PREFACE

The Thirty-Sixth Southeastern Archaeological Conference was held in Atlanta, Georgia, on November 8-10, 1979. Roy C. Dickens served as local arrangements chairperson and Robert L. Blakely and Anne P. Rogers were program co-chairpersons. For the first time ever a student paper competition was held, and a committee chaired by Stephen Williams selected Julie Stein as the winner. Ms. Stein's paper was entitled "Geologic Analysis of the Green River Shell Middens."

The conference was the largest for the SEAC to date. One hundred fourteen papers were presented in fifteen sessions, and for the first time three sessions ran concurrently each morning and afternoon. This completely necessitated the printing of a floor plan of the meeting rooms which also showed the locations of both men's and women's rooms. A once small conference has clearly become big time.

I am grateful to Vernon J. Knight and Diane Cope for their help in preparing this Bulletin for publication. Jim handled most of the correspondence with authors, all of whom graciously provided us with excellently prepared copy and graphics.

J.T. Nilsson
Florida State University

TABLE OF CONTENTS

Program of the 36th Southeastern Archaeological Conference
1

Grasshopper Site and the Delecatation of Disturbed art In Situ Site Structure: Two Examples from North Carolina—Ewriton Heard
4

The Bank Site—An Upland Peep Site—David G. Moore
9

Variation in Mississippian Structures at Lubach Creek—John H. Blitz
11

A Transitional Woodland—Mississippian Period Shaft-and-Chamber Burial from Central Alabama—Brian McDonald Bremner
15

Excavations at Mound A, Shellh National Military Park, Tennessee—Lindsey M. Bedrini and Randy V. Hellenau
20

Speculations on the Early Woodland Tom's Creek Phase Settlement Pattern along the South Carolina Coast—Michael Tinkle
23

Holocene Environmental Change and the Nature of Coastal Settlement: An Assessment From South-eastern Virginia—Paul R. Green
26

Prehistoric Cultural Adaptation in the Saline River Valley of Southern Illinois—Richard W. Jeffries
33

A Mason Phase Collecting Station on the Elk River in Tennessee—Brian M. Butler
37

Floral Exploitation and Location of Winter Sites in the Yocca Basin—James Ford
41

Excavation at the LeConte—Woodstock Site—Jennifer M. Hamilton and Robert McDonald
43

Archaeological Survey of Big Cypress National Preserve—Robert Taylor
49
PROGRAM OF THE 30TH SOUTHEASTERN ARCHAEOLOGICAL CONGRESS, 1979

THURSDAY, NOVEMBER 8

SESSION: Coastal Occupation and Adaptations
Organizers: Robert L. Baskin and Thomas F. Spencer (University of Florida)

M. C. Webb (University of New Orleans) The Natural Caloric? On the Maintenance of Shelled Societies in an Agriculturally Deficient Environment
R. C. Baucom (University of New Orleans) The Conch Site: A Waterfowl Occupation in the Louisiana Coastal Marsh
J. W. Treat (Big Bend Natural History Museum) Coastal Settlement Patterns Changes in the Petite Anse Area of Southwest Louisiana
B. L. Segal (Coastal Environments, Inc.) and T. M. Ryan (Corps of Engineers-New Orleans) Prehistoric Utilization of Mississippi River Sandbars
J. R. Shelden (University of New Orleans) Subaqueous Site, Specialization
J. L. Lomax (Florida Museum of Natural History) Archaeology and Ethnohistory of the Eastern Gulf Coast
M. A. HUNT (University of Mississippi) Ethnohistorical Implications of the Bayou Conquers flora

SYMPOSIUM: The Application of Heavy Machinery in Archaeological Investigations: Knowledge from the Tennessee-Tombigbee Waterway
Organizers: J. D. Tully (University of West Florida) and W. D. Adams (USS Systems, Inc.)

R. L. Jarret (University of Alabama) The Application of Heavy Equipment in Site Location Survey
J. A. Boven (University of West Florida) The Use of Heavy Machinery in Testing
A. C. Cabants and M. L. Powell (University of Michigan) Use of Power Mover and Backhoe/Front-end Loader for Testing and Large-scale Excavation: Lobb Creek Project
J. B. Jenkins (University of Arkansas) The Use of Heavy Equipment on Four Prehistoric Sites in the Gulf Coast Region
J. W. O'Neal (Mississippi State University) The Use and Abuse of Heavy Earthmoving Equipment in Major Site Excavation: Factors for Consideration in Equipment Selection and Use
B. Gilbert (Mississippi Historical Society) Examination of Heavy Equipment Use in Large-scale Mitigation
C. Cole (University of Michigan) Large-scale Processing at the Lobb Creek Site
W. D. Adams (USS Systems, Inc.) and J. D. Tully (USS Systems, Inc.) The Use of Heavy Equipment on Historic Sites: NocorIndian Village Site
J. A. Boven (University of West Florida) and W. D. Adams (USS Systems, Inc.) Summarization of Papers and Evaluation of Machinery

CONTROLLED PAPERS:
Spatial Analysis and Settlement Patterns
Chairpersons: D. J. Ralston (University of Georgia)
J. R. House (Arkansas Archaeological Survey) Mobile Lake: Quantitative and Spatial Analysis of a Site of Middle Water Drainage Occupancy in East Central Arkansas
D. J. Ralston (University of Georgia) The Explanation of Inter-stratified Artifact Variability: A Case from Southeast Georgia
J. D. Mann and B. C. B. Wall (Emory University) The Influence of Sampling (this Site) on Statistical Estimation in Archaeological Site Sampling
J. M. Wroblewski (University of North Carolina-Chapel Hill) The McMillan Settlement System
J. C. Stephen (Southern Illinois University) The Crab Orchard Site: A Surrogated Mississippian Frontier Site
J. D. Tully (University of West Florida) Mississippi River Bluffs Site
J. P. Huron (Florida State University) The Huron Site - An Ousted Peopled Site
D. J. Ralston and P. A. Morey (Arkansas Archaeological Survey) Mississippi Settlement Systems in Northeast Arkansas

SYMPOSIUM: The Toltec Mounds Research Project: Narrows Coves Creek Culture in Alabama Bluff Valley
Organizers and Chairpersons: M. A. Rolinsson (Arkansas Archaeological Survey)
M. A. Rolinsson (Arkansas Archaeological Survey) Introduction: The Toltec Site and Research Progress
H. A. McDermott (Arkansas Archaeological Survey) Analysis of the Toltec Drew Site from the Toltec Vicinity
M. A. Rolinsson (Arkansas Archaeological Survey) The Saline and Natural Ethnography
J. E. Clark (Arkansas Archaeological Survey) Construction of Site Features: Tests of Mounds C, D, E, F, and G
J. E. Clark (Arkansas Archaeological Survey) Ceramic Studies: A Basis for a Tentative Cultural Sequence
J. E. Clark (Arkansas Archaeological Survey) Lithic Studies, Analysis of the Tools and Debris from the Site
N. A. Rolinsson (Arkansas Archaeological Survey) Emerging Cultural Patterns and the Archaeology
J. S. Belzheim (University of Mississippi) The Relationship of the Toltec Site to the Coltes Creek Culture of the Lower Mississippi Valley

Organizers and Chairpersons: J. A. Boven (University of West Florida) and W. D. Adams (USS Systems, Inc.)
R. J. Bongard (University of Mississippi) Mountain Top Utilization
K. E. Johnson (University of Mississippi) Archaeological Response: Settlement Systems and Last Paper
J. A. Boven (University of West Florida) The Testing Program and the Unusual 'Hidden Mounds' of the Tombigbee River Drainage
A. Frankin (University of Florida) A Preliminary Analysis of the Fossil Remains in the Gulf Coast Region
SYMPOSIUM:
Natural and Cultural Processes in the Formation of an Archaic Shell Midden on the Green River, Kentucky
Organizer and Chairperson: W. H. Maugans (University of South Carolina)
W. H. Maugans (University of South Carolina) Introduction
W. G. Haug (Louisiana State University) The Green River Shell Midden in the W. F. A. Era
E. J. Watson (Washington University - St. Louis) and W. H. Maugans (University of South Carolina) Shell Midden Formation and Deformation: A Case Study
J. A. May (University of Missouri - Columbia) Shell Midden Formation Processes: A Methodological Perspective
C. E. Wagoner (Washington University - St. Louis) The Green River Archaic: A Botanical Reconstruction
R. Hink (University of Minnesota) Geological Analysis of the Green River Shell Midden
L. A. Gussky (University of Missouri - Columbia) A Stratigraphic Study of the Chalico Point Site
E. N. Best (University of South Carolina) (Shell Midden Formation Processes: Implications for the Green River Archaic

SYMPOSIUM:
Recent Work in the Lower Mississippi Valley
Organizer and Chairperson: J. Williams (Harvard Peabody Museum)
J. Price (Demos-Southwest Missouri State University) The Lou Anderson Collection from Southwest Missouri
R. D. Smith (Smithsonian Institution) Survey in the Advance Lands of Southeast Missouri
W. O. Autry, Jr. (University of Arkansas) Mississippian Settlement Patterns in the Western Tennessee River Valley
J. M. Brown (Harvard Peabody Museum) A Late Mississippian Component in Southeast Louisiana: Observations from the Salt Mine Valley Site
J. E. Baldwin (Harvard Peabody Museum) The Gold Mine Site and the Concept of Touhou Culture
S. Williams Harvard Peabody Museum Some Negative Painted Pottery: A Possible Burial Marker in the Southeast

CONTRIBUTED PAPERS:
Subsistence and Environment - II
(Rylander, J. E. Wells, University of Georgia)
B. J. Reed (University of Georgia) Availability and Use of Fish Fauna in the Georgia and Florida Atlantic Coasts
G. C. Sires (University of Tennessee-Knoxville) Plant Use Patterns during the Mississippian Period in South-Central Tennessee: A Preliminary Statement on Changing Adaptation in the Eastern Highlands
M. M. Buley (Southern Illinois University) A Mound Phase Collector's Site on the Big River in Tennessee
A. R. Wilson, Jr. (University of North Carolina-Chapel Hill) European Contact and Plant Food Subsistence among the Chickasaw and Virginia Indians
E. S. Shelden (Auburn University) Protolimnic Plant Shelly in Two Georgia Geographical Provinces
J. L. Ford (University of Mississippi) The Seasonal Occupation Pattern in the Income Basin
T. M. Moseley and J. F. Red (Center for Environmental Studies, New Orleans Louisiana) Morphology and Paleoenvironmental Reconstruction: A Case Study from Coastal Louisiana

SATURDAY, NOVEMBER 10

CONTRIBUTED PAPERS:
Necaric Sites Archology and Ethnography
(Rylander, J. E. Wells, University of Georgia)
L. Beck (Georgia State University) Physical Anthropology of Skeletons from Historic Oakland Cemetery, Atlanta
P. Elschnig (Georgia State University) An Ethnographic Study of Selected Archaeological Features at the Myers Site, Southern Blood Nation, Alabama
J. R. Hamilton (University of Florida) and R. L. Koepp (Georgia Southern College) Excavation at the Lower Waterfall Site, Southern Georgia
T. C. Leftfield (University of North Carolina-Villamont) Excavation at 31 ON 33: A Late Woodland- Woodhullish Archeological Site
H. T. Smith and S. A. Kowalski (University of Georgia) Tentative Identification of a Postclassic Period Village in Florida
S. Storey (Pennsylvania State University) Aspects of Chiefdom Demography
Roser, R. B. (University of Georgia) Water Travel of the Southeastern Indians
T. J. Byrnes, Jr. (Chattahoochee-Oconee National Forest) The Historical Method as a Positive Aspect of Anthropology and Archaeology in the United States

CONTRIBUTED PAPERS:
Lithic Analysis and Interpretation
(Rylander, J. E. Wells, University of Tennessee-Knoxville)
J. R. Hildebrandt (Simon Fraser University) Neutron-activation Analysis of the Dower Chart Quarry
C. A. Sargent (Southern Illinois University) A Production Stage Analysis of Lithic Artifacts from the Livingston Site, Leflore County, Mississippi
The purpose of this paper is to discuss some preliminary findings concerning the correlation between the structure of undisturbed, in situ features and architecture and the patterns of various classes of artifacts contained in the plow zone. The study of the interrelationships between disturbed and undis-turbed site structures is certainly neither novel nor revolutionary.

Recently several researchers (Riford et al. 1970; Redman and Natson 1972; Schiffer and Battye 1973; Farnsworth 1978) have tried to explain and account for the coincidence between disturbed site structures and the undisturbed matrix. These studies have, however, been primarily concerned with surface-subsurface correlations. These attempts to investigate on a large scale the degree of correspondence between the patterns of artifact densities within the plow zone and buried, in situ, structural remains. These patterns have been described by Farnsworth, Nogues, and other architectural forms. The purpose of the present study, which is a revision of a previous report by M. Jackson (1976), is to evaluate the findings of other studies, as well as to expand on the methodological basis of the research. The research laboratories have been developing for several years. The best known laboratories in the Southeast are the Laboratory of Archaeology at the University of North Carolina at Chapel Hill and the Laboratory of Archaeological Science at the University of Florida. The latter laboratory has been conducting a series of experiments on a variety of archaeological materials, including artifacts and bones from the Southeastern United States. The Laboratory of Archaeology at the University of North Carolina has also been conducting similar studies, and has produced a number of significant results. These laboratories have been working closely with the Museum of the American Indian, and the Laboratory of Archaeological Science at the University of Florida has been developing new methods for the analysis of archaeological materials. The Laboratory of Archaeology at the University of North Carolina has been conducting a series of experiments on a variety of archaeological materials, including artifacts and bones from the Southeastern United States. The Laboratory of Archaeological Science at the University of Florida has also been conducting similar studies, and has produced a number of significant results. These laboratories have been working closely with the Museum of the American Indian, and the Laboratory of Archaeological Science at the University of Florida has been developing new methods for the analysis of archaeological materials.

My interest in this area grew out of a concern over a growing number of reports dealing with the ex- change of small, low-density sites. Some sites show a degree of positional spatial integrity that has been simply assessed. It was felt that many of the spatial relationships among various artifact types and classes were simply not reflecting the activity structures and agents which past cultural systems as they were then interpreted. These patterns eventually led to a series of spatial studies of the Willamette Valley area. The results of this study were published in the book by M. Jackson (1976). As part of my interest in this area, I conducted a series of experiments on a variety of archaeological materials, including artifacts and bones from the Southeastern United States. The Laboratory of Archaeological Science at the University of Florida has also been conducting similar studies, and has produced a number of significant results. These laboratories have been working closely with the Museum of the American Indian, and the Laboratory of Archaeological Science at the University of Florida has been developing new methods for the analysis of archaeological materials.

My interest in the site comes from the fact that large portions of their respective village areas have been totally excavated, bringing to light considerable information concerning the spatial arrangements of features, burials, houses, points, as well as other architectural forms. Over 20,000 ft. have been opened at 30 ft., while well over 6,000 ft. have been exposed at the site, and the work is continuing today. The scale of the site is such that it is not unusual to find that they have been consistently excavated with similar techniques resulting in the near total recovery of plow zone materials, which are often difficult to locate. This plow zone study, in conjunction with the in situ site, permits the use of an entire area of the site to be studied.

The scope of this paper is too limited to allow a detailed discussion of the research objectives currently being investigated. As a consequence, only a brief, general overview will be presented.

As mentioned previously, the first objective has been to explore the degree of correlation between undisturbed feature artifact output and the disturbed artifact distributions contained in the plow zone. Based on studies of surface-subsurface correspondences, the picture is unclear, and it appears that a myriad of factors are at play (Niswander 1976). However, by comparing the plow zone artifact densities with the known in situ structure, the best possible conditions for patterned correspondences between the two contexts exist. Patterned correspondences simply refer to the fact that in undisturbed areas of the site, those high artifact output, it is expected that this trend would be discernible within the plow zone and vice versa.

If some form of predictive relationship between the two contexts could be established, it was felt that the different classes of artifacts would display differential degrees of predictive density, and that certain kinds of specimens would readily indicate specific types of subsurface features, for example. It was hypothesized that the presence of concentrations of bone in the plow zone would indicate subsurface trash pits. This relationship is based on several assumptions: First, it was somewhat ethnocentrically assumed that bone, because of its plasticity and malleability, would be the most likely to be cleaned up and deposited in a secondary context (see South 1977). It was also assumed that bone elements would be broken up into smaller and smaller fragments with each successive plowing and that those smaller, dismembered fragments would lose their original form. Consequently, only those pieces kicked up by the most recent plowings would be present in the plow zone, and those would be concentrated in close proximity to their points of entry.

Because of its small size and undisturbed presence, this debris was considered to have most likely entered the record in a primary or de facto context (see Niswander 1977; Riford 1976, South 1977). A similar disposal pattern was suggested for the small triangular arrow points common at both sites. As a result of the work, in which the writer was involved, we discovered the record, or facts, from a number of archaeological contexts lineage was developed to see Schiffer's (1976) methodology - it was hypothesized that plow zone densities of deni-sity and arrow points would have little predictive value in locating subsurface features.

A third objective was to define the intra-site structure contained within the plow zone and the undisturbed site. For the most part, most large scale, and long-term studies have dealt explicitly with the problem of the degree of disturbance of disturbed and undisturbed materials were present (Smith 1978) or assumed a degree of spatial association for the material separated by the project (see South 1979). Few, if any, spatial or activity analyses have utilized both contexts in interpreting spatial patterns and the plow zone. The plow zone study was conducted in a similar manner. Specimens containing diagnostic features in primary or de facto context are contained in the plow zone at sites similar to Warren Wilson and Skia, while secondary refuse deposits primarily comprises the in situ artifact patterns. By using data from both contexts, it is hoped that a complementary relationship can be established that will allow for a more complete understanding of the site formation processes as well as spatial dynamics.
The artifact classes used in the study have been ceramics, animal bone, debitage and projectile points. The choice of these categories was dictated, for the most part, by factors of preservation and sheer numbers. Only a few kinds of specimens are represented at both of the sites in sufficient quantities for valid inter- and intra-comparisons. This handicap is particularly acute when dealing with materials from the pit row not only at Brs 29 and 38a but at most sites in the Northeast. The more fragile materials, including anthropological specimens, shell, and other organic remains are simply not able to withstand the difficulties and expenses of excavation.

Pit row zone counts were calculated for each of the different classes of artifacts per 10 ft grid unit. There were 242 such units at Brs 29 and 38a. Since a random walk in both instances the undisturbed context consisted of various post holes, pits, and depressions that had been trampled by the plow. When comparing their output with the pit row, artifacts counts per feature square were calculated. If more than one feature occurred in a given square, the contents were retained so that there was only one count per artifact class per square. A summary of these data are presented in Tables 1 and 2.

