BURIAL STATUS DIFFERENTIATION AS EVIDENCED BY FABRICS
FROM ETOWAH MOUND C, GEORGIA

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
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By

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* * * * *

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To My Parents

With Gratitude for Their Love and Support
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CHAPTER I
INTRODUCTION

The research reported here considers the role of textiles and clothing in prehistoric cultures for the communication of symbolic behavior. Using textile evidence from a high status burial site, the study investigates whether gradations in rank were marked or indicated by differences in the complexity of textiles chosen for inclusion with the interred individuals.

Horace Miner (1936, p. 181) called the attention of archaeologists to the value of textiles in the archaeology of the Mississippi drainage. Using actual textile fragments and the impressions of textiles on pottery, he developed a series of techniques to facilitate the study of the material culture information found in textile remains. Archaeologists have been concerned with deriving information about prehistoric peoples from the often buried material remnants of the society, but textiles, due to their highly perishable nature, have not always been available for study. Many textile samples encountered in prehistoric North American sites have presented excavators with problems in conservation and preservation (Dellinger, 1936). Some fragments seemed so damaged that further research on them was
problematic, but Laudermilk (1937) developed methods to preserve or stabilize for study burned and ashed textile pieces.

Methodology and terminology in textile analysis have been slowly evolving since the 1930's with new technologies supplementing the older established methods. Those new methods enable the present researcher to study a textile collection from Mound C at the Etowah site that consists predominantly of very small textile fragments and mineralized portions adhering to copper and matting sections.

In earlier analyses, archaeologists focused on the more durable items of stone, flint, metal, shell, and ceramic materials, and ignored textiles. Modern archaeological field and laboratory technology has expanded the amount of information to be gleaned from an archaeological site through the recovery of organic and perishable materials such as seeds, microscopic pieces of wood and nut shells, pollen grains, and mineralized, microscopic-sized fragments of textiles.

Armed with greater amounts of information about each site, archaeologists are better equipped to analyze changes in settlement behavior and to consider the less tangible problems such as the cultural organization of the prehistoric sociopolitical groups, their belief systems, and other aspects of culture (Steward & Setzler, 1938). One aspect of the cultural organization of interest to the archaeologist is the way in which groups assign or designate differences in status among members or
"status differentiation" procedures. As Saxe (1970) has indicated from his investigations of status, when social groups become increasingly complex, there develop more levels by which differences in deference may be accorded to members within the society.

The question as to why some persons receive greater deference or status than others within a society has been pondered by many scholars. In the early nineteenth century, one of the founders of a new democratic society wrote: "There is a natural aristocracy among men..." (Jefferson, 1813), and it is evident that individuals of high influence do command and enjoy possessions not available to the "common man." There is also an obvious range of mastery evident in the products of human endeavor, some are instantly recognized as high quality and others of lesser degrees of perfection and adequacy. As Jefferson continued:

The grounds of this are virtue and talents. Formerly, bodily powers gave place among the aristo. But since the invention of gunpowder has armed the weak as well as the strong with missile death, bodily strength, like beauty, good humor, politeness and other accomplishments, has become but an auxiliary ground of distinction. There is also an artificial aristocracy, founded on wealth and birth, without either virtue or talents; for with these it would belong to the first class (Padover, 1943, p. 283).

Of the crafts of ancient peoples, metal work, ceramic production, and fabric production provided excellent opportunities for the expression of artistic and technological excellence. The quality of workmanship in the preparation of the materials for textile production and also in the construction and artistic
design of the textile itself resulted in goods of high desirability (Kent, 1957; Kent, 1985; King & Gardner, 1981; Scholtz, 1975; Willoughby, 1941;). Such high quality products seem to have been valued as a means of marking respect for the dead and assuring them of comfort in their after-life, as Cyrus Thomas observed:

The gifts to, or property of, their dead deposited in these sepulchers illustrate their arts and customs and cast some rays of light into their homes and daily life, and the regard for their dead indicated by the remaining evidences of their modes of burial and sepulchral rites affords some glimpses of their religious beliefs and superstitions. The larger and more imposing works, as the pyramidal mounds, the enclosures, canals, etc., furnish indications of their character, condition, strength, and culture-status as a people or tribe, but the mounds and their contents, besides the evidences they furnish in regard to religious belief and art of the builders, tell us something of individual traits, something of their social life, their tastes, their personal regard for each other, and even something of the diseases to which they were subject. What is still more important, the modes of burial and vestiges of art found with the dead furnish us undoubted evidences of tribal distinctions among the authors of these works, and, together with the differences in external form, enable us to determine in a general way the respective areas occupied by the different tribes or peoples during the mound building age (Thomas, 1887, p. 9).

Burial practices of prehistoric people have concentrated objects of high craftsmanship in locations accessible to archaeologists.

Mound C in the Etowah complex in northwestern Georgia contains such a concentration of artifacts of prehistoric North American Indians (Figure 1). To date, however, the focus of research has been upon the non-degradable artifacts consisting of stone, copper, bone, shell, and pottery. Utilizing the distribution of these types of artifacts among specific burials of
Mound C, Larson (1971) found strong evidence for status
differentiation among the "outer phase" burials of the mound.

Although Byers observed textiles adhering to copper plates
before they were cleaned (Byers, 1962a, 1962b), only Sibley and
Jakes performed indepth studies of the textiles and pseudomorphs-
after-textiles from the Etowah collection. Though pseudomorphs
are not actually textile products any longer, they may be used to
derive cultural information in the same ways as the fully organic
textile item (Jakes & Sibley, 1984; Sibley & Jakes, 1982).

Textile products are the result of behavioral decision-making
upon the part of the people producing and utilizing them (Jakes &
Sibley, 1984; Sibley, Wimberley & Jakes, 1986; King, 1978;
Kuttruff, 1986, n.d.). One can learn about a culture by examining
the textile products as evidence of the interrelated choices
involved in the sequence of production, distribution, use, and
discard of the textile product. Sibley and Jakes (in press) have
developed a model (discussed below) illustrating how the biologic,
systemic, and diagenetic spheres of change within the process of
transformation of the textile raw material are evidenced in the
surviving textile product.

Rationale

The Mississippian period (AD 700–1500) has been characterized
as an era of cultural elaboration (Brown, 1965, 1975, 1985). This
high level of development was facilitated by the continuation of
cultures with an agricultural subsistence base. Large towns were
established that provided a focus for political and ceremonial life. Several major ceremonial centers existed during the Mississippian period at Spiro, Oklahoma; Cahokia, Illinois; Moundville, Alabama; and Etowah, Georgia. Though Etowah was not as large as Cahokia and Moundville, it was, nonetheless, a very significant site of Mississippian development. The fabrics from the Etowah "textile collection" represent one of the largest collections of Mississippian textile products presently known.

Typical of most large Mississippian ceremonial sites, Etowah is located on a floodplain in the Etowah River valley in the northwest corner of the state of Georgia. The town was protected by a surrounding stockade and consisted of three large platform mounds and three lesser mounds bordering a plaza area. The habitation area shows evidence of heavy utilization, indicating a large year-round population for this ceremonial center (Larson, 1972). Circumscribing the site there is a ditch-like structure which may have functioned as a moat. The textile collection comes from Mound C, one of the mortuary facilities, and has the advantage of known proveniences for each of the items. (This type of information has been lacking for other Mississippian textile collections from Spiro and various rock shelters in the south.) Mound C is known to have had multiple building phases, with burials added during the creation of each mantle (Larson, 1971). The mound has been the focus of much of the exploration of Etowah, since it yielded rich artifacts through each phase of recovery (Kelly & Larson, 1956; Moorehead, 1932; Sears, 1953; Thomas,
1887). Of the excavations and explorations that have been conducted at Etowah since the 1900s, the two most extensive excavations were those led by Moorehead in the 1920s and by Larson in the 1950s.

The textiles from Mound C were found in association with copper and other grave goods from burials of the later phases of the mound's development. Of concern to this research are the fifty-one burials of the last phase or Wilbanks (radiocarbon dates AD 950-1440) which yielded 61 catalog numbers for textiles, mineralized textiles (pseudomorphs-after-fabric), and matting. Textiles from an earlier phase (Etowah II) have been analyzed for technical fabrication and elemental content by Jakes and Sibley (1983, 1986). (This designation refers to the Larson schema of labeling the phases from the outermost mantle to the innermost one by incremental Roman numerals and not the chronological use of the same title by Hally and Randolph (1985) during their discussion of the Etowah site and surrounding territory.)

Until recently little has been known about fabrics from southeastern North America. Fabrics of other regions of North America have been studied closely as examples of fabric production techniques and organization by Adovasio and Maslowski (1980), King and Gardner (1981), Kent (1957, 1985), Scholtz (1975). Their work focused upon technical fabrication and the development and clarification of textile terminology and classification systems. Scholtz (1975) and Kent (1985) also made cultural and functional
analyses by means of consistencies found within the artifactual remains.

One of the reasons for the lack of information about the southeastern textiles has been the problem of survival. The soil and climatic conditions of the region are not as conducive for survival of organic materials as are those of the Southwest. Recently the value of mineralized fabric remains as sources of information has been recognized by archaeologists and textile scientists through the work of Vollmer (1975), Jakes and Howard (1986), and Sibley (1986). Formerly, pseudomorphs-after-textile remains adhering to copper and its corrosion products were removed from metallic surfaces in an effort to protect the metal. Some scholars recorded the appearance of the textiles prior to their removal. Byers' (1962a, 1962b) drawings of Mississippian fragments attached to engraved copper plates excavated by Moorehead's expedition are examples of these efforts (see Appendix A).

Textiles-after-pseudomorphs, when studied in conjunction with textile fragments, expand greatly the number of prehistoric remains available for analysis. Since many of the Etowah textiles appear to be at least partially mineralized, their examination contributes to the understanding of Etowah textile production and its cultural matrix.

The Mound C burials at Etowah are characterized by mortuary practices which are associated with the Mississippian culture and which represent cultural processes related to the Etowah people. The burials are within a rectangular temple mound, not a conical
"burial" mound. Mound building had occurred before this period in North American prehistory, however there are significant differences that separate Mississippian Etowah Mound C from the older Middle Woodland mounds and Late Woodland burials including: (1) the structure of the mound itself, (2) the treatment of the grave goods, (3) the grave inventory, and (4) the treatment of the human remains. In Late Woodland mounds, the bodies were usually flexed and evidenced various levels of treatment after death. Mississippian burials at Etowah are typically extended, as are those at Moundville (Peebles, 1974). Spiro burials are different, since rank is proportional to the increasing degrees of disarticulation, representing degrees of custodial care (Brown, 1971). Late Woodland burials had few exotic goods and usually few utilitarian items. Mississippian mound burials have exotics (copper plates, marine shell gorgets and beads) and utilitarian goods (galena, bone tools, stone implements) with the emphasis on exotics (the term "exotics" refers to the raw material or the finished product being imported to the site, rather than being locally available). The symbols used on the artifacts are those associated with a religious system that appears to have spread among all the ceremonial centers regardless of the local stylistic regions. The major symbols are the weeping or winged eye, the cross, the sun circle, bilobate arrows, human hands with eyes or crosses on the palm, human skulls, "falcon warrior" costumed dancers, and various animal symbols (Brown & Hamilton, 1965; Howard, 1968; Kreiger, 1945; Waring & Holder, 1945) (Figure 2).
Figure 2. Southeastern Ceremonial Complex Symbols. Rendered from illustrations by A. Waring (1965). *The Waring Papers*.
Archaeological textiles, whether discarded in a midden or placed carefully in a burial, are products of cultural processes and therefore provide information about the types of decisions or choices involved in their production and utilization within the culture (King, 1975; Sibley, Jakes & Larson, 1985; Wallace, 1975). Part of their utilization involves technic and socio-technic functions (Binford, 1962). Disposal within the burials could reflect both of these functions, but the investigation of the symbolic or communicative (socio-technic) function of these textiles, with special emphasis on their ability to convey status messages, should reveal whether or not both technic and socio-technic functions occurred equally during the final disposition or whether one dominated the other.

One of the concerns in trying to reconstruct the lifeways of prehistoric peoples is the lack of suitable reference. The analyst must use observations of present-day behavior by people operating at a similar social or political level and project this behavior onto the peoples of prehistoric societies. Ethnographic studies have frequently been used in the discussion of criteria for the various levels of prehistoric social organization (Sahlins, 1983; Service, 1962; Steward, 1948). Similarly, as one reviews the relationships between clothing and textile utilization and social behavior, one inevitably resorts to the use of theoretical frameworks and research data from nineteenth and twentieth century observers of human behavior associated with
clothing to infer prehistoric behavior associated with textile utilization.

The significance of clothing and textiles as participants in the world of nonverbal communication has been the subject of research since the 1800's when the economist-social commentator Thorstein Veblen (1899) proposed his theory of *Conspicuous Consumption* and used women's dress as a source of illustration. Veblen explained that, since men's dress became more restricted in design and coloration as a result of changes wrought by the industrial revolution, men had to convey their status through their possessions (homes) and the dress of their wives. More recent observers of the phenomenon of nonverbal communication have also cited the role of clothing and its raw materials — textiles and coloration. Sociologist Irving Goffman (1959) viewed social interaction behavior as the individual taking on roles much as a stage actor does. Dress functions as a role facilitator for the individual, as Goffman described in his text *The Presentation of the Self in Everyday Life* (1959).

Harrison and Horn both discussed the communicative aspects of clothing in 1975. Horn drew an analogy between the English language and its subparts building in increasing complexity to convey the verbal message and dress or costume with its subparts collectively joining to send the nonverbal message. Harrison pointed out that the majority of communication between persons is nonverbal and that clothing plays as important a role in the stream of communication as do proxemics, voice tonality, and
facial expression. Dress, its raw materials, methods of construction, and decorative techniques send nonverbal messages about the wearer to perceivers or the persons with whom the individual is interacting or to whom he is visible. The study of the Mississippian Mound C fabrics as status indicators will increase our knowledge about the social communication and social organization of a major prehistoric society.

Ethnographically, one sees textile sophistication as an accompaniment to the development of cultural complexity. Folk societies often use the natural raw materials without much processing (such as natural feathers or the relatively simple processing involved in stripping leaves for heavy veins for use as fibrous material). The forms of dress are not complicated and not highly differentiated between members within the culture, since the society is organized in a more egalitarian manner, with some special deference given to age and sex (Roach & Eicher, 1973). As culture develops in complexity, some textiles may change in structural appearance, as well as in costume usage. The textiles, themselves, give evidence of more processing during the preparation (yarn formation, fabric formation techniques, methods of decoration). Additionally these textiles are utilized as symbols of status differentiation between ranks or classes within the culture, with the coarser fiber types and simplest fabric constructions being relegated for use by the lower class individuals. For example, during the Edo period of Japanese history, government legislation regulated very strictly the
distinctions between social groups by prescribing the qualities of textiles (weaves, fibers, coloration, pattern) considered appropriate for each of their clothing and household usage (Ema, 1938; Kawakatsu, 1936; Takasawa, 1948). Similar examples may be found in many cultures during historic times. There is less documentation for prehistoric peoples and their textile utilization.

Very few studies have been made considering the question of the relationship between North American textile fabrics and social differentiation. Church (1984) studied Ohio Hopewell textiles from several mound groups. She pointed out that although textiles have not been considered in discussions of Hopewell mortuary ceremonialism, they have stylistic attributes that could be used to delineate levels of social integration and social differentiation among Hopewell burials, if used in conjunction with other artifacts. Other studies of Hopewell textiles by Hinkle (1984) and Carr and Hinkle (1984) investigated the levels of symbolic communication evidenced by various attributes of these textiles. Except for the inferential work of Sibley, Jakes, and Larson (1985) that utilized several Etowah fabrics, the communicative aspects of Mississippian fabrics have not been related to status differentiation.

Statement of Purpose

The purpose of the present research is to determine whether textiles were utilized to mark gradations of distinction in social
status for the Mississippians at Etowah. Mound C at Etowah
contained a large number of graves containing significant amounts
of high status grave goods (non-textile artifacts), including
copper plates, gorgets, and celts. This study uses textile
products from the purposeful discard (and not accidental or
haphazard) during mortuary practices to investigate status
differentiation. Since there are no studies to support the
premise that the textiles from these same burials are evidence of
high status, this research seeks to document attribution of status
through textiles by using non-textile items for comparison.
Though all the burials are viewed as having high status simply by
their presence in Mound C rather than the village area, it is
possible that there are gradations or levels of status among the
burials. That is to say that not everyone would have been
accorded the identical or equivalent treatment in social
interaction. The statistical procedure of correspondence analysis
is used to discover whether any gradations in status are evidenced
by the non-textile artifacts from the outer mantle burials of the
Wilbanks phase in Mound C. Then the textile evidence is analyzed
for evidence of differences in utilization among those same
burials. It is possible that textiles were viewed as strictly
utilitarian items and that all persons were buried with the same
types, level of quality, and amounts of textiles. Or they may
have had symbolic meanings associated with status roles and the
types, qualities, and amounts consumed by individuals varied with
their multiple statuses and concomitant roles.
Although Mound C yielded 203 burials during the Larson excavation (1971), this study considers only the fifty-one burials enclosed in the final mantle of the mound and designated as Etowah I by Larson. It is assumed that by confining the analysis to the burials in this mantle the sample should be limited to contemporary burials (Larson, 1971, p. 61).

Objectives

The research is guided by the following objectives:

1. To assign a level of status by means of correspondence analysis for the entire group of 51 burials, comprising the Etowah I phase of Etowah Mound C, using mortuary practices such as associated grave goods, supra-local and technic symbols, sex, age, degree of articulation for skeletons, and position of the remains (regardless of whether textiles are present or not).

2. To develop an instrument to measure: (1) the degree of complexity of the textile and its subparts; (2) ease of textile/garment fabrication; (3) degree of processing for raw materials; and (4) determination of function for communication of personal attributes and physical functions.

3. To evaluate all the textile and pseudomorphic evidence from the outer 51 burials of Etowah Mound C for degree of complexity, ease of fabrication, possible socio-technic and technomic function and occurrence of samples per burial. It is not known whether the amplitude of textiles included with the burial could be an aspect
of symbolic communication for the Mississippian culture as it has been for other cultural groups. The variation in number may be due to multiple bodies per burial. Differential survival due to the presence and close proximity of copper artifacts may also be a factor as with any consideration of archaeological material.

4. To perform a correspondence analysis using the level of status assigned by non-textile attributes in conjunction with the textile structural/function attributes to find whether there is separation of the burials into levels of status differentiation by textile evidence as well as that indicated by non-textile attributes.

Research Hypothesis

Burials which, by analysis of mortuary practices and supra-local and technic associated grave goods, evidence status differentiation also evidence a differentiated use of textiles included within those same burials.

Limitations of the Study

This research will consider only the fabrics and pseudomorphs-after-fabric from the outer ring of burials of Mound C at Etowah. Although there exist a number of samples of matting from the 51 outer burials, these will not be analyzed in the present study, but they do represent a source of information for future study of the Etowah people and their culture. If a pseudomorph-after-textile adheres to the matting, the pseudomorph
will be studied. These data will eventually be viewed with the fabric evidence from the other mantles of Mound C, currently under examination by Sibley and Jakes. But at the present time, generalizations using these data will be relevant only to the outer (Wilbanks) phase of Etowah Mound C.

Definitions of Terms

Pseudomorph-after-fabric -- "a mineralized structure formed through a petrifaction process in which the organic compounds of fibers have been replaced by inorganic compounds assuming the physical shapes of fibers, yarns, and fabrics" (Jakes & Sibley, 1984, p. 404).

Provenience -- "three dimensional locational data for the individual items within or on the matrix at the time of discovery" (Sharer & Ashmore, 1978).

Socio-technic -- "material elements having their primary functional context in the social subsystems of the total cultural system" (Binford, 1962, p. 219).

Technomic -- "artifacts having their primary functional context in coping directly with the physical environment" (Binford, 1962, p. 219).

Supra-local symbols -- artifacts, associated with the Southeastern Ceremonial Complex, which were widely distributed across the distinct cultures of the area and yet retained a common form (Peebles, 1974).
Material Culture -- "an information subsystem of patterned constellations of artifacts which outline the behavior patterns of a sociocultural system" (Clarke, 1978, p. 129).

