plantation (p. 324); the Bay Springs historic “farmstead” sites (p. 337-338); and the town of Vinton (pp. 343-344). How many of these have been the subjects of “meaty” articles or reports that are readily available to the public of Mississippi and archaeologists in general? Only the Hester site, reported on by Sam Brookes in a rather lengthy but “preliminary” 1979 publication (*MDAH Archaeological Reports* No. 5, incorrectly cited by Bense as No. 3).

Indeed, a modest but perhaps significant beginning step has been taken in our neighboring state of Louisiana, with the publication of a 31-page, well-illustrated booklet summarizing archaeology at a 19th-century sugar plantation (Yakubik and Mendez 1994). This publication was sponsored by Shell Chemical Company, going beyond the bare legal requirements of the “Section 106 compliance” process, and published by the Louisiana Department of Culture, Recreation, and Tourism, Division of Archaeology, for free distribution to the public. Other numbers in this “Discovering Louisiana Archaeology” series are planned.

Back to the volume at hand. In summary, Bense has taken on an immense task, and made a promising beginning, but the effort is flawed in several ways. Some of them were predictable, given the nature of the job at hand, but some could have been avoided. I look forward to a much improved second edition.

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