Table 1. Br 29 Flow Source and Feature Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic</td>
<td>102</td>
<td>658.1</td>
</tr>
<tr>
<td>Lithics</td>
<td>102</td>
<td>102.5</td>
</tr>
<tr>
<td>Bone</td>
<td>102</td>
<td>11.9</td>
</tr>
<tr>
<td>CSPP</td>
<td>102</td>
<td>8.3</td>
</tr>
<tr>
<td>Ceramic (F)</td>
<td>60</td>
<td>244.2</td>
</tr>
<tr>
<td>Lithics (F)</td>
<td>61</td>
<td>46.3</td>
</tr>
<tr>
<td>Bone (F)</td>
<td>102</td>
<td>159.2</td>
</tr>
<tr>
<td>CSPP (F)</td>
<td>60</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Table 2. Br 29 Flow Source and Feature Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic</td>
<td>232</td>
<td>1873.7</td>
</tr>
<tr>
<td>Lithics</td>
<td>242</td>
<td>32.9</td>
</tr>
<tr>
<td>Bone</td>
<td>242</td>
<td>23.9</td>
</tr>
<tr>
<td>CSPP</td>
<td>242</td>
<td>6.9</td>
</tr>
<tr>
<td>Ceramic (F)</td>
<td>47</td>
<td>124.2</td>
</tr>
<tr>
<td>Lithics (F)</td>
<td>48</td>
<td>13.9</td>
</tr>
<tr>
<td>Bone (F)</td>
<td>47</td>
<td>310.3</td>
</tr>
<tr>
<td>CSPP (F)</td>
<td>46</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Trend surface and residual, as well as contour maps, were calculated for each category of artifact from each context at both sites. Second,检查. Fifth order surfaces were fitted and these were compared with each other as the known excavated surfaces to determine if the modeled resolution was significant.

Since one of the main goals was the investigation of the relationship between the pit row distribution of artifacts and the distribution of features and structures, the maps of residuals from the trend surface were of primary importance. However, by comparing the various trends of different artifact classes within the two structural contexts, hopefully patterns can be identified and correlated with situational structural patterns. These patterns may then be used to develop spatial models that will facilitate activity analysis of disturbed context data. This segment of the research is only beginning and will require similar data from a variety of sites.

Comparing the large number of maps with one another and the excavation plans has not been an easy task. The major problem is that, despite all the visual inspection using overlays has proven most productive. Some fairly simple quantitative techniques have also been used to not only aid in comparing the maps but to add another dimension to support the visual analysis. The Statistical Analysis System of SAS has provided a flexible program to create a series of cross-correlation and partial cross-correlation coefficients (Tables 2, 3). This procedure complemented the SYMAP comparisons and aided in isolating corres...
spontaneous between different artifact variables. Of course the correlation coefficients only measure general correspondence between two variables, and since sample locations are not taken into consideration, it is possible to have a high r value and very little spatial overlap and vice versa. In this regard, the SIMAPs have been extremely helpful in evaluating the correlation coefficients.

Most of the data analysis has yet to be completed. A few general comments can, however, be offered in light of the stated research objectives. The first objective was to determine the degree of coincidence between the patterns of artifact distributions within the plow zone and the patterns of artifact output from disturbed features and other structural components. It now appears that artifact distributions within the plow zone may or may not have a significant degree of structural overlap with major concentrations of such undisturbed facilities as trash pits, houses, or storage units. The degree of overlap is dependent on many variables, but one of the major factors, at least at Bu29 and Skis, is the storage and refuse disposal patterns.

A distinct and different form of storage and garbage disposal was practiced at each site. At Skis most of the garbage was disposed of in specially prepared trash pits or large abandoned storage facilities normally associated with the site. In contrast, the Burnt Willow data suggest that the overwhelming bulk of refuse was collected and dumped along the ridges. This pattern is not unlike that described in the literature for the Maske site where the kachina storage area was directly related to patterns of use intensity (Binfet 1970:136). At both sites high density zones, for the most part, reflect disposal and not activity areas. At Burnt Willow very few trash or storage units were dug, indirectly indicating not only the absence of ground refuse disposal but also the presence of above ground storage facilities. As a consequence, there is very little correlation and overlap between the patterns of artifact output in the plow zone and the in situ site structure (see Figures 1-4). On the other hand, the Skis data show a fairly strong predictive relationship between the two contexts. These different patterns are reflected in the various SIMAPs as well as the array of correlation coefficients.

Although the degree of correspondence between the plow zone and what lies beneath it will vary considerably from site to site, on sites where refuse disposal was of the surface type, refuse in the plow zone appears to be a fairly strong indicator of the locations of such facilities. This relationship was detected by the residual maps and reinforced by the correlation coefficients from both sites. Although at Skis there were several high correlations (r > .4) between plow guns and feature content, the only correlation above .4 at Bu29 was derived when feature bone content was compared with plow zone bone output. Also as expected, lithic debris and projectile points were not as frequently found in secondary context

<table>
<thead>
<tr>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>0.64</td>
<td>0.49</td>
<td>0.41</td>
<td>0.05</td>
<td>0.60</td>
<td>0.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.44</td>
<td>1.00</td>
<td>0.33</td>
<td>0.52</td>
<td>0.13</td>
<td>0.27</td>
<td>0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.69</td>
<td>0.35</td>
<td>1.00</td>
<td>0.40</td>
<td>0.23</td>
<td>0.31</td>
<td>0.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.63</td>
<td>0.52</td>
<td>0.40</td>
<td>1.00</td>
<td>0.22</td>
<td>0.24</td>
<td>0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.03</td>
<td>0.11</td>
<td>0.23</td>
<td>0.72</td>
<td>1.00</td>
<td>0.72</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.08</td>
<td>0.27</td>
<td>0.31</td>
<td>0.24</td>
<td>0.72</td>
<td>1.00</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.23</td>
<td>0.34</td>
<td>0.43</td>
<td>0.44</td>
<td>0.58</td>
<td>1.00</td>
<td>0.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.10</td>
<td>0.36</td>
<td>0.53</td>
<td>0.71</td>
<td>0.70</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
<th>Ceramic</th>
<th>Lithics</th>
<th>Bone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>0.42</td>
<td>0.26</td>
<td>0.46</td>
<td>-0.10</td>
<td>0.60</td>
<td>-0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.26</td>
<td>1.00</td>
<td>0.12</td>
<td>0.26</td>
<td>0.04</td>
<td>0.22</td>
<td>-0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.26</td>
<td>0.12</td>
<td>1.00</td>
<td>0.17</td>
<td>0.29</td>
<td>0.35</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.66</td>
<td>0.34</td>
<td>0.17</td>
<td>0.06</td>
<td>0.04</td>
<td>0.67</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.10</td>
<td>0.26</td>
<td>0.29</td>
<td>0.06</td>
<td>1.00</td>
<td>0.73</td>
<td>0.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>0.06</td>
<td>0.35</td>
<td>0.06</td>
<td>0.53</td>
<td>1.00</td>
<td>0.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.06</td>
<td>0.22</td>
<td>0.47</td>
<td>0.75</td>
<td>0.31</td>
<td>1.00</td>
<td>0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.13</td>
<td>-0.18</td>
<td>0.13</td>
<td>0.00</td>
<td>0.85</td>
<td>0.48</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. Ceramic distribution, plow zone, third order trend surface.

Figure 2. Ceramic distribution, plow zone, third order trend surface.
as zone or pottery. This pattern appears to be particularly relevant at 5m59 where the plow zone distrib-
ution reflects a general coincidence between lithic debris and house structures, while ceramics and bone
are found mainly along the palisade alignments. At 5m59, there is also some indication of a spatial re-
lation between lithic materials and structures, but here there is also a fairly strong correlation be-
tween the plow zone output and large storage-trash pits. In fact, many of the large storage-trash pits are associated with houses. Most of the ceramics at 5m59 appear in secondary
plow zones, but in some areas, they are concentrated in the plow zone in areas containing trash pits or other refuse disposal facilities.

It is felt that the spatial patterns isolated at Vauven Wilson and 5m59 necessitate a re-assessment of the
two most prevalent assumptions concerning plow-disturbed deposits. They cannot simply be bulldozed or
shovelized away as many have suggested (Binford 1964; Smith 1978; Faulkner and McCullough 1978) nor can the
plow zone alone, and this certainly applies to surface materials also be expected to encompass data suffi-
cient to allow for an accurate analysis of intra-site activity structure as others have implied (House and

The complexities and subtleties of site formation processes require that disturbed context data to be
studied as part of an overall spatial analysis that also relies on in situ structural data. The evidence from 5m59 and 5m59 underlines the need for more extensive excavations on sites where both types of data
can be carefully controlled before realistic predictive trends and spatial models can be formulated. This
effort needs to be directed toward the small households and campsites, as well as the large villages where
disturbed and undisturbed site structures are present. Once sufficient quantities and varieties of sites have been studied and the structural components compared, hopefully predictive patterns of disturbed con-
texts can be used to reconstruct the prehistoric activity patterns for the entire plow zone area of interest.

In the plow zone. Based on the results outlined here, plow zone data should be used to complement site
observations but not as a substitute. Without undisturbed deposits, paleoanthropologists or prehistorians
may provide only descriptive distributional information that lends functional, behavioral correlations with
systemic context. At the same time, structural studies based solely on non-plow disturbed deposits can be
very misleading in the search for spatially relevant behavioral inferences.

References cited:


American Archaeology, Memoir No. 16.


Investigations No. 10. Department of Anthropology, University of Tennessee, Knoxville.

Foster, Robert W. 1936. Prehistoric pottery and archeological surface collection. In the Early Mississippian village, edited by Kent E.


Talisga and Okea Chovesser. 1977. The importance of small, surface, and disturbed sites as sources of significant


thesis, Department of Anthropology, University of North Carolina.
Flaxhag settlement systems are described as generalized Mississippian systems (Dickens 1976, 1974). However, information from the brick site, 31M11, in Brown County, North Carolina, suggests that some of the current model of Flaxhag settlement is expanded with additional expansions placed on upland environments.

Robert Brunk contacted me in August, 1978, with information about Flaxhag ceramics he had collected. His description of an upland spring and nearby field assumed an unmarked location for such a find, but a visit confirmed it as a non-eroded Flaxhag site.

The Brunk site is located at the head of a small intermittent stream valley, which runs south from Big Frog Creek about 200 yards to the confluence of the French Broad River and Big Frog Creek. The elevation of the Big Frog millpond is approximately 440 feet above sea level, while the elevation of the Brunk site, just over 1 mile to the north, is nearly 940 feet above sea level.

The site is situated on the edge of a corn slope on the north margins of Tryon-Frog Peak, which rises to a height of about 1280 feet less than 1 mile south of the site. Along the neighboring slopes, rock terraces were constructed in the late nineteenth century to create additional fields for cultivation. Thus the site is found on the highest, relatively flat land in the valley. The intermittent stream, Sugar Creek, runs within 100 yards of the site, and though it is often dry at the upper elevations, two nearby springs are active today. The first is less than 30 yards from the site, but the second, 100 yards north, is the more significant as it is here that the original discovery of the Flaxhag ceramics was made. Mr. Brunk has recovered more than 2000 sherds from the spring. Unfortunately, the area around the spring has been subject to large earth-moving projects and no archaeological material has been recovered independently of it. It is assumed that the pottery found here is related to the site above, though the nature of this relationship is presently unknown.

With the cooperation of the Brunk family and the support of the Research Laboratory of Anthropology, we began excavation of the upper field with the hope of uncovering subsurface features which would corroborate the interpretation of this site. Work has proceeded on a part-time basis during the past 17 months. Presently, 25% of the site has been excavated to the top of the subsoil.

A plow zone, usually about 30 cm deep, contains ceramic and lithic artifacts. Beneath the plow zone lies a dark, compact soil zone which represents earlier plowsharps from the upper elevations. No features of postholes have been observed in this zone, but it does contain additional artifacts. The entire zone is 1.30 to 1.32 m thick and is overlain by a lighter colored, clayey subsoil. Postholes are visible at the surface of the subsoil through they are often obscured by recent rodent activity. By removing 1 to 1.5 m of the subsoil, we are able to clear most of the rodent disturbances. The excavation unit is then troweled and photographed and all strata and features are recorded.

The resulting map has been used to locate postholes and other features. Though most posthole patterns may be suggested by the map, not all postholes have been observed in the zone, but it does contain additional artifacts. The entire zone is 1.30 to 1.32 m thick and is overlain by a lighter colored, clayey subsoil. Postholes are visible at the surface of the subsoil through they are often obscured by recent rodent activity. By removing 1 to 1.5 m of the subsoil, we are able to clear most of the rodent disturbances. The excavation unit is then troweled and photographed and all strata and features are recorded.

Unfortunately, postholes provide the bulk of information about the structure and possible function of the Brunk site. Other classes of features are represented only by several small shell mounds. Preliminary analysis of the fill from one of these features revealed carbonized human body, well, animal bone, and two ash beds, corn. This appears to be the deepest and most active area of the site is unstable. Final analysis has not been made yet. Corn has been grown on the site as recently as 10 years ago. A small patch of corn is visible in the high seafloor of the Flaxhag phase but instead brought to the site is unstable. Finally, no factors remain have been yet recovered.

Many dozens of artifacts are present; many, ceramics being the most prolific. While the Flaxhag site is known for its presence of corn and small quantity of iron, the site has been thought to be a Flaxhag phase in its own right. The site, as a whole, is also represented by postholes, both of these artifacts have pipe fragments and ground stones which usually exhibit ground stones or surface finishes.

Lithic material is varied, though relatively rare; the excavated sample consists of only 20 tool's- of which 10 are chipped, 5 are sherd, 4 are flakes, and 5 are points - with up to 8 flakes. A sample is usually flint or chert. The diagnostic lithic artifacts reflect a variety of occupation episodes as do the other artifacts. The site is located on the Archaic Savannah River points. One is an "earred" Middle Woodland point; the last is a Flaxhag type.

It would be clear from this brief artifact inventory that small upland sites are prey to the same problems of small sample size. Contexts disturbed through plowing, plowing, and other factors must be thoroughly examined to determine if artifact association is meaningful or merely fortuitous.

At this point the reader may be wondering at the author's selection of an artifact new to the literature of Flaxhag, site with similarly modeled Flaxhag settlement. Indeed, I shall disappoint you and discuss the usual sites for more information and data. I do know that the Brunk site represents how it articulates with overall Flaxhag settlement systems and is presently under study. Once more, the site is considered the Brunk site requires a reconsideration of the presence of the Flaxhag settlement which emphasis village locations in upland environment.

The site does not fit the usual location models for the Flaxhag phase. It is found at a high elevation and is located from the nearest village and is located on a major agricultural field. In the early 19th century, and has been reported as temporary campsite; yet the artifact association recovered is nearly identical to those at least few excavated Flaxhag villages, though smaller in quantity. The site does not resemble previously reported Flaxhag burial sites where large villages without associated ceramics have been located.

Southern archaeological Conservancy Bulletins 31, 1960
while the observations above illustrate why the Brunk site does not fit the current model, they do not explain the lack of fit. One may construct numerous explanatory hypotheses, most of which fall into two categories.

In hypothesis under the first category, it served as a special-purpose site, an outpost or extension of a larger village located on the flood plain of the Big Toy Creek. Some examples of this type are hunting stations, seasonal locations for gathering and collecting plant foods, a source of local creek and spring clay for the production of pottery, or finally, the site of a particular ceremonial haven.

The second category subsumes explanations relying on the interrelationships of chronology, environment, and culture. For instance, the site may have served as a refuge, that is, a more easily defended position, during periods of conflict. Or, population pressures and competition for arable land may have forced small groups of the lower valley population to exploit marginal agricultural land of the uplands.

It is premature to embrace any particular hypothesis. In fact, one may do injustice to prehistoric cultural systems by seeking a quick solution to the questions posed by the Discovery of this site. It may be more productive to examine the current model to determine if it may be effectively altered to accept the new data.

Dickens (1976:22) suggests that Flanagan subsistence was based on approximately equal parts of hunting, gathering, and agriculture. Each of these activities can be pursued within close proximity of the alluvial valley and the adjacent upland areas as well. Thus, models of Flanagan subsistence necessarily consider all environments. In contrast, the locational model of Flanagan settlement emphasizes alluvial valley village settlement while acknowledging temporary upland occupations for which there are little data at the present time.

Dickens (1976:115) also states that a combination of the two sets of data enables reconstruction of a settlement-subsistence system. This is easily accomplished by postulating a model of primary occupation in the alluvial valley locations with additional or secondary settlement in the nearby upland regions. Nature work at the Brunk site and additional surveys in similar environments should contribute to a fuller understanding of the articulation of the secondary upland settlement with the primary lowland settlement.

The altered model is also useful since it need not be limited to the Mississippian Flanagan phase. The Flanagan occupation was apparently the latest at a location found useful by earlier Woodland peoples. Since the subsistence strategies of the Flanagan phase probably differed from those of the Woodland periods only by the increased emphasis on maize, it is not unreasonable to expect that some continuity of settlement systems also occurred. Indeed, a brief survey of the sugar creek valley has revealed numerous Woodland sites and the possibility of additional Flanagan sites. The combination model proposed above thus forms a framework for temporal study of cultural continuity and change as well as for the study of Flanagan settlement.

carole Crumley (1979:143) has recently underscored the importance of the concept of "scale" in regional studies and emphasis on regional analysis will be particularly useful for future Flanagan studies. However, the present scale of lowland emphasis should be enlarged; the model boundaries should be conscientiously expanded to make use of complementary geographic areas. A regional study of Flanagan settlement should examine equally alluvial sites and their adjacent mountainous regions. If this course is taken I do not expect that the Brunk site will remain an anomaly for long.

References Cited:


Recent archeological excavations in the central Tombigbee River Valley near Lubbock Creek in western Alabama have produced a wealth of data on architectural remains of a single continuously occupied Mississippian community. The location of this settlement gave access to the easily tilled, productive soils (Hard 1935) and the varied ecosystems of the Fall Line Hills to the north and the Black Belt Prairie to the south and west.

Lubbock Creek Mississippian architectural remains can be loosely grouped into two sets: dwellings or buildings and architectural features requiring more "public" labor, such as the substructure mound. This paper will address the variation in these structures identified as dwellings or buildings. Three distinct types of structures are differentiable by the physical evidence: the rectangular wall trench construction, the circular single post set construction, and the rectangular single set post construction.

An example of the rectangular wall trench structure is illustrated in Figure 1. Four wall trenches, each approximately 3 m long, define the limits of a structure encountered on the original ground surface below the substructure mound. These wall trenches were dug through a sandy loam submound to a maximum depth of 50 cm. Defining individual post holes within the trench fill was not always possible. The tiers were non-convergent, suggesting corner entrance. These were no interior post holes. A clay-lined hearth formed a shallow basin in the structure's center. Almost no cultural debris was recovered from the floor, but the wall trenches and hearth yielded a small amount of shell tempered sherds. A total of three rectangular wall trench structures were discovered.

Another type of structure encountered at Lubbock Creek were those that had a circular pattern of single set post holes (Figure 2). This example was 10 m in diameter, with a central, clay-lined hearth forming a shallow basin with a rim raised slightly above the floor. Lines of small post holes in the structure's interior might indicate screen partitions, racks for storage, or other furniture. The dotted line represents a heavy clay layer partially overlaying the floor. This was probably a ditch, dug prior to the building collapsed. This layer preserved formal remains on the floor, there was no evidence of burning. Two pits were located in the interior. One contained an infant burial, and both contained deer, turtle, and fish bones as well as small shells. The two lines of parallel post made running perpendicular to the wall probably indicate an entrance way with an eastern orientation. Diagnostic ceramic sherds associated with the floor and pits are identified with the Moundville II phase between A.D. 1200 - 1400. Approximately eight structures of this type were encountered.