Status -- "the worth of an individual as estimated by a group or class of persons" (Secord & Backman, 1964, p. 294).
CHAPTER II
REVIEW OF LITERATURE

Introduction

This study investigates the ways in which textiles and non-textile grave goods were utilized by late prehistoric peoples of the Mississippian period for the purposes of status differentiation symbolism during mortuary ritual practices at Etowah, Georgia. Mound C at the Etowah site was a mortuary facility, constructed in stages with burials included around the base of the mound, particularly during the final stage of formation (Figure 3). Inclusion within the mound appears to have been a function of holding a high status position upon the part of the interred or perhaps the attainment of a higher status by sacrifice upon the part of a lower ranked individual (Blakely, 1981; Larson, 1971). Whether the former participants' status was achieved or ascribed is discussed in greater detail later in the chapter.

The more immediate and specific question examined in this research is whether any gradations in status can be determined among the outer phase burials of Mound C and if textile products appear to function as markers for these gradations in rank. As
Figure 3. Modified Plan of Final Stages of Construction of Walls and Burials.
Brown (1981) has suggested, this orientation should prove more productive than focusing on the classification aspect of the social structure:

In terms of variations in rank, classification is a poor research objective because the gradations in scale of social hierarchy are more important than the type of hierarchy. For this reason, archaeological research should shift to models and methods for detecting gradations of rank irrespective of the institutional contexts in which it might be expressed. Rather than concerning ourselves with whether a particular burial population belongs to a prehistoric chiefdom (state), it is more rewarding to assess the degree of ranking and to determine the ecological contexts of social hierarchy (Brown, 1981, p. 28).

The organization of this chapter is by sub-topical areas. First there is a survey of background information about Mississippian culture as well as the general characteristics of burial practices during that period. The summary of information derived from the various excavations and research projects concerning the Etowah site is followed by a consideration of status, including achieved and ascribed orientations. Beginning with an explanation of the relationship of clothing to symbolic behavior, the discussion will move to exploring the textile itself as a symbol. Then a brief consideration of archaeological textiles as resources for the study of cultural practices or processes leads to a general description of Mississippian period textile evidence.

Mississippian Culture

The first use of the term "Mississippian" for archaeological description was made by W. H. Holmes in 1903 as he reported on a
ceramic tradition and its geographical location: "First in importance among the groups of ware [in the eastern United States] is that called in former papers [1884a, 1886] the Middle Mississippi Valley Group" (Holmes, 1903, p. 21). Since that time, various modifiers have been used with the term to emphasize either chronological [early, middle, late] or geographical [Middle and Upper] aspects. Most frequently the term has been used with regard to geographical connotations and applied to later prehistoric cultures of the Middle and Lower Mississippi Valley and the interior portions of the Southeastern United States as demonstrated by Spaulding:

In the strictest sense, the Middle Mississippi culture type is represented by a limited number of great sites situated roughly in an east-west belt from north central Georgia through northern Alabama and Mississippi to western Tennessee and Kentucky, southern Illinois, and southeastern Missouri (Spaulding, 1955, p. 24).

In looking for the origins of the Mississippian cultural development, Willey and others have stated that the Central Mississippi Valley was the core area for development and subsequent diffusion of the tradition (Griffin, 1967; Willey, 1966). It was a tradition that "transformed the lifeway" of Eastern North American Indians, beginning around AD 700 (Willey, 1966). Major changes from the preceding Late Woodland period (AD 400-700) in subsistence, settlement patterns, and social organization occurred during this period as the new lifeway expanded into other areas by migration along the bottom lands of major rivers (Griffin, 1967; Peebles, 1974). Wolf, among others,
has addressed the question as to whether the emergence of
the Mississippian "culture" was a product of population movement
(i.e., a single biological group), the diffusion of ideas without
migration, a widespread indigenous development or some combination
of all three processes. Support for each of the three separate
processes can be found by using various archaeological records.
Wolf (1977) reasoned that if migration were the only explanation,
there should be "minimal biological (genetic) difference among the
groups from various geographical regions in the Southeast" (Wolf,
1977, p. 31). Analyzing both metric and discrete traits for
skeletons from six Mississippian sites, Wolf concluded that the
samples "derived from at least four and perhaps six separate
populations" and that the hypothesis of a migration of a single
biological population was not supported (Wolf, 1977, p. 41). Wolf
admitted that his work was only a small start in testing this
hypothesis and hoped that more research would follow. Therefore,
though the question as to source of the emergence of the
Mississippian culture still remains to be debated, the net result
of the manifestation was three major regional expressions of
Mississippian culture: (1) Central Mississippi Valley with a
major population center at Cahokia; (2) Middle South or Tennessee-
Cumberland drainage area with major sites at Moundville and
Etowah; and (3) the Caddoan area of eastern Oklahoma, Texas, and
Louisiana with the major ceremonial center at Spiro (Walthall,
1977). The height of the culture was reached during the AD 1200-
1500 period.
Perhaps the most significant developmental change for the Mississippian tradition was the switch to intensive agriculture (Griffin, 1967, p. 189). Food resources obtained by hunting and gathering methods were still important features of subsistence, but the cultivation of domestic cultigens, maize (*Zea maize*), beans (*Phaseolus* sp.), and squash (*Cucurbita pepo*) became the major components of the diet along with three secondary crops of sunflower (*Helianthus annuus*), marshelder (*Iva* sp.), and gourd (*Lagenaria siceraria*) (Christenson, 1980, p. 50; Smith, 1978, p. 483). These items were more productive for supporting large populations by being dependable, seasonally abundant, and storable. Additionally, Mississippian populations continued to exploit a number of wild plant and animals which represented dependable and seasonally abundant resources requiring a relatively low level of energy expenditure: backwater species of fish; migratory water fowl; whitetailed deer, raccoon, turkey ("terrestrial trinity"); nuts, fruits, berries; and seed bearing pioneer plants, viz. *Polgonum* and *Chenopodium* (Smith, 1978). Christenson (1980) has proposed that the continued reliance on these wild resources was a response to the dietary deficiencies that can occur with heavy reliance on maize.

With a strong agricultural base, the settlement characteristics changed from the Late Woodland pattern. This pattern was one of population dispersal in smaller groups into the hinterlands from the riverine valleys. This was a markedly
different arrangement from the preceding Middle Woodland or Hopewellian period where settlements were typically founded along the major rivers and their tributaries. During the Mississippian period, major settlements were again established on the floodplains of rivers, where the rich alluvial soils could be easily tilled (Griffin, 1967; Healan, 1972; Larson, 1972). Smith (1978, p. 486) has proposed that the definition of "Mississippian" be based more specifically on the unique ecological niche (linear, environmentally circumscribed floodplain) that these populations occupied, rather than on the usual material culture traits.

Various forms of settlements, differing in size and compactness, were utilized as permanent year-round habitations (Steponaitis, 1986). The open plaza with mounds and individual household structures located on the perimeter became a distinctive characteristic of the large settlements (Chapman, 1980). Large mound-and-village complexes, encompassing one to ten hectares, supported hundreds of inhabitants inside wall and ditch fortifications (Brown, 1981; Steponaitis, 1986). These sites with a mound or mounds have been characterized as civic-ceremonial centers. Moundville, Alabama and Etowah, Georgia are examples of these stockaded and moated towns. Moundville was the larger of the two, covering three hundred acres. Etowah was protected by both stockade and moat, surrounding fifty-six acres. Some mound/village settlements lacked defensive earthworks. An example is the site cluster of Spiro, Oklahoma. Not all civic-ceremonial
centers had large resident populations; some were maintained only by a small group of year-round inhabitants.

Other types of settlements were nucleated villages without mounds, but they were fortified. Larson (1972) has suggested that the need for fortification was the result of the contest over the fertile lands for cultivation of maize and other crops as the population density increased. Carneiro (1981, 1983) also has proposed this hypothesis in his discussion of the role of chiefdoms in the transition to statehood. His term for the situation is "social circumscription," meaning that the people have no place to which to flee as a rival group becomes larger and challenges the control of the territory; therefore the group under duress must fight or submit to the challenger.

Still smaller settlements were homesteads, containing one to three houses. Special purpose sites continued to be established for such services as salt production camps (Muller, 1984; Yerkes, 1986), agricultural field houses (Prentice, 1983, 1985), and hunting bivouacs (Steponaitis, 1986). It may be found as has been indicated by the research into Inca social organization in Peru, that specialized sites were created in response to a complex system of interconnected communities each of which was no longer self-sufficient in their economic production (Marcus, 1987). Steponaitis (1978) argues for a system of organization where the larger ceremonial centers were the recipients of more tribute to the chief in the form of labor from those settlements nearby and, therefore, had larger numbers of mounds as well as mounds of
larger size. Hally (1986) has investigated the size of the Mississippian polities in Northwest Georgia and found that the sites containing more than one mound, clustered mound sites, represented polities that attained a larger size and more complex administrative hierarchy than those with only a single mound. The practical limit to a Mississippian polity size was determined to be the distance that could be traveled in a single day when measured in a straight line. Hudson and his colleagues had proposed a distance of twenty to twenty-five miles (Hally, 1986). Using sites from the Savannah period (AD 1250-1400), Hally's analysis pointed to a core territory of twenty kilometers in any direction from the primary administration center with variation dependent upon local topography, carrying capacity, and political strength or ritual importance of the polity in relation to its neighbors (Hally, 1986, p. 9). For the Etowah site Hally determined that it was the administrative center for a two-tiered political system with four other single mound sites (minor centers) within fifteen kilometers of Etowah. These findings support the descriptions made by DeSoto that he had encountered Indian provinces encompassing several hundred kilometers. These extensive systems could have grown by incorporating the core territories of neighboring polities. The result was widely separated mound sites and mound site clusters (Hally, 1986). Thus this development of a hierarchical system of settlements existed in strong contrast to the pattern during the Late Woodland tradition.
Most communities were linked by political, economic, and social ties into larger regional polities. Much debate has focused upon the determination of whether this organization constitutes the chiefdom level. Healan (1972) described Mississippian communities as well organized and of a social complexity comparable to Service’s estimation of chiefdom for Oceania (Service, 1962, p. 153).

Burial Practices in the Mississippian Period

Archaeologists generally use spatial relationships (Binford, Binford, Whallon, & Hardin, 1970; Goldstein, 1980, 1981), artifact accompaniment (Larson, 1971), and differential treatment of the remains (Saxe, 1970; Tainter, 1975) to indicate status differentiation. Many archaeologists have been working on the problem of what features or aspects of culture evident in artifactual remains may indicate social organization and status differentiation, in particular. Sahlin's (1983) and Binford (1971) both have looked at the social roles that individuals play in life and how these are reflected in treatment after death. Both have found indications through ethnographic studies that these roles are in fact evident in the ritural of mortuary practices. Binford found that the social complexity of a society was related to burial practices. Two terms, developed by Goodenough in 1965, came to be used in discussing the relationship of social roles with mortuary behavior - social identity and social persona. Social identity is the status or position that the individual
commands in life. Social persona is a composite of several social identities of an individual assumed in a specific social context. They reflect the organizing principles of the larger social structure. At death, a choice between conflicting social identities of the deceased is made by the living, so the social persona of the deceased includes the social identities that are felt to be important for reflection in burial treatment (Saxe, 1970).

In order to understand the changes in mortuary practices that reveal status differentiation during the Mississippian period, it will be helpful to review some mortuary studies for the preceding two periods, Middle Woodland and Late Woodland. Binford (1971) and Buikstra (1976) both found that in less complex societies status is often derived from biological attributes. Buikstra found that males which commanded the most extensive special features were of larger than average stature.

Blakely (1981) used the estimate of stature for the individuals of the two samples from Etowah to test the problem of status being ascribed or achieved. It was predicted that if status were ascribed at birth that the preferential treatment, including a superior diet, would result in greater adult stature for high status individuals than for subordinate individuals. Yet he found no difference for both the males and females in height between the village sample (subordinates) and the Mound C sample (superordinates).
The general assumption that underlies status differentiation studies using mortuary patterns is that those treated differently in life will be also treated differently in burial or after death. Douglass (1969) and Saxe (1970) have stated this position very explicitly. "Not only does death serve to activate the various levels of social organization, but on each level it occasions the widest expression of such relationships . . . to a significant degree -- it is through death that the social relationships of the living are defined and expressed" (Douglass, 1969, p. 4). Saxe's Hypothesis 8 refers to the spatial positioning of bodies in formal disposal areas (or permanent, specialized, bounded areas such as a cemetery) as indicative of differential or preferential treatment (Saxe, 1970). Goldstein restated Saxe's Hypothesis 8 as three subhypotheses for testing by a wider review of ethnographic data. She found that Saxe's Hypothesis 8 to be basically supported with the revision that not all corporate groups controlling critical resources through lineal descent will maintain a formal disposal area for the dead. But if the formal disposal area exists and if it is used exclusively for the dead, the society usually has corporate groups organized by lineal descent (Goldstein, 1980).

As Goldstein (1980) suggests in her study of Mississippian cemeteries in the Lower Illinois Valley, one first needs to take the data and see if there is spatial patterning and then determine if those in the different patterns have differential aspects of treatment. Aspects most often considered are the sex and ages of those interred. If the burial population has representation from
infants, adolescents, adults and old adults, as well as males and females (in roughly equal numbers), then there seems to be no preferential treatment by sex and age. The proportions of life cycle are compared to today's averages, and there should be a relationship between the decades of inclusion. Blakely (1977, 1980) and Buikstra (1976) explain these factors in detail in their publications.

Another feature in differentiation is the degree of articulation of the individual, whether all bones are present in original position or some missing though put in roughly the original position. The latter case may indicate that the body was interred after some holding and decay of tissues. Position of the skeletal remains is considered also -- flexed, semiflexed, extended, bundle, skull, and so forth. Orientation of the body to the grave as well as to other burials and groups of burials should also be sampled. The placement of the body in a special feature like a slab stone tomb or log tomb while other burials are in undefined pits or simple pits indicates preferential treatment. Additionally the numbers and types of burial furniture or associated grave goods indicate differential aspects of burial. There may be exotic ceremonial goods derived from trade, or functional items produced locally. Everyone may have the same items or there may be individuals with different or unshared items or with greater amounts of shared items. Braun (1977) and Peebles (1971) suggest that in order to make judgments or inferences about status differentiation from mortuary practices with accuracy, the
entire picture, (i.e., as many of the aspects as possible) from the data that exist must be considered.

The bioarchaeologist Jane Buikstra has conducted intensive studies of Middle Woodland (Hopewellian) burial populations in the Illinois River Valley. Illinois Hopewell burial practices differ from Ohioan practices. The latter has more evidence of crematories and charnel houses for treatment of the dead. By contrast, Illinois has little evidence of cremation activities. Perino (1973) found several of what he thought to be possible crematories but later changed his opinion and designated them tomb-like features. Buikstra (1976) similarly did not find wide evidence of cremation. Only a few examples, and then only portions, of the remains were charred. Remains, however, are associated with exotic goods like the copper as in the Ohio Hopewellian burials.

Much of the Middle Woodland interment was in mounds -- most on bluff crests and fewer on floodplains, according to Buikstra's work. Cemeteries were not routinely searched for at first, but several sites were studied for this characteristic, and none were found [for the sites with which Buikstra was working]; so Buikstra (1976) concluded that unbounded cemeteries were not distinctive of Middle Woodland in Illinois. Buikstra surveyed Gibson, Klunk, Dickenson, Kamp and Schild sites in an effort to define mortuary practices of this period - Middle Woodland. She found little evidence for bodies being taken to separate areas for processing. There were some disarticulation of remains, but it
appears to have been done close to the final mound burial. In trying to see a pattern for status differentiation among the sites evaluated, age and sex seemed to be the determining factors for different treatments. More males were in mound burials; and, if females were present, they seemed to be deriving status from the male. Age (i.e., older, more mature individuals) had access to the special features; though subadults were present in the mound burials.

Braun (1979) reevaluated the Gibson-Klunk mound burial data to question whether the status for Hopewellians was achieved or ascribed. His findings supported those of Buikstra that the data indicated that the status distinctions appeared to be based on achieved status with some function of kinship.

For Late Woodland, mound building subsides in some areas and in others it persists with the mounds being of lesser size (i.e., height). There is more evidence of remains being interred in villages, in midden deposits, or unbounded cemeteries. The bodies are less frequently interred with grave goods and those found are not of the exotic variety of the former Middle Woodland. The exception to this trend is the Weeden Island culture complex originating in North Florida, where mounds were built of good scale and contained pottery caches with many examples of zoomorphic images (Walthall, 1980). Most of the pottery in the cache, usually located on the east side of the mound, was symbolically "killed", that is having a hole punched in before or after firing (Jenkins, 1982). Typical Late Woodland pottery was
not very decorative. Usually plain or cordmarked surfaces each with few incised lines comprise the collections. Few forms existed. The Mississippian tradition with its wide variety of forms and modes of decoration stands in sharp contrast to Late Woodland pottery styles.

With Mississippian societies the amount of differentiation for mortuary practices increases. Mound building returns in large scale, including both the number of mounds and their sizes. Mounds are typically pyramidal and flat-topped for ceremonial buildings or public buildings to reside on top of the mound (Howard, 1968; Saunders & Merino, 1970).

At Etowah site Mound C has been excavated by Moorehead (1932), Thomas (1894), and Larson (1954, 1957); and more than 270 bodies have been recovered from the mound. Blakely and Larson have worked with 171 burials from Mound C, and Blakely has also analyzed some 50 to 70 burials from the village area associated with the site. Blakely and Larson disagree as to the significance of the status differentiation evidenced by the Mound C burials. Larson (1971) believes it to be only ascribed status, but Blakely (1977, 1980, 1981) argues that the society had both. The presence of both ascribed and achieved distinctions for social status indicate flexibility and greater social complexity than the presence of only one type.

At Etowah the superordinate group, to use the term as does Peebles, is buried in Mound C. The Wilbanks burials are in rectangular pits generally and located parallel to the outside
edge of the mound, just inside the palisade at the base of the mound (Hally, 1975; Larson, 1971). The population is bimodal, according to Blakely (1977), and, therefore, indicative of differential treatment. For example, few child or infant burials exist in Mound C, in contrast with the number of occurrences in the village sample. The decades most represented for males in Mound C are the 20s and the 40s; for females it is the 30s. Again this is a different distribution in comparison to the village population. Most exotic goods are found more frequently with males, young adults and adults. Women do possess some exotic goods (e.g., copper). Blakely asserted that the females seemed to be gaining status from their relationships to males (Blakely, 1977, 1981). There is some evidence of sacrifice in the Mound C burials. Village graves do not have the exotic goods accompanying them.

At Moundville the picture appears somewhat different as shown in a review of Peebles (1981) and Steponaitis (1978, 1983). There are mound burials but also a large number of burials just beside the mounds in cemeteries. Peebles, like Brown (1971), studied grave goods for supra-local and local attributes and related these to status differentiation. Orientation of the bodies by compass directions is significantly linked to differences in artifactual accompaniment. Disposition of the bodies is typically in the extended position, with a limited number of flexed positions.
Goldstein (1980, 1981) worked with two Illinois River Valley Mississippian cemeteries (Moss and Schild) and has investigated the relation of status differentiation and spatial patterning. She found that the cemeteries had more egalitarian treatment of the remains than would be predictable if the superordinate group was buried in the mounds. The disposal types most often represented ordering by age and sex (achieved status), though some ascriptive status was indicated by shell artifacts found with children. Schild burials suggested differentiation by craft by the occurrence of all individuals with antler staffs and/or other tool-making items.

When spiro mortuary practices were studied by Brown (1971), he found a pattern of increasing elaboration for mortuary treatment that corresponded with higher social rank. Four mortuary contexts were isolated: (1) open cemeteries; (2) burials in the tops and flanks of platform mounds; (3) burial in a charnel house or on mortuary floor; and (4) burials in accretional burial mounds "of what are thought to be discarded charnel house remains" (Brown, 1971; Goldstein, 1980). The lowest ranking individuals were articulated and typically buried separately. As status increased the degree of articulation decreased and the incidence of group burial increased. The highest ranking individuals were interred in charnel house structures. Spiro has proven to be the most elaborate mortuary system among all the Mississippian sites excavated to date.
The preceding discussion has focused on the information to be derived from mortuary analysis by archaeologists. An important question to be asked at this point is whether the transformations, intermediate between the mortuary practices and the archaeological evidences of these practices, have regularities such that one could predict a relationship between the practices and their archaeological observation. This problem was addressed by O'Shea (1981). He wanted to find out whether all status distinctions have an equal chance of being observed in the archaeological record. Studying both horizontal (clan, kinship) and vertical (social ranking) differentiation, O'Shea found that vertical distinctions were readily identifiable from mortuary remains but the horizontal distinctions were much more difficult to distinguish as patterning in the archaeological record. Change in the "social distinctions given symbolic recognition and in the means through which such distinction is achieved" can be expected over time. Using ethnographic data in relation to archaeological sites, the changes in mortuary practices could be predicted from investigation of the changes in the society in its temporal context of adaptive priorities and necessities (O'Shea, 1981, p. 51). In summary O'Shea suggested that "our perception of social organization derived from the analysis of mortuary remains may be distorted, but distorted in a regular and predictable manner" (O'Shea, 1981, p. 52).

We need more research in order to learn more about the transformations that occur in the burial context and what types of
information are subject to change or even loss during these transformations. Alternative sources of information such as skeletal analysis and textile pseudomorphs have been used to illustrate that differences in social status are reflected in the isotopic ratios in skeletal remains as the higher status groups ingested more meat than plant material or more structurally complex textiles accompanied higher status burials.

Etowah

The Etowah site, located two miles south of Cartersville, Georgia, has had a long history of exploration and excavation. Before the State of Georgia acquired the property and erected a museum, the land belonged to the Tumlin family and was used for farming. Designated as B1 for archaeological purposes, Etowah, with its three outstanding platform mounds, sits on the right (or north) bank of the Etowah River. One of the first descriptions of the site was published in the 1819 Silliman’s Journal by Reverend Elius Cornelius. The early reports of the Etowah site do not agree on the number and placement of the mounds within the bend of the Etowah River. A planned elevation made by C. S. Rafinesque was reproduced by Squier and Davis in 1848 (Figure 4a). This plan shows the three large mounds in a different configuration from the Cornelius depiction and indicates the ditch, or “moat”, as being continuous to the river. In 1849 White’s Statistics repeated the Cornelius dimensions for the site. Then in 1854 White reprinted the Silliman’s article in his Historical Collections of Georgia.
Figure 4. Early Maps of the Etowah Site.


b. Plat of Etowah by M. F. Stephenson.  
Source: Annual Report of the Board of Regents of the Smithsonian Institution for 1872, p. 421.
Two detailed descriptions appeared in 1873. Writing for the Smithsonian Annual Report for 1872, M. F. Stephenson indicated ten mounds and a "moat" which was described as being twenty to thirty feet deep (Figure 4b). This account reported upon the sandstone idol which was plowed up from the "raised platform on the east side of the highest mound [A]" (Stephenson, 1883, p. 421). Also discovered in the same location were translucent quartz discs measuring six inches in diameter, a stone ax, a mica mirror, a perforated "marzanella" shell, a "small native copper vessel," and "gold beads," which Stephenson believed originated from a local deposit of the metal (1883, p. 421). The second account for 1873 was that of C. C. Jones in his work Antiquities of the Southern Indians. The map by Jones has the three large mounds in their positions as seen today, plus four small mounds in a rather straight line, two small mounds outside the ditch and to the west, and another mound outside and to the east of the moat. This is similar to the Stephenson plan (Figure 5). Jones conjectured that the excavation of the ditch and adjoined pools were created for two purposes: first, to supply earth for mound building and second, to create "fish preserves" for the higher ranked personages dwelling inside the river/moat complex.

Colonel Whittlesey visited Etowah to prepare a report for the Western Reserve Historical Society in 1871. The surrounding land and mound summits had been cleared of forest and put under cultivation. His lecture notes and drawn elevations were later
Figure 5. C. C. Jones' Plan of the Etowah Site.
published in 1883 for the Smithsonian Annual Report for 1881. Cyrus Thomas again used the Whittlesey figures in his mound report published in 1887 (Figure 6).

The Thomas report of 1887 is significant, for it described the opening of one of the Etowah mounds and the resultant artifacts, which were sent from the field to Washington. Working for the Bureau of American Ethnography, Rogan excavated a "smaller" mound and uncovered eleven burials. The details for each grave were published in the Annual Report for 1883-1884 (Thomas, 1887). The mound explored by Rogan was labeled as "C" in both the Jones and Whittlesey plans. Figure 7 reproduces his stratigraphic elevation and Table 1, a summary of the burial characteristics. All burials were located in the lower layer of the central core and were of the stone box type, a box shape formed by stone slabs for walls and top.

Thomas noted in his report that more copper plates were received than indicated by Rogan's notes. A total of seven plates were derived from this excavation: two winged human figures, commonly referred to as "eagle dancers"; two ceremonial badge type; two "plume" type; and one bird figure. More than any other feature, these copper plates generated the continuing interest in the Etowah site. Only Illinois and Missouri had produced similar plates at the time.

Based upon this information, Thomas stated that the copper plates were not Central American or Mexican products and that the mounds were not the work of the indigenous Cherokees but rather of
Figure 6. Plat and Elevations by Whittlesey.
Source: Annual Report of the Board of Regents of the Smithsonian Institution for 1881.
Figure 7. Rogan's Drawings of Etowah Excavation.

a. Rogan's Vertical Section of Mound C. Rendered after Thomas (1887, p. 97).

Table 1
Burials from Mound C Excavated by Rogan

<table>
<thead>
<tr>
<th>Grave/Burial</th>
<th>Type of Grave</th>
<th>Type of Burial</th>
<th>Position</th>
<th>Age</th>
<th>Copper</th>
<th>Matting</th>
<th>Skin</th>
<th>Shell</th>
<th>Ceramics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Stone Box</td>
<td>Primary</td>
<td>Extended/Back</td>
<td>Adult</td>
<td>Plate/Under Head</td>
<td>Present</td>
<td>Present</td>
<td>Conch, Beads</td>
<td>Water Bottle, Vase</td>
</tr>
<tr>
<td>B</td>
<td>Stone Box</td>
<td>Primary</td>
<td>Extended/Back</td>
<td>Adult</td>
<td>Plate/Forehead</td>
<td></td>
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some group tied to the Cumberland Valley stone grave people and the mound builders (Thomas, 1887, p. 96). He believed further that the southeastern temple that was visited by DeSoto (as chronicled by Garcilasso) was the large mound [A] at the Etowah site. Though it is not clear from Thomas' description and Rogan's cross sectional view of Mound C, apparently only the southern side of the mound was opened from the top downward (Kelly, 1954; Moorehead, 1932).

By Thomas' 1894 report, Mound B and three smaller mounds had been opened at the Etowah site. Two small mounds were apparently located to the end of the central plaza, and one is described as being 450 feet north of Mound A, the largest mound (Thomas, 1894, pp. 309-311). Mound B was tested by a 12 foot square shaft down the center of the mound to a depth of nineteen feet. Nothing was found to indicate its use as a burial facility. Mound D, one hundred and fifty yards east of the largest mound [A], had a height of four feet above the current ground level but was determined to have had a nine foot height from the original ground level. It contained pottery fragments, decayed animal bones, some mica, and burned mussel shells and animal bones among red clay. Mound E, one hundred feet north of D, had a layered stratigraphy of soils, sand, and charcoal but contained no bones of either animals or humans (Thomas, 1894, pp. 309-310).

In the spring of 1890 W. H. Holmes visited Etowah and published his data in the Smithsonian Annual Report for 1890-91 (Powell, 1893). Evidently from the report, Holmes was primarily
interested in the great pyramid or Mound A. It was described as a "four sided truncated pyramid" (Powell, 1893, p. 30). The height was recorded as 63 feet and the summit diameter was 175 feet. Sides were steep with a slope of 45 degrees. Two irregularities intrigued the author. First was a graded way on the eastern side which extended out from the summit at a slope of 21 degrees and a width of twenty feet to reach the ground. Holmes believed this to be the actual roadway to the top of the mound. The second feature was on the southern side. Twenty feet below the height of the summit was a forty-five feet square platform that had a terrace about forty to fifty feet wide extending down to the base of the mound. He postulated that this anomaly was an addition to the mound in the process of construction (Figure 8). Holmes speculated that Mound A was the "stronghold of the village and that its top was inclosed by a stockade" (Powell, 1893, p. 30).

During the winters of 1925, 1926, and 1927, Warren K. Moorehead excavated at Etowah for the Phillips Academy, Andover, Massachusetts. His work, with additional essays on Southern prehistory, was published in 1932 in a text entitled The Etowah Papers. A large number of specimens from the one hundred and ten graves excavated from Mound C were taken back to the Peabody Museum in Andover. In shell beads alone Moorehead estimated a total of "several hundred thousand of beads" (Moorehead, 1932, p. 98). In "surface-found artifacts" (or as we now describe them -- surface-collected), the amount going to Andover totaled 12,000 items, and an additional 5,000 to 6,000 artifacts were sent
Figure 8. Mound A or Great Mound at Etowah, Georgia. Note the eastern ramp to the summit and the terrace on the southern side which terminates at a point twenty feet below the summit.

to educational institutions in Georgia (Moorehead, 1932, p. 2). A total of objects found in the excavation of the mounds B and C and the village area was not reported.

In excavating Mound C, Moorehead and his fellow investigators worked from the top of the mound downward to a base line which coincided with the current soil surface. After test pitting the mound during the first season, they worked from two large trenches running east-west and north-south. Most burials were found seven to twelve feet below the surface of the mound, but some were located at a depth of twenty-one feet. Because of this occurrence, Moorehead differed with the Rogan/Thomas estimate of the mound's height of fifteen feet in favor of being at least twenty-one feet (Moorehead, 1932, p. 78). Further, Moorehead proposed a two-stage building plan for the construction of the mound, since the first two-thirds of the final mound height contained one hundred ten burials and the final third was without burials (Moorehead, 1932, p. 66). After the three seasons' work, the mound was left at an elevation of seventeen or eighteen feet; for Moorehead believed that any excavated mound should be restored to within two-thirds of its original height, rather than being flattened, in order that it could stand as a testimony to the prehistoric Indians' abilities (Moorehead, 1932, p. 86).

Most of the burials excavated by Moorehead were stone box graves with the greater number of interments having been in the flesh. A few skeletons were disarticulated, with the bones cleaned of flesh before final burial. Moorehead attempted to
locate and identify the eleven graves formerly opened by Rogan but not removed. Since Rogan had settled in Cartersville, he could be called to the site for confirmation of such judgements by the Moorehead team.

A problem encountered by both Rogan and Moorehead in their studies of the Etowah site was that high waters from the Etowah River had upon several occasions washed away portions of the southern end of Mound C. Moorehead estimated in his report that thirty to forty feet had been so removed by flooding in 1880 and 1890 (Moorehead, 1932, p. 5). A second difficulty was the changes caused by cultivation to the mounds at the site and in particular to Mound C. Moorehead believed the Whittlesey description of C, as being somewhat square with a roadway on the east side to the summit, to be more accurate than the Thomas report of a rounded shape for the mound (Moorehead, 1932, p. 86). The site was heavily cultivated, including the sides and tops of the major mounds. In fact after each winter season's work the trenches and pits had to be filled in to allow for the planting of the coming agricultural season. This no doubt explains some of the problems in consistency and continuity for the grave descriptions within Mound C. Wauchope evaluated Moorehead's figures of grave positions as follows:
He [Moorehead] furnished two cross sections of the mound, showing the relative depth of graves, but in a structure of this type relative depth meant little, for the deepest graves were not necessarily the oldest; he did not show the remains in relation to the strata in which they lay (Wauchope, 1966, pp. 254-255).

In Moorehead's conclusion to The Etowah Papers (1932) he listed eight characteristics that distinguished Etowah from other prehistoric American cultures at that time: (1) excellence in ceramic art; (2) copper worked in "highest artistic development"; (3) sculpture in shell of "human figures, eagles, and other forms of life"; (4) problematical forms in flint -- "different in concept and method of chipping"; (5) monolithic axe; (6) effigies in clay; (7) stone images of superior quality to others found in ceremonial centers; and (8) "sarcophagi of stone" which had been chiefly discovered to occur within one hundred miles of Nashville in the northern Muskogean territory (Moorehead, 1932, pp. 166-167). These traits are now commonly referred to as "Southern Cult" or "Southeastern Ceremonial Complex" artifacts (Hudson, 1984; Wauchope, 1966, p. 2555; Waring & Holder, 1945).

Although textiles had been found that indicated that robes were printed and that the structural composition of the textiles was fine, the problems of disintegration perhaps prevented their being listed as a special cultural characteristic for Etowah. Willoughby described and illustrated the largest fragment found, "preserved by contact with the copper plate . . ." (Moorehead,
1932, p. 61) (Figure 9). This twined fabric is decorated with symbols associated with the Southern Ceremonial Complex. He designated its use as a mantle since DeSoto's chroniclers reported that both sexes wore mantles or shawls of spun nettle fiber or inner bark of the mulberry tree. "We have the circles enclosing a cross, and the cross with a central sun symbol. The garment seems to have been covered with a symmetrical arrangement of these two designs, each world symbol apparently surrounded by four crosses" (Moorehead, 1932, p. 61).

In 1940-1941 the University of Georgia conducted a North Georgia survey encompassing Bartow and Cherokee Counties, where the Etowah phase sites were most common and Etowah itself is located (Kelly, 1954). Similar to the problems encountered by Moorehead, the entire site was under cultivation when Wauchope and his team arrived at Etowah. They were given permission to dig in a very few square yards in the down river end of the ravine. This spot was ruined for stratigraphic study because of the river overflows (Wauchope, 1966, p. 255). The emphasis of this excavation involving four test pits was a ceramic census, though other artifacts were found. Wauchope presented his detailed results in Memoir 21 for the Society of American Archaeology in 1966. Again in 1948-1949 the University of Georgia ran a survey in conjunction with the Smithsonian Institution. Etowah was involved briefly, since it was in the located Allatoona drainage area (Kelly, 1954, p. 22).
Etowah Group: Mound C (Temple Mound). Fragment of cloth mantle preserved by contact with copper plate, Grave 19. According to De Soto's chroniclers both sexes wore mantles or shawls woven of twine spun from nettle fiber or the inner bark of the mulberry tree. This fragment seems to show that the garment was covered with a symmetrical arrangement of symbols representing the world, the four directions, and the sun, in the natural light color of the fiber combined with dark red, against a background of the latter color. About ½. The inset illustrates a small section of this twined-woven cloth slightly enlarged to show weave.

Figure 9. Willoughby Drawing of Etowah Fabric. From Moorehead, W. K. (1932). The Etowah Papers. Union City, Georgia: Charley G. Drake, page 64.
The next actual large scale excavation at Etowah was begun in the summer of 1953 under the direction of William H. Sears for the Georgia Historical Commission, the Department of State Parks, and the University of Georgia. Earlier in the spring of that same year, the Etowah main group and most of the village area enclosed by the moat had been purchased from the private owners, the Tumlin family, by the Georgia Historical Commission (Kelly, 1954, p. 23). By this time, the subsidiary mounds, barely perceptible as rises in the terrain to Moorehead, were even further reduced by cultivation of the area.

Sears outlined the goals for the season's work as twofold: (1) the establishment of a closely defined cultural sequence and (2) the investigation of the relationships between the site's structural features and their cultural period. Sears had previously worked out a cultural sequence and typology for the area based on pottery types found in the Allatoona Reservoir sites during the University of Georgia investigations held a few miles upstream from the Etowah site. Caldwell and Miller contributed to the sequence with data from their River Basin Survey program for the Bureau of American Ethnology (Sears, 1953).

Sears determined that he would have to conduct an extensive test-pitting program outside of the main mound structures in order to obtain more extensive data from the Etowah site. He expected that this program would provide information on the ceramic sequence to facilitate his definition of culture periods and their
relationship to the mounds. One square out of every fifty feet was staked out and excavated in the area bounded by mounds A, B, C and the river. The larger site area was not greatly surveyed since it was under cultivation. These five foot square pits uncovered stratified remains with indications of large midden areas. Four to five feet of alluvial fill had washed down from the Temple mounds into this "little plaza" lying between the mounds and the Etowah River (Kelly, 1954; Sears, 1953). Several feet below the level reached by the Andover Expedition, the ceremonial occupation level was found underneath the fill.

Indications were that Moorehead had accepted present ground level as aboriginal ground level in his work. If then part standing above modern ground level were restored, as Moorehead implies (1932, p. 86) then at least five feet of the original structure remained for excavation below present ground level. As it happened, Larson discovered that considerably more of it than five feet remained in his work in 1954, 1955, and 1956, and 1957. The ceramic sample, very small in all units, was predominantly Wilbanks, and contained Wilbanks sherds all the way to basic soil. The mound then would appear to be Wilbanks or earlier (Sears, 1957, p. 52).

Sear's analysis of stratified remains in conjunction with the ceramic sequence indicated that the mounds, Mound A and B in particular, were constructed during the Etowah III phase at the site. A portion of Mound C was certainly in existence at this period with completion occurring during the Wilbanks phase (Sears, 1953, p. 53).

In June 1954 two excavation units undertook work at Etowah. For the Georgia Historical Commission, Lewis H. Larson focused on completing the excavation of Mound C. For the University of
Georgia, A. R. Kelly with students surveyed the area along the eastern edge of Mound B and extended out into the plaza portion between Mounds C and B. The Mound B area produced several house sites of different cultural periods. Perhaps the most surprising discovery was made by the Larson team in 1955 in finding sixty new burials in Mound C, most of which were related to the Southern Cult. Moorehead had asserted at the end of his fieldwork that there might be a few more burials found but nothing of consequence. Again in 1956 fifteen more Southern Cult burials were uncovered.

By the end of the 1957 season a total of 210 burials had been documented by the Georgia Historical Commission (Larson, 1971). Most burials were of two types: (a) simple rectangular pits and (b) elaborate log tombs. For the log tombs, logs were erected vertically in a wall trench around the edges of the pit. Other logs were placed horizontally across the top of the pit to form a roof. The greater proportion of excavated burials was made following the additions of clay to the mound. These graves were into the lower edge of the mound just inside a post palisade surrounding the base of the mound, and parallel to the side of the mound. Those burials associated with the last phase of building the mound belonged to the Wilbanks phase and exhibited all the paraphernalia of motifs of the Southern Ceremonial Cult. Radiocarbon analysis indicated that these burials fall within a time range of AD 950 to AD 1440. They are all primary burials,
and most contained the remains of a single individual, typically in extended position (Larson, 1971, p. 61).

Not all burials in this group yielded grave goods. This could be the result of poor preservation or the fact that no items had been included at burial. Very few graves intruded into another pit. Larson concluded that either all the burials were made at one time or that the graves had been marked in some manner to make them known at the time of subsequent gravedigging (Larson, 1971, p. 64). "The marine shell, the Dover flint, the painted pottery vessels, the sharks teeth, the sea turtle shell and the mica were exotic" (Larson, 1971, p. 64). Significantly those burials of the same phase in the village area do not exhibit any of these exotic items. Most of the ceramic vessels, though rarely encountered in Mound C burials, were of utilitarian ware and of local manufacture, Wilbanks Complicated Stamped. None of the conch shell bowls from these burials were engraved, unlike conch shell bowls found at other Mississippian sites. Several of the copper articles were analyzed for possible origin. Traditionally it had been assumed that the Great Lakes-Michigan had been the source of native copper for the Southeast. Yet Hurst's and Larson's analysis illustrated that the copper in these items was not of Michigan origin, but was from the general area of northwest Georgia (Hurst & Larson, 1958).

The work accomplished by Larson in the late 1950's was the last major excavation at the Etowah site. The remaining unexcavated portions of the site are being preserved for future
archaeologists. The emphasis, at present, is to analyze the various artifact collections from the previous excavations, including in this instance the textile evidence from the Wilbanks phase burials.

**Status Theory**

Within any society every individual occupies positions that incorporate certain rights and responsibilities. These positions or offices are referred to as *statuses*. *Role* denotes the behaviors expected of the holder of a particular status. Ralph Linton, in his text *The Study of Man* (1936), first introduced these designations into systematic theory. In Linton's usage, status was neutral, merely referring to a "niche in life" (Murphy, 1979). But with time and additional investigation, status as a theoretical construct has become associated with rank and prestige (Secord & Backman, 1964). Goodenough (1965) believed that this connotation was the preferred meaning for status analyses and coined a new term for the aspect of the individual's sense of self that makes a difference in how his rights and duties are distributed in social transactions with others. That term is *social identity*. Goodenough makes clear that the duties or rights involved are owed to the social identity and not the person.