A third type of structure encountered during the excavation was a rectangular pattern of single set post holes (Figure 3). There was a central clay hearth and, as in the second example, lines of smaller post holes on the floor indicate spatial partitioning. Perhaps some of the larger interior post holes were roof supports. Two small shallow pits were located in the floor. Two parallel wall trenches, each 2 m long, perpendicular to the structure, form a very narrow eastern entrance. As many as seven structures of this type were uncovered.

Several Lubbock Creek structures showed evidence of burning. Fine hardened ash covered portions of floor areas, preserving ceramics, food remains, lithic debris, and charred posts. Ground stone discards were often found on these floors within post hole fills.

The rectangular structures with tightly spaced posts in wall trenches is apparently associated with the transition from the Woodland cultural tradition into the increasingly intensive agricultural economy of the Mississippian. Examples of this structure type have been found throughout a wide area in the eastern Mississippi basin. In general, the wall trench type represents a technological departure from the large circular single post Woodland structures like those utilized in central Tennessee (Falkner and McElroy 1974) and by the Miller people of the Tombigbee region (Cutter and Corbett 1955). A small semisubterranean rectangular structure has been associated with a terminal Miller III phase in the central Tombigbee area (Hyden 1979:270).

Soon after A.D. 1000, an economy based on an increasing reliance on agriculture emerges in the west Alabama region with a full array of Mississippian traits. Evidence from the Beesmer and Moundville sites indicate architecture became quite complex, with a distinction between residential dwellings and more southeaster. Excavations at the Moundville, 1950-1955.
specialized buildings of community or religious significance. At Resemnez, a wall trench structure has been radiocarbon dated at A.D. 1700 to 1970 B.P. (early 1970s). DeCaro and Wilmer 1941).

The wall trench structure predates at these two localities and was the base architecture, as well as the 'public' buildings. At Mundrille, the wall trench structure appears to have been in use for quite a long time. Judging from associated material, wall trench sites entered into the Mundrille III phase. A.D. 1500 - 1550, and evolved into multiroom buildings (Dobbs 1975). Single set post mold patterns, both circular and rectangular in shape, are minority types at Resemnez and Mundrille.

Returning to the central Tombigbee Lake Terrace area, the wall trench construction has only been found beneath the surface. Only a few small wall trench building structures are present, some with rectangular patterns. Although these structures were not radiocarbon dated at this time, associated ceramic suggest a Mundrille I, A.D. 1100 - 1250 context. The restricted location of these structures on the site implies a special rather than a general function.

The majority of Laub Creek structures are single set, wide spaced post mold patterns with wall trenches appearing only in associated entrances. Some of the circular and rectangular single post structures appear to be contemporaneous with each other and the ceramic evidence indicates contemporaneity with Mundrille as well. At the Laub Creek presaged surface, single post structures superimposed over earlier wall trench structures indicate that the wall trench form did not exist here for very long. Apparently certain factors influenced the Laub Creek people to abandon the use of wall trench structures after a relatively short period of time. This change from a predominance of the wall trench to a single set post construction is documented at Bennison and Mississippian sites where superimposed structures revealed a long occupation contributing to the formation of "residence mounds" (Lewis and Kenoyer 1968; MacNeish 1962).

Wall trench structures are differentiated from single set post houses by the scarcity of cultural debris found on the surface of the site. The occupants of the wall structures either carefully removed or did not accumulate the type of debris found in abundance on single post house areas. On the presaged surface, where both wall trench and single set post construction occurred, no ash or sudden spadrae were found anywhere in the immediate building area. Perhaps this material had been removed to some unknown location on the site. The filling within wall trenches, post molds, and hearths contained most of the retrieved artifacts.

In west Alabama, single set post construction has a long cultural continuity. It is present in the archaeological record from the Woodland period, and is then eclipsed by the wall trench form after 1000 A.D. The single post technology does not disappear, but evolves into a slightly different form in late Mississippian times. Wall trench structures persist at the major center of Mundrille, but appear only briefly at Laub Creek. In the ceremonial context of the presaged surface. Apparently the majority of Laub Creek people lived in single set post houses. In reviewing the record provided by these sites, it is apparent that variation in building form increases with the size and complexity of the site and perhaps mirrors the developing social differentiation in Mississippian society. At Mundrille this emergence of recursive, hierarchical ranking of people is seen in mortuary ceremonialism (Dobbs 1975, 1976). This is not meant to suggest that wall trench construction is used in a ceremonial context, but that some of the variation in Mississippian structures at Laub Creek can be explained in part as a phenomenon of local, provincial, or regional differentiation, with construction techniques reflecting an earlier Woodland architectural heritage.

Through much of this discussion I have emphasized chronology, which is a necessary perspective for an overview, but now, with the volume of field work in Alabama increasing, we will be able to approach architecture from an alternate point of view. Some behavior, such as social, psychological, and, physical, can be linked to architecture because this form is a physical embodiment of these behavior patterns and, conversely, the built structure affects behavior and the way of life (Rappaport 1968).

For example, the Choctaw and Chickasaw used two different types of dwellings, the winter house and the summer house. The winter house was a circular structure and the summer house was a rectangular form. This is a description of an eighteenth century Choctaw winter house as seen by a French traveler in Mississippi:

This house is nearly of a circular figure and built of clay mixed with hazel straw or grey, which they sow in the winter and cover with a roof of cloths (the nature oil which is usually made from them and which they cover their shoes and hats with) you come upon the houses in two ways, the one by a ladder fixed against it and raised at least eight feet from the ground, the fire place is in the middle of the floor, and the back room is in the other part of the house. The door is on the east side, and in winter they have a fire in the chimney which warms all the house. (Rappaport 1968).

The traveler mentions food storage in pits beneath the floors of the house under caves. Both are objects that could be expected to leave some physical disturbance in the soil. It therefore seems
possible that the small pits and post molds discovered along interior walls of structures at Lubbub represent this kind of activity.

A possible explanation of the parallel wall trench and single set post mold patterns associated with entrance ways might be found in this description from a Mississippian winter house by Adair:

The door of the winter palace is commonly about four feet high, and so narrow as not to admit two to enter it abreast, with a winding passage for the space of six or seven feet, to secure themselves both from the power of the black winds, and of an invading enemy (Adair 1775:419-420).

Most archaeological evidence is the physical remains of a culture's technology. The assumption is made that if we can examine the physical records of a people with human materials, artifacts, buildings, in a similar environment or even the same geographical area, and see which types of material culture influenced or were with which kinds of social behavior, then we can say that the excavated data will infer similar types of social behavior and activities as described in the ethnographic or historical record. Does the acceptance of this assumption in archaeology always have to remain in the realm of a subjective judgment on the part of each investigator? There is much disagreement on this point. K. C. Chang presents one point of view. "As to analogy, archaeology as a whole is analogy, for to claim any knowledge other than the objects themselves is to assume knowledge of patterns in culture and history and to apply these patterns to the facts" (Chang 1967:109).

Other archaeologists feel that using analogy in a specific historical explanation is not applicable to a positivist approach that seeks to define cultural laws by testing hypotheses through deductive reasoning. Thus analogy should not be used to explain any behavior directly, but it can suggest hypotheses to be tested.

One advocate of this approach states:

In short, I do not view interpretations or synthesis of interpretations as an end product of our investigations; on the contrary, we should be seeking generalizations regarding the operation of cultural systems and their evolution - positing which has not been possible except through the observation and analysis of contemporary events (Binford 1971:889).

However, it would seem that most archaeologists working in the southeastern United States do not hesitate to compare archaeological data with ethnographically or historically known behavior. Furthermore, most investigators would deny that the interpretation of cultural remains at a specific site in an attempt to reconstruct past patterns of behavior is not without value in and of itself. If the goal is an interpretation of prehistory as a process, all information or analogies must be considered in forming meaningful hypotheses. The limitations of the systemic model to interpret all that one may wish to understand in archaeology is real.

Consider this exact observation: "Logical analysis of form depends as much on perception of the object, which is conditioned by cultural background, as by any universal principles" (Anderson 1969).

In the absence of any evidence for seasonal variation, the winter/summer house phenomenon may not have occurred at Lubbub Creek. The purpose of the analogy has been to show how seasonal changes in life style and daily activities influenced change in house form as a way to explore the question of the relationship between change in culture, expressed by behavior, and change in environment, as expressed in physical form. Archaeologists can only record the physical form of the houses that are excavated, but they are aware that forces working on house form are primary and which are secondary. Then perhaps they can make the move to not just describing or classifying differences in form and construction, but can attempt to determine what social, cultural, or environmental factors are associated with these differences. With all of man's complexities and dilemmas, a viewpoint attempting to explain house form through any single causal factor is too limited.

It is necessary to understand the character and values of a culture to gain an insight as to its choices among the possible dwelling responses to both the physical and cultural variables. The physical setting provides the possibilities from which choices are made through eocultural values. In a rich environment, where the physical possibilities for house form are great, the actual choices for a society may be limited by its cultural values (Rappport 1969).

So house form is not just the result of physical forces involving climate, materials available, and technology, but in an expression of a society's cultural values, modified by the physical environment and materials available. A structure is a container for people in which they are protected from the physical environment. It can also be a symbol of social ordering that represents a way in which people socially separate themselves. The different activities within this circumscribed space can determine the design of the structure, giving it a purpose beyond mere shelter.

The cultural organization of space and the relationship between social order and the spatial pattern of the archaeological data is being subjected to more analytical approaches (Clarke 1977). The spatial patterning of artifacts, individual activities, and architectural design as a symbolic expression of a society's values has been demonstrated with an ethnographic study of a dinner household (Kroodsma 1971), and in the more present realms of public architecture, which in Mississippian societies includes mounds, palaces, and ceremonial buildings. The representation of cultural values should be easier to detect than in the remains of individual household dwellings. Therefore, eocultural factors are of primary importance in understanding house form and basic to an understanding of man's response to the natural environment.

Acknowledgments:

Previous excavations at Lubbub Creek began with Clawson R. Rowe, 1901; the University of Alabama, under the supervision of Jerry J. Nielsen, 1974; and the Office of Archaeological Research of the University of Alabama in the person of Fred C. Jenkins, 1977. An intensive analysis of the excavation data from the Lubbub Creek communities is now in progress, directed by Br. Christopher F. Penela and the University of Michigan's Museum of Anthropology. It is through the kind permission of the United States Army Corps of Engineers, Mobile District, and the Interdisciplinary Archaeological Services, Atlanta, that this preliminary information on current investigations is presented here.
During the Phase III and Phase IV investigations at the site of Fort Toulouse (1SE8) at the confluence of the Coosa and Tallapoosa Rivers in Central Alabama, six Transitional Woodland-Mississippian and Early Mississippian period burials were encountered. Four of the six burials were excavated while the remaining two were mapped and recorded, but left intact. Two of the excavated graves were semi-flooded early Missis- sipian period burials while the other two were shaft-and-chamber burials. One of the shaft-and-chamber burials was quite unique and is the major topic of this paper. This burial, Pit 4V, was assigned a Transi- tional Woodland-Mississippian period cultural affiliation based upon the associated artifacts and a radiocarbon date of 1090 ± 55 B.P. or A.D. 860 (U-261). The Burial:

The uninterred, burial Pit 4V first appeared to be a double feature, one intrusive into the other, as can be seen in the orifice drawing on Figure 1. Upon excavation, however, it was evident that the west half of the feature was a relatively round shaft with straight sides and a narrow basin shaped bottom which may have served as an aid in lowering the body into position in the actual grave. The fill associated with this shaft was the same brown sandy soil as found immediately above the skeletal remains.

The skeletal remains were in very poor condition with only fragments of the skull, humeris, and femora remaining (Figure 2). This fragmentary skeleton was that of an adult male at least 35 years old at the time of death. There was no indication of pathology on any portion of the skeletal remains present (Turner, personal communication 1979).

The skeleton was situated in the east half of the pit in a flexed position, with the scapulae to the north and facing west. The body was placed along the east profile of the burial pit and covered with approximately 85 cm of brown sandy soil which was probably a mixture of excavated subsoil and topsoil. This portion of the pit was then capped with seven large mica schist slabs weighing between four and eight pounds each. The next phase of the burial process apparently consisted of tossing whole ceramic vessels into the sides (Figure 3). At least 17 vessels containing the charred remains of charred corn were laid in the base of the grave. Other matter were thrown into the pit. Several of these vessels were stacked inside one the other. Pottery vessels were then thrown in to fill the void around the broken vessels. This zone of broken vessels and earth fill was approximately 35 cm deep. The ritual was continued with a small fire built atop the burial indented by a thin zone of charred wood in a matrix of brown loam. The entire pit retained a depth of 1.5 m, a maximum width of 1.8 m at the point of the mica schist slabs, a width of 98 cm at the base of the burial pit, and a width of 48 cm across the orifice. A sediment core through the profile of the burial is shown in Figure 1.

The Material:

The Transitional Woodland-Mississippian ceramics from 1SE8 have tentatively been assigned the type names Tskk, Tskki, Inclined, and Tskki Complicated Stamped. Three three ceramic types were named for the mound at Tskki which was called the "Tskki Mound" by the Alabama Archaeological Society in the first quarter of this century. Tskki, Tskki Inclined, and Tskki Complicated sherds have been found along the base of this mound, but it is not known what association exists between the people who produced the Tskki ceramics and the people responsible for construction of the mound since formal investigations have never been conducted there.
The Tikaboo ceramic types were previously unknown in central Alabama until their identification at the Tikaboo site could be said to consist of vessel size and form. During the Phase II excavations until burial Pit 48 was discovered and excavated. This single burial produced 17 vessels. An analysis of these vessels resulted in the documentation of eight whole and five partial vessel forms.

Taskiki Phase bowls were divided into three varieties based upon form: one variety is tempered with sand and/or grit and polished shell, a second variety is tempered with flake shell, and the third variety tempered with sand and/or grit and flake shell.

Twenty-nine sherds of Tikaboo figural stamped ware were recovered from the burial. These were the only examples of stamped sherds found during the Phase II investigations. The sherds needed to create a larger rim fragment which had been tempered with fine sand and large flake shell. It is possible that this rim was a trade item and may not belong with the Tikaboo styles at all.

The decoration of the Tikaboo vessels is reminiscent of both Woodland-Hopewell period ceramics. A combination of stippling, incision, and combing motifs is found on the vessels. The decoration is characterized by a repeated pattern of parallel lines and arcs. The use of incised lines and arcs is also found on the vessels of the late Woodland Hopewell phase ceramics from central Alabama.

The eight known vessel forms from burial Pit 48 are discussed below in detail. Where more than one vessel per form is known, both measurements will be given. Where there are vessel differences, the available data on the two incomplete forms will also be presented below. All vessels are shown in Figure 4.

Vessel 2b

Only one vessel of this form was recovered from the burial. This container appears to be a Mississippian influence. The small jar is composed of a short, straight neck with a round lip and wide shoulders tapering to a flat base. It is tempered with coarse grit and flake shell. The body is gray. The interior color is medium gray. The vessel is rimmed and has a base with a rounded lip and dark gray flake shell. The vessel has a small low shoulder and a broad base. The surface is dark gray with dark gray flake shell present. The surface finish resembles the salt and pepper appearance of akrigga flake resulting from sand particles protruding from the paste. The surface is smooth and unglazed with no decoration.

Vessel 2c

One vessel of this type was found from the burial. This is a small globular jar with a round neck, depressed rim, and round base. Two holes in the shoulder were drilled in the neck. Sand was used as the tempering agent. The paste is hard and medium gray with black flake shell present. The surface finish resembles the salt and pepper appearance of akrigga flake resulting from sand particles protruding from the paste. The surface is smooth and unglazed with no decoration.

Vessel 2d

One vessel of this type was found from the burial. This container closely resembles Roundville incised, the dominant vessel form at Roundville. This is a medium sized globular container with a round top flatter base and a short, straight neck with a rounded lip. The shoulder is rounded and flake shell with a small amount of sand temper. The paste is uneven and contains a moderate amount of sand and a moderate amount of flake shell. The surface finish is incised, and the surface is grey or brown with the surface finish being rough and uneven. Sand particles are not present on the container.

Figure 3. TASKIKI burial.

Figure 4. PIT 48 excavation.
<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.2</td>
<td>14.7</td>
<td>27.6</td>
<td>10.1</td>
<td>24.0</td>
<td>40.0</td>
<td>19.4</td>
</tr>
<tr>
<td>24.0</td>
<td>27.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.3</td>
<td>16.5</td>
<td>28.6A</td>
<td>-</td>
<td>26.4/33.0</td>
<td>35.0</td>
<td>18.6</td>
</tr>
<tr>
<td>9.0</td>
<td>13.7B</td>
<td>8.4</td>
<td>-</td>
<td>17.1/21.1</td>
<td>31.5</td>
<td>1.5</td>
</tr>
<tr>
<td>-</td>
<td>9.2</td>
<td>23.5E</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7.7</td>
</tr>
<tr>
<td>3.4</td>
<td>4.6</td>
<td>3.2</td>
<td>-</td>
<td>5.1</td>
<td>-</td>
<td>4.7</td>
</tr>
<tr>
<td>0.5</td>
<td>0.7</td>
<td>1.1</td>
<td>-</td>
<td>0.7</td>
<td>1.3</td>
<td>0.8</td>
</tr>
<tr>
<td>0.7</td>
<td>0.7</td>
<td>1.0</td>
<td>5.8</td>
<td>8.0</td>
<td>1.0</td>
<td>0.5/6.1</td>
</tr>
<tr>
<td>0.9</td>
<td>0.7</td>
<td>1.1</td>
<td>-</td>
<td>0.7</td>
<td>1.0</td>
<td>0.7</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>73.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 1.** Vessel measurements (vessels are shown in Figure 4; letters are keyed to figure in text). All measurements in centimeters.

- width of vessel at widest point
- measurement taken at base of neck
- maximum width below rim
- measurement taken at lip
- measurement taken near lip

**Vessel a:**
Two vessels of this form were recovered from Pit 4V. These containers are globular with a short, straight neck. The lip is round in places and flat at others. The base is generally round but appears to be slightly flattened. This shape is probably the result of pressure from hitting the vessel against something. The neck is usually fairly short, but it was still wet. The neck contains two drilled holes (0.8 cm in diameter). The temper consists of a very slight amount of fine sand and pulverized shell. The paste is smooth and even, weighing the vessel as a loose aggregate. The paste is smooth, consistent, and grey in color. Coil lines are visible. The interior is grey and smooth with a slight shine. The surface is irregular and lumpy showing finger and hand impressions. Decorations are absent on both vessels.

**Vessel f:**
Pit 4V contained two of these vessels. They are large conical containers almost as wide as they are tall. The basic shape resembles conical vessels of the late Woodland period in Central Alabama. The neck is constricted and the base is pointed. The rim is curved and the lip is round. A slight fold is evident along parts of the rim but is smoothed away in places. The rim near the lip is noticeably thinner. The tempering agents consist of a medium amount of fine sand and pulverized shell with a sparse amount of flakes shell and mica included. The paste is smooth and consistent and is buff in color. The interior and exterior color is buff with varying shades of light grey in patches. Slight streaks of grey to black fire clouds on the exterior surfaces. The surface is slightly smoothed but is pitted and coil lines are evident. Design elements are absent on both vessels.

**Vessel q:**
Two vessels of this type were recovered from the burial. They are small jars with narrow necks, rounded shoulders, a tapering body, and a small flat base. The neck is straight at the button but slightly flaring at the top with a round lip. The manufacturing technique entailed molding the jar by hand. Pinge and hand prints are obvious on the interior surface. The jar is tempered with a slight amount of pulverized and flake shell while the other is tempered with a medium amount of medium sized sand and grit with a slight amount of pulverized and flake shell. The paste is dark grey to black and is consistent in texture. The interior is grey and very rough while the exterior is buff and smooth with occasional streaks of grey fire clouds. The surface shows no evidence of polishing or decoration.

**Vessel h:**
Five vessels were recovered from Pit 4V which conform to this shape. These containers are large jars with a slightly tapering neck, round shoulders, a tapering body, and a flat base. The rim of the necks are straight, but taper towards the lip. Four of the five jars indicate a 1.5 on difference between the width of the neck at the base and at the lip. The fifth jar has a 4 in difference. Lips of all five vessels were round, and one has a slight exterior fold. The temper used in the manufacture of four of the five containers consists of medium sized sand grit with a slight amount of pulverized shell. Coarse sand
and grit with polished shell was used in the final jar. The paste is dark grey in color and consists of silt texture. The interior and exterior colors include grey, orange, and buff on the vessel walls. Grey and black fire clouds are present on the exterior of all five jars and on the interior of two of these. Four of the five jars have a very smooth interior surface, while one jar has wide blushed lines over a previously smoothed surface. The exterior surface of all five is smooth to the touch and pitted. Ceiling lines are easily visible. None of the vessels have any indication of decors.

One of the two incomplete vessel forms comes from the burial, shares similarities with the three largest vessel forms described in the text, and is 6. The container was generally thrown into the burial with the base directly impacting upon the stone slab. This flattened the lower half of the vessel, allowing the vessel reconstruction impossible. This container was probably a burial jar similar to the base shape of vessel E, Figure 4. The rim is curved and reveals a rounded profile. A slight amount of this was used as a temper. The base is light grey in color as is the interior of the vessel. The exterior is a mixture of grey, buff, and orange with a dark grey rim; though present, the rim is not smooth, but the exterior feels sandy to the touch and is pitted like that of Vessel E, Figure 4, with no design element noted. These measurements were taken with the container sitting on a soft surface (0 cm: 0 cm: 0 cm: 0 cm). Width of shoulder 0 cm, width at neck 0 cm, thickness of base 0 cm.

The second partially reconstructed vessel form was unlike any other found in the burial. Twenty-nine sherds needed to form a complete complete container. In addition to a fragment of a shoulder fragment of the base appears to a camelina bowl. The angle of the shoulder is sharp, and the rim from the shoulder to the lip is slightly inverted. The lip is round, the curvatures design covers the entire area and is a circular or "cup" profile. Some are 0 cm apart. The upper shoulder is a large, thin shell with a slightly pointed end of this form. The paste is white, and is consistently smooth. Both the interior and exterior are light grey in color, and it is a very fine, even, and smooth container. These measurements are possible (in centimeters): Height of rim from shoulder to lip 0 cm, thickness of neck 0 cm, thickness of body 0 cm.

The only lithic tool found in the burial was a basal portion of a randomly flaked, small quartz flakes before break. The remnant of the lithic material with the exception of one bundle of red ochre and a small fragment of the inner surface of the model of end arbor and a small fragment of the inner surface of the model of end arbor is a fragment of a Late Mississippi period tool. The materials consisted of 3 small, black flakes, 1 flaked black quartz pebble, 1 pink quartz fossils, 3 quartz pebbles, 4 quartz pebbles, and 3 pieces of white marble.

Associated burials and Other Features:

The second shaft-and-chamber grave was very much like VU 46, and pit shape, but lacked the large obsidian blade and vessel offerings. The only offerings found within the pit were miscellaneous fragments of a Tshadike burial. No information could be ascertained from the skeleton since only faint traces of bone remained.

Two Early Mississippian burials were found near VU 46: one inside a vessel with the shaft-chamber burials but very poorly preserved. The other burial contained evidence of a few bone sites in the pit, but the vessel was very poorly preserved. From the two burials, only one fragment of a fragmentary vessel was found, and it was bone. The Early Mississippian burial sites were semi-placed rather than tightly flexed. The corpse from the Dorisville site is a young man, but not complete. The skeletal association and a radiocarbon date of 3.5-3.119 ± 470 years (1692 ± 8) suggest that the interments may have been the dead of the earlier transitional Hopewell-Mississippian people.

The Early Mississippian period ceramics retrieved from the burials have been identified as Ship Track, a form associated with the major phase in central Alabama. This phase was named by Best (1937) after the new site site on the Tallapoosa River that a few miles up river from the. The phase has been assigned a tentative date of A.D. 2550 to 2900 and is associated with hemipodium and platform mounds. Definitions at other sites indicate that the site was a very recent form, and the Mississippian village in the common region. The vessel is not a straight vessel or a straight vessel style is known (Chase 1990a:179-179, 1979). The vessel is a straight vessel of a straight vase and is arched, hemipodium vessels are becoming more common. The two probable burials recovered and not excavated had an offering very similar to that of Pit VU 46. These burials were located very close to Pit VU 46. The upper pit fills contains fragments of charred wood and charcoal fragments suggesting that fire was built in this area.

Numerous methods containing fragments of Tshadike plain wares were discovered scattered all across the majority of the site and were usually small, white in diameter, and round. Most architectural references could be found from the posthole, however.

One small, shallow, irregularly shaped pit with a brown shape was also excavated near Pit VU 46. This pit was initially 0.5 cm in diameter, contained clayey fragments of Tshadike, and was very similar to the posthole. The location is a probable posthole pit. Jars and sometimes stones were used to seal shaft-and-chamber framed burials in the basket village site in North Carolina (Chase 1970). Shaft-and-chamber graves are also known in the Upper Tennessee Valley during the Late Mississippian-Adams phase. A
The sherd-and-chamber grave is a small burial at the Jocassee site in the spruce-fir zone of the southern Appalachian Mountains. A radiocarbon date of A.D. 177 ± 53 years ago was obtained from the burial which makes it the oldest known sherd-and-chamber burial in the Southeast (Mead and others, 1977).

The sherd-and-chamber burial at the Jocassee site sits in a pit filled with charcoal. Burial pit size and shape are similar to that of the chamber burial in the pit, and the presence of charcoal in the pit fill. Major differences include the angle of maples to the burial and the ceramic grave offerings in the Jocassee burial. It is important to note that the chamber is also a burial that has been assigned to a late woodland period context and PEF 4V has been assigned to a transitional Late Woodland/Early Mississippian association.

Mead and others (1979:181) state that the origin of the sherd-and-chamber grave type in the Southeast is still unclear at this time. Although the question of the origin of this burial custom may remain unanswered for the present, the identification of sherd-and-chamber burials in Central Alabama associated with the Late Woodland/Early Mississippian culture is significant in this regard and may shed some light on this riddle.

References cited:


Figure 4. Pigsaw mound.
EXCAVATIONS AT MOUND A, SEC.F MATERIAL MILITARY PARK, TENNESSEE

Lindsey E. Watts and Sandy V. Melmon

Shiloh National Military Park in Hardin County, Tennessee, includes a large and well preserved prehistoric Indian mound and village site within the park's boundary. The site is located in the eastern portion of the park on a high bluff above the west bank of the Tennessee River. The edge of the bluff forms the eastern boundary of the site. Deep streams cut by tributary branches of the Main stream border the site on the north and south. A long, low embankment marking the line of a former polderland which extended across the creek of the bluff is believed to be the western boundary of the site.

The major features of the site are seven large mounds, ranging from 5 to 15 ft in height, and numerous small low mounds are generally thought to be house platforms.

The Tennessee River, which forms the eastern boundary of the park, is eroding the glacial terrace as well as other portions of the park along the river bluff. The mechanism for potential slope failure are complex, because they are undoubtedly acting in various combinations. The low-lying areas are largely blanketed with alluvium which is nearly impermeable and relatively nonpervious. Consequently, during periods of high water, these infiltration occur and a subsequent relatively rapid drainage does not cause a critical increase in pore water pressure within the bluff.

On the other hand, the higher, steeper slopes which come on the river adjacent to the mounds and the cemetery are composed of Kaskaskia silt. The materials are quite diverse, bearing superficial clay layers sandwiched between more pervious gravel beds. The permeability of these soils varies widely, both laterally and vertically. Paleohydro high stage ranges follow by rapid drainage has historically triggered the major slope failures. It has been suggested that variable, but excessive, infiltration into these soils during prolonged high water stage is not relieved during usual short drainage intervals. Excessive pore water pressures developed during this time may in effect "blow" or the lower portion of the slope. This is followed by sliding and slumping of the steep overlying slopes above (Department of Interior 1976:10).

While one might expect all these mechanisms to work in varying degrees along an uncontrolled reach of river with similar physiographic and geological settings, the operation of hydraulic structures upstream and downstream undoubtedly enhances the erosive process.

Further, the orientation of the park on the terrace and downstream from a conifer steep bank in the river increases the site of erosion by undercutting. The current is unusually swift because the park is located 2.3 mi downstream from the discharge of the pickwick and powerhouses. It is obvious from aerial photos that the current is capable of rapidly moving material which flows into the river so that the current is the major transportation mechanism for material downstream from the park.

The area of the Indian mound is the National Cemetery, a length of approximately 500 ft. The mound is been designated by the National Park Service as Mound A. This condition was accomplished and is now in process of being accelerated by the National Park Service (Department of Interior 1976:10-11).

Because Mound A of the sound group is now immediately threatened by this erosion, a team from the National Park Service, Archaeological Center conducted test-trenching at Mound A during the summer of 1977. This report summarizes the preliminary findings of this testing.

Previous Archaeological Investigations

The earliest documented archaeological investigation of the mound and village site was carried out by Colonel Cyprius of the War Department in 1869. He trench Mound C, the burials mound, and located three burials accompanied by a human effigy pipe in a loo tomb (Rails 1902).

Clarence B. Moore visited the site in 1915, as unable to obtain permission to excavate any of the mounds. However, the bulk of the archaeological work was done during late 1951 to early 1954 under the Civil Works Administration. Francis B. Roberts of the Department of Health directed the project. During this investigation Mound C (the burial mounds was sectioned and 30 burials recovered. A series of trenches were dug in the area surounding and between the main mounds. These trenches revealed the remains of 20 houses, a cist, and numerous refuse dumps. Two of the platform mounds-Mounds A and B were also sectioned (Schiller 1934; Roberts 1935; Chanler 1936).

In 1975, under contract to the National Park Service, Gerald Smith of Memphis State University carried out a 3 phase investigation involving the Mound A mound and village site. First, he analyzed the work done by Roberts in 1933 and 1934. Roberts' field notes are relatively general. He started his survey and excavation crew at the same time, and there are no benchmarks which can be located in the field from this excavation. Smith also conducted limited testing to determine the limits of the site and the culture chronology. In conducted six test excavations involving the basament and embankment area and the area near Mounds D, E, and F (Rails 1977).

Methodology

Archaeological testing at Mound A was conducted to determine the internal composition of the mound as well as the possibility for the presence of a ramp or fortification face. A 1-by-1 square test pit was placed to the west and north on the mound top. However, this first square test yielded historic intrusive material due to a depth of 1 m when the test was abandoned.

A second square test was then excavated several meters west of the first test. This square yielded only one historic artifact and showed no other evidence of disturbance. It was excavated to a depth of 4.5 ft sterile soil was encountered.

A third test pit 1 by 1.5 m was sunk to a depth of 1.5 m to the south face on the mound in an effort to locate a ramp leading into the central area of the plate. No evidence such a ramp was discovered. However, the surface of the pit corresponded to a section from the second test, suggesting that the mound was essentially undisturbed.

Southeastern Archaeological Conference Bulletin 15, 1980
Artificial analysis

Just over 1,000 artifacts were excavated from Test 2. The majority were ceramic, lithic, and shell; small amounts of bone and dust were recovered. No features of any kind were discovered.

Ceramics - Two ceramic types dominate the ceramic assemblage: Teapot's Ferry Plain (which is Mississippian Plain) and Solenoid's Plain. Both are burnished wares with a reddish-brown alkaline slip. The Teapot's Ferry Plain is shell-tempered, while Mulberry Creek Cord-marked is grit-tempered. Rim/rim pieces include Heyward Plain, Delaware Plain, Enniskillen Plain, Bell Plain, Moundville Jitney, Whipple Creek Slabbed, and O'Bryan Incised (Phillips 1976). No complete or partial vessels were recovered. The test material of the sherds is only thumbnail size, so no reconstructions were possible. Only 15 of 243 sherds with thin sherds.

In general, the ceramics from the Wood & excavation show no particular trends through time. Mulberry Creek Cord-marked and Solenoid's Ferry Plain are certainly indicative of two major ceramic complexes: a Mississippian and Woodhull complex. However, the presence of ceramic types seem to fluctuate randomly through time or at least throughout the levels of the excavation. The ceramic data indicates that rather than being constructed in various groups through time, the mound was probably constructed with a relatively short period of time. The sherds were present in the fill or midland used to construct the mound. No ceramic vessels were excavated in levels 14 through 26 which correspond roughly to the bottom one-third of the mound. Other cultural debris was present in these levels, however, it appears possible that at least two different wares provided dirt or fill for the mound. The specific source across for the mound fill are presently unknown, although the river floodplain is a likely source based on the types of ceramics excavated in the mound.

Sherds were also found to a depth of over 2 m below the base level of the mound. Percentages of the two major ceramic types, Teapot's Ferry Plain and Mulberry Creek Cord-marked, indicate a general decline of Teapot's Ferry Cord-marked throughout time as Solenoid's Ferry Plain increases. Thus, it seems likely that Wood A was constructed over an area which contains evidence of occupation through time at this spot.

Lithics - With the exception of one projectile point, all of the lithic material recovered from Wood A is extremely non-diagnostic. Over half of the lithic material consists of modified rocks and pebbles which probably occurred naturally in the fill. Approximately 1/4 of the lithics consists of unmodified flake debris. The remaining 1/4 of the lithic material was modified. This 1/4 included worked flakes, a unifacial scraper, a core, a chopper, and a small typical Mississippian projectile point with a broken distal tip.

Bone - Only 12 fragments of bone were found. Bone were human and none showed evidence of modification or utilization. Only 11 fragments could be identified with certainty, and these fragments were all deer bone.

Shells - In addition to the bone and ceramics associated with the mound, several species of mussel shell and mud snails were also recovered. Of the 152 shell found, well over 1/4 were unidentified. All of the shells were less than 1 cm in size. The species of shells recovered below the base of the mound, four species and three genera were identified. These included the mussels, Anadara luciae, Anadara oblonga, Littorina littorea, Littorina neritoides, and Unionidae sp. (Philips 1976).

The genus Unio was also identified (Wood 1942:139-139; Hurst 1977; Magee 1977).

Two genera of small snails were also identified as Goniodromis and Campelomma, both of which aid burrowing. Many of these snails are river dwellers and reflect deep water environments at least water too deep for wading to collect mud (Wood 1979).

The heaviest concentration of shells occurred in levels 2 and through 31, which extended for a depth of over 1 m below the base level of the mound. These shells are apparently associated with the midden or living surface on which the mound was constructed.

The heavy concentration of shells below the base of the mound may have been gathered as a food source during the fall season in the river.

The secondary concentration of shell in the upper 1/2 to 1/2 of the mound may indicate that this fall carried these shells farther and toward a period of low water. It may also have come from an old river channel area of the river floodplain. This fill caused the bottom 1/3 of the mound contained only shells of shell and shell. These shells have been carried in from another area farther away from the river.

Summary and conclusions

The results are based on charcoal samples collected from 5 different levels of the excavation even to support these conclusions. The 1 date obtained for these levels of the mound itself range from 650 to 1450 A.D. (level 21, 750 A.D., level 2, 950 A.D.). The site is dated to the mound on which the mound is constructed ranged from approximately 250 A.D. (level 26) to 750 A.D. (level 23). The dates follow the general trends and compare with the artifacts and stratigraphic data mound. However, however, none of the charcoal came from identifiable hearths but was collected throughout the level, it is possible that the buried material dates the midden or fill, which was then brought in to construct the mound.

Based on the 1979 excavation data, it appears that Wood A was constructed during a short period of time rather than over an extended period. It was built up in a way which has been occupied over a period of time. The fill used to construct the mound was carried in from at least two separate areas, at least one of which was probably located on the river floodplain.

References cited:


When invited by Mr. Clemens to present a paper at this symposium I envisioned a broad review of operations from various phases of the Woodland period. When I began collecting some thoughts, however, I narrowed the topic to only the Early Woodland, or essentially the Tom's Creek phase. Before continuing I should clarify two possible points of confusion. First, I need to define what I mean by "operations" and "second, I need to briefly explain what I mean by "interpretation" of settlement patterns. I do not mean operations without the backing of substantive, empirical data. I have called these "skeptical" interpretations because I have held that interpretations should play a significant part in the development of our understanding of prehistory, and play an important role in our discipline. It is based on sound reasoning of this data. Although the term "settlement patterns" has been defined in a variety of ways, I will follow Trigger's (1968) exactly and will use the term in three ways: the individual's structural elements, the community site clusters, and the area (small) patterning of these communities. Trigger (1968:24-30) notes, "It is assumed that the quantity, type, and distribution of the material remains of human activities constitute a reliable evidence medium for the manner in which life was affected by their environment and that all of the factors that influenced this environment are reflected, either directly or indirectly, in the settlement pattern." Of course, our study of settlement patterns will be no better than our empirical data regarding the material remains, and the settlement pattern may be interpreted to suggest a variety of adjustments to the environment. Consequently, I am going to deal with such speculations about the Tom's Creek project in terms of the data and for the results so far ignored. A number of investigators (Miller 1969; Williams 1968; Smith 1974) have found evidence, either stylized or stratigraphic, for an in-depth development of the Tom's Creek phase in the Savannah River region of South Carolina. This idea has been given additional support by Scudder's (1966) early radiocarbon dates for this phase. The other is that the major faunal and Tom's Creek were is far from well defined (Trinkley 1976). The Two appear to be roughly contemporaneous, although the shells were pushing, slightly earlier. Smith (1974) has suggested that the intrusion into the Savannah River region of the People exhibiting the Musgrove Mountain and the hill culture traits, at a time when population densities had approached carrying capacity (Cox, Richmond 1968), caused a disequilibrium which resulted in the various factors being directed toward a problem of procuring supplemental food sources. At this time, according to Smith, shells migrated away from the Quarterly River. This may affect subsistence base led to a population increase, and then to larger sites such as Fossil Hill on the Savannah River, and the Love Site in the uplands. Which goes on to suggest that the larger shell mounds and resultant disequilibrium led to further geographical expansion — into the Atlantic Litorial.

Smith's evidence from the along the Savannah River is scanty and the survey work necessary to provide the evidence has not been conducted, in spite of the constant encouragement of the late Clinton Kilgore (Williams 1968) and others (Crawford and Jolly 1970) observed a transition from plain to decorated pottery, and from plain or simply engraved plain to finely engraved bone points at coastal sites. The occurrence of baked-clay halls is also early manifestation.

I am prepared to say that the people of the Tom's Creek phase became one successfully adapted to the environment. There are only three major changes: first, a complete change in the composition of the community, probably a result of a change in technology. The process of establishing sedentary village life along the Atlantic Litorial is essential for the understanding of these people: the process of realizing and utilizing the potential resources concentrated along the coast (cf. One and Plimley 1964).