Some statuses or social identities are bestowed at birth or can be predicted to occur from birth. Linton described those positions as *ascribed statuses*. These statuses are almost impossible to change by the individual. Sexuality is one example.
At birth one is presented with a birth order position within the immediate family as well as a kinship status. Age statuses are examples of predictable status. From infancy an individual will progress to childhood, to teenage, to middle age to old age. The positions cannot be avoided except by death at some point along the continuum. Other ascribed statuses are race and skin color. Age, sex, and kinship are the only ascribed statuses found in every society. Other ascribed statuses may vary in occurrence from culture to culture. Caste is one example. It is not linked to any physical characteristic but is related to religious and occupational specialization. As in India, this type of status has been most difficult to change. The alternative has been to work for improvement in conditions for the entire caste. Inherited rank or office, such as king or queen, is granted at birth by direct descent.

For those positions attained or "wandered into during the vagaries of life," Linton introduced the term achieved statuses (Murphy, 1979, p. 41). This includes political, religious, and leisure statuses. Again there has been criticism of the phrase because it connotes striving and success. In actuality the positions may be accidental or something one falls into. The beggar has an achieved status as does the senator.

One can measure the development or evolution of a society by evaluating growth in the number of achieved statuses. Simple societies have few achieved status positions. Primarily these societies are organized around the ascribed statuses of age, sex,
and kinship. There are few political leadership roles, and those present are weak and directly inherited. Religious offices are transmitted through kinship. Even social groups are differentiated by kinship. Age and sex statuses are utilized for labor divisions (Murphy, 1979).

The two categories of achieved and ascribed statuses are not mutually exclusive (Murphy, 1979). They are in fact interwoven. Achievement may modify an ascribed status. For example, one may reach a particular age level for a status and yet refuse to assume the social role behavior of that status. Or sex roles may be used to achieve different levels of identity not dictated by biological aspects. Looking at the interplay from the opposite side, examples may be found of ascription influencing the attainment of achieved statuses. Age, sex, and kinship influence achieved statuses. A modern day instance is the American Presidency, where despite the fact that the only qualifications are an age of thirty-five years and native citizenship in the U.S.A., there are specific statuses never elected. Namely, no females, no non-whites, and no Jewish individuals have become President. Therefore many social statuses are a blend of both ascribed and achieved positions (Murphy, 1979).

Continuing the discussion of social identities, it becomes evident that all persons are holders of multiple statuses or social identities and are expected to play a number of different roles (Goodenough, 1965; Kaiser, 1985; Murphy, 1979; Secord & Backman, 1964). In most societies a single individual has the
fewest number of statuses when very young or very old. Most statuses occur during the middle years. The social system works as social identities find ways of adjusting to each other to form an organization of related parts. Personalities are integrated as the person relates all his statuses one to another to allow consistency of behavior. Within a particular social situation, the individual must select those social statuses relevant to the interaction from his total collection of social identities. Social persona refers to this combination of identities chosen for performance during any social encounter (Goodenough, 1965). Since many roles are played before the same live audience, those roles must be mutually compatible. Role conflict may occur when two statuses or social identities come into opposition for a consistent self image.

Role set is the term that describes the concept that a particular status or social identity has a category of other actors with whom it interacts (Murphy, 1979). The status category of son has a role set consisting of mother, father, other siblings, and other kin. In order to have privacy in one's life, the individual may operate to "segregate the role set," thus separating the audiences. This is most easily accomplished within mass societies where many statuses and roles are "functionally specific" (Murphy, 1979, p. 48). Many roles, such as clerk, postal carrier, or waitress, are narrowly defined and relevant to very specific types of social transactions. Other roles are "functionally diffuse" or associated with a large content which is
applicable to a number of different situations and to a greater depth of relationship. An example is the status of parent.

Of particular importance to this research project is the difference of simpler (often called primitive) societies from more complex societies in the twentieth century in the number of diffuse and specific roles present. The majority of roles in simple societies are of the diffuse type. Role segregation is very difficult to accomplish since one person interacts with the same individuals in a variety of social identities. A male in such a culture may function as leader of a kinship group, priest for that group, father and grandfather to the group's members, and finally worker during economic ventures with other kinship groups. When everyone's movements are known to everyone, special efforts must be made to help make the roles visible or achieve segregation. Ritual is often the chosen recourse. The person participating in the rite is believed to have acquired an altered state of being. Clothing and other accessories of dress are frequently used to bestow the desired separateness (Horn & Gurel, 1981; Kaiser, 1985; Roach & Eicher, 1973). Many societies use masks and special religious regalia to conceal identities of the participants in ceremonies. Kachinas in the Hopi culture of the American Southwest are actually community men performing the initiation rites for the boys from behind masks and costumes (Murphy, 1979).

Murphy summarized the effect of status and role on the individual as follows:
Any personality is, in part, the sum total of its social statuses and of the ways they are adjusted to each other. Our sense of self is largely a product of how we are regarded and treated by others. Since this in turn is heavily influenced by social roles, we are social products (Murphy, 1979, p. 49).

The individual occupying a status must keep his behavior within the boundaries of expected behavior for that role. If he were to go beyond those limits, then the "personal style" would be viewed as eccentric or deviant (Murphy, 1979).

Though the theory of symbolic interaction describes the ways symbols achieve meaning from social interaction, the present author sees it as complementary to and merging with the preceding role theory. Many statuses and roles are dependent upon the assistance of props for verifying the person's performance. These props are symbols describing and defining the role. Since the individual possessing and honoring a social status is sanctioned during the social interaction, the person assesses his being or self in light of these transactions. Therefore role theory and symbolic interaction theory complement each other as a researcher conceptualizes human behavior in social situations.

Viewing status positions as a continuum ranging from positions with little prestige or rank to those with the highest estimations causes the observer of human behavior to search for the visible signs or symbols for separation of the status. Social differentiation information may be obtained or supplemented by description of the mortuary ritual for prehistoric and historic societies (Braun, 1977, 1979, 1981; Buikstra, 1976; Tainter, 1975;
Trinkas, 1984). For Mississippian societies spatial patterning with differential mortuary treatment indicated various social levels. Commoners were interred in simple graves in community cemeteries or in close proximity to dwellings (Penny, 1985). Typically these burials were accompanied by simple grave goods. Higher ranking individuals were buried in public buildings on temple mound summits or near them at some location in the mound. These graves exhibited elaborate artifacts. This burying of high status lineages in special mortuary temples is similar to the function of charnel houses in the highly developed Middle Woodland period. DeSoto described temples on top of large platform mounds that contained remains of ancestors of the chief, kept in baskets and cared for by priests at the time of European contact (Penny, 1985). Thus ethnographic reports support the archaeological finding of differentiation.

At Moundville, Alabama, there was further differentiation in the cemetery areas where individuals were arranged in rows with elaborate and simple graves segregated into separate rows (Steponaitis, 1986). It has been suggested that the row orientations were reflective of kinship groups, possessing differential ranking.

Besides spatial patterning and elaboration of mortuary practices, archaeologists have investigated status differentiation using the burial populations by deriving data with regard to the diet and health status of the individuals. For example, analysis of Dallas phase skeletons from eastern Tennessee showed that the
elite males, who were buried in the mounds, were of significantly greater height. Elemental analysis of skeletal material indicated that this group had greater access to meat than commoners. Elite skeletons also exhibited less evidence of strenuous physical activity and fewer episodes of acute biological stress during childhood (Steponaitis, 1986). Similar trends seem to be resulting from the Moundville skeletal analyses conducted by Peebles and Schoeninger (1981). Using isotopic signatures from domesticated plants left in the composition of human bone materials, they found in preliminary testing that there was a difference between adults in the elite stratum and adults in the remainder of the burials. The elites had had more meat than commoners, who displayed larger amounts of strontium. Males and females, regardless of status, exhibited a difference in the same strontium signatures. It was hypothesized that the difference could be accounted for by the fact that since men were the hunters, they had opportunity to consume some parts of the kill before the meat was taken back to the settlement (Peebles & Schoeninger, 1981).

The difference in diet between the elite and commoners in Mississippian society as indicated by archaeobiological testing parallels the ethnographic reports of chiefdom behavior patterns by Service and Fried. Sumptuary laws that separate the elite and maintain their status include dietary regulations that assure the chief and his lineage a superior diet, both in quality and quantity. In several accounts of the Natchez of the Southeast,
DuPratz and Penicullt report examples where the great chief or Great Sun could demand provision when needed or had rights to the prime cuts of meat from any hunt (Peebles & Schoeninger, 1981).

Peebles and Kus have suggested a test for the presence of a ranked society as evidenced by the organization of burials (Peebles, 1977; Peebles & Kus, 1977). They believe that the simple test of the presence of richly accompanied child or infant burials does not really address the complexity of the situation. The authors suggest that the test should confirm the prediction of two independent dimensions of social personae to be reflected in the burials. The first dimension is the ascribed dimension, which "must be a partial ordering which is based on symbols, energy expenditure, and other variables of mortuary ritual, and which is not simultaneously ordered on the basis of age and sex" (Peebles & Kus, 1977, p. 431). This results in some representatives of all age groups (infants, children, adults) being found in every scale category except the highest. The highest class will contain only adults and usually only adult males. Since the status is ascribed, there will be incidences of some subadults having evidence of greater amounts of energy expended on mortuary ritual than some adults. Additionally some adult females will be ranked higher than some adult males and will share with males status-specific symbols. The number of burials per level in the ascribed dimension decreases appreciably as the top of the scale is reached.
The second dimension is the achieved. It "will be a partial order based on symbols, energy expenditure and other variables, which generally will be ordered on the basis of age and sex" (Peebles & Kus, 1977, p. 431). The relationships found will be that with greater chronological age there will be greater energy expenditure on the burial. Adult burials will be more complex than subadult burials, and subadults will have grave goods not found with adults, just as women will have items not shared by men. Binford's "socio-technic artifacts", symbols of rank and office for ascribed statuses, will not occur within the achieved social personae. The energy expended for the lowest level of burials from the ascribed will be higher than the energy amounts for the highest level in the achieved dimension. The number of persons in each level of the achieved dimension should reflect the "age and sex pyramid of the population through time" (Peebles & Kus, 1977, p. 432).

Blakely (1977) used this test in his bioarchaeological study of the Etowah skeletons from Mound C and the village cemetery. Peebles (1977) argued that Blakely's cultural interpretation of contrast between the mound and village individuals is incomplete because of the absence of the archaeological data that should provide the cultural variables for the burials. The goal of this research is to provide a study of a portion of the Mound C burials (outer phase) in conjunction with the cultural variables of mortuary treatment and associated grave goods, including textile and non-textile items.
Clothing and Textiles as Symbols

A symbol is an object that has referential meaning for someone which may not be directly related or intrinsic to the object itself (Horn, 1975; Kaiser, 1985). The symbol is visible, yet the meaning may be less tangible and even abstract. Clothing and its subset textiles are symbolic when they have meaning for perceivers. They provide information about the wearer and the situation in which he is involved. Clothing and appearance factors can help individuals understand one another by the cues they provide.

Clothing and appearance factors along with gestures, facial expressions, and body posture are specific forms of nonverbal communication (Kelley, 1969; Rosenfeld & Plax, 1977). In the area of nonverbal communication, Ray Birdwhistell has argued that in two person conversation, perhaps less than thirty-five per cent of the social meaning is actually exchanged in the verbal band. More than sixty-five per cent of the message is nonverbal (Harrison, 1975). The dimensions of the social situation communicated in the nonverbal range are specific messages about the individual, his relationship to other human beings, statements of status, the kind of relationship desired, the degree of formality or informality, and how close or distant the relationship will be (Harrison, 1975). The nonverbal area tends to operate at a very low level of awareness. A person may be receiving and transmitting messages, processing them, and modifying his behavior based upon those
messages without ever realizing that he is doing it. Investigations have focused on the role of the body in transmitting nonverbal messages and in the "artifactual codes" or objects used for both functional and communicative purposes. Some cues are pan-human or universal, such as facial expressions for indicating emotions. Other cues are dependent upon the group or culture and change in meaning from one group to another (Harrison, 1975).

As groups use clothing for nonverbal communication, clothing symbols reflect cultural norms and social values. Two types of information are conveyed by clothing and appearance factors: identity and definition of situation. Identity refers to aspects of the individual's appearance that give information about him to the perceiver, such as age, race, nationality, and marital status. Aspects of the social situation may be indicated by the degree of formality of dress and the mode of wearing. An individual may be wearing a dress shirt, which could define the situation as formal; but if it is worn without the usual accompaniment of a tie and with the sleeves unbuttoned and rolled up, the situation would be interpreted as an informal or work situation.

Kelley (1969) investigated clothing as nonverbal communication, in particular dress and hairstyles. He noted that dress has been used to communicate many aspects about the wearer: social class, nationality, region or tribe, age, marital status, and various official and divine statuses. His work focused upon the university community. While this group may not be viewed as
typical of the whole society, Kelley did find that political and social attitudes were associated with dress. Taylor and Compton's (1968) research disclosed that conformity in dress was related to the individual's desire to be accepted and liked rather than to the artistic aspects of dress. Similarly Rosenfeld and Plax (1977) found a relationship between dress and personality for both males and females.

Social situation also has been demonstrated to have an influence on subjects in clothing symbolism studies. For instance, when wearing a tie the subject was judged more intelligent, ambitious, and serious. When the social situation to which the person was going was added (i.e., interview or tutorial), the respondents' perceptions were modified (Kees, Williams, & Giles, 1974). The meaning of the symbol within the social group may be dependent upon the social context, because the meaning of the symbol arises out of the social interaction itself (Franklin, 1982; Kaiser, 1985).

The power of the symbol is dependent upon both the transmitter's and receiver's mutual understanding of the meaning (Kaiser, 1985). Interpretations of the transmitted message are made in light of the receiver's own values and experiences (Horn, 1975). Perceivers (necessarily receivers in symbolic interaction theory) also differ in their perceptual style or in what they pay attention to. Some individuals are very sensitive to details of dress and others to the bodily aspects of appearance (facial expressions and gestures). This "selective awareness" or fact
that everyone screens the cues seen and used is an extremely important factor in understanding subgroups or cliques within a society and between societies.

Bogatyrev (1971) in his study of folk costume formulated "grammatical rules" underlying the wearing of the costume and believed that these "costume signs" have to be learned in the same way that a language must be learned. Costume not only functions practically but also insures the wearer's adaptation to his environment's norms.

Because they are charged with signalizing and discriminatory functions, folk costumes of Moravian Slovakia cannot function without pointing out the differences in its member's social, economic, moral, nationalistic status, age, or occupation in a compulsory way, and this differentiation is essential for the community (Ogibenin in Bogatyrev, 1971, p. 20).

The analogy between clothing usage and language usage has been made in the literature by many authors. Bogatyrev (1971) pointed out that costume and language share the feature that individual consciousness links the sign and its value tightly. Just as grammatical categories are put together to convey an expression at the morphological level (person, number, tense, gender), individual costume parts display functions only if arranged in a compulsory way, in definite combinations (Bogatyrev, 1971; Davis, 1986; Horn, 1975). For Moravian Slovakian costume, the nosegay worn on a hat in combination with a particular type of trouser signals a recruit. If the same nosegay-decorated hat occurs without these trousers, the individual must be a groom or
best man. Similar examples may be found in other folk costume sets around the world.

The textile as part of costume is most certainly a part of the communicative process and frequently acts as a major symbol in the process. Non-ethnic based studies by Compton (1962) have investigated the role of fabric and color in personal dress. She found that people select fabrics and colors to help them conform to their ideal image of self. In the popular text by Vance Packard The Status Seekers, examples are included in the discussion of status symbols where not the design or style of dress was the symbol of status so much as the fabric from which it was made (1959).

The significance of the textile for functioning in the communicative process of social interaction as a symbol is further illustrated by the Ethiopian toga (Messing, 1960). The toga's general term shamma is not frequently used because other terms referring to the different textures of the material from which it is made are utilized instead. By textile used and method of draping, the toga is able to convey a variety of messages from a distance, including one's mood, status, maintenance of social distance, role assumed, and function about to be attended. Focusing upon the textile or fabric, borders and their width separate the freeholders from the serfs. Embroidery and motifs employed designate royalty and wealth. This type of communicative value for the textile and clothing is possible where
interrelations among persons are formal and ritualized (Bogatyrev, 1971; Murphy, 1979).

Another example of the language of the textile is the Guatemalan huipil or overblouse. In a general interest article for *Handweaver and Craftsman* (1973), the author indicates that each huipil is identifiable as to the village or region from which it comes. The identifying features are the woven designs and colors, more than the form of the garment, in which there is some variation. The huipil is brocaded and almost complete when it leaves the loom. In addition it may have embroidered sections. While there are variations in the quality of weaving and arrangement of designs, the textile's originating town can be readily identified. San Juan Sacatepequez weavers produce a fabric with purple, red, and gold stripes. The sister town of San Pedro Sacatepequez uses blue, red, green, and orange to weave patterned arrangements of Ceiba tees, monkeys, caterpillars, coyotes, and chickens. Yet this is not the full story on these symbolic textiles.

Tedlock and Tedlock (1985), in exploring the relationship between language and technology, utilized textiles of the Quiche Maya of Guatemala. They specifically desired to investigate the phenomenon of "intertext." This term refers to the fact that any language use occurs in a world where the meaning will be subject to different interpretations the moment they are entered into the context of previous meanings. Any new text has other texts speaking within it (Tedlock & Tedlock, 1985). The researchers
used computer analysis of the textile arts to show that
differences in the textiles of the Quiche Maya correlate more
closely with language and dialects than they do with geographic
distances between towns, the common conception described above.
The language syntactical paradigm of lines of speech as ABCB and
ABAC was also found in the weaving using color placement. ABCB
was equivalent to "purple, black; blue, black" and ABAC was
paralleled by "black, purple; black, blue" (Tedlock & Tedlock,
1985). Rhythm was evidenced in the positioning of framed panels,
and even syncopation occurred where colors and motifs broke into
"half measures and quarter measures," or where the motif was not
completed before a change in color was made.

It is hoped that from this brief account of fabric symbolism
in ethnic situation, the significance of clothing and its raw
material textiles has been clearly demonstrated. Its capacity for
conveying a variety of nonverbal messages has been documented in
contemporary society and recorded for more formal, ritualistic
folk societies. Whether textiles functioned in the same manner
for prehistoric societies remains to be investigated beyond the
ground-breaking work of archaeologists Church, Carr, and Hinkle
for Ohio Hopewellian cultures mentioned earlier.

Archaeological Textiles

The importance of textiles for the study of human societal
behavior was demonstrated when the Wenner-Gren Foundation for
Anthropological Research held a conference entitled “Cloth and the
Organization of Human Experience" in 1983. The purposes of the conference were to document the significance of textile traditions in the development of world societies and to promote the concept that textile traditions are as central to social and evolutionary theoretical development as agricultural production (Schneider & Weiner, 1986, p. 178). Textiles or cloth may be viewed from a variety of such theoretical orientations as an economic commodity, a critical object of social exchange, a vehicle of symbolic meaning, an instrument of political power, or an "objectification" of ritual intent. The cloth properties of malleability (it can be cut, shaped, and tied), labor of production (among the most labour-intensive crafted items) and aesthetics add particular strength to its usefulness as a symbol (Schneider & Weiner, 1986). Textiles may not only reveal and document, but also mask or transmit contradictory messages.

In the domain of prehistoric textiles, writers have approached textiles from all the above vantage points. An early advocate for the usefulness of textiles as evidence of past behavior was William Holmes, writing during the last quarter of the nineteenth century. Working with an aesthetic framework, Holmes (1888) analyzed North American textiles for the development of form and ornament in order to document the link between prehistoric and historic aboriginal populations. In a subsequent publication on Eastern North American textiles, Holmes again stated the case for textile analysis for archaeologists:
Until within the last few years textile fabrics have hardly been recognized as having a place among materials to be utilized in the discussion of North American archaeology. Recent studies of the art of the mound-building tribes have, however, served to demonstrate their importance, and the evidence now furnished by this art can be placed along-side of that of arts in clay, stone and metal, as a factor in determining the culture status of the prehistoric peoples and in defining their relations to the historic Indians (Holmes, 1896, p. 9).

Holmes further noted that fabric and cordage have different geometric systems and that these systems influence other styles of art directly or indirectly (Holmes, 1896). Thus he indicated that each medium of artistic endeavor has the potential for communicating unique messages.