The investigation of Tom's Creek phase sites along the coast has been irregular and informally published. Edwards (1963) published the preliminary results of excavating the small shell mounds, Morgi, (1970) published a brief account of his teaching of the site (land shell ring and O'Neal (1967) reported on the site in a single paper and Shell Creek Shell Ring and Shell Creek (1974) have offered prehistoric reports on the Savannah River shell mound, and recently I have investigated two sites, the light-house mound and the Berlin Place shell mound. The Shell Creek Shell Ring has a surface area of 2200 ft², and at Stratton Farm in excess of 1300 ft². These two sites, coupled with extensive survey and archaeological data, suggest that there has been a center of human occupation in the Savannah River valley.

An examination of the changing settlement pattern through the Tom's Creek phase, coupled with artifactual and radiocarbon data, may provide evidence of the population increase, increased social complexity, and specialization of technology. Two classes of coastal sites apparently provide the earliest evidence of the high density community, Tom's Creek I and Tom's Creek II. Tom's Creek I is dated to 1750 B.C., while the sites with Shell Creek Shell Ring and Shell Creek Shell Ring, an average date of 1410 B.C. only two dates, 1440 B.C. are available for the Shell Creek Shell Ring and Shell Creek Shell Ring, the total sample size is 500, and too many potential, interpretations of the data, to offer conclusions, although it is clear that the irregular ridges should have older dates, of their artifact assemblages and topographic positions are studied. Not only do the artifacts from these sites show a great deal of similarity with the Late Archaic and Paleo I phase (Hill, Large quantities of lithics, baked clay objects, and plain or simply engraved bone points, but the sites are frequently inundated by the rising sea level.

In the wide work conducted through Shell Creek Phase coastal shell middens, no structures have been found, although sand patches are not infrequently noticed. In an attempt to discover living areas, I have opened fairly large contiguous areas at several shell mounds, noting in the work no peculiarities were noted. In addition the occurrence of random post holes was greater than anticipated. This is not, however, the situation at the individuals living at the site. Tom's Creek, one could interpret that interpretation as being used for demonstration. A similar phenomenon has been observed at both highlands in the Eastern Oconee Creek Shell Ring area and other field reports by the Indians. These small mounds were noticed on with day into town, and have been over them to bring us to the extent of these. At this stage of our study little more than this can be said about the basic level of settlement studies.
Slightly more, however, can be said about the community layout during the Early Woodland Thon's Creek phase. I have previously mentioned that there are two basic settlement patterns, and this has recently been expanded by Richter (1978): (1) the irregular midden usually found standing out of a large scale; and (2) the shell mound usually found on higher ground. At the present time only the excavated data from irregular middens come from sites in Georgia, and from two South Carolina sites. These sites are similar to the presumably ancestral sites of the Savannah River, and consist of midden debris evidencing occupation. Some sites (fairly small) are rather large. There are no data at present regarding the permanence of all these occupations, although sites such as Reel Island, Walton Creek, and others suggest temporary occupations, perhaps used on an annual basis; however, it is not clear in any instance, these activities are distinct from the ring-shaped middens. From which we have most of our data.

As late as LightHouse Point and Steckle Point suggests that while these shell ring sites are similarly data not in the area of the shell suggest a change in the Late Prehistoric period. There appear to be coastal line areas at a shell ring sites that have been identified from the landscape of Georgia, and from this the late prehistoric period. Different soil chemistry, different levels of soil chemistry, suggesting different soil use. From the Late Prehistoric period, 40 or 50 feet, it is impossible to suggest a quantity of potted and animal bones will be found. Beyond this the soil chemistry rapidly decreases, and it is possible to suggest a different occupation. Both of the reconstruction of the shell mound should be for digging off the hilltop. The lack of artifactual evidence to suggest the shell mound in the Late Prehistoric period. The shell mound in the Late Prehistoric period is on the rim - not adjacent to it. The rim itself is composed of varying proportions of shell, animal bones, pottery, soil, and other artifacts. It does not appear possible to infer any averages, although it is possible to suggest that the midden ring, when compared to the interior or exterior, is composed of a higher percentage of shells and clays. The midden is loosed and clogged. Pits have been dug into the midden, and the restoration process appears to be one of house middens, deposited in a rough circle, gradually closing together, forming a continuous ring of varying height and width. Under the midden is a quantity of large shell pits, several feet in diameter, and several feet in depth, filled with crushed shell and charcoal. These features appear to have been shellfish gathering pits. Their use, with the consequence disposal of the shell, actually formed the midden. The majority of the middens found at LightHouse Point come from the outside edge of the rim, perhaps an area of public use. Different occupation of the shell mound, with the white shell and massive quantities of pottery, consisting of potted filled with quantities of hardshells, bone, and shell, and lime shell. These pits suggest that a wide range of shell was produced as opposed to charcoal. The purpose of these pits is not clear, although they are different from the shellfish gathering features. This interior edge, perhaps twenty feet in width, shows a great deal of disturbance, but few post holes.

The last site area is the interior of the ring. Thought by some researchers to be the result of occupational debris, the shell ring interior has developed a certain amount of silt. Stones and stones are present in the shell midden, and the tidal silt has been removed from the site. Many of these sites, as late as Fish Island, Cape Mabbe (1978) and Ritter (1984) suggested that the interior was more confined and that the shell ring was the water. While the ring did extend to the rim, the interior has been occupied. One pit was observed on the rim, a dark, humid pit was observed at LightHouse Point, and a similar pit was observed at the sites, which are located on the water line. The interior is not just for pottery, but no animal bone. Garbage was deposited in the ring interior, but garbage disposal was entirely by peat bog. This seems to be the case in many sites, the ring line was on the water line. Understanding a low line, and the amount of steam, peat bogs, and peat bogs. Consequently, while activities were taking place in the ring interior, the silt and the water line below were not transported.
People. If this reconstruction to conserve the spread of the area may have vague in the inland Tho's Creek sites, prior to the adaptation to it a coastal site. These inland sites are far, while represent part of a seasonal cycle between the coast and the interior which is not found later in the Tho's Creek phase.

There are two major problems with this reconstruction. First, the inland Tho's Creek Road Punic pottery appears better made than the majority of pottery found along the coast. Second, the inland sites are generally multi-component, evidencing quantities of later pottery mixed with the Tho's Creek material. It is tempting to suggest that these inland sites were therefore later than the coastal sites, perhaps being the result of some environmental stress on the coast which broke up the formerly settled. This appears that, at this stage, we can not successfully use pottery as a temporal indicator in trying to understand the relationship between coastal sites with shell middens and a variety of pottery types, and interior sites without shell middens and consisting predominately of Tho's Creek Plain and Tho's Creek Road Punic pottery left. (MBA 1976:41.)

It is ironic that the future of "settlement archaeology" along the South Carolina coast seems to be increasingly tied up in a quest posed over ten years ago, but never resolved. In change's edited work on settlement archaeology (1968:209-210) noted the procedural reevaluation between change and house over time, and had made a suggestion of a) a sequential order of these changes. This interpretation has been taken as a step in the long debate about the significance of change. The concept of change as an order of change has found a strong base in the archaeological record, and a number of recent publications have focused on this order of change, and how it is reflected in the archaeological record. It is the purpose of this paper to present a new look at the geological and spatial relationships that are present in the archaeological record, and how they can be used to understand the development of settlement patterns in South Carolina.

References cited:


Gillman, Alan L. 1967. Test excavations at the Late Archaic sites on Wilson Head Island, Beaufort County, South Carolina. Records of Antiquity 16:57-63.


Kemp, C. 1970. Preliminary report of excavations at Fig Island, S.C. Institute of Archaeology and Anthropology, University of South Carolina.


[REFERENCES CITED CONTINUED]
This essay examines prehistoric human settlement in the temperate maritime environment, specifically the southeast coast of Southwestern Virginia. Few controlled excavations and systematic archaeological surveys have been conducted in this area, although the potential of the region is considerable, as judged by the quantity and range of local artifact assemblages.

Generally speaking, the study of settlement patterns and systems, as well as the ecological framework into which these remain, offers a frontier for the archaeology of the area (Beall 1972; Parsons 1972; Flannery 1974a). Also relevant to this discussion is the comparative study of coastal or maritime adaptations in similar contexts (cf. Casset and Quayle 1975; bellarsa 1978; bellarsa 1979). Within the southeastern United States, other archaeologists have sought to elucidate particular settlement interrelationships in local or regional environmental contexts (cf. Mowich 1977; Bellarsa 1978; Bellarsa 1979).

Few studies, however, have closely addressed problems of local environmental change which may affect the generate settlement patterns and systems and their development. It is on this point that this essay is directed. But first it is appropriate to comment on the methodology of settlement pattern analysis as a method of understanding patterns and their interpretation. As a method of predicting models will undoubtedly be inadequate to make advances in research designs for the mid-Atlantic region.

As several authors have noted (Mowich 1979:110; Parsons 1972; Flannery 1975b:160), the terms "settlement pattern" and "settlement system" are not at all synonymous. Settlement pattern studies treat the "pattern of sites on the regional landscape" (Flannery 1975b:162) or the distribution of the "absolute spatial loci of sites" (Bellarsa and Bellarsa 1971:91). Much of what passes for "spatial archaeology" today attempts to culminate the geometric arrangement of sites such behavioral inferences as are possible, if not probable (cf. Mowich and Bellarsa 1976). Settlement systems incorporate the inferences from pattern analysis with a consideration of the relationships between contemporaneous sites. These relationships, variously described as functional, dynamic, or systematic, produce what Flannery (1975b:162) called "the set of rules that generated the pattern in the first place."

Before concluding this level of analysis, however, one necessarily deals with basic definitions, determination of site sizes, and establishment or contemporaneity of site occupation. Locally sites are defined by some arbitrarily measured spatial separation between aggregations of cultural material; site size is often computed from surface dimensions of artifacts and features, with varying degrees of success (cf. Bellarsa 1978:424.). These methods are inexact and may be subject to considerable error. "Temporal occupation is a severe limitation to the development of settlement models, for as shown (1978:13) has noted."

It is the archaeologist's ability to measure the degree of contemporaneity between sites, the duration and absolute breadth of their occupational periods, and the duration of the time period which is being analyzed. Thus the grouping and description of sites in context of such time periods may conceal interesting developments within and between these times.

or it may result in what Bellarsa (1978:424) aptly termed the "production of a complex series of patterns to a single, simple unitary pattern." The archaeological distribution map, the grid of most settlement pattern analysis, is subject to numerous biases. There are the familiar problems of survey in forested or grass-covered areas of producing site distributions which correlate all too well with convenient modern road networks, and of the biases resulting from the limitations of standing water, constructional activity, or agricultural land use. In addition, orthophotographic survey techniques, subsequent settlement, and natural transformations processes (such as deposition and erosion) have the distribution map (and consequent inferred patterns) incomplete and biased (Wendorf 1978).

Settlement pattern studies often encounter difficulty in objectively delimiting the research area. A physiographic barrier may be sufficient in some cases, as in Lagoi studies (cf. Pearson 1978), but more often one relies upon some strategy of overlapping cultural, parasitic, and biogeographical boundaries for this purpose. Such schemes are obviously variable in their degree of reliability, and the bounded boundaries may be interpreted as a single research.

Site size information has been often applied in models to suggest hierarchical levels of sociocultural organization (cf. Johnson 1972; Pearson 1978; Price 1978). Others caution, though, that such models drawn from the Western intellectual tradition may be inappropriate for prehistoric examples (Bell 1977; Crumley 1976, 1979; Stahl and Vorhies 1978). Archaeological size is persistently rely upon correlates (some demonstrated, some assumed) of site size and functional complexity to maintain a hierarchical model of spatial organization (cf. Pearson 1978). This assumed relationship is based on the weight of the literature, particularly at sites of the intermediate and smaller sites, where this relationship is expected (Heppert et al. 1977:1127; Mowich and Vorhies 1976:69-70). Crumley (1979), Stahl and Vorhies (1979:137-139), and others have suggested alternative forms of spatial organization, which may more properly reflect local natural and biogeographic conditions.

Settlement pattern or system reconstruction inherently requires thorough knowledge of areal distributions of site types, thus necessitating wide use of time and resources to achieve the most accurate picture possible. The procedure is based on a field survey as well as a database of the identity, significance, and applicability of a database of the identity, significance, and applicability of such a purpose or conceptual technique, particularly when used exclusively, in order to identify, classify, and analyze the relationships between the sampled unit and the total research universe. To that end, sampling designs borrowed from biology and geography may prove useful (as shown in Stahl 1976). Stahl's (1976) comparison of probabilistic sampling techniques showed, generally speaking, that there was a little significant increase in knowledge gained from use of the more elaborate schemes: Flannery (1978:1385) commented that a single network of judgmental and statistical techniques would probably yield the best results. Michael (1971) examined the efficacy of stratified random sampling relative to judgmental survey and found the usefulness of the approach advocated by Flannery. One of the dangers

Southeastern Archaeological Conference Bulletin 23, 1960 26
in sampling techniques, particularly in large surveys, is that the recovered set of sites for "data" on the distribution map, however "representative" of the different kinds of sites in the area, may never have actually been located in a settlement system at any given time. The "lines connecting the dots" must be established by careful, intensive site excavation and analysis and not blindly assumed in a hastily contrived settlement model.

Parsons' (1972:155) review included a concise restatement of Stowrer's view on an "ideal" settlement reconstruction. It is noteworthy that the initial stages advocated there (stabilization of local temporal relationships) reappear in the present paper as a necessary first step of the modeling process, due not only to the complexity of such problems but also to the current archaeological attraction for modeling prehistoric social systems on a regional scale and to the funding attitudes of governmental agencies. The soundness of the regional approach is not being questioned here, rather the manner in which such a program is usually planned and executed.

Southeastern Virginia is relatively untested by the professional archaeologist, although there has been considerable surface survey and intensive collecting. Prior to developing models of settlement distribution and interaction for this area, careful attention should be paid, as noted above, to the paleoenvironments of various cultural phases. In the past, several archaeologists studying prehistoric coastal cultures recognized this problem and used the work of geologists to help them resolve it (cf. McIntyre 1973; Schrader and Grubert 1971). Conversely, geologists have on occasion resorted to the dating of archaeological midden to elucidate patterns of coastal landform development (cf. Cuskey et al. 1967).


"The various deposits of the same facies areas and similarly the sum of the rocks of different facies areas are found beside each other in space, north across section, as they lying on top of each other. As a rule, therefore, it is a basic statement of far-reaching significance that only those facies and facies areas can be superimposed primarily which can be observed beside each other at the present time."

Figure 1: Illustrates in a schematic form how such a principle is applied to a section of the Delmarva coast.

![Diagram of coastal evolution](image)

An extensive program of subsurface sampling in barrier beaches, estuaries, salt marshes, tidal lagoons and creeks, and alluvial valleys explored Kraft to detail his geographic morphology in coastal Delmarva throughout the Holocene period (Kraft 1971). This information, when combined with the distribution of known archaeological sites, produces a series of cultural geographic time-sequences (Figure 2) altogether more accurate than is normally found for that area.

The geological configuration of southeastern Virginia in post-Holocene times has been reconstructed primarily by Oake and Coch (Oakes and Coch 1972, Oake et al. 1974). This area (Figure 3) contains numerous subaqueous and intertidal flats or terraces. Initial workers in this and similar regions incorrectly attributed these topographic features (mostly on non-archaeological evidence) to a few dramatic episodes of marine transgression and regression during the Pleistocene (Oakes and Coch 1972:13-14). Oake and Coch analyze hundreds of core profiles in terms of the sedimentary morphology of the Stock (they contain). Eight formations and various numbers were defined, along with several regressive episodes, all of which showed the Pleistocene sequence to be developmentally and spatially complex.

Following a marine regression and shoreline emergence episode between about 6,000 and 8,000 years ago, the Littoral Ridge Formation was deposited (Figure 4). It consists of a sand and gravel facies with tidal and nearshore clayey silts. Deposits (Oakes and Coch 1974:8). A prominent north-south ridge of mounds (Ghent's area of Virginia) was also identified near the eastern portion of the present Diemel Savanna (Figure 4). Oake and Coch's mid-Holocene stage (absolute dates are uncertain, and the mud-brink Formation was deposited (Figure 5). According to Oake and Coch (1973:827), it consists of a non-continuous sandy lower member and a heterogeneous upper member, with facies of ridge sands and fluvial or alluvial clayey-sands, silty-sands, and silty-clays.
Figure 2. Paleogeographic reconstructions of the Cape Mendocino drift and shoreline areas from aggrading through Woodland times. Data shown are of 'best fit' shale occupancy for each time period (redrawn from Kukla 1964: fig. 20).

Figure 4. Paleogeography of southeastern Virginia in Woodbridge time, relative sea level near 24 feet; shales on Manna Ridge and Diamond Spring Swamp (after Oaks and Cadin 1971: fig. 31).

Figure 5. Paleogeography of southeastern Virginia in earliest late Woodbridge time; relative sea level near 13 feet; shales at Pomme Ridge (after Oaks and Cadin 1973: fig. 32).

Figure 3. Coasts and ridges in southeastern Virginia and adjacent North Carolina (after Oaks and Cadin 1974: fig. 7).
The spatial inter-relationships of these lithic facies suggest a combination of barrier island and back-barrier environments (Figure 1). The relatively low ridges east of Killdeers Neck (Figure 1) such as Range Ridge, Dewey's Corner Ridge, and Koott Island Ridge were all formed during this period. The late Wisconsin glacial maxima saw sea level in this area fall more than 180 feet below the current mean and the concurrent eastward migration of the shoreline (Oaks and Coch 1974:484.). The land exposed prior to the Holocene submergence was not studied by Oaks and Coch, but submarine geologic studies by Swift et al. (1971) and many others have shed some light on this portion of the sedimentary sequence.

Ridge and dune topography on the seafloor in the vicinity of False Cape, for example, has been interpreted as reflect strand plains and beach ridges (Fish 1980; Sanders 1982; both cited in Swift et al. 1971:239). Land is known farther to the west is intrinsically a minor problem to resolving the long debate over the origin of barrier islands (see Schwartz 1973 and especially Schwartz et al. 1973). The land has been an important subject of research, however, since the first humans began to occupy this region of the continent. While the scattered recovery of megafaunal remains from the continental shelf testifies to the presence there of one known food source of the Paleo-Indians, nothing is known of their coastal sites and associated local environments.

Sea level rose quite rapidly, in geological terms, in this area between about 10,000 and 5,000 years ago (see Oaks and Coch 1974: Figure 12). Paleo-Indian occupation had been supplanted by Archaic cultural groups, whose sites are far more numerous and widespread than the former. Evidence from other areas in North America suggests that Archaic people intensively exploited both marine and freshwater aquatic resources, and one might easily suggest that Archaic groups were so situated by Holocene shoreline of any given time. As the glacial retreated in the north and sea level began to rise, Archaic groups were necessarily "forced" westward. Previous Archaic occupations were either buried or, as Kraft (1976) suggests, more likely destroyed by the dynamic "waking edge" of the transgressing sea. Thus, Archaic sites found today in the Virginia Beach area, for example, represent a palimpsest of later coastal occupations and inland coastal plain remnants of former Archaic site distribution patterns.