Another observer/analyst of North American textiles, C. A. Whitford, worked with ethnological and archaeological collections which were housed in various American museums and which had been fabricated by tribes from the Mississippi drainage area and eastward. Whitford’s particular focus in 1941 was the identification of the vegetable fibers utilized in the production of objects. Whitford indicated that the fibers were part of the commercial interchange between the Northern and Southern tribes during the prehistoric period as well as the historic period. This conclusion is borne out by continued research into the Mississippian trade networks: Penny (1981) commented that, in addition to the long established exchange of copper and marine shell, finished objects circulated through the network. These included ornaments and tools (or implements) of aesthetic manufacture rather than utilitarian types for actual use (Penny,
1985). Though documentation of textile exchange for Mississippian societies has not been accomplished, ethnographic examples are abundant to illustrate the participation of cloth or clothing as significant exchange items for maintaining social obligations among individuals, families, clans, and communities (Cordwell & Schwartz, 1979; Kuper, 1973).

In 1954 Osborne and Osborne, writing in American Anthropologist, again called for the development and utilization of standardized treatment for various aspects of material culture, in particular fabric or textile remains. They complimented the work of Amsden (1936) and Emory (1952) in their development of terminology. The Osbornes then argued, as did Emory, that the use of definitions for yarns, cordage, twine, twist, and related terms set up by the American Society for Testing and Materials (ASTM) Committee D-13 would standardize and simplify the description of textile evidence for archaeologists. These definitions were included as a glossary at the completion of their comments. Excellent illustrations explained the intricacies of the relationship between twist and diameter of yarns. Namely that the helix angle remains stationary regardless of the diameter of the yarn. Reporting the turns or twists per inch in a yarn will be useful if given with the diameter of the yarn, otherwise the angle of twist is more significant (Osborne & Osborne, 1954).

The search for a standardized terminology for describing yarn and textile attributes continued until Emery published her monumental work The Primary Structure of Fabrics (1966). Emery
sorted out the confusing definitions for textile processes and products and then devised a workable outline of techniques that solved some of the overlapping problems of Holmes' seven categories, developed from the pottery impressions of fabrics. The constructions were duplicated in actual yarn and made the definitions very clear. More and more researchers are using Emery's designations and this clarifies the comparison of fabrics between studies, the very goal of Miner's first call for standardization. This research will use the Emery designations as well as the yarn descriptions from ASTM.

Many other researchers have continued the analysis of North American textile tradition. Except for the more preservative dry, hot climate of the American Southwest, much of North America has climatic and soil conditions not favorable for the preservation of organic textiles. Much of the textile evidence exists in a fragmentary state. One of the largest Mississippian collections of fragments comes from the Craig Mound at Spiro. Diverse in technique, the textiles have been studied in detail by Willoughby (1952), Brown (1976), and King and Gardner (1981). Other specimens from dry caves in Kentucky, Tennessee, and Arkansas have interested Watson (1969) and Scholtz (1975), while some wet site samples from the Northwest coast were studied by Croes (1976).

Even when the actual textiles have not survived, interaction of natural events, their characteristics may be studied from the impressions they have left in ceramic pieces or sherds. Holmes (1888) first used casts of fabrics to study their properties of
construction, and other researchers like Rachlin (1955) have followed his lead. Douglass (1944) identified several varieties of fabrication on Wisconsin ceramics, as did Evans in his study of Virginian pottery sherds. Four techniques of construction were identified by archaeologists Lewis and Kneberg, from the Hiwassee Island ceramic collection (1946). Not all of these textile impressions were of cloth. During the Late Woodland tradition in the eastern United States, a very common practice for pottery decoration was to use paddles wrapped with cordage to form impressions on the pot's surface. These cord impressions have been studied by archaeologists from direction of twist, angle of twist, and number of elements involved. Various theories equating twist direction and ethnicity have been explored (Carr, 1984; Maslowski, 1984; Petersen & Hamilton, 1984). In 1979 Hurley published a comprehensive documentation of the many variations of cordage to be identified from impressions on pottery.

The resources for textile information have been additionally expanded by the study of pseudomorphs—after-textiles. Biek first used the term during his analysis of a mineralized textile fragment on the surface of a brass ring from the Chertsey Abbey (Biek, 1963; Jakes & Sibley, 1983). Vollmer (1974) described the identification of pseudomorphs on seventy-four Shang period bronzes at the Royal Ontario Museum during the 1974 Irene Emery Roundtable Forum. Understanding the importance of the pseudomorph phenomenon, Jakes, Sibley, and Howard have been involved in both the physical and chemical analysis of textile pseudomorphs. From
the pseudomorphs, the prehistoric technology of textile production may be identified. Beginning with Tunnecunhee Hopewell pseudomorphs (Middle Woodland, AD 150) and continuing with Mississippian Etowah mineralized remains (AD 100), Sibley (1983, 1984, 1985) has demonstrated the usefulness of the pseudomorphs for deriving inferences about the social function of the textiles in the society. Jakes and Howard (1986a, 1986b) have begun to characterize the actual causes and mechanics of pseudomorph formation. The minerals formed during post-burial alteration of fabric in association with metal artifacts of bronze, iron, and copper replace the fabric components by filling the interiors of fibers and moving outward rather than coating the structure and then filling the inner spaces. The pseudomorphs on two Shang weapons were larger-than-usual filaments of silk, but this increase in size may have been occasioned by the physical factors occurring in the burial matrix during pseudomorph formation (Jakes & Sibley, 1984). Though larger, the minerals do replace fabric components faithfully, duplicating the shapes of fibers, yarns, and fabrics (Jakes & Howard, 1986).

Treatment of pseudomorphs requires caution just as do the actual fragile organic textile remains. Crumbling may occur with handling, and traditional methods reintroducing moisture content may result in dissolving the pseudomorph (Jakes & Howard, 1986a, 1986b). Another difficulty in studying pseudomorphs has been that the artifact may be viewed from only one side, since it usually cannot be removed from its metal host (Jakes & Sibley, 1984).
There are quite a few yarn manipulations that cannot be positively identified by viewing only one side of the textiles (Emery, 1966; King, 1972; Sibley, 1984).

Jakes and Sibley (1986) have found, as did Willoughby (1952) and Whitford (1941), that yarns in the Etowah fabrics are complex mixtures of vegetal and animal fibers. Hair and feather have been combined in yarns used for textiles in burials EMC #103 and EMC #109 (1984, 1986). Another burial, that of a young adult male in EMC #57, has produced a wealth of textile items. One artifact, EMC catalog #840, is a fabric bundle which, though appearing to be organic, has been demonstrated by Jakes (1986) to be partially mineralized to different degrees throughout the textile.

Mississippian Textiles

As has been mentioned above, the survival of Mississippian textiles has been sporadic, with the largest number of actual fragments coming from the Craig Mound at Spiro, Oklahoma. Except for the Etowah Collection of textiles and pseudomorphs, many Mississippian sites give evidence of textiles by indirect means, such as fabric impressions in pottery.

For the Mississippian phase at the Kincaid site in Illinois, Wilder (1951) derived textile information solely from impressions in pottery for two Late Woodland foci and one Mississippian component. The sherds from the Mississippian occupation of the site were shell-tempered, which has been a characteristic feature of Mississippian ceramics. Twining was the single method employed
for fabric construction. Three variations of this technique occurred: plain (Emery--compact weft or warp two strand), zigzag twilled (Emery--alternate pair), and octagonal openwork (Emery--spaced octagonal). The yarns involved in twining had various diameters, measuring from one millimeter to three millimeters.
The final twist was counter clockwise or "S" for joining singles into ply yarns and for creating cords from individual ply yarns. The fineness of the interworked web, or the distances between intertwining elements, had great variety. The occurrence of the spaced octagonal twining in a uniform mesh is significant for Mississippian textile characterization. Both Rachlin (1958) and Scholtz (1975) assert that the spaced octagonal interworking of elements is characteristic of Mississippian textiles since it first occurs during this period.

Rachlin (1958) first focused attention to the spatial and temporal distribution of octagonal openwork. The appearance is gauzelike, but its formation does not require a true loom, as do the gauze weaves. The true gauze weaves have been found in Peru, Mexico, and the American Southwest. These areas also evidenced gauzelike weaves similar to the southeastern twined octagonal openwork or weft wrap. Rachlin was not able to document any true gauze weaves for the Southeastern United States during any period covered by her research. While gauzelike weaves were absent through the Woodland periods, they did appear for Mississippian times. The 1958 report by Rachlin described the transposed warp (octagonal) openwork for the Spiro site in Oklahoma. She proposed
that the technique was "characteristic of the Tennessee-Cumberland aspect of the Mississippian culture" in southeastern United States, dated about AD 1200" (Rachlin, 1958, p. 70). Scholtz contributed further evidence for this hypothesis by finding another sample of octagonal openwork (TF10) from the Putnam Shelter (3WA4) during her analysis of textile evidence from the Ozark Bluff Shelters (Scholtz, 1975, pp. 133-134). Considerably more frequent in occurrence for these shelters were the transposed warp method without the more rigid octagonal formation of twisting elements.

Though Moundville produced a large number of burials, many of which were associated with the Southeastern Ceremonial Complex, no textile evidence has been described (Peebles, 1971, 1974, 1981). The reasons for this situation have not been made clear. Were textiles not included with the burial accoutrements; or did they fail to survive, despite the presence of copper items? Perhaps the textiles were transformed into pseudomorphs attached to the copper and subsequently lost in the cleaning of the copper?

Kuttruff has been analyzing textile evidence from Tennessee in the forms of actual fragments found in dry rock shelters and caves (1986) and from textile impressed pottery sherds from Mississippian period sites. In a report on Mound Bottom textile evidence from ceramic impressions (Kuttruff, n.d.), it was determined that the majority of fabric structures used to "decorate" the salt pan forms were twined. Four types were identified: (a) spaced two-strand S-twist weft twining; (b)
spaced two-strand, S-twist, alternate pair twining; (c) compact two-strand; and (d) structures employing more than one of these basic types. There was some reservation about the compact two-strand twining category, for the impression created by this technique is very close in appearance to warp or weft-faced plain weave fabric. Since impressions were used, no positive fiber identification was possible, but yarn characterizations were made. Most yarns were spun with only one example of a "combined not spun" element (Kuttruff, n.d.). Most elements used in the fabrication of the textiles were spun singles with a minimal amount being two-ply yarns. Counter clockwise (\) or S was the predominant direction of twist.

By far the greatest information about Mississippian textile arts comes from the Spiro and Etowah collections. It is beyond the scope of this review to give a detailed description of Spiro textiles. The reader is guided to consult the work of King and Gardner (1981), Brown (1976), Willoughby (1952), and Burnett (1945).

What is important in surveying the Spiro textile evidence is the variety utilized both in fibers employed and in fabric construction methods. Trowbridge in 1938 analyzed samples and identified rabbit hair (or possibly squirrel or rat), buffalo (or bear, dog, or horsehair), feathers, and vegetable fiber. By 1945, Whitford established the sources of the plant or cellulosic fibers as canebrake (*Brundinaria tecta*), pawpaw (*Asimina triloba*), bluestar or dogbane (*Amsonia ciliata*), and beargrass (*Nolina*
Further animal or protein fibers were identified as fox and muskrat. R. Laybourne analyzed the feather samples and determined that they were from the order of galliformes—large, heavy-bodied terrestrial birds including turkeys, quail, prairie chickens, and grouse (ptarmigans) (King & Gardner, 1981). Specifically the feathers appeared to be goosedown (probably Banta canadenses). These fibers were used in combination yarns where a cellulosic core yarn would support feather and hair binder elements.

Many of the Spiro textiles were colored. The color range included rose red, pink, yellow, gray, tan and brown-black (King & Gardner, 1981). The reds were derived from madder, according to Max Saltzman of the University of California at Los Angeles. The brown-black could have been obtained from walnut or pecan hulls, though no positive identification was possible (King & Gardner, 1981).

Dye coloration may be introduced at any of several points during the construction of the textile. Fibers may be of natural hue or dyed before spinning. The yarn itself may be colored, or the fabricator may wait and dye the structured textile as a whole by immersing the entire piece in a dye bath for a solid color or by restricting the penetration of color to specific areas, as in resist dyeing for a patterned fabric. Several fabrics described by Trowbridge exhibited negative type designs which have been characterized by King and Gardner (1981) as resist patterns.
Willoughby (1952) identified methods of fabrication along with inferred uses for the textiles. Both weaving and twining were used to produce fine polychrome cloth, mantles, shawls, and skirts. Techniques were twined twill, spaced two-strand twining, compact two-strand twining, countered compact weft twining, and checkered (plain) weave. The polychrome cloth had elements utilized to outline the design. In 1976, Brown published a comprehensive report on artifacts from Spiro, including the textiles. Both simple and two-ply yarns were used to produce alternate pair twining, spaced octagonal twined open work, twined open twill, oblique twill, transposed warp twining, plain and countered weft twining, and true weaving. Further functions identified were sacks, and headdresses or caps (Brown, 1976).

In working with copper objects from the Moorehead excavations, Byers (1962b) studied the cloth from Grave 19 which was illustrated by Willoughby's figure 34 in *The Etowah Papers* (1932). Byers' examination revealed that the construction was different from that described by Willoughby. Though Byers distinguished warp and weft directions, these terms have not been used in this discussion, because warp and weft directions are very difficult, if not impossible, to identify with any degree of surety for textiles displaying no selvages or finished edges (King, 1978; Sibley, 1982). Most of the vertical or passive elements were made of two-ply yarns with S-twist. Some of the elements, however, exhibited Z-twist with a tighter degree of twist and slightly thicker diameter. The effect of this
difference was to create a slight rib in the cloth although it
could not be determined whether the rib was an effect desired for
the edges of the cloth or an overall characteristic (Byers,
1962b).

The horizontal or active elements in the cloth from Grave 19
consisted of "two double-strand S-spun and S-twisted threads"
(Byers, 1962b, p. 595). Or, to use Emery's designations, the
fabric is created by two-strand weft twining by two-ply, S-twist
elements making a half turn around each other as they enclose the
passive elements in the Z direction.

Byers further studied a second fragment from Moorehead's
excavation of grave 18a, shown in figure 64 in The Etowah Papers
(1932, p. 95). Described as "lacework," it included areas of
spaced octagonal twining, eight-strand braiding, and compact two-
strand twining.

Of particular relevance to the present research are the
analyses conducted by Jakes and Sibley on several textiles from
Etowah Mound C burials (Numbers 57, 109, 103). An intriguing
example of Etowah textile processing is catalog number 1145 from
burial 103. This ten centimeter by fifteen centimeter fabric
incorporates feather in a complex yarn structure. The feather is
wrapped around a core segment of at least two two-ply, S-twist
yarns apparently positioned side by side rather than being twisted
around each other as in a cord construction. At several points,
another yarn, perpendicular to the core, functions as a binder to
secure the feather to the core yarns. Fiber analysis indicates
that the core is made of bast fibers. The feather is of the genus falconiformes (hawk), based on the barbules or nodular shapes along the shaft. Also participating in the wrapping structure is an unidentified hair fiber, indicated by its scalar structure. Clay encrusting the fiber hinders the classification of any method of interworking for the yarns of A (complex yarns) and B (fine, simple yarns) systems. The combination of feather and hair was necessary according to King and Gardner, who found that down (in their case turkey) was too difficult to spin without the addition of some ten to fifty per cent mammal hair (King & Gardner, 1981).

Another sample of study from Mound C is catalog number 840, burial 57. Chemical analysis reported by Jakes indicated that the fiber content was bast fibers from the nettle family; stinging nettle in particular was suggested (Urticaceae Boehmeria or U. Urtica) (Jakes, 1986). The fiber bundles rather than individual fibers were spun into two-ply yarns of fine diameter (System A = 0.175 mm and System B = 0.135 mm) and medium twist (25–45 degrees) (Sibley & Jakes, 1986). The fabrication of the textile incorporates four methods of twining: (a) compact two strand, (b) alternate pair, (c) spaced octagonal, and (d) spaced two strand twining (Sibley & Jakes, 1986; Sibley, Jakes, & Wimberley, 1986). Also employed was a four strand braiding technique. Though the fabric has been left in its crumpled state, fringed areas have been observed adjacent to areas of spaced octagonal twining. These fringe areas are difficult because the hanging yarns do not
fall from the lower edge but actually extend from openings within the compact twined edging (Sibley, 1986).

A third textile, previously described in the literature by Sibley and Jakes (1986), is catalog number 1156 from burial 110, Mound C. It is a twisted yarn of undetermined fiber composition and loose feather material, associated with a copper plate of the same catalog number. The yarn is a complex yarn type in which two singles have been plied by Z-twist to form a two-ply yarn. This ply yarn is then twisted with another two-ply, Z-twist yarn in a counter clockwise direction (or S-twist) to form a cord or "replied yarn." The diameter measures 1.55 millimeters. The feather is not at present attached to the yarn; and its relationship to the cord can only be guessed at.

Burials 103 and 110 from Mound C have been assigned to phases of construction earlier than the Wilbanks phase of the final mantle burials. This has been determined by their spatial position within the mound and the burial pattern of stone box graves rather than log tombs. Burial 57, because of its special location in the mound as an extension beyond the circular perimeter, has been more difficult to assign to relative chronology. Being a log tomb interment like those of the final mantle, it appears to be of a later date than the stone box type burials (Larson, 1971). Additionally this burial can be viewed as preceding the perimeter burials in time, since they are located beyond the tomb's extension. Actual chronological position for burial 57 will be dependent upon radio carbon dating for textiles
or wood from it and a representative sample from the perimeter burials.

Model for Cultural Inference

An important development in the study of archaeological textiles has been the cultural inference model proposed and tested by Sibley and Jakes (in press). This model is useful for studying both archaeological and historic textiles and for establishing a theoretical framework from which to draw inferences about those textiles about the cultural context in which they occurred. Springing from the concept of Wallace (1974) that textiles are the result of a series of interrelated choices, the model was developed to image or tie together these choices into a "continuum" from procurement to processing to distribution to consumption to discard. At each stage there are decisions made that determine the resultant textile product and superimposing itself is the idea of cultural context. What is chosen for processing into textile material is influenced by cultural ideals of what is suitable to use. One area may have animals which could provide hides for clothing or household textiles; but culturally the use of hides may be unacceptable and, therefore, unused though available.

The continuum of movement is further subdivided by description of the developmental spheres. The biologic sphere is the physical environment in which the materials grow. This environment leaves on the textile raw material tangible
impressions that can be helpful in indicating aspects of the growth of the material. For example, "brown" cotton of the Acadians will display color variations in its fibers due to the amounts and kinds of minerals in the soil where it is planted. Some areas will produce more of a yellowish cotton. Fiber length and degree of convolutions will be correlated with other soil nutrients, amounts of rainfall, and sunshine during the growing season. Laboratory analysis of organic materials found at archaeological sites, for instance, has developed such sophistication that charred remains of wood can be identified as to type of wood and more. So while biological dimensions seem simple, they are anything but simple.

The next sphere is the systemic, where the processing, distribution, and consumption of the item occur. "Processing" refers to cleaning of raw materials, formation of the individual (smaller) units into the larger textile, and end product. "Distribution" indicates how the item moves from the original "fabricator" to the consumer -- gift exchange, trade within the community, trade outside the local community, or tribute. "Consumption" describes the use to which the article is put -- wearing apparel, household textile, religious vestment, sacrificial item. Ultimately this progression will lead to discard after use.

The third sphere is the diagenetic or archaeological context. "Diagenetic" refers to the interactions between the environment and the item at the discard stage which occurs because of various
circumstances. It may be found lying on the surface of the earth if it had been simply tossed away or fell off a beast of burden, or it may have been buried in the soil or in a pile or rocks or forgotten in an attic. The effect of the environment is progressive on the textile, and thus it leaves an imprint to be "read" by the textile analyst.

Now that the model has been briefly described, it would be useful to apply it to a geographical region. The raw materials available to people vary with the physical environment. In Egypt, the flax plant was available for textile use since it produces hairlike and long length fibers (14"-20") which are more easily spun into yarn than shorter fibers. Though the climate is hot, the soil receives nutrient-rich moisture from the flooding of the Nile which enables the plant to grow well. Cattle are raised for food and also produce a fibrous substance or hide that may be used as a textile item. Other plants and trees are also available, but decisions were made that flax was processed into linen for textiles and papyrus was processed into paper. Linen fibers are extracted from the stem of the plant by retting, which leaves its imprint on the fiber, i.e., stream retted fiber color is different from dew retted fiber, the latter being more grey in color and the former more buff. Therefore, if the fiber was used without dye, the analyst may infer that the culture used one of these natural methods of processing and then be able to infer whether time factors were important to the people. For example, today some flax processors use sulfuric acid baths to break down the stems
more quickly. Flax is a fiber that is strong and durable because of its length, waxy content, and crystalline structure; but these features create problems for dyeing/coloration of the fiber. Dyeing weaver and spinning of flax requires more sophisticated technology. Among some guild members there is quoted an old adage, "you can't dye a plant with a plant." Basically this refers to the idea that cellulosic fibers often require an additional step of mordanting to produce easier dye pickup. Mordants are necessary to form a chemical bridge between the organic dye group and the molecular chains. Therefore much linen was not dyed in early Egypt. Color was accomplished by painting the textile where the pigments could be held on the surface and not have to penetrate the fiber deeply. Thus thought processes are evident as one looks at the color treatment of the item and whether the item was used for wearing apparel or not. Mummy wrappings were generally plain or with decoration limited to hieroglyphic writing.