Model of barrier island formation not only serve to explain the genesis of submerged topography on the continental shelf but also the most recent landforms found in current shoreline regimes of the region. Oaks and Coch (1973:98) divided southeastern Virginia coastal sediments into those of barrier environments (forebeach, bars, dunes, backbeach flat, and inlets) and barrier-bar environments (dunes, swamps, small beaches, tidal flats, and open bay) (see Figure 6). Each of these local environments has a characteristic biotic association, knowledge of which is useful to the archaeologist attempting to assess locally available resources.

As sea level rose, the barrier island accretion system moved seaward and sediments were and are being deposited. Much of the Holocene botanical history of this area is known from the work of Whitehead (1972), and it is discussed below.

Fisher's (1967) dissertation traced the development of the Cape Henry foreland (Figure 7) by the use of pedogenic analysis and inspection of surface morphology through aerial photography. The numerous relict dune ripples on Cape Henry were divided by Fisher into nine temporal sequences (Figure 7, inset). According to Fisher's model, sometime after 4,000 years ago erosion from a Pleistocene headland, combined with longshore drift currents, initiated and distally propagated a spit formation. Subsequent erosion and aggradation episodes after this initial phase eventually to that found at Cape Henlopen (Delaware) by Kraft (1971) (Figure 9).

The relatively recent formation of Cape Henry is borne out archaeologically by the absence there of in rays of Paleo-Indian and Archaic components, though these both occur on the Pleistocene formations immediately south and west of Broad Bay. Although Oaks and Coch defined the local environments of the present coastal regime, their research was not directly aimed at detailing the Holocene evolutionary sequence, as was Kronk's (1975) research at Cape Henry. While we are aware of the dynamic and recent nature of the littoral zone we are far less certain of the paleoecophy and chronology of this period, which is contemporaneous with the appearance of Archaic and woodland peoples in the area.
Some of this information for the Holocene has been filled. At least at the western part of the coastal plain, by Whitmore's (1972) work in the Leland Swamp. The analysis of hundreds of pollen profiles provided, with careful qualifications, a biotree history for the late Pleistocene and Holocene age, when combined with the geophysical data of Oakes and Cook, permitted a tentative reconstruction of the development of the swamp itself.

From about 12,000 to 10,000 years ago (this and other information discussed later is summarized from Whitmore 1972) the region was dominated by pine (jack or red) forest with some firs. This boreal forest of the valley and glacial epoch occurred in intertidal zones, while freshwater marsh vegetation occurred on the interfluve. Clays being deposited in streams between 10,000 and 8,200 years ago a hardwood-birch-balsam forest developed, while marsh formation steadily increased along streams and in interfluve areas (Figure 10a). From about 8,200 to 6,000 years ago a fibrous oak-hickory forest developed, although other forest communities were also abundant in the swamps, including gum, water gum, sycamore, elm, and cypress (Whitmore 1972:199) (Figure 10b). The percentage of oak-hickory decreased from 6,000 to 3,500 years ago, while cypress-gum vegetation increased and fine-grained peats began to be sequentially deposited in interfluves (Figure 10c). From 3,500 years ago the present forest development occurred throughout the swamps. Cypress-gum forest dominated a complex mosaic of vegetational types, whose pattern Whitmore (1973:111) attributes to water table fluctuations, storm blow-downs, and natural induced forest fires. Whitmore (1973:111) suggested that the primary factor controlling the beginning of swamp development was ponding due to the rise of sea level. The latter phase of the swamp's development was probably also controlled by his interaction between topography of the floodplain and surface and the rise of sea level. The palaeoecological classification appears to have controlled the character of the vegetation growing on the interfluves within the swamp, but ultimately climatic factors related to sea level seem to have predominated. Post development events appear to have had some influence on the swamp patterns and to have created inland toward the Gulf Stream and as the post accumulated, laterally onto the interfluves. The gradual weathering of "mineral soil" humic and interfluves by peat resulted in the replacement of hardwood forest by swamp forest. Although the ecospace and vegetation pattern documented in the present paper is but an initial step, it does provide a framework within which to form more specific models of natural adaptation. It emphasizes the complex and heterogeneous composition and distribution patterns of significal material relationships, ephedrin amens, survey and assessment of the potential for further attempt total coverage of a carefully selected tract. This tract would

![Figure 1: Development of Cape Henry Dune Ridge Complex](image-url)
Figure 9. Geomorphic elements of the Cape Cod Peninsula spit-dune-march complex (after Kaston 1957: fig. 76).

Legend:
- active dunes
- inactive dunes
- tidal march
- Pleistocene-Holocene highland

Figure 10. Reconstructions of topography of glacial swamp, based on core profiling (after Whithead 1972: figs. 7-9).

a) ca. 6500 B.P.

b) ca. 6000 B.P.

c) ca. 3500 B.P.
Include most or all of the biophysical environments discussed above. Rather than extracting only a "representative sample" of the different kinds of sites in the cultural system, the archaeologist would locate and excavate all sites within a complex of environmental zones. The goal, then, is to closely and accurately model the subsistence and settlement systems of the archaeological inhabitants on a small scale. While itself possible, the extraction of an accurate sample of such a model would be fastened from a more complete and accurate informational base than is usually the case.

In the future it could be logically integrated with smaller-scale models for adjacent regions, such as the lacustrine complex of the Western Great Lakes or the various complexes of New York City. The goal, therefore, is to closely and accurately model the subsistence and settlement systems of the archaeological inhabitants on a small scale. While itself possible, the extraction of an accurate sample of such a model would be fastened from a more complete and accurate informational base than is usually the case.

References cited:
Bear, Thomas C. 1917. The classification of the American Greenshanks, Kansas.
The Center for Archaeological Investigations at Southern Illinois University at Carbondale has recently completed fieldwork in the Carrier Mills Archaeological District, Saline County, Illinois. Fieldwork was conducted for a total of 9 months during the 1978 and 1979 field seasons. The Carrier Mills Archaeological District consists of 97 ha located on a loess upland area adjacent to the South Fork of the Saline River (Figure 1). Three major sites, 11SE6, 11SE7, and 11SE8, along with several smaller sites, are contained in the district (Figure 2).

Fieldwork conducted at the three primary sites during this period utilized a multistage research strategy which included a non-landed collection of all sites, two hand excavations of over 200 systematically selected 1 X 1 m test units, the excavation of large blocks of cultural portion of the sites, and the use of various types of heavy machinery to remove extensive portions of cultural fill. As estimated 906 g of loose artifacts were removed from these three sites resulting in the location of nearly 700 features and 638 burials. The results of analysis discussed in this paper represent a preliminary interpretation of data recovered from 11SE6, 11SE7, and a sub-area of the Black Earth site (11SE8).

Problem Orientation

Until recently, little information regarding the nature of prehistoric cultural adaptation in southern Illinois (McKern 1975; Muller 1978) the extant literature was largely based on data which accumulated over the course of widely scattered and disassociated sites or from a few relatively large scale research projects conducted during the 1930s and 1940s, prior to the development of many of the scientific research techniques which are currently available (Maxwell 1951; McNish 1964).

Archaeological investigations in the district have been directed toward collecting data which can be utilized to formulate and test hypotheses concerning the nature of the adaptation between the prehistoric inhabitants of the research area and the physical and social environment. Research goals have emphasized the development of a range of cultural and environmental data and the utilization of expertise from a diverse group of scientific disciplines to interpret these data. The unique nature of the Carrier Mills sites allows the investigation of many of the questions at both the synchronic and diachronic level.

More specifically, a number of interrelated problems were currently under investigation:

1. The development of a regional chronological framework to which can be utilized to formulate and test hypotheses concerning the nature of adaptation between the prehistoric inhabitants of the research area and the physical and social environment.

2. Examination of cultural and environmental data to elucidate the nature of, and changes in, the subsistence, technological and social systems operating at the site.

3. Analysis of environmental variables to gain insight into the nature of the paleoenvironment.

4. Analysis of the large burial population to generate data relating to the range of social and biological variability among the various groups which inhabited the site.

Environmental Setting

Contemporary environmental conditions in the Carrier Mills District reflect major geological and climatological events which occurred during the Pleistocene. A major geological event during the late

Southern Illinois University, Carbondale, Illinois, 1980. 33
Placerocene was the backflow of the Salinas River drainage from the Salinas River in the vicinity of Carrier Mille. This lake reached its maximum extent around 10,000 B.P. but continued intermittently to exist until 13,000 B.P. (Yrje, 1971).

Early nineteenth-century land records indicate that much of the Placerocene lake bed was covered by large areas of ephemeral ponds and shallow lakes and ponds. A large expanse swamp covering an area of about 366 ha was located immediately west of the archaeological district, while a smaller lake covering about 150 ha was situated to the east. It is likely that these ponds and lakes were present at least a millennium, if not year-round back to the glacial period. Local accounts have reported that the water of water contained a diverse range of aquatic fauna and flora prior to the last glacial period. The water of the lake contained enough to exist until the early part of the twentieth century when the lowlands were drained to create agricultural fields (Pitzer and Van Huy 1974:9). The Carrier Mills Archaeological District is largely situated on a series of low ridges which are located along the edge of the former lake. These ridges range from 8 to 15 m in elevation above the river of the lake. The Shameen Hill, located approximately 5 km south of the district, offers much more rugged terrain, rising to a maximum of 215 m above sea level.

It is readily apparent that the prehistoric inhabitants of the Carrier Mills Archaeological District were able to fully exploit both the aquatic resources found in the river and lake, and the terrestrial resources available in the dry portion of the upland area. Evidence demonstrating the extent to which this micro-locale was utilized through time is best exhibited at the Black Earth site (118A7-Area A).

Description of the site

The Black Earth site (118A7) is located in the northeastern portion of the Carrier Mills District. The site is the largest in the district, consisting of three midden areas located along the crest of a low ridge (Figure 3). Total area of the site is 14,000 m². The largest of the three midden deposits, designated as Area A, is located at the eastern end of the site and covers 10,300 m². Midden deposits in this locality extend to a maximum depth of 160 cm. A low, sandy plain, formerly occupied by remnants of the prehistoric lake, before the site to the west. Remains of inhabitants of the site would have had immediate access to the resources of the lake.

A multi-strata research design was utilized in the excavation of the site. A stratigraphic analysis was performed, and the site was divided into four excavation units. Each of these excavation units were excavated to determine the depth of the midden and the nature of its contents. Depth of the midden deposits in an excavation area ranged from 90 to 160 cm. A second phase of the excavation was excavated along north-south and east-west lines connecting those of the original stratigraphic areas. After completion of this analysis, selected areas were excavated to determine the nature of the deposits. A third phase of excavation was conducted to determine the nature of the deposits. A fourth phase of excavation was conducted to determine the nature of the deposits. A fourth phase of excavation was conducted to determine the nature of the deposits.

A chronological framework was developed to assess the relative age of the site. A series of radiocarbon dates were obtained from charcoal collected from the site. These dates were obtained from charcoal recovered from the black earth site. The majority of the charcoal recovered from the black earth site was white, indicating the nature of the material. The charcoal was used as a basis for estimating the midden deposit, as well as for establishing the nature of the cultural and natural processes instrumental in midden formation. No distinct sterile units are evident.

Stratigraphy

The excavation of well profiles located in the deeper portions of the midden revealed a relatively homogeneous deposit. The absence of any distinct sterile layers is a potential problem for archaeological investigations at the Black Earth site. (In the analysis of soil profiles at a depth, a sterile unit was defined as a unit of minimum vertical control. The stratigraphic analysis of soil profiles taken from the midden contained no discernible sterile layers, as well as for establishing the nature of the cultural and natural processes instrumental in midden formation. No distinct sterile units are evident.
in the midden, suggesting that long periods of abandonment did not occur. The midden is characterized by a relatively homogeneous texture, a basic soil, an extremely high organic content, areas of strong carbonate concretions, and a high level of calcium carbonate. The soil is deep and only 40 to 70 cm below the surface. The midden period soil on which the site is located is characterized by high soil acidity, low organic content, and low levels of the discolored organic matter.

At least two or more color zones can be observed in the midden. A dark brown zone was identified in the upper portion of the midden and extended to an average depth of 50 cm below surface. The Woodland and late Archaic occupation extends almost entirely within this zone. The lower zone of gray-brown color extends from 60 cm to 100 cm below the soil surface. The second midden zone can be attributed to a Middle Archaic period occupation. The dark color zone might be due to a combination of factors, including the depth of the soil profile, the presence of organic matter, and the influence of climate.

Boils in the midden are neutral to weakly alkaline with samples falling in the 7.0 to 8.0 pH range. Analysis indicates that the cultural; created alkaliinity of the midden can be attributed to the ash content of the site, which is low. The high concentration of calcium, aluminum, and potassium can be attributed to the presence of these ions in wood ash. The alkaline condition of the midden is also instrumental in the excellent preservation of bone (N. 1973:11). In the midden, organic matter content in the midden consists of pyrolytic products, such as charcoal and charred plant remains. Soluble organic content decreases with depth, but remains extremely high throughout the midden (N. 1973:11). Carboxyl content is quite high, with the highest concentration present in a zone beginning between 60 and 80 cm below surface and continuing until 100 cm above the soil. Strong carboxyl content is indicative of levels which have experienced intensive burning or bacterial decomposition of plant and animal remains (N. 1976:14).

Chemical analysis of soil samples reveals that calcium had the highest level of concentration of any element tested. Levels of calcium decrease toward the edge of the midden. Within the midden, high concentrations of calcium exist below 50 cm below surface. The principal source of calcium at the site is believed to be the result of intensive cultural activity. Cultural calcium can be derived from the exsudates of humans or other animals, or from other types of organic debris (N. 1973:12, 14). Bone contains high levels of calcium, but osteological material in the midden does not exceed the bone content of the site. The site is a result of human waste, evidence suggests the source of calcium may be bone tissue and wood ash, with wood ash being the primary contributor. High levels of potassium and magnesium found in the midden can also be attributed to wood ash.

The rate of 1.19 m of midden accumulation per year is considered to be an extremely high rate of building. The 1.19 m of midden accumulation over the terminal period of the Middle Archaic occupation in the 1.19 m of midden accumulation over the terminal period of the late Woodland period can be attributed to the deep deposition of the late Woodland period. The depth of the midden accumulation over the terminal period of the late Woodland period can be attributed to the deep deposition of the late Woodland period. The rate of 1.19 m of midden accumulation per year is considered to be an extremely high rate of building. The 1.19 m of midden accumulation over the terminal period of the Middle Archaic occupation in the 1.19 m of midden accumulation over the terminal period of the late Woodland period can be attributed to the deep deposition of the late Woodland period. The depth of the midden accumulation over the terminal period of the late Woodland period can be attributed to the deep deposition of the late Woodland period.

Rapid occupation of artifacts from the lower 1 m of the midden suggests relatively little stylistic or technological variability within the zone. The 1.000-year period, defined by dates from the upper limit of the lower zone, is generally included in the terminal period of the Middle Archaic. Temporally diagnostic projectile points from levees within the lower zone show very little stylistic or technological variability. With the great majority being included in one of several broad morphological types. Projectile points sharing similar stylistic attributes have been identified as Alaskan and Middle points at the Hostet site (Cook 1979:1, Big Sandy II in the Tennessee River Valley (Lewis 1981), and numerous other names in other parts of the Eastern United States. In general, the contents of the Middle Archaic zone at the Middle Archaic site show considerable morphological variability. So-called Horizon C and Horizon D points are characteristic of Late Archaic period occupation. The synthesis of a rapid accumulation of material during a short period of time, which was inferred on the basis of reaction diffusion, is one of the most distinctive features of the Middle Archaic period. It is also one of the most distinctive features of the Middle Archaic period. It is also one of the most distinctive features of the Middle Archaic period. It is also one of the most distinctive features of the Middle Archaic period.

Late Archaic material is concentrated in the upper 50 cm of the deposit, along with most of the Woodland material. Projectile points associated with the Late Archaic occupation are generally rare and include several types traditionally assigned to the knife and blade point group. Approximately 94% of the 1,190 stratigraphic samples were associated with ceramic material in the levels above 50 cm below surface, while 90% of the Late Woodland ceramic material is contained in the levels above 30 cm below surface. The density of various ceramic artifacts is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated. The percentage of late Archaic period and Late Archaic period is higher in the Late Archaic period. Ceramic points and blades tend to be more numerous in the Late Archaic period; this trend is sharply reversed when the per cent rates of artifact accumulation are calculated.
Fossil Analysis

The algal characteristics of the soil at the Black Earth site provided a favorable environment for the preservation of fossil remains. More than 400,000 elements have been analyzed, representing a minimum of 25 species of macroalga. Analysis of these remains supports a diverse exploitation of plant habitats associated with the lake and its immediate environs.

A second major area of research is directed toward the analysis of bone as a resource for tool manufacture. Analysis of bone utilized in tool manufacture is being conducted to determine the nature of the environment of the lake and to identify changes in micro-environmental conditions through time.

A third major area of research is directed toward the interpretation of plant evolution, with emphasis on the evolution of plant species and their distribution. Plant microfossils are being studied to determine the nature of the environment of the lake and to identify changes in micro-environmental conditions through time.

Botanical Analysis

Flotation samples collected from all excavation units and features are providing data relating to prehistoric occupation. The analysis of plant remains has been completed, with emphasis on the identification of carbonized elements. The predominant plant remains include grasses and sedges, with smaller percentages of flowering plants, ferns, and mosses. A diverse assortment of non-vascular plants has been identified from the various excavation units.

Summary and Conclusions

The analysis of plant remains and botanical features indicates that activities conducted at the site during the Middle Archaic period were associated with a high frequency of burning, possibly associated with the processing of plant material resources. Apparent changes in the rate of carbon accumulation during the late Archaic period and Woodland occupations point to a decrease in the intensity of certain activities, a shift in the nature of activities being performed at the site, or variations in the size and composition of the social unit occupying the site. Corresponding changes in feature morphology have also been observed between the Archaic and Woodland occupations. Such trends may reflect the changing role of the site in the settlement/subsistence system during later occupations.

Acknowledgements

Analysis of botanical material recovered from the Black Earth site is being conducted by R. E. Lovejoy, Southern Illinois University, Carbondale. Donald Krogh, 212A, Carbondale, is conducting the analysis of fossil material from the site.
The purpose of this paper is to examine data from a late Woodland Mason phase occupation on the Elk River in Tennessee. The site is situated in the Taylor site (46Co-16) which was excavated by the author in 1975. The Yearwood site yielded an extensive Middle Woodland component which has been described elsewhere (Shuter 1977, 1979), but it also revealed a highly selective group of remains attributable to the Mason phase. The latter are suggestive of a particular functional role of the site in the local subsist- ence-settlement.

The Mason phase is a late Woodland cultural assemblage presently defined for the upper Elk and river drainages in southeastern Middle Tennessee—the southern edge of the eastern Highland Rim. The phase was defined on the basis of work at the Mason site (Faulkner 1968) in the Tipton-Jones reservoir on the upper Elk River. The last extensive work in the Natchez reservoir on the upper Elk shows unequivocally to the north has provided additional data on the Mason phase, although it appears that the Mason utilisa- tion of the upper Elk was relatively minor (Faulkner and Nottelmann 1975, 1976, 1977). While the over- all character of the cultural assemblage is generally similar to other Late Woodland phases in neighboring areas, the Mason phase is distinctive on a number of points. Most importantly, the Mason phase is characterized by its distinctive chert-tempered ceramics which exhibit not only the ubiquitous cord-wrapped surf- faces but also knot-tempered and net-impressed surfaces. The marked preference for shallow bowls, necked chert, is in sharp contrast to the persistent regional tradition of using crucible limonite as tempering metal.

The Mason phase was originally accorded dates of A.D. 640-900, but virtually all the presently accepted dates fall after A.D. 750 with several in the range of A.D. 900-1000. In several instances, trade ceramics in the form of shell-tempered pottery have been found in association with Mason ceramics.

Present data on Mason settlement activity are sketchy. The type site (Mason) was relatively large (up to 6 acres) but the precipitation and late Woodland settlements were not distributed uniformly over that 3600 acres. The Mason site did evidence a comparatively intense Late Woodland occupation including a variety of subsurface pits, burials, and a moderate amount of artificial material. Several large bell-shaped stor- age pits were located, but no architectural remains were identified.

The majority of Mason components identified to date appear to represent short term, non-intensive use sites. This is particularly true on the upper Elk River, which may well be a marginal area for Mason activity. In the Natchez reservoir, the contrast between Mason components and the numerous and substantial Middle Woodland occupations is particularly striking. Only one intensively occupied Mason phase site is presently known to exist in the upper Elk area: this is the Powers Bridge site (46Co-58) which has yet to be investigated. Considering the Mason components reported to date, it is immediately covered by the reality of substantial housing and features. The Natchez work has identified several lightly built single-post oval structures as being Mason.

Available subsistence data are equally sketchy. To date, no faunal has been documented in Mason contexts. Only equally, ground rock, and macaroni (thought to be cultivated) have been identified (Shuter, 1978; Charles Faulkner, personal communication). The inference is that the Mason occupied the upper Elk area primarily for seasonal gatherings in some quantity. The overall impression of the Mason phase is of an intensive hunting-forging adaptation in- volved in the exploitation of which are highly mobile and only marginally equipped with plant cultivation. This statement will receive further comment at the end of this paper.

The Yearwood Site

Yearwood was excavated in 1975 by the Tennessee Division of Archaeology. The excavation was a salvage effort at the site of an undergound storage facility. The site was located at the southwest end of the Knox County, and contained 12 mounds, a number of which were connected by a series ofafflees on the edge of the site. No definite cultural features, a large number of which were present, were contained in the floor topsoil. After initial hand excavated test pits and shovel probing, heavy machinery was employed to strip the soil from the site and expose the features. Unfortunately, there was neither time nor the resources to conduct a controlled surface collection. Virtually the entire site (approximately 2.5 acres) was stripped under conditions which were not controlled and the stripping was more thorough than would have been in any surface collection. Features adjacent to the area and continued the horizontal extent established by the original work. The exca- vation uncovered features from five different components, although Woodland materials predominated. The Woodland component marked the most extensive use of the site, and Early Woodland (Long Branch phase) and late Woodland (Mason phase) were also present in quantity.

The archaeological data on the Mason occupation at Yearwood can be summarized as follows:

1. Surface Artifact Density: There is very little surface debris associated with the Mason occupation. In the exca- vations of 1975 a complete site reconnaissance revealed only a few small Elk River sherds and one small triangular Hamilon-like projectile point. Examination of several prize collections from the site revealed a period of knowledge by knowledgeable collectors a revised estimate of 37 Mason artifacts.

2. Subsurface Features: A total of 37 pit features can be definitely attributed to the Mason component. All but three feature are located in a single large cluster at the geographical center of the site (see Figure 1). This cluster occupies a roughly rectangular area measuring approximately 30 by 15 m. The other three features constitute a small group about 30 m to the southwest. Twenty-seven of the 37 features were partially or wholly excavated, all were non-substantial in their process and proved to be either shallow, and few contained any appreciable amounts of artificial material. The standard procedure was to remove the surface deposits and half of the pit fill. Of the 27 excavated features, 25 of them proved to be large deep pits with flat bottoms and vertical or undercuts walls. The features are identified here as storage pits, a type which is consistent with their physical characteristics and anthropic data on similar features from other sites. The feature is on average 3 m in diameter, and 1.5 m deep, and are contained in the storage pits. The feature is on average 3 m in diameter, and 1.5 m deep, and are contained in the storage pits.

3. Subsurface Features: A total of 37 pit features can be definitely attributed to the Mason component. All but three feature are located in a single large cluster at the geographical center of the site (see Figure 1). This cluster occupies a roughly rectangular area measuring approximately 30 by 15 m. The other three features constitute a small group about 30 m to the southwest. Twenty-seven of the 37 features were partially or wholly excavated, all were non-substantial in their process and proved to be either shallow, and few contained any appreciable amounts of artificial material. The standard procedure was to remove the surface deposits and half of the pit fill. Of the 27 excavated features, 25 of them proved to be large deep pits with flat bottoms and vertical or undercuts walls. The features are identified here as storage pits, a type which is consistent with their physical characteristics and anthropic data on similar features from other sites. The feature is on average 3 m in diameter, and 1.5 m deep, and are contained in the storage pits. The feature is on average 3 m in diameter, and 1.5 m deep, and are contained in the storage pits.
Figure 1. Yearwood site: general location and site map showing stripped area.

Figure 2. Yearwood site: location of Neobi phase features.
The storage pits are generally large. Twenty-two of them were sufficiently excavated to obtain accurate measurements and volume estimations. These data are summarized as: diameter, mean = 1.18 m, range = 0.75-1.5 m; depth, mean = 0.129 m, range = 0.07-0.45 m; volume, mean = 0.9 m, range = 0.26-3.74 m³. The total volume of the 22 excavated storage pits is 64 m³. For all their volume, these pits contained surprisingly little food material. Typically, they contained far more Middle Woodland material than Mason artifacts. Only in six cases were significant amounts of refuse associated with these pits. In each case, the refuse consisted of a concentrated load in one portion of the pit. In five instances, the refuse load was in the central part of the pit while in one case it consisted of a load placed along the western side of the pit.

Five burials were recovered from the excavated storage pits. All were burned. They were in an advanced stage of decomposition but the burials could be identified as adults.

Artifact Assembly: The artifact assemblage recovered from the pit features does not differ markedly from that recovered from the surface sites. There is a slight bias toward a greater number of stone tools, although there is an obvious difficulty in identifying non-diagnostic chipped stone tools.

Habitat: Virtually no botanical data were recovered. Few of the pits produced a noticeable quantity of charred material, and samples from the refuse load were suspect due to potential mixing with older materials. A total of 546 fragments of faunal material were recovered, of which 396 were mollusks. The faunal material comes chiefly from two of the storage pits with refuse loads. For such a small amount of material, the variety of species and habitats represented is surprising. Deer and turkey predominated; but also present were bear, beaver, raccoon, and opossum. Of the bone specimens of deer, two species of terrapin/turtle, three species of fish, four species of mollusks, and four species of rodents. The sample size is far too small for any definitive conclusions, but the remains imply a broad spectrum faunal exploitation.

Chronology: Two attempts were made to radiocarbon date Mason phase features. In the first instance, a sample of charcoal collected from the central fill of a storage pit yielded a date which coincides with the cluster of Middle Woodland dates from the site. Apparently, this sample represented charcoal introduced into the pit from the Middle Woodland occupation. The second sample, from one of the concentrated refuse loads in a storage pit, yielded a date of 1240-1350 A.D. or 4, 750 (100 600). The status of these dates is unclear. If accepted, it represents one of the earliest Mason phase dates. Some characteristics of the associated ceramics and geometric points could be viewed as arguable for an early date, but the possibility of some contamination from the Middle Woodland occupation cannot be ruled out.

Discussion: The Mason component at Tiwamus appears to be the full in the situation in which the occupational evidence consists of almost entirely of storage pits. There are no architectural remains, the hearths, even liberally designing a number of the unclassified sherds as Mason, are meager. In addition, very little refuse is associated with the occupation. Several important assumptions are involved in the discussion of the occupational evidence. The first is that the storage pits are not socially or functionally linked in any way. The second is that all refuse is considered in the same way. The third is that all refuse is considered to yield useful information about storage practices. The study has presented definitive archaeological evidence about the type or types of foodstuffs actually stored in such fashion. The amount of refuse associated with ordinary domestic activities and the absence of substantial mortar in storage pits suggest that the foodstuffs selected for storage were quite different from the types of refuse that would be produced during normal economic activities. The latter suggests the greater likelihood that plant foods rather than animal products were stored in these structures.

The placement of the majority of the pits in one tightly defined cluster indicates both planning and continuity of use. The pits are placed in the area affecting the best drainage conditions on the entire site--the crest of the rise on which the site is centered. This portion of the site is not an area of prime activity during any of the other occupations at the site, despite the very small area in which these pits are concentrated, there is only one case of two of three pits being in close proximity. This lack of pit intrusion indicates continuity of use in that, with successive occupation, the inhabitants knew or could identify where previously used and refilled pits were located. The site was used with sufficient frequency that a number of on-site deaths eventually occurred (set least five).

The data argue for brief, periodic utilization of the site by small groups over an extended period of time. It should be noted that storage pits are shorter-term storage areas than refuse deposits. There is no evidence of one of the storage pits except insofar as the presence of storage features at storage pits. The second is that pits function primarily for the storage of foodstuffs. This was confirmed by radiocarbon dates, which placed them in the Late Woodland period. The site has already been occupied by groups with different cultural traditions and the presence of storage pits suggests a significant increase in the amount of foodstuffs used by the occupants. The storage pits, of course, are very tangible evidence of the importance of a certain set of activities.

In the case of storage pits, it should be noted that the site represents a furiously convenient in which a relatively simple pattern of economic activities is reflected by a single type of refuse load, and relatively specialized labor and production activities. The pattern of site use suggested by the Mason component at Tiwamus suggests that the site would provide little evidence for any special emphasis on hunting activities. This consideration is a sobering thought in light of attempts by archaeologists at other sites to interpret the kind of settlement patterns and the kinds of activities that took place at a given site.

The storage pits, of course, are very tangible evidence of the importance of a certain set of activities.
dirt (both and both 1978:317–318). Because of the dispersion of such resources, exploitation of them by large groups is not feasible. A small group agriculture is far more efficient from the standpoint of labor input, but with it there is less capacity for transporting the harvest. Thus, some form of storage or, near the populus area is required. As effective collection strategy would involve a series of such camps, each of which serves as a base of operations and collection point for the harvest within a certain delineated radius. The total residences time on these sites in any one season would be small, but other basic subsistence and maintenance activities would take place. Such a pattern of use, projected over an extended period of time, would produce precisely what we find in the archaeological record at Yearwood.

The foregoing interpretation of the Mission occupation at Yearwood fits the current picture of Mission sub- migration/settlement activity as that of small, mobile groups involved in an intensive hunting-gathering strategy. At this juncture, however, a certain caution is in order. There is a growing uneasiness among investigators who work in this region that the present view of Mission culture may be partially biased by the circumstances of where intensive investigations have taken place in the area. Of all the cultural units defined in this area, the Mission phase is probably the least understood. Understanding has been thwarted by the high degree of confidentiality and the extent of archaeological work that has been done. We are left with a mosaic of investigable and non-investigable sites. As was usual in the introduction, the upper Duck River is thought to be a major area for Mission activity. In the Elk River drainage, the Mission phase is defined, but the sites are major areas not fully surveyed and portions of the river. The implication is that we may not yet have identified the complete spectrum of Mission phase settlement systems. There are uninvestigated parts of larger, more intensively occupied Mission villages, such as those on the Bankhead in the bank

In the final analysis, this paper makes two points. The first is the interpretation of the Mission component at Yearwood as a site where certain areas of activities, namely collecting and processing for storage, were emphasized. The second is a caution against assuming that Mission settlement systems consist entirely of ephemeral and short-term sites. While this is possible, there is growing reason to suspect that our present view of Mission phase settlement and subsistence is seriously biased in favor of short-term seasonal sites and that substantial, nucleated, and temporarily more sedentary occupation do exist.

References cited:


There is an often made assumption in some archaeological literature that, given the choice, pre-agricultural groups would not winter in river valleys, but would instead withdraw into the hills. This paper will investigate the distribution of potentially exploitable flora in a representative area of the North Central Delta region of Mississippi and on this basis evaluate the loci of wintering in the hills.

Archaeological research in the area

The central region represents a void in the archaeological knowledge of north Mississippi. To the west, the Delta region has been extensively studied and has yielded a number of proposed components which can be arranged in time and space. To the east, excavation of sites such as Tyner, Miller, and Pharr have suggested that the eastern half of the state has a history of occupation extending back to the Early Archaic period. It is the lack of systematic surveys in this area which suggest that some remains of the Late Archaic period have not been adequately documented. It is also suggested that there must have been a large number of sites in the area, since it is apparent that the various investigators have not yet reached all of the potential areas for such remains.

Bybloss' definition of the cultural affinities of the north central section of the state are understandable since archaeological work has been somewhat limited both in extent and focus. Reports of five excavations have been published. Only sounds were excavated at Baker's Creek (Tyner 1948a), Tyner (Tyner 1948b), and the Great White Mound (Cooksey 1938). The Clear Creek excavation (Tyner and McClure 1947) was a small operation precipitated by the recovery of skeletal material by the war action of a village site. Only at Wagner did research include excavation of a 'village' area. Even here information yield was limited. The 'village site' had been almost totally destroyed by frequent inundation and cultivation; only 57 sherds were recovered (Wagner 1961). There has been no large-scale survey of the region.

In sum, all that is known about no part central Mississippi is that the Indians lived there (or at least there) at some point in time that they built houses, made pottery, and left stone tools and fragments thereof. It is known, further, that these artifacts show affinities to those from both the Tyner and Miller phases as well as from other. These types and their affinities are exhibited in the various specimens and their potential for eliciting information about ecological utilization and/or its effect on settlement decisions.

Description of the region

The majority of the region between the Delta and the Tennessee-Tombigbee drainage is composed of a physiographic region known as the North Central Plaques. While this designation does denote the original land surface, erosion and stream cutting are an advanced south of the Mississippi-Tennesse line that the designation 'North Central Hills' is more descriptive. The region is characterized by relatively flat rolling hills, broad valleys, and a drainage pattern which drain westward into the Yazoo. Each of these river basins is basically similar.

The Yazoo River Basin

One of the basic types of the North Central Hills is that of the Yazoo River. The Yazoo drainage basin in North Mississippi, carrying water generally southward into the Tallahatchie River. The channel meanders through a valley which extends some 50 mi from the headwaters to a junction with the tributary plain of the Yazoo River. The basin system consists of the active river channel, the active floodplain, the first terrace (or 'ground moraine') and the second terrace. The valley walls are composed of weathered plateau remnants with consist of rounded clays and sandstone intruded with more rounded rocky hills. The valley bottom is occupied by rich loams washed down from the hills; twenty-five ft deposits have been recorded in Lafayette County (Matyas 1951:32,23). The valley ranges in width from 1/3 to 1 mi.

Approach

The modern floral inventory of the Yazoo Basin cannot be considered as accurate reflection of the prehistoric picture. The valleys have been stripped of their forest cover in order to facilitate agricultural practices and the transportation of goods. A more adequate representation of the floral content of the hills should be available through a systematic study of this area. There is also a need for a more complete understanding of the relationship of the lakes to the valley bottom.

Figure 1. Sites in the North Central Hills and adjacent areas.
While ground cover has changed, the variation of soil content and potential water supply apparently has not been drastically altered. Therefore, the same microorganisms that existed at the time preagricultural occupation should still be present and it should be possible to asssess floral distribution on the basis of the microclimate habitat preference of individual plant species. For example, those that showed a preference for rich, wet soil should have been found in greatest abundance in the valley than in the hills, even in the preagricultural period.

Procedure

In order to determine the distribution of exploitable potential, a list of species which were native to the area and which had been credited as food sources by either historic or archaeological groups was composed. The same dual zone division of hills and valley was chosen for the present purpose. Some distribution type, habitat type, and representative dominant species does not supply data of proper sensitivity for study of the question in general. It therefore became necessary to look for areas where the trees used are not the dominant species, as the forest, e.g., qualitative information about each species became important.

One of the by-products of the manipulation of information produced by the paradigm was the sequence of plant part availability. It was often necessary to judge water placement of sites, the late summer to spring portion of the circle was viewed. The pollinator, sequential, but overlapping categories of plant part availability thus studied were those of fruit, seeds, nuts, and roots. Since the point of the investigation was to study the relative advantages of hills and valleys, species which occurred in both zones were removed from consideration. Specific qualitative information was then gathered on species which provided food during the late summer through autumn and which showed mutually exclusive floral distribution (Table 1, page 24).

Results

Although the mutually exclusive distribution of plants producing edible fruit showed a greater preponderance of species in the hills, since all were small fruits. The larger and apparently more important fruit-bearing species showed non-specific distribution.

All of the differentially distributed species producing edible seeds occurred in the valley zone. Some of these species provide potentially important food sources. Carbohydrates periodically provide a large food supply and need a rootstock. If wild rice was, indeed, also available, the relative exploitative potential of the valley intensified in the late autumn to early fall.

Many sources indicate that the nut crops were grown as food staples even in the historic agricultural period. The investigation of the plants showing ornamental or other non-food use was based on the assumption that these crops had been totally domesticated and were therefore of potential use. An evaluation of ornamental species which exhibit ornamental potential reveals that the productive potential of the hills was superior. Hilly the valley contains two species whose products are considered edible, even meat flavored, neither of which are firmly documented as being important to Indian crops. The sake which prefer the microchans found in the hills, white oak, black oak, and red oak, were the more productive and more frequently productive species which, coincidentally, seemed to have been more often domesticated in archaeological contexts.

Evaluation of the distribution of hickorys exhibiting ornamental potential was not as simple as that of oak. The small pinnut which is seen but not extremely plentiful (Wedger 1960:1021) was found in the hill areas as was the pinnut, which Sawicki and Swanscater (1963:21) consider important enough to mention. The valley produce more hickory and bitter pecan, but also two of the more important species—pecan and water hickory. The quality of pecan is unquestioned. The out of the water hickory has been found in archaeological contexts (Tarroni 1963:89) even though it is apparently rather bitter tasting.

Other nut bearing trees showing ornamental preference were the chestnut, more plentiful in the hills, and probably the black walnut, flourishing in the valley. The pecans are not listed as having primary distribution in the hills. Possibly McCullough's (1940:194) statement that the black walnut grows best in deep rich soil is true in the lower valley, as in that of the Elk and Duck rivers. These soils occurred primarily in the alluvial bottoms.

When the category of plants with exploitable roots is considered, the potential of the valley far exceeds that of the hills. All exploitable rootstock showing ornamental preference occurred in the valley. The list is considerable and the yroids great. Arrow soro, for example, yields a root that is said to weigh three or four pounds (Wedger 1960:1021).

Interpretive conclusions

Given the qualitative data and the distribution of plants, several conclusions for winter occupation seem to emerge. If the location of winter villages in the hills is assumed, some patterns may be suggested:

1. Withdrawal from the valley right logically take place in the early fall when the hill zone reached the peak of its floral potential. From this base, then, inhabitants could descend on a daily or short period basis to gather hickories, walnuts, and rootstocks in the inner fall. Valley-produced supplies could then be brought back in weekly or monthly increments for storage in the winter base camps in the hills.