Once the fiber is obtained, spinning is used to take the individual fibers and form them into a continuous stream or a yarn. Egyptians had the technology to perform this job; and although they had primitive tools compared to today's technology, the yarns were extremely fine. Unbelievably fine thread count fabrics have been found of 300 per sq. in., for instance. We have the technology to do such fine counts but our decision making choice is not to do so, considering the prohibitive cost of the resultant textile. Modern complex societies are concerned with
mass production of textiles; the ancient Egyptians produced and traded textiles, not in the large quantities required today yet perhaps of a proportional magnitude to the existing population of the Mediterranean area. Weaving involves choices: for instance, is a fine sheer linen desired for apparel or a coarser, durable mummy wrap? During classical Egyptian times linen was the preferred fiber. Wool was available but considered barbaric and unclean; so its use was limited to shawls and lower quality wigs. Wool items were judged to be not worthy of inclusion in the tombs of royalty (pharaohs). Finest materials were reserved for royalty and the coarser items and hides were utilized for the lower classes and slaves. Consumption factors are thus evident from what items were included in the tombs, as well as omissions, compared with known material/information about availability and processing.

The model proves itself most useful for taking the bits and pieces of textile information and integrating them into a form useful for information about the cultural context of the textiles.

Conclusion

The Mississippian Tradition of North America represents a significant level of social-cultural achievement. A period of cultural sophistication evidenced in the development of subsistence agriculture, new and more complex forms of artistic representations, a hierarchical settlement system, and participation in a wide spread trade network. Etowah, though not the largest of all Mississippian ceremonial centers, is still an
important site for study of Mississippian social behavior. Hally's work illustrates that Etowah was the organizational center for a cluster of smaller Mississippian settlements. The artifacts, including a large number of copper objects, engraved shell, monolithic axes, and textiles, point to the value of this collection of Mississippian cultural evidence for learning more about how the society functioned. Mound C at Etowah has been the focus of various types of analysis such as artifactual, textile, and bioarchaeological. This study attempts to view the artifacts in conjunction with their cultural context, using sociological ideas from role theory, symbolic interaction, and cultural inference. Textiles and clothing are capable of conveying nonverbal messages about many aspects of human behavior, including status differentiation.
CHAPTER III
METHODOLOGY

Introduction

The research into the functioning of textile and non-textile artifacts within Mississippian mortuary ritual for status differentiation involves several underlying assumptions which require discussion before the posing of specific hypotheses for testing. This chapter addresses these steps, as well as describing the collection of data, the development of a complexity rating instrument for textile evidence, and the data analysis techniques.

Assumptions

1. Persons who are treated differently in life are treated differently in death.

Since mortuary practices deal with a tangible object, or corpse, they frequently leave a material trace which becomes part of the archaeological record (Tainter, 1977). "As social ritual, mortuary practices are structured by social relations" (Trinkaus, 1984, p. 674). Studies using ethnographic data have illustrated that the patterning of mortuary ritual symbolizes the structure and organization of social systems, as well as the status
positions occupied by the members of the social system (Binford, 1971; Saxe, 1970). The death and burial of an individual may involve the entire range of persons who may have had social relationships with the deceased person during his lifetime. The form of the mortuary ritual is structured by two social components: the social personae of the deceased individual and the size and internal composition of the social unit honoring status responsibilities to the deceased. Binford (1971) has illustrated by his research that the elite will be entitled to a larger amount of corporate involvement during the mortuary ritual and to a larger degree of disruption of normal community activities for that ritual, because of their greater number of status positions within the ranked society. Tainter (1975) has proposed and tested the idea that the energy expenditure during mortuary ritual is calculable, since it is reflected in mortuary ritual attributes such as burial size, elaborateness of the place of interment, method of handling and final disposal of the corpse, and the nature of associated grave goods.

Formal analysis of mortuary remains has been shown to give information about past social structure (Brown, 1971). This technique subdivides the population on the basis of the presence or absence of all variables utilized. The method has been criticized as failing to account for the variability in importance for the attributes. Criticisms have also indicated that large, diverse data sets are difficult to handle and that the
classification may focus on variables which are idiosyncratic to
individual burials (Tainter, 1977). In trying to distinguish the
most satisfactory method of analysis for mortuary data, Tainter
(1977) compared the use of average- and complete-linkage cluster
analysis, factor analysis, and monothetic division using the sum
of chi-squares and the information statistic (an alternative
algorithm for monothetic-divisive classification). His results
indicated that the information statistic produced the best
results, and this coincided with Peebles' (1974) results using the
Moundville data.

In 1969 Ucko questioned the correlation of burial practices
with social status using ethnographic data. Clarke concurred that
the "interpretation of complex patterns of association and
covariation within burial data in terms of particular
anthropologically-recorded patterns of social organization is a
field mined with potentially circular arguments" (Clarke, 1978, p.
140). Yet Clarke believed that if the burial data were coupled
with settlement data, the social analysis of mortuary data could
be productive. A more recent assertion has been made and tested
by Goldstein that spatial analysis has greater value for deriving
social organization information and structure from mortuary
practices.

The purpose of the present research is not to propose a new
method of analysis but to build on the fact that all of these
methods have been demonstrated as being able to distinguish
differential treatment of persons in the mortuary practices of
societies; and, based upon ethnographic analysis, this difference in patterning reflects the status positions occupied by individuals during their life.

2. Clothing and textiles are part of the nonverbal communication subsystem of material culture.

Sahlins (1976) has proposed that culture is a symbolic structure. Culture defines its natural environment, and the culture's system of symbols is the means of communication between culture and nature (Wright, 1986). Culture filters its experience of the environment through its unique symbolic system and therefore limits the aspects of the natural environment that are recognized as being useful to it.

Clarke (1978), in discussing material culture as one of the five subsystems of culture, included textiles and clothing as part of the nonverbal communication subsystem of material culture. As discussed previously in the textile as symbol section, textiles and clothing have been repeatedly demonstrated to have the ability to convey complex nonverbal messages. Strathern and Strathern (1971) used ethnographic examples to support their argument that stylistic behavior in clothing or costuming symbolized status and affiliation with kinship, religious, political, and social groups. "Decorations, then, make statements about social values [especially] clan solidarity and prestige, and individual wealth and well-being" (Strathern & Strathern, 1971, pp. 172-173). Wobst (1977) similarly included clothing or dress in the development of
the information exchange model. The stylistic attributes of the
artifact transmit the message for reception by groups beyond
immediate membership groups to the socially distant. Testing his
model with ethnographic examples from Yugoslavian folk costume,
Wobst concluded that folk dress was an efficient method of
information exchange. Based upon Wobst's work, Carr and Hinkle
(1984) investigated information exchange and messages of
ethnicity, using Ohio Hopewellian textile evidence.

3. Fabric complexity by structural patterning or other
methods of decoration are related to levels of status
differentiation.

As has been discussed with mortuary practices, "the number
and distribution of different characteristics symbolized in
mortuary treatment [are] a function of the complexity and degree
of differentiation characteristic of [a] society" (Binford, 1972,
p. 239). If mortuary ritual attributes indicate status by their
complexity, it is logical to assume that other aspects of the
material culture could evidence the same symbolic relationship.

Wallace (as noted earlier) (1975) commented that a fabric
was a "product of a configuration of interrelated decisions" (p.
101). This refers to the fact that textiles function in a variety
of end uses within a society and that the actual use will affect
all the choices made during the construction of the textile.
Textiles suitable for heavy-duty cordage and bagging, for
instance, are not adequate for a use such as clothing. Sibley,
Jakes, and Wimberley (1986) illustrated this relationship of decisions to behavior associated with textile manufacture, distribution, and consumption using an Etowah fabric, catalog number 840. Function may be inferred from archaeological textile evidence as demonstrated by Sibley, Jakes, and Larson (1985). This analysis requires technical fabrication information and elemental analysis of the textile in conjunction with archaeological records.

In developing a theoretical framework for inferring behavior from archaeological textiles, Sibley and Jakes have built upon the concept of decision making to develop the idea that the number of decisions involved in the production of a textile is related in a direct proportion to the value of the textile. A textile requiring a large number of decisions during the production process will possess greater social value (Sibley & Jakes, in press; cf. Feinman, Upham & Lightfoot, 1981, for a similar framework applied to ceramics).

Other textile studies (Roach & Eicher, 1973) have pointed out the changes in complexity of textile fabrication in relation to the development of technology and social complexity. As the society increases in the development of technology with which to interact with its natural environment, the ability to produce finer, more complicated, and greater numbers of textile structures and (sometimes) garment forms increases. Social complexity or social ranking is additionally associated with developments in technology. As the social complexity of Medieval and Gothic
Europe increased, the production of varied textiles increased through the guild production process. With accelerated economic welfare, sumptuary laws were necessary to define the social levels based upon heredity and wealth and what textiles were considered appropriate for each level (Pistolese & Horsting, 1970). The usual relationship was a progression of complication of fabric type, elaboration of decoration, and amplitude of yardage with greater rank and wealth. Therefore this research will assume the relationship between structural complexity in textile fabrication and status differentiation.

**Hypotheses**

The research hypothesis stated in Chapter I is as follows: burials which, by analysis of mortuary practices and supra-local and technomic associated grave goods, evidence status differentiation also evidence a differentiated use of textiles included within those same burials. For testing, this broad hypothesis was restated as three hypotheses, each one representing a step in the research process and directly related to the objectives listed in Chapter I. Each hypothesis is listed and followed by a discussion. Acceptance of the hypotheses will be tested by use of correspondence analysis.

1. H₀ **Use of mortuary practice variables (such as energy expenditure on the burial, non-associated grave goods, socio-technic and technic items, and age and sex of skeletons) to determine status differentiation will reveal**
that all the burials in the outer phase of Mound C at Etowah are of the same status.

Discussion of Hypothesis 1

The assumption has been made that those individuals buried in Etowah Mound C were the superordinates of the society since they are interred in a special mortuary facility and not buried in the village cemetery or other unbounded locations. Visual inspection of the burial descriptions points out that not all the graves are of the same form and that burials do not have the same types and numbers of associated grave goods. These artifacts are indeed different from those accompanying the village burials. The question is what causes the difference in artifact accompaniment, as well as grave form, for these individuals. The relationship hypothesized here is that the differences are caused by differences in the social personae of the interred individuals. Though they are all buried in what appears to be a high status mortuary facility, the individuals may not have possessed the same number of social identities nor were these identities of equal "worth" in their society. There are ethnographic examples that social statuses or social identities are each given a place on a scale of value for that identity for that society (see Blau, 1970). Some roles are of a higher rank or estimation than others. A common example in modern American society is the difference between "white collar" and "blue collar" categories of work. Even within either category there are roles which possess higher
or lower evaluations of worth. For instance, a teacher may have a higher status than a clerical specialist, though both are white collar social identities. In simpler cultures, the differences may be biological, such as maleness having more rank than femaleness or older chronological ages over younger ages.

Previous research has demonstrated that factors such as the amount of energy expended upon the burial place, amount and type of artifactual accompaniment, and spatial patterning are indicative of differences in status for prehistoric and historic communities (Brown, 1971, 1981; Saxe, 1970; Tainter, 1975, 1977). The present research uses these demonstrated variables to search for variations or gradations of status among this population of burials.

Peebles (1974) and other investigators of the Mississippian manifestation in the Southeast have used the ethnographic descriptions of the Natchez historic period for comparison with the archaeologically derived cultural material of this period. In reports by the Spanish explorers and later French colonists of the mortuary ritual among the Natchez, there is evidence that persons could achieve higher status by volunteering themselves or their children for sacrificial death during the rites conducted upon the death of a great chief ("Great Sun") or one of his close kin. These lower rank individuals may then have achieved enough status to be interred in a formal disposal area different from that of his role. Peebles (1977) indicated that there were sacrificial burials in Mound C. It is hoped that the correspondence analysis
will delineate any such variation among the burials based on the idea that although these lesser ranked persons may have had mound burial, the total energy expenditure on their interment was considerably less than those of higher rank.

2. \( H_0 \) The outer phase burials in Etowah Mound C which have surviving textile evidence will have the same textile evidence as concerns fibers utilized, yarn structures, or fabric structures.

Discussion of Hypothesis 2

The perishable nature of textiles will cause some problems in the testing of this hypothesis. Just as the human skeleton, or any other vertebrate skeleton, experiences diagenetic transformation after burial, so will the textile be changed by the chemical and physical environment in the burial site, the properties of the enclosing sediment, and the properties inherent in the textile fiber itself (Jakes & Howard, 1986; Parker & Toots, 1980).

There may have been textiles and/or clothing included in all the burials in the last mantle of Mound C. Textiles in the form of a burial shroud may have been considered an essential feature of the burial process. Or, since clothing serves as an indicator of social status in many cultures, every corpse may have been dressed in specially prepared costume to convey the individual's rank. Fabric and/or garments could have served as forms of economic wealth; and, as such, large amounts of them placed in the
burial would attest to the societal worth and importance of the interred.

Often textiles do not survive the diagenetic processes after burial. At other times portions of the textile or a mineralized copy of the original textile (i.e., pseudomorph-after-textile) may survive if the textile was in contact with metal artifacts. A large number of the outer mantle burials have copper artifacts accompanying the burial remains. This has allowed the survival of textiles in some of these burials for use in this study. Discussion of the analyses of the textiles and derived inferences will have to consider the problem of differential survival for all the burials, but this hypothesis will be testing those burials that have surviving textile evidence.

If textiles were viewed in a utilitarian manner, then all burials should evidence the same forms and types of textiles. If textiles were utilized for their nonverbal, symbolic nature, then gradations of status could have been indicated by different forms and types of textiles. If the latter case were true, then one could predict that there would be differences among the textiles found within separate burials in the outer phase graves.

3. $H_o$: There will be a relationship of association between those burials exhibiting status differentiation based upon mortuary practices and those burials with fabrics made of more complex composition both in elements and structure.
Discussion of Hypothesis 3

Textiles in prehistoric societies in the Southeast have not been linked to status differentiation in previous studies. Church (1984) indicated that the Ohio Hopewellian textiles served as status markers. Hinkle (1984) and Carr and Hinkle (1984) investigated communicative aspects of Ohio Hopewellian textiles but focused on the ethnic relationship revealed by textiles. Sibley, Jakes, and Larson (1985) illustrated that textiles are a rich source of information about cultural processes of the society producing them and that one could possibly infer the function of the textile within the culture.

The purpose of this hypothesis is to investigate the use of textiles to communicate nonverbally the rank differences among individuals within the culture. The approach will be to find differentiation data by nontextile means and then to test whether textiles with greater or lesser complexity can vary in the same direction as do the nontextile artifacts used for status differentiation. Mississippian societies have been proven to be ranked societies, and whether the ranking involves two tiers or more is not important to this hypothesis. What is critical is that there are societal ranks of some number and whether gradations can be found between the levels or whether one gross level can be subdivided by smaller variations in status.
The Sample

The research sample for this investigation consists of attributes in three categories (viz. mortuary practices, textiles artifacts, and non-textile associated grave goods) from the fifty-one burials from the outer mantle of Mound C at Etowah. These burials typically occur outside the wall or trench set post lines or cane lines and are of pit or log tomb construction. Stone box graves are viewed by Larson (personal communication) as being an earlier style of burial; therefore, two stone box graves situated upon a trench line on the western side of the mound were dropped from the sample.

Sixty-one catalog numbers from the outer phase burials are associated with textiles, pseudomorphs-after-textile, and matting. Those catalog numbers with textile or pseudomorphic evidence were analyzed for textile attributes. Some numbers represented only cordage or very small fragments; others included multiple fragments under one catalog number. It was not necessary to draw a smaller sized sample from this population of catalog numbers because the size of the population was not prohibitive for the examination of each fragment in a reasonable amount of time.

The archaeological contexts for the burials were derived from consulting four types of records provided by Dr. Lewis Larson: field excavation notes for the burials, typed burial record cards, artifact record book, and photographs taken during the excavation of Mound C by the Larson team. These sources provided information for mortuary attributes such as age, sex,
proveniences for associated grave goods, skeletal disposition, and interment form. As a result of the poor survival of bone materials, age and sex data were not available for every individual interred within the outer mantle. A second resource for outer burials was a listing of age and sex data for the Mound C burials studied by Robert Blakely during his research on the bioarchaeological aspects of the Mound C population.

Data Collection

Each sample was checked visually under the microscope for the following attribute dimensions. These were: (1) fiber type (cellulosic, protein); (2) yarn type (single, ply, cord); (3) yarn twist direction (S, Z); (4) angle of twist (5°, 30°, 60°); (5) method of interworking (weaving, knitting, twining); (6) specific variation of that interworking method (plain weave); (7) number of elements per centimeter (density of yarns); (8) total size of sample; and (9) presence of attachments (beads, couched yarns on surface, feathers). The foregoing dimensions are used in classification of both modern and archaeological textiles. These dimensions provide basic characterization data of the textile evidence.

Textile analysis involved the use of non-destructive or minimally destructive techniques. A Bausch and Lomb SKVB-73 stereomicroscope equipped with a 35 mm Nikon FE2 camera was used for visual characterization of the textiles. A permanent photographic record of the observations was made at 1X, 4X, and
7X. Diameter and angle of yarn twist were measured by micrometer and protractor reticles inserted into the eyepiece of the stereomicroscope and recorded at 7X.

Coloration was originally considered as an attribute dimension to be judged, but the original survey of the samples indicated the majority of them to be dark in color with no design present. Only one catalog number included two samples that displayed possible dye or other means of coloration. This information was recorded on textile analysis sheets which included a summary of burial context information.

Possible function based upon fabrication attributes can be inferred by the interaction of attributes, such as compact twining versus spaced two-strand twining for use as a bag or pouch for carrying seeds and nuts. Yet the small size of many of the surviving textiles made it impossible to determine function with certainty.

For samples of adequate size, scanning electron microscopy (SEM) was used to determine physical structure of fibers in order to identify fiber types. One Energy Dispersion Analysis of X-rays (EDS) was performed on the Catalog Number 483, Fragment 9 because it appeared red in color. Since SEM and EDS involve removal and destruction of a portion of the sample, these techniques were used sparingly.

Specific mortuary practices (testing Hypothesis 1) included in the analysis were: whether the grave was occupied by a single person or multiple persons; sex; age (only distinguished as adult
or subadult since specific ages could not be determined for every individual); disposition of the skeletons; presence of associated grave goods; and the type of burial facility (log tomb or pit). Log tomb construction constituted the higher status interment since it required a greater energy expenditure in preparation. Age and sex attributes were important for their relationship to tests for ascribed and achieved status definitions. Disposition of the body categories were: extended on back, flexed (including partially flexed), long bones and/or skull, and bundle burial. These categories were related to the amount of special handling and energy expended upon the burial.