2. It is possible that the inhabitants could stay in the valley throughout the fall. The valley bases would serve as centers for the accumulation of the roots, hickories, walnuts, and rootstocks. When those supplies were complete, they could then be carried into the hills of the winter camp bases.
The range of possible alternatives can be narrowed somewhat by data recovered from exploration of the slaughter site (846). Slaughter occurred on two small islands and on larger island located near the mouth of the Lena River. The larger island, approximately a boulder mound, was isolated and spread over the surrounding areas. A field road cut into one of the smaller mounds yielded no evidence of Aboriginal use. The other two small mounds, however, were marked by concentrations of flakes, sherds, stone tools, and other evidence of Aboriginal activity.

Of primary importance for the point in question is the floral inventory recovered from the site. Bearded goldenrod, crab (642), perennials (4 species), 1 complete fruit, senna (1 seed), wild potato (2 seeds), and numerous fragments of edges, birch, willow, and willow. The entire suite of the site was covered with charred oak. Senna was so numerous that the deposit was dark or decreases in concentrations either horizontally or vertically. It should be noted that this deposit marked an area of considerable time immediately adjacent to the Archaic through the Woodland. Such a continuity is not unique. McCollough and Paulson (1962:257) report that the inhabitants pattern at Ol Olowo showed little change during the same Archaic/Woodland epoch.

Given the available data and the time sequence represented, the absence of blackberries is striking. Certain lilies have been known to be present in the southeast by this time level in the eastern Tennessee Valley. It can be dated at A.D. 675-903 (Fustine and Graham 1966:331). It is equally true that these data have been biased by the faunal evidence, which indicates the presence of muskrat. Paulson (1971:42a), finding this situation in the upper Elk and Dick River areas, tentatively hypothesized a continued reliance on hunting and gathering, with any ancient agriculture relegated to secondary importance. Such an hypothesis also seems to be supported by the floral inventory from Blackfoot.

The specific contents of the inventory the most pertinent to the point in question. Grapes are a late summer/early fall food source; muskrats are plentiful all through September. Perennials generally become edible somewhat in the North Coastal fall season. Pumpkin, while not a major food source, has several technological problems associated with it and is not used for making a diet staple. Despite the presence of the species occurring primarily in the late fall, it is among the major species in the autumn. Many species and wild potatoes reflect later fall or winter. Senna, a major winter food source, is often used for making early spring petrochemicals. The evidence of willow and wild potato may suggest use of a plant whose root provides a sprout and fall food (Fernald and Kimsey 1943:268).
### Table 1. Distribution of exploitable flora in the Yocona Basin.

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Yocona Valley</th>
<th>Mississippi Delta Sedimentary Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Oak</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>White Oak</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Black Oak</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Swingle Oak</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>已经开始</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
the following paper presents the preliminary analysis of the LaCoste-Woodmanston site (Figure 1). The garden club of Georgia plans to develop this site as an eighteenth-century garden. The garden site is located near the confluence of the Savannah and Ogeechee creeks. This site is significant for several reasons. First, it contains evidence of gardening practices that have been used for centuries. Second, it provides insight into the social and cultural practices of the indigenous people who lived in the area. Third, it offers a unique opportunity to study the impact of European contact on local gardening practices.

In archaeological sites disturbed by cultural activities, the integrity of the site is compromised. The site is destroyed, and the information that can be recovered is limited. In this case, the site has been disturbed by modern development and agricultural activities. The site has been affected by plowing, which has removed much of the organic material. In addition, the site has been affected by construction activities, which have disturbed the soil and removed artifacts.

The site contains evidence of gardening practices that have been used for centuries. The site contains a variety of gardening tools, including hoes, shovels, and baskets. These tools were used to cultivate the land and to gather wild produce.

In conclusion, the LaCoste-Woodmanston site is an important archaeological site. It provides insight into the social and cultural practices of the indigenous people who lived in the area. It also offers a unique opportunity to study the impact of European contact on local gardening practices.
from what we can infer from the documents, the main house was probably a two-story structure with a detached kitchen. The plantation also included a settlement for about 40 slaves and was supported by a tannery, blacksmith shop, cooper shop, shoemaker shop, anvil killing/ginning facilities for both rice and cotton. The documents indicated that the latter equipment was horse powered (Dec. 2 nd 1833), indicating we were unable to locate any of those support structures with any certainty.

In 1857, 40 years after the site had been abandoned by the family, Joseph LeConte made the journey from California to the family homestead. Photographs taken during this visit gave a stirring view of the remains of the LeConte/Leblanc Plantation (Figures 2 and 3), from then a tenant house, row crop, several old cabins, and two carriage poles were all that was left of the once magnificent plantation.

Previous century land use has been predominantly lower parcel, cattle grazing, and horse feeding. The area has been flooded and then cut by numerous drainage ditches to prevent flooding. During initial reconnaissance of the site considerable damage from logging and lumbering activities was noted. A portion of the site, the east part of the plantation landbanks, had been completely removed for use as fill dirt in the construction of access roads.

Previous archaeological data consisted of the 1972 archaeological assessment by Gordon Midgley of the Georgia Historical Commission. A brief report states that after a surface walk-over and aerial survey, his findings indicated that "surface evidence of the estate's manor house,...stables, walled enclosure, and possibly foundations of side rooms...dates from eighteenth and early nineteenth century" (Midgley 1973). These field notes did not provide substantive information for the present study because they failed to tie in any existing archaeological, for example the monumental or the lake system. Because the site is very wet, the only areas visually accessible are the entrance road and a small area around the main cemellia. Dense vegetation and rocky leaf cover made adequate surface identification almost impossible. In addition it was difficult to place any degree of confidence on the negative result of such a survey.

Archaeological goals during the 1997 excavations were dictated by the Department of Natural Resources' proposed development plan. This plan emphasized interpretation of the plantation's site components, the natural setting, and use as a hallmark for endangered plant species (LeConte-Loomis Research Trustee Evergreen, 1997). In order to provide necessary guidance for the Gordon Club development of the site, our assessment focused on the impact of proposed structures to be developed, initial site visit, visitor interpretation center, and a commitment to the blending of resources and development and identification of the building and its history to help supplement documentary evidence. The historic State Park and national register period between 1880 and 1889, the days during which Leblanc's home was built in Washington and the botanical gardens flourished.

The basic research strategy can be characterized as a diagnostic survey with a limited amount of formal excavation. Approximately 5% of the island was covered by a series of linear trenches which were used to control sampling of disturbed area and posthole testing. A grid driven in by mechanical digger was used along with standard posthole diggers. Both worked well, each had its advantages and disadvantages. The super, however, is much more efficient in terms of less post test. A great distance can be covered in a day. It's true, too, has its disadvantages, such as the noise and gas fumes and the possibility of getting hung up in roots and clay.

Figure 1. Photograph of Joseph LeBlanc standing under the main cemellia tree in the old mansion of Louis LeBlanc, taken by Omohundro in 1857. (Note: the main cemellia and the cemellia saplings were not in the background.)

Figure 2. Picture of Joseph LeBlanc standing under the main cemellia tree in the old mansion of Louis LeBlanc, later owned by Omohundro, photography taken by Dr. Joseph Hight LeConte in 1857.
Two areas measuring approximately 45 data per day. Each area extended approximately 3 ft or until the drill reached clay. The test interval was 1 m. Test material was caught in a metal tray and screened through a 1/4" hardwood sieve. Findings were plotted and arcs of culturally positive testings were noted. Surface clearing for positioning super tears required substantial crew hours but was the most efficient method of sampling a large area with the least expenditure of time. This form of testing made it possible to compare surface indications with the distribution of archeological refuse over a large part of the site. For the most part this does not seem to be a 1:1 correlation. Although this may sometimes be an in cleared field sites, heavy ground cover presents different problems.

Super testing has been used successfully as a means of delineating site extent. Determination of artifact distribution and site composition, and tracing correlation between surface and subsurface materials in both historical and prehistoric sites by Douglas andnostwick in St. Augustine, Perry at the Townsite site in Liberty County, Florida, and by Colleary and Powell in the Ludlow Creek Project, Elkhorn, (Design 85-86; 1975; Hoffecker, 1980; Cobble and Powell 1978). Prow, Zander, and Kunimichi used a 200 pound solid core drill for approximately the same purposes as the lightweight two men super offers a much more practical alternative (Price 85-86; 1964).

Three areas were opened. The central area included the botanical features and comprised approximately two acres. A total of 93 tests were made in this area. Fifty per cent of the cultural artifacts were burned, glass and metal were well represented. Cleaning of 208 square feet included property indicated by the 1944 plat map to have at least one settlement and various fields (Liberty County 1941). A total of 217 tests were made with 146, culturally positive. The east area, 8360 feet, included to have been finished comprised approximately 12 acres. This area received 175 tests with only .5% culturally positive. For all the areas, 558 tests were made with 174 culturally positive.

These results were checked by limited formal excavation and trenching. Areas of high positive con- content and areas with low frequencies were checked. In the central area, two locations were determined to be possible locations for structures. Eight surface elevations, concentrations of brick fragments, and positive test findings indicated excavation. The first group of excavation units were placed approximately 30 a east of the prevailing wind. Several small areas were excavated (Figure 4). These units exposed a brick structure which was determined to be the base of a double chimney. Evidence of a m tering perpendicular to the long side of this chimney was recorded. This structure may have been part of a building from the plantation era.

Figure 4. Diagram of the surveying, 1979, testing program. Once the existing plantation era landmarks: palms, cemeteries, posts, and rice runs were excavated through 1/4" in hardware cloth over 3/4" by 3/8" in diamond mesh by mechanical shaker screens. The silicate content of the structure was relatively high and included weathered glass, nails, pieces, pipes, and household artifacts, grindstones, toys, gun parts, jewelry and food bone. Trans- fer-printed glassware, similar wares, and Dutch and American were recovered in the ceramic assemblage. One piece of transfer-printed earthenware was recovered with a maker s mark. It has been identified as Ridgway, Morning, and Company of Staffordshire, circa 1750 - 1812 (Goldberg 1964:261).

The second group of formal excavation units were located near the west of the creek and west of the north palm. A linear configuration was observed and from the scattered. Temporay condition of the bricks indicates a railed brick wall. The artifact content of this unit was less numerous than the first, but of the same nature. The size and composition of the bricks differed between the two excavation areas. This may indicate different time periods on the same different occupations.

The third and final formal excavation unit was located just northeast of the southern palm in an area which showed no cultural evidence on the surface but had bid positive subsurface tests. This unit had a much lower content of cultural material.
For diagnostic trench lines were laid east-west and north-south across the convex area. 1 1/2 m wide, the fill from these trenches was not screened but carefully removed in an effort to assess the presence of remaining features within the time frame. These trenches clearly showed that the central area still contains cultural information which is relatively intact. The features are difficult and have not been subject to the benching or subsurface disturbance which could have occurred. Numerous postholes and other remains indicate some sort of activity area but it is not possible to say what type without further intensive excavation in this area.

The entire central area, or a large portion of it, needs to be stripped in order to assess the type of activities represented. Large scale stripping has been used by Noshem at the Riverfront site in Savannah (1974). Also an entire symposium at the 1979 Southeastern Archeological Conference in Atlanta was dedicated to the use of such heavy equipment.

Lacoste-Woodruffton has the advantage that its access roads have been maintained for use with logging trucks so that the problem of site inaccessibility would be negligible. The central area is also relatively free of large wood and woody shrubs which might prove an impediment to such moving equipment.

In summary, sites like Lacoste-Woodruffton, although they have incurred surface damage, may produce archaeologically significant information. Use of the mechanical earthmover in a proper, controlled excavation fails to be a satisfactory means of applying widespread excavations to a central area. Such a testing procedure minimized the amount of clearing needed to place and plot the density of cultural materials over a site.

References cited:
Hammack, Nicholas. 1964. Archeological survey of the Savannah waterfront area. Ms on file, Department of Anthropology, University of Florida.
The mandate to preserve cultural resources for the benefit, enjoyment, and understanding of this and succeeding generations is contained not only in the National Park Service Organic Act of 1916, but also in five other significant legislative enactments. These laws have significant impact on the policies, programs, activities, and procedures of the Service, and taken in toto impose a legal obligation on the Service to locate, identify, evaluate, preserve, manage, and interpret cultural resources in every federal park in such a way that they may be handed on to future generations unimpaired.

Therefore, as by law, the establishment of the Big Cypress National Preserve in South Florida required that the area's cultural resources be identified, inventoried, and evaluated. Initial reconnaissance preservation began in the spring of 1971. This was the beginning of a 3-year program which is entering its fourth season. The program is designed to provide an initial inventory, preservation and resource management proposals to guide planning, development, interpretation, maintenance, protection, and compliance with legal requirements. The cultural resource inventory is an essential part of the Reserve's information base.

The National Preserve is located within the Big Cypress wetland and encompasses approximately 240,000 acres of subtropical hardwood hammocks and prairies, tropical hardwood hammock islets, and prairies (Figure 1): the region in general has less than 4 above sea level with large areas covered by cypress and secondary pine forests. Most of the soils in the swamp have developed on shallow deposits of recent and colluvio sand overlying marl or limestone. Natural drainage in the swamp, south, with well defined streams occurs almost entirely along the swale where the swamp meets with the mangrove forest of the Ten Thousand Islands. The natural vegetation is that characteristic of estuarine areas in southern Florida. It consists of a great variation of plants that vary widely with differences in the soils and water level. Wildlife in the swamp is bog aquatic or water tolerant and is adapted to seasonal inundation.

There is considerable literature concerning the archeological sequence of South Florida around the Big Cypress but little has been published. The need for an understanding of prehistoric cultural sequences within the swamp is primarily due to the potential of impact within the area of a proposed highway. This paper is intended to report on field and research conducted there to date. The National Preserve is located well within the boundaries of the Glades archeological region and within this area two traditions are recognized, the Archaic and the Glades. The Glades tradition is represented only sporadically in the Glades area, and as yet no sites attributable to this tradition have been located. Excavations conducted by Tuckwell and Morrill on the southwest Florida coast at Marco (land demonstrated the existence of reconstituted shellmound sites with fiber tempered ceramics, midden, and root-sockets (Cleland 1957a, Morrill 1963). This tradition may have existed from between 3000 B.C. to 1000 B.C. The subsequent Glades period, subdivided into eight subperiods, was constructed by Cleland in (1957a, 1963). This time span was characterized by the Glades tradition subsistence, typified by the exploitation of the food resources of the tropical coastal waters with secondary dependence on game and some use of wild plants (Cleland 1947, 1981). Understandably, this resource-utilization strategy grew from similar patterns during the Archaic. The only component in Cleland's definition that is the ecological adaptation chosen strategies that reflected the area's local environment. Ceremonial centers of the prehistoric Glades period were located along the inter-tidal areas of the riverine estuaries, and outbuildings and shell mounds remained in common throughout the area. Griffiths modified much of Cleland's research and delineation of the Big Cypress National Preserve and presents the following data for subsequent subperiods (Griffiths 1959:13-14).

Gladis I: Late) ca. A.D. 500-700
Gladis II: A.D. 900-1000
Gladis III: A.D. 1000-1200
Gladis IV: A.D. 1200-1400
Gladis V: A.D. 1400-1550
Gladis VI: A.D. 1550-1750

Of 146 Gladis tradition sites recorded to date 124 or 86% lack sufficient material in adequate place them in the Glades Chronology. Brown Gladis I - II Period sites make up 13% of the total Gladis tradition sites, with the combination 11 exhibit traits associated with the Gladis II - III Period. This period is the degeneration of native American populations within the Gladis area after European contact, the complete or partial extinction of southern Florida tribes occurred by the end of the eighteenth century. The significant migrations of Creek into South Florida did not occur until after the first Seminole War. A

Southeastern Archeological Conference Bulletin 12, 1962
probable beginning date for Seminole occupation in South Florida may be ca. 1820 (Eshenbruch et al. 1970:10). After this date the Seminole population reached about 1500 by the time of the second and third Seminole Wars which led to the removal of all but 100 Seminoles by the year 1900. Throughout the entire period of Semi­
ol e occupation, until present, many of the tree islands within the Glades area have been used for settle­
ment and especially agriculture. The Big Cypress survey project had recorded 72 sites with Seminole compo­
sents. Of these 72, 68 are sites with an underlying Glades tradition component; 2 exist as single Seminole
components. Preliminary data indicate that the majority of the Seminole sites date from A.D. 1890 to 1940.

The site and natural environment of the preserve has generated special logistical problems. During
the previous three field seasons a variety of reconnaissance techniques have been employed and compared.
They include the use of literature, random sampling of possible site areas, use of maps showing site loca­
tions, and aerial photographic analysis. Transportation into the tract has been by helicopter, swamp buggy,
shark all-terrain cycles, and by foot. Each method of reconnaissance and the associated mode of transpor­
tation featured advantages and disadvantages relative to ground cover, target to target distance, and per­
sonnel and equipment carrying capacity.

The most productive and often used technique involves the use of infrared imagery (Mark Burb, 1:80,000),
and small scale, high resolution black and white imagery (1:2500 or 1:4500). This method targets for the
vegetal hardwood tree islands and forests in relation to deep ponds and sloughs. This functional model
was first employed by Carr and was modified to fit the Big Cypress tract (Carr 1935). Areas of possible
site locations are first field checked to determine the nature of the aerial photograph features. All pos­
sible sites targets are systematically checked as well as marginal areas. The use of helicopter greatly facilitated this process by allowing the survey workers to race above the forest canopy and iden­
tify the tree islands and typical hardwood stands that are depicted on the imagery.

Once a site is located a small test pit is usually placed within the site area. Seminole sites are
primarily surface expression and do not exhibit the ordinary middens components that are typical of Glades
tradition sites. The test pit is of a standard size (40 cm) and excavated in arbitrary 10 cm levels. The
midden matrix is screened in available water with a 1/16 in. mesh screen. The small test unit size and
complete removal of soil in the field make it possible for two- to three-week crews to retrieve artifact samples
from remote site locations. These samples contain a variety of material that when analyzed will provide
the needed data to form testable hypothesis on settlement patterns, subsistence activities and site
chronology for the preserve.

Our inventory of the preserve is now approximately 65% complete. It has produced site quality and
quantity data of sufficient detail to show that the cultural manifestations within the preserve show rela­
tionships and interaction between the coastal zone and the interior. However, and more importantly, the
majority of the Glades tradition sites of the Big Cypress found to date represent a separate and interior adaptations to the environment that is substantial and long term in nature. Continued mapping and analysis will provide the necessary data to explain the behavior of the prehistoric
population of the Big Cypress and link series of events that account for the patterns that are observed in
the archeological record.

References cited:
Carr, Robert S. 1934. The use of panchromatic photographs for the interpretation of archeological sites in south Florida.
Unpublished manuscript 11 in the south Florida Archeological Center, Tallahassee, Florida.
Eshenbruch, John, Robert S. Carr, and Robert C. Taylor 1970. The archeological survey of the Big Cypress National Preserve:
Field season I. Southeast Archeological Center, Tallahassee, Florida.
1969. Cultural traditions in Florida prehistory. In The Florida Indian and his Neighbors, edited by John W. Griffith, Inter­
American Center, Rollings College, Winter Park, Florida.
Center, Tallahassee, Florida.