Non-textile associated grave goods were subdivided into three categories of socio-technic artifacts (supra-local symbols, supra-local artifacts, and local artifacts) and a fourth category of technomic artifacts. Table 2 lists the actual artifacts or representations in these four categories for the outer phase burials in Mound C. The supra-local artifacts were those belonging to the Southern Ceremonial Complex or Southern Cult (Waring & Holder, 1945; Peebles, 1974; Hudson, 1984). The local socio-technic items are those which had a more limited distribution than the supra-local symbolic items. Peebles found at Moundville that animal effigy vessels or parts of animals were the local symbols to differentiate individuals within a single site.
Table 2
Non-textile Associated Grave Goods Categories for Status Analysis

<table>
<thead>
<tr>
<th>Socio-Technic Artifacts</th>
<th>Technomic Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supra-local</td>
<td>Local</td>
</tr>
<tr>
<td>Symbols</td>
<td>Artifacts</td>
</tr>
<tr>
<td>Sun Circle</td>
<td>Monolithic axe</td>
</tr>
<tr>
<td>Cross</td>
<td>Ceremonial flint</td>
</tr>
<tr>
<td>Bilobed arrow</td>
<td>Conch shell bowl</td>
</tr>
<tr>
<td>Open eye</td>
<td>Stone palette</td>
</tr>
<tr>
<td>Eagle</td>
<td>Stone celt</td>
</tr>
<tr>
<td>Eagle warrior</td>
<td>Copper celt</td>
</tr>
<tr>
<td></td>
<td>Shell gorget</td>
</tr>
<tr>
<td></td>
<td>Copper gorget</td>
</tr>
<tr>
<td></td>
<td>Copper ear spool</td>
</tr>
<tr>
<td></td>
<td>Copper hair orna.</td>
</tr>
<tr>
<td></td>
<td>Copper rattles</td>
</tr>
<tr>
<td></td>
<td>Copper cov. bead</td>
</tr>
<tr>
<td></td>
<td>Copper plates</td>
</tr>
<tr>
<td></td>
<td>Copper cov. object</td>
</tr>
<tr>
<td></td>
<td>Chunky stone</td>
</tr>
<tr>
<td></td>
<td>Columnella pendant</td>
</tr>
</tbody>
</table>
Data Analysis

Correspondence analysis was used to find status differentiation relationships among the burials based upon mortuary practices, non-textile associated grave goods, and textile attributes. This type of analysis is a statistical procedure suitable for use with large data sets and with large data matrices that contain so many interrelationships that it is difficult to interpret at first sight. It does not build a statistical model but provides a procedure for statistical inference. The procedure reduces the number of dimensions by "singular value decomposition algorithm" (Lebart, Morineau, & Warwick, 1984). The data are analyzed by two forms of principal axes analysis, depending upon the type of data. For continuous or interval scale data, descriptive principal components are used; two-way correspondence analysis is used for categorical or nominal data. The procedure may be viewed as finding the best "simultaneous representation" of two data sets that comprise the rows and columns of a data matrix (Lebart, Morineau, & Warwick, 1984, p. 30).

Numerical results are eigenvalues and percentages of variance. Percentages shown on the axes represent the portion of variance explained by the axes. The center of gravity is located at the origin of the axes and corresponds to the average profiles of both sets of points. Those variables located near the center have undifferentiated distribution among all the variables. Eigenvalues are displayed in a histogram similar to the display of
the auto- and partial-correlations in time series analysis. Two series of coefficients for each axes, applying equally to rows and columns of the data matrix, are calculated. The absolute contributions indicate the proportion of variance explained by each variable in relation to each principal axis and the squared correlations indicate the part of the variance explained by a principal axis (Lebart, Morineau, & Warwick, 1984, p. 46).

Conclusion

The methodology of the research guided by three hypotheses is a stepwise process of analyzing mortuary and non-textile artifactual evidence for status differentiation levels by correspondence analysis. Textile evidence is then described by its fabrication attribution at the levels of fiber, yarn, fabric, and methods of decoration. Each textile specimen is rated for complexity with the assumption that complexity, representing the number of decisions made during the construction of the textile, is reflective of the social value or status of the textile. Next these ratings are analyzed using correspondence analysis for status differentiation among the burials based upon fabric complexity. Finally the levels of textile status are correlated with the levels of mortuary status to determine whether the two data sets vary in the same manner using correspondence analysis.
CHAPTER IV

PRESENTATION OF FINDINGS

The analysis of both non-textile and textile evidence from the fifty-one burials of the Wilbanks phase of Mound C at Etowah was guided by the three research hypotheses stated in Chapter III. Presentation of the results of the study will be ordered by referring to the appropriate hypothesis.

Mortuary Variables and Social Status

The first hypothesis proposed that all of the burials in the outer phase would reveal the same status level as measured by mortuary practice variables such as energy expenditure on the grave, associated grave goods (including specific categories of socio-technic and technomic items), and biological categories of age and sex.

Labor Expenditure

Consideration of the amount of energy or labor involved in grave preparation suggests that the log tomb would have taken much more labor than simple rectangular pits. The logs were placed vertically into trenches to form a rectangular shape and then the roof was formed by placing other logs across the opening. In the testing of his energy expenditure model for social
differentiation, Tainter (1977) has as his highest categories firstly the central log tombs with disarticulation and imported grave goods and secondly smaller log tombs for Hopewell/Late Woodland analysis. At Etowah Mound C during the formation of the final mantle interment facilities, energy expenditure varied considerably from no distinguishable grave outline to rectangular pits to log tombs. Table 3 lists those graves which were log tombs or partial log tombs. Thirteen (25.5%) graves were log tombs, with four of the thirteen not completely enclosed by timbers. These four had horizontal roof logs only. Four of the remaining graves had no pit outline in evidence (Burials 1, 21, 39, 43). It is important to note that most of the burials are separate and non-intrusive of each other.

Three of the thirteen log tombs contained multiple interments, varying from two individuals to four to six. Adults outnumbered the subadults being accorded this treatment. The results with regard to any priority of sex for this type burial is unclear. Four indeterminate designations obscure whether single males were more often given this status burial. Only one single has the log tomb type burial. The other females are part of multiple burials. Subadults do not have this type of interment as single individuals. With regard to the spacing of the log tombs, they occur with rather even distribution around the ring except for a cluster in the northwest portion where a roof-only burial, 42, is situated between the two complete log tombs of 40 and 46.
Table 3
Mound C Burials with Log Tomb

<table>
<thead>
<tr>
<th>Burials</th>
<th>Age</th>
<th>Multiple/Single</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3 Adult/1 S.A.</td>
<td>M</td>
<td>3 F/1 M</td>
</tr>
<tr>
<td>30</td>
<td>Adult</td>
<td>S</td>
<td>Ind&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>38</td>
<td>Adult</td>
<td>M</td>
<td>6 F</td>
</tr>
<tr>
<td>40</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td>42 (roof)</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td>46</td>
<td>Ind</td>
<td>Ind</td>
<td>Ind</td>
</tr>
<tr>
<td>47 (roof)</td>
<td>Adult</td>
<td>S</td>
<td>F</td>
</tr>
<tr>
<td>49</td>
<td>1 Adult/1 S.A.</td>
<td>M</td>
<td>2 M</td>
</tr>
<tr>
<td>53</td>
<td>Ind</td>
<td>Ind</td>
<td>Ind</td>
</tr>
<tr>
<td>58</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td>61 (roof)</td>
<td>Adult</td>
<td>S</td>
<td>Ind</td>
</tr>
<tr>
<td>67 (roof)</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
</tr>
<tr>
<td>74</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
</tr>
</tbody>
</table>

N = 13

<sup>a</sup>Ind = Indeterminate
See Figure 10. All of the log tomb burials, with the exception of Burial 61 and 47, had accompanying grave goods of both supra-local and local socio-technic types. Burial 47, a roof-only and female burial, had only the local socio-technic pearls and bead categories; and Burial 61, another roof-only burial of indeterminate sex, had only minimal bead accompaniment. With regard to the amount of energy expended upon grave preparation, the data indicate that variation in this characteristic existed for Wilbanks phase burials in Mound C.

Associated Grave Goods

Although Mound C was a special mortuary facility, not all of the individuals interred within the outer ring of burials were accorded the same treatment. There is great variety in the types and amounts of grave goods included with the skeletons. Table 4 indicates that ten (19.6%) of the fifty-one burials had no grave good accompaniment. Only half of these individuals could be classed by sex, but all burials were single interments and the majority (60%) were identified as adults. The degree of articulation of the skeletal remains varied from one bundle burial to five partially flexed to three with only long bones.

The first computer-run correspondence analysis utilized the associated grave goods in their entirety without collapsing categories (except for some bead locations on the body) in a pairwise analysis. The resulting matrix was fifty-one rows by sixty-one columns. Only three groups were clustered on the x,y
Figure 10. Modified Plan of Outer Burials
Redrawn from Larson (1971).
Table 4
Mound C Burials with no Artifacts

<table>
<thead>
<tr>
<th>Burials</th>
<th>Age</th>
<th>Multiple/Single</th>
<th>Sex</th>
<th>Grave</th>
<th>Articulation</th>
</tr>
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<tr>
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<td>S</td>
<td>M</td>
<td>Pit</td>
<td>Partial flex</td>
</tr>
<tr>
<td>21</td>
<td>Adult</td>
<td>S</td>
<td>F</td>
<td>Ind(^a)</td>
<td>Long bones</td>
</tr>
<tr>
<td>26</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
<td>Partial flex</td>
</tr>
<tr>
<td>33</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
<td>Partial flex</td>
</tr>
<tr>
<td>34</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
<td>Long bones</td>
</tr>
<tr>
<td>35</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
<td>Partial flex</td>
</tr>
<tr>
<td>36</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Ind</td>
<td>Long bones</td>
</tr>
<tr>
<td>39</td>
<td>Adult</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
<td>Bundle</td>
</tr>
<tr>
<td>56</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
<td>Ind</td>
</tr>
<tr>
<td>65</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
<td>Partial flex</td>
</tr>
</tbody>
</table>

N = 10

\(^a\)Ind = Indeterminate
axes plot: those with no artifacts (10 burials, see Table 4); those burials with statues and effigies, projectile points and bone tools, and the biological features of adults greater in number than subadults and males equalling females in the same burial (3 burials -- 1, 15, 25 -- with 25 only participating through projectile points); and a large group around the center of gravity with mixed socio-technic (including copper) and technomic items. By focusing only on copper items, designated by the author to have higher status than wood, bone, shell, or stone items, a group of thirteen burials results. Though Peebles (1971) listed copper and shell artifacts in the same category of ceremonial objects, there was differential possession of the items at Moundville. Adult females were the only individuals to have shell gorgets with the Southeastern Ceremonial Complex motifs. Adult males with supra-local artifacts and symbols (SECC) also had local symbols at Moundville. Therefore the researchers weighted copper and copper with SECC symbols as having greater status than shell items, even with SECC symbols. Only two complete shell gorgets, from separate burials, were recorded in the outer ring and a portion of one reported for another burial. The distinction with regard to sex is not clear at Etowah for one shell gorget with a single warrior was from Burial 27, a female, and the other with two warriors entwined came from Burial 19, sexed as an adult male. The broken gorget was listed in Burial 38, a multiple female burial. The majority of individuals possessing copper items were adults. Table 5 presents these burials. Two subadults
<table>
<thead>
<tr>
<th>Burial</th>
<th>Age</th>
<th>Multiple/Single</th>
<th>Sex</th>
<th>Grave Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>25</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>28</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>29</td>
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<td>M</td>
<td>Ind</td>
<td>Pit</td>
</tr>
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<td>31</td>
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<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>38</td>
<td>Adult</td>
<td>M</td>
<td>6F</td>
<td>Log</td>
</tr>
<tr>
<td>42</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
<tr>
<td>44</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
<tr>
<td>45</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>46</td>
<td>Ind</td>
<td>Ind</td>
<td>Ind</td>
<td>Log</td>
</tr>
<tr>
<td>48</td>
<td>1 Adult/1 S.A.</td>
<td>M</td>
<td>2M</td>
<td>Pit</td>
</tr>
<tr>
<td>49</td>
<td>1 Adult/1 S.A.</td>
<td>M</td>
<td>2M</td>
<td>Log</td>
</tr>
<tr>
<td>50</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>52</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
</tr>
<tr>
<td>53</td>
<td>Ind</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
</tr>
<tr>
<td>59</td>
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<td>S</td>
<td>M</td>
<td>Pit</td>
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Table 5 (continued)

<table>
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<th>Burial</th>
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<th>Sex</th>
<th>Grave Type</th>
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</thead>
<tbody>
<tr>
<td>64</td>
<td>SA</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
</tr>
<tr>
<td>67</td>
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<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
<tr>
<td>75</td>
<td>Adult</td>
<td>M</td>
<td>3 Ind</td>
<td>Pit</td>
</tr>
</tbody>
</table>

N = 19

Ind = Indeterminate
in association with an adult (Burials 48, 49) were accompanied by copper artifacts. Most unusual, Burial 64 was a single subadult burial (an infant or child) which contained one copper plate. Three of the burials were multiple (the two previously mentioned, 48, 49) and one involving six females (Burial 38) with large amounts of copper symbols badges, five copper celts, copper covered ear spools, copper covered wooden beads and copper covered "objects". The closest grave with similarly large amounts of copper is the single male burial of #67. Interestingly the higher status grave type of log tomb only occurred with six (31.6%) of the nineteen copper containing interments.

Those socio-technic artifacts with the motifs typical of the Southeastern Ceremonial Complex were designated by the researcher as having greater status due to their supra-local message than the more local socio-technic types of beads, carnivore teeth or mandibles, turtle bone, bird bones, or the single occurrence of sharks teeth (which must have been an imported item). As can be seen from Table 6, thirteen (25.5%) of the burials contained items with these SECC motifs. Not all of these motifs were worked in copper. Mica sun symbols and crosses and shell gorgets with eagle warrior figures were grouped in this class. As with the copper artifacts, the adult burials included artifacts with the Southeastern Ceremonial Complex symbols. One subadult in association with an adult male was accompanied by these motifs. Burial 64, which was either an infant or child in a single pit burial, had a copper plate with an SECC open eye design upon it.
Table 6
Burials with Southeastern Ceremonial Complex Symbols

<table>
<thead>
<tr>
<th>Burial</th>
<th>Age</th>
<th>Multiple/Single</th>
<th>Sex</th>
<th>Grave</th>
</tr>
</thead>
<tbody>
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<td>19</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>25</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>27</td>
<td>Adult</td>
<td>S</td>
<td>F</td>
<td>Pit</td>
</tr>
<tr>
<td>28</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>30</td>
<td>Adult</td>
<td>S</td>
<td>Ind</td>
<td>Log</td>
</tr>
<tr>
<td>38</td>
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<td>M</td>
<td>6F</td>
<td>Log</td>
</tr>
<tr>
<td>42</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
<tr>
<td>44</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>45</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Pit</td>
</tr>
<tr>
<td>46</td>
<td>Ind</td>
<td>Ind</td>
<td>Ind</td>
<td>Log</td>
</tr>
<tr>
<td>48</td>
<td>1 Adult/1 S.A.</td>
<td>M</td>
<td>2M</td>
<td>Pit</td>
</tr>
<tr>
<td>64</td>
<td>Adult</td>
<td>S</td>
<td>Ind</td>
<td>Pit</td>
</tr>
<tr>
<td>67</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
<tr>
<td>74</td>
<td>Adult</td>
<td>S</td>
<td>M</td>
<td>Log</td>
</tr>
</tbody>
</table>

N = 14
This fact seems to have relevance for the question of achieved versus ascribed status. Males were in the majority for having access to these symbols, yet one female (Burial 27) had a shell gorget with an eagle warrior representation. Only two of the thirteen burials were of the multiple type (15%).

Based upon information in the review of literature for Mississippian mortuary practices, it was expected that the higher status burials from the outer ring would be characterized by possessing all three of the characteristics of greater energy expenditure grave type, copper artifacts and the supra-local Southeastern Ceremonial Complex motifs and artifact types. Although a majority of individuals associated with these three features were expected to be adult males (with some level ofascriptive status operating as proposed by Larson, 1971), females were predicted to participate in the accumulation of some of these attributes as well as a few subadults. Log tomb individuals did not have a monopoly on the possession of copper articles nor on the supra-local SECC motifs and artifacts. Only six of the copper containing graves were of log tomb construction and three of these copper containing log tombs also had SECC symbolic representations. It would seem that if the triad of characteristics are indeed the higher status categories and as a group form the highest level of status, the scarcity of the triad occurrence would appear to support the premise. Of the three burials with the triad, one is a multiple, female, adult burial, one male adult, and one is of indeterminate age and sex. While no
subadult is in the triad, there are two burials with two out of the three characteristics; therefore, it may be that achievement may be functioning in the attainment of the triad. See Table 7. As can be seen from the above discussion, variation existed in the associated grave good accompaniment for the Wilbanks burials.

Biological Characteristics of Burials

In investigating biological characteristics of the Mound C burials, one finds only three instances of subadults having burials without accompanying adults. Burial 55 is a single subadult (age 15) in a pit grave with only shell beads at the ankles of the skeleton as grave goods. Burial 32 is a disarticulated adolescent with beads, conch shell, and pottery bowl. Burial 64 is another single subadult (infant or child) with a greater number of grave goods including more profuse beading of the body areas of ankles, wrists, shoulders; a negative painted pottery vessel, one small clay vessel, and a small copper plate with open eye design. The third grave with subadults is less definite; there may have been two bodies in the pit but only one body has been identified as an adolescent. No skull is evident in the drawing of burial by Stewart, only teeth at the lower left side. Artifact accompaniment was limited to beads at wrist and knees, one conch shell bowl, and one small pottery vessel found along the left arm. All types of pottery vessels were classed as technomic since they were small-sized, generally plain, and even the decorated vessels lacked special decorative features such as
Table 7

Comparison of Burials with Log Tomb, Copper, SECC Motifs

<table>
<thead>
<tr>
<th>Burial</th>
<th>Multiple/Single</th>
<th>Age</th>
<th>Sex</th>
<th>Log Tomb</th>
<th>Copper</th>
<th>SECC</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>20</td>
<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>25</td>
<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>27</td>
<td>S</td>
<td>A</td>
<td>F</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>28</td>
<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>29</td>
<td>M</td>
<td>A</td>
<td>Ind</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>30</td>
<td>S</td>
<td>A</td>
<td>Ind</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>31</td>
<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>38</td>
<td>M</td>
<td>A</td>
<td>6F</td>
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<td>X</td>
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<td>A</td>
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<td></td>
<td>X</td>
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<td>A</td>
<td>M</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>46</td>
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<td>Ind</td>
<td>Ind</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>48</td>
<td>M</td>
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<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>M</td>
<td>1A/1SA 2M</td>
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<td>X</td>
<td></td>
<td></td>
</tr>
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<td>S</td>
<td>A</td>
<td>M</td>
<td></td>
<td></td>
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</tr>
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<td>Ind</td>
<td>Ind</td>
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<td>S</td>
<td>A</td>
<td>M</td>
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Table 7 (continued)

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<th>Sex</th>
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<td>67</td>
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<td>A</td>
<td>M</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
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<td>A</td>
<td>M</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>75</td>
<td>M</td>
<td>A</td>
<td>3Ind</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

M = Multiple  
S = Single  
Ind = Indeterminate  
A = Adult  
SA = Subadult
legs and handles. The conch shell bowl, like all the others found in Mound C, was not inscribed. They may have had ceremonial use but since they were plain, their use for black drink ceremonies seemed less certain. Hudson (1979, 1984) and Milanich (1979) have stated that black drink ceremonial conch shell bowls were typically inscribed with SECC motifs. Reasons why Etowah is not parallel with other Mississippian ceremonial centers in this aspect should be investigated. Table 8 summarizes the subadult burials.

From the outer phase burials, sixteen graves had such poor bone preservation that no determination of sex was possible. Of the forty-eight skeletons able to be sexed, only eighteen are females (37.5%). Table 9 presents the distribution of these female skeletons. Females appear to be interspersed among the outer ring and do occur as individuals with socio-technic grave goods indicating some status. Whether this is achieved in their own right or ascribed by kinship and/or marriage has not yet been determined. Burial 38 with the six females and the preponderance of high status copper celts and copper symbol badges is intriguing. The burial 54 female is accompanied by stone celt as the sole grave good. This item is viewed as a higher status socio-technic artifact than beads and decorated shell items since it is a war article and other stone celts in the outer phase burials occur with males. More typically, single females have pit grave types and multiple burial females have log tombs. The multiple burial, 15, is unusual with its two large painted stone
<table>
<thead>
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<th>Burial</th>
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<th>Age</th>
<th>Sex</th>
<th>Grave</th>
<th>SECC</th>
<th>Sociotech</th>
<th>Technom</th>
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<td>Ind</td>
<td>Pit</td>
<td>0</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>55</td>
<td>S</td>
<td>15</td>
<td>M</td>
<td>Pit</td>
<td>0</td>
<td>X</td>
<td>0</td>
</tr>
<tr>
<td>64</td>
<td>S</td>
<td>inf/ch</td>
<td>Ind</td>
<td>Pit</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
Table 9
Mound C Burials Involving Females

<table>
<thead>
<tr>
<th>Burial</th>
<th>Multiple/Single</th>
<th>Age</th>
<th>Sex</th>
<th>Grave</th>
<th>Sociotechnic</th>
<th>Technomic</th>
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<td>01</td>
<td>M</td>
<td>3A&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2M/2F</td>
<td>Ind</td>
<td>1 cu cov</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 s.a.</td>
<td></td>
<td></td>
<td>discs</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>M</td>
<td>3 Adult</td>
<td>1M/3F</td>
<td>Log</td>
<td>3 two stone</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 s.a.&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>F</td>
<td>Ind</td>
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<tr>
<td>27</td>
<td>S</td>
<td>Adult</td>
<td>F</td>
<td>Pit</td>
<td>3 shell gorget</td>
<td>0</td>
</tr>
<tr>
<td>38</td>
<td>M</td>
<td>6 Adult</td>
<td>6F</td>
<td>Log</td>
<td>58</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>S</td>
<td>Adult</td>
<td>F</td>
<td>Pit</td>
<td>1 beads</td>
<td>0</td>
</tr>
<tr>
<td>47</td>
<td>S</td>
<td>Adult</td>
<td>F</td>
<td>Log</td>
<td>1 beads</td>
<td>0</td>
</tr>
<tr>
<td>54</td>
<td>S</td>
<td>Adult</td>
<td>F</td>
<td>Pit</td>
<td>1 celt</td>
<td>0</td>
</tr>
<tr>
<td>66</td>
<td>S</td>
<td>Adult</td>
<td>F</td>
<td>Pit</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

N = 10
<sup>a</sup> = subadult - female (14 years)
<sup>b</sup> = subadult - female (14 years)
statues as well as being the only interment where females outnumbered the males. These stone statues are kneeling figures of a male and a female. Various details are painted on the statues in black and white. This style of kneeling figure is found at other Mississippian ceremonial sites such as Spiro and Moundville and at numerous smaller town sites (Knight, 1986). None of the other Wilbanks phase burials have such items. Identified females comprise 28% of the total skeletal population and 21.5% of the fifty-one burials.

Based upon the table information, the first hypothesis as stated in Chapter III which predicted no difference in status among the fifty-one outer burials may be rejected. There is variation in mortuary treatment between adults and subadults and between males and females. Blakely's assertion that the group of individuals represented in Mound C is different from the normative age and sex distribution of the general population appears to be borne out by these data.

Textile Evidence

The second hypothesis stated that the outer phase burials in Etowah Mound C which have surviving textile evidence will have no difference in the textile evidence as concerns fibers utilized, yarn structure, or fabric structures. Or if textiles were viewed as merely utilitarian items by the Wilbanks phase Mississippians, then those deemed necessary for inclusion in burials would be fairly consistent in production characteristics for all graves.
Yet if textiles had a symbolic nature beyond function then those textiles chosen for grave accompaniment would display differences in the complexity of structural features. As can be seen from Table 10, the evidence of textiles generally accompanies the occurrence of copper artifacts. Only two burials of the ten having textile evidence, #22 and #30, display any textile evidence without copper grave goods. Burial 22 was accompanied by shell beads at the upper arms, wrists, ankles, and knees, a clam shell, and a pottery vessel of black filmed, quadrooned type. It was intruded by burial 15, but this burial did not have copper articles either. Burial 30 was accompanied by a scalloped stone disk, a small mica cross, columnella beads, shell beads at the legs, a polishing stone, a sun disk, conch shell, and two types of pigment. A second feature is the aspect of sex. Since the majority of copper artifacts were found with males, the discussion of status differentiation based upon textile evidence is biased toward males. The fact that burials 22 and 38 include textile evidence and are female burials gives some indication that females may have had textiles included in the burial furniture. Yet survival may not have been possible without the effect of copper in the burial environment.

As can be seen from Table 11, ten (19.6%) of the fifty-one burials have some type of textile evidence. The major proportion of evidence occurs as fiber and yarn, some of which appears to be partly mineralized. The samples are extremely brittle or friable. Actual fabric samples are limited. Except for catalog numbers 645
Table 10
Burials with Fabric/Fiber Evidence

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Copper</th>
<th>Log/Pit tomb</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>M</td>
<td>1</td>
<td>Pit</td>
</tr>
<tr>
<td>22</td>
<td>F</td>
<td>0</td>
<td>Pit</td>
</tr>
<tr>
<td>25</td>
<td>M</td>
<td>4</td>
<td>Pit</td>
</tr>
<tr>
<td>28</td>
<td>M</td>
<td>7</td>
<td>Pit</td>
</tr>
<tr>
<td>30</td>
<td>Ind</td>
<td>0</td>
<td>Log</td>
</tr>
<tr>
<td>38</td>
<td>6F</td>
<td>33</td>
<td>Log</td>
</tr>
<tr>
<td>42</td>
<td>M</td>
<td>3</td>
<td>Log</td>
</tr>
<tr>
<td>45</td>
<td>M</td>
<td>5</td>
<td>Pit</td>
</tr>
<tr>
<td>50</td>
<td>M</td>
<td>1</td>
<td>Pit</td>
</tr>
<tr>
<td>64*</td>
<td>Ind</td>
<td>1</td>
<td>Pit</td>
</tr>
</tbody>
</table>

N = 10

* Stewart's drawing included feather and textile in association with copper plate. The textile was not available for study, but the drawing appeared to show 2/2 basket or it could be interpreted as two-strand twining around double elements in opposite direction.
Table 11
Textile Evidence by Burial

<table>
<thead>
<tr>
<th>Burial</th>
<th>Cat #</th>
<th>Fiber</th>
<th>Yarn</th>
<th>Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>442 (box 1)</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>442 (box 2)</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>22</td>
<td>452</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>463 (box 1)</td>
<td>0</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>463 (box 2)</td>
<td>0</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>463 (box 3)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td>483 (box 1)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>483 (box 2)</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>482</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>535</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>38</td>
<td>567</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>38</td>
<td>570</td>
<td>3</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>567</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>38</td>
<td>614</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>38</td>
<td>558</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>42</td>
<td>645</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>643</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>647</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>637</td>
<td>1</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 11 (continued)

<table>
<thead>
<tr>
<th>Burial</th>
<th>Cat #</th>
<th>Fiber</th>
<th>Yarn</th>
<th>Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>706</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>735</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>50</td>
<td>734</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>64</td>
<td>911 (display, Etowah mus.)</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
and 643 from burial 42, the majority of the textile evidence consists of very small fragments of fabric. The usual size of the fragment is small, averaging 1.5 cm by .5 cm. Not only do the largest pieces of fabric come from burial 42, but the textiles are of a more complex nature. Although many of the samples were encrusted with clay and other materials, no attempt was made to remove these materials from the textile evidence.

Fiber Evidence

Table 12 presents those catalog numbers that had only fibers present and no yarn or fabric structures. Very little information about fiber traits could be obtained because of the friable and fragile condition of the fiber. Microscopy, selected as appropriate analytical technique for this exploratory study, provided information about the gross morphological features of general physical shape, size, and such properties as degree of fibrillation. Diameters of the fibers were recorded and the average of five measurements reported. Often the visual difference between fiber types was borne out additionally by difference in fiber diameters. At other times the visual difference was due to surface characteristics and color, not fiber thickness.

The majority of fiber visual evidence pointed to the utilization of plant type fibers and hair fibers. Feather was expected but was not identified in actual samples (burial records indicated feather adhering to copper plate for burial 64). The
Table 12
Fiber Evidence from Outer Phase Mound C Burials

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Fragment Number</th>
<th>Burial</th>
<th>Number of Fiber Types</th>
<th>Fiber Diameter (7X)</th>
<th>bar x</th>
</tr>
</thead>
<tbody>
<tr>
<td>442 (box 1)</td>
<td>F 13</td>
<td>20</td>
<td>1</td>
<td>.01 mm</td>
<td></td>
</tr>
<tr>
<td>442 (box 2)</td>
<td>F 1</td>
<td>20</td>
<td>2</td>
<td>.014 mm, .113 mm</td>
<td></td>
</tr>
<tr>
<td>442 (box 2)</td>
<td>F 32</td>
<td>20</td>
<td>1</td>
<td>.044 mm</td>
<td></td>
</tr>
<tr>
<td>442 (box 2)</td>
<td>F 41</td>
<td>20</td>
<td>1</td>
<td>.016 mm</td>
<td></td>
</tr>
<tr>
<td>442 (box 2)</td>
<td>F 44</td>
<td>20</td>
<td>2</td>
<td>.01 mm, .03 mm</td>
<td></td>
</tr>
<tr>
<td>483 (box 1)</td>
<td>F 14</td>
<td>28</td>
<td>2</td>
<td>.012 mm, .014 mm</td>
<td></td>
</tr>
<tr>
<td>483 (box 2)</td>
<td>F 6</td>
<td>28</td>
<td>2</td>
<td>.01 mm, .01 mm</td>
<td></td>
</tr>
<tr>
<td>535</td>
<td>F 10</td>
<td>38</td>
<td>1</td>
<td>.066 mm</td>
<td></td>
</tr>
<tr>
<td>535</td>
<td>F 17</td>
<td>38</td>
<td>2</td>
<td>.014 mm, .016 mm</td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>F 4</td>
<td>38</td>
<td>1</td>
<td>.034 mm</td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>F 27</td>
<td>38</td>
<td>1</td>
<td>.033 mm</td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>F 31</td>
<td>38</td>
<td>1</td>
<td>.033 mm</td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>F 33</td>
<td>38</td>
<td>1</td>
<td>.034 mm</td>
<td></td>
</tr>
<tr>
<td>614</td>
<td>F 5</td>
<td>38</td>
<td>1</td>
<td>.01 mm</td>
<td></td>
</tr>
<tr>
<td>614</td>
<td>F 7</td>
<td>38</td>
<td>1</td>
<td>.03 mm</td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>F 8</td>
<td>38</td>
<td>1</td>
<td>.02 mm</td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>F 24b</td>
<td>38</td>
<td>1</td>
<td>.01 mm</td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>F 29</td>
<td>38</td>
<td>1</td>
<td>.018 mm</td>
<td></td>
</tr>
<tr>
<td>637</td>
<td>F 34</td>
<td>42</td>
<td>1</td>
<td>.032 mm</td>
<td></td>
</tr>
<tr>
<td>Catalog Number</td>
<td>Fragment Number</td>
<td>Burial</td>
<td>Number of Fiber Types</td>
<td>Fiber Diameter (7X) ( \bar{x} )</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------</td>
<td>--------</td>
<td>------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>706</td>
<td>F 29</td>
<td>45</td>
<td>1</td>
<td>.06 mm</td>
<td></td>
</tr>
<tr>
<td>706</td>
<td>F 36</td>
<td>45</td>
<td>1</td>
<td>.043 mm</td>
<td></td>
</tr>
<tr>
<td>743</td>
<td>F 1</td>
<td>50</td>
<td>1</td>
<td>.016 mm</td>
<td></td>
</tr>
<tr>
<td>735</td>
<td>F 1</td>
<td>50</td>
<td>2</td>
<td>.01 mm, .02 mm</td>
<td></td>
</tr>
<tr>
<td>735</td>
<td>F 4</td>
<td>50</td>
<td>2</td>
<td>.01 mm, .022 mm</td>
<td></td>
</tr>
</tbody>
</table>

1 Not able to distinguish fibers for measurement
plant type fibers were characterized by fibers that were not
individualized but rather clumping into bundles of varying
diameter. Scanning electron photomicrographs in several cases
revealed the cellular of phloem or plant type fibers and the break
down of the bundles to fibrils. Photographs in Figure 11 are
examples. Even in consultation with a plant anatomist, the SEM
photomicrographs could not be identified consistently as phloem or
zylem type fibers. The cellular structural features were too
encrusted for differentiation. Fibers that appeared at 7X to be
plant types did not continue those characteristics at the 1000X to
5000X magnification. End views of the fibers also posed more
questions than providing answers. In phloem fiber the area
surrounding the lumen or central vessel should be porous, but in
all the examples the area was a smooth, solid filled area. Refer
to Figure 12. It may be that the mineralization process had
already begun by filling in the area. The only way to know would
be to perform further testing. Though polarization typically
should show a difference between the mineral and plant areas, the
degree of mineralization in these fibers causes poor light
transmission. Another possibility would be to try the techniques
used for separating organic plant material from fossil material,
but this is a destructive technique.

The hair fibers were identified by scale structures of the
surface of the fiber or the impressions of scales left in the
negative casts of the corrosion products. See Figure 13. No
Figure 11. Evidence of Plant Fibers.

   Catalog Number 42, Burial (Magnification 500X).

b. Fibrillation of Fiber Bundles.
   Catalog Number 484, Fragment 38
   Burial 28 (Magnification 5000X).
Figure 12. Transformations of Mineralization Process.

a. Broken Fiber End Showing Solid Areas.
   Catalog Number 645, Burial 42 (Magnification 1000X).

b. Broken Fiber End Showing Solid Areas.
   Catalog Number 643, Burial 42 (Magnification 5000X).
Figure 13. Scale Structures Identifying Hair Fibers.

a. Hair Casts.
   Catalog Number 734, Burial 50 (Magnification 2000X).

b. Higher Magnification of Hair Cast.
   Catalog Number 743, Burial 50 (Magnification 5000X).
final identification of source of the fiber was made at this time. A system for measuring the scales or scale casts for identification may be used in the future. Another problem in identifying archaeological specimens is that there is no comparative specimen collection to aid in pinpointing the fiber type. The Mississippians had recourse to a wider selection of fiber resources than are used today, and modern fiber examples may not be suitable for comparison to archaeological samples.

Yarn Evidence

Table 13 presents the occurrence of yarn structures as individual units for the outer phase burials. This listing does not include those yarns participating in a fabric construction. Six burials had yarn structures as part of various fragments of matting, copper or clay. The two burials with the greatest number of yarn fragments were burial 25 and burial 38.

The types of yarns found were singles, ply types (2, 3, 4) and cord or replied. The cord examples varied from two two-ply yarns being twisted together to three two-ply yarns replied. The single and two-ply yarns occurred most frequently and the S-twist was most usual for the ply twist, with the Z-twist typically used for creating the single yarns. In only two instances did the Z-twist ply two singles together. The diameters of these two-ply yarns were different and it was assumed that they were two
### Table 13
Yarn Evidence from Wilbanks Phase Burials of Mound C

<table>
<thead>
<tr>
<th>Cat #/Box</th>
<th>Fragment Number</th>
<th>Burial Number</th>
<th>Yarn Type</th>
<th>Yarn Twist</th>
<th>Yarn Angle (degrees)</th>
<th>Yarn Diameter (-7x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>442(1)</td>
<td>f3</td>
<td>20</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>0.89 mm</td>
</tr>
<tr>
<td>442(1)</td>
<td>f5</td>
<td>20</td>
<td>2 ply</td>
<td>s, z</td>
<td>15, 15</td>
<td>0.224 mm</td>
</tr>
<tr>
<td>442(2)</td>
<td>f27</td>
<td>20</td>
<td>single</td>
<td>z</td>
<td>10</td>
<td>0.032 mm</td>
</tr>
<tr>
<td>442(2)</td>
<td>f33</td>
<td>20</td>
<td>single</td>
<td>z</td>
<td>15</td>
<td>0.498 mm</td>
</tr>
<tr>
<td>452</td>
<td>f1</td>
<td>22</td>
<td>cord</td>
<td>z, s, z</td>
<td>45, 25</td>
<td>3</td>
</tr>
<tr>
<td>452</td>
<td>f2</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>452</td>
<td>f3</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>463(1)</td>
<td>f3</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>1.14 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f7</td>
<td>25</td>
<td>3 ply</td>
<td>s, z</td>
<td>60, 15</td>
<td>1.40 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f9</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>1.03 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f10</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>30, 15</td>
<td>1.40 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f11</td>
<td>25</td>
<td>4 ply</td>
<td>s, z</td>
<td>30, 15</td>
<td>1.46 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f12</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>10, 15</td>
<td>0.462 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f13</td>
<td>25</td>
<td>3 ply</td>
<td>s, z</td>
<td>45</td>
<td>1.28 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f14</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>15</td>
<td>0.416 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f15</td>
<td>25</td>
<td>3 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>0.32 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f17</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>1.13 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f18</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>1.49 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f20</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>10, 15</td>
<td>0.33 mm</td>
</tr>
<tr>
<td>463(1)</td>
<td>f23</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>5</td>
<td>0.27 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f1</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>0.914 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f19</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>60, 15</td>
<td>0.88 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f25/20</td>
<td>25</td>
<td>3 ply</td>
<td>s, z</td>
<td>45, 10-15</td>
<td>1.114 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f24a</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>30, 15</td>
<td>1.144 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f24b</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>30, 15</td>
<td>0.942 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f3</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>30, 30</td>
<td>0.683 mm1</td>
</tr>
<tr>
<td>463(2)</td>
<td>f4</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>45, 15</td>
<td>0.873 mm1</td>
</tr>
<tr>
<td>463(2)</td>
<td>f7a</td>
<td>25</td>
<td>cord</td>
<td>z, s, z</td>
<td>30, 30</td>
<td>0.736 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f7b</td>
<td>25</td>
<td>2-2 ply</td>
<td>single s, z</td>
<td>75, 30</td>
<td>0.176 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f28a</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>30</td>
<td>0.264 mm</td>
</tr>
<tr>
<td>463(2)</td>
<td>f28b</td>
<td>25</td>
<td>single</td>
<td>z</td>
<td>30, 15</td>
<td>0.272 mm</td>
</tr>
<tr>
<td>463(3)</td>
<td>f7</td>
<td>25</td>
<td>2 ply</td>
<td>s, z</td>
<td>15, 15</td>
<td>0.28 mm1</td>
</tr>
<tr>
<td>482</td>
<td>f2</td>
<td>28</td>
<td>2 ply</td>
<td>s, z</td>
<td>30, 15</td>
<td>0.97 mm</td>
</tr>
<tr>
<td>482</td>
<td>f6</td>
<td>30</td>
<td>cord</td>
<td>z, s, z</td>
<td>60, 30, 30</td>
<td>0.33 mm/s</td>
</tr>
<tr>
<td>482</td>
<td>f4a</td>
<td>30</td>
<td>2 ply</td>
<td>s, z</td>
<td>20, 10-15</td>
<td>0.942 mm</td>
</tr>
</tbody>
</table>
Table 13 (continued)

<table>
<thead>
<tr>
<th>Cat # (Box)</th>
<th>Fragment Number</th>
<th>Burial Number</th>
<th>Yarn Type</th>
<th>Yarn Twist</th>
<th>Yarn Angle (degrees)</th>
<th>Yarn Diameter (-7x)</th>
<th>Yarn Diameter (in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>482</td>
<td>f4b</td>
<td>30</td>
<td>2 ply</td>
<td>s,z</td>
<td>15,10</td>
<td>0.462</td>
<td>0.462 mm</td>
</tr>
<tr>
<td>614</td>
<td>f9</td>
<td>38</td>
<td>single</td>
<td>z</td>
<td>15</td>
<td>0.568</td>
<td>0.568 mm</td>
</tr>
<tr>
<td>614</td>
<td>f26</td>
<td>38</td>
<td>single</td>
<td>z</td>
<td>15</td>
<td>0.990</td>
<td>0.990 mm</td>
</tr>
<tr>
<td>614</td>
<td>f27</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,15</td>
<td>1.226</td>
<td>1.226 mm</td>
</tr>
<tr>
<td>614</td>
<td>f86</td>
<td>38</td>
<td>single</td>
<td>z</td>
<td>30</td>
<td>0.720</td>
<td>0.720 mm</td>
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<tr>
<td>570</td>
<td>f5a</td>
<td>38</td>
<td>2 ply</td>
<td>z,s</td>
<td>15,45</td>
<td>1.144</td>
<td>1.144 mm</td>
</tr>
<tr>
<td>570</td>
<td>f5b</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>50,10</td>
<td>0.838</td>
<td>0.838 mm</td>
</tr>
<tr>
<td>570</td>
<td>f12a</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>15,15</td>
<td>0.526</td>
<td>0.526 mm</td>
</tr>
<tr>
<td>570</td>
<td>f12b</td>
<td>38</td>
<td>2 ply</td>
<td>z,s</td>
<td>30,10</td>
<td>0.896</td>
<td>0.896 mm</td>
</tr>
<tr>
<td>570</td>
<td>f17a</td>
<td>38</td>
<td>2 ply</td>
<td>s,1</td>
<td>10,0</td>
<td>0.672</td>
<td>0.672 mm</td>
</tr>
<tr>
<td>570</td>
<td>f17b</td>
<td>38</td>
<td>2 ply</td>
<td>z,1</td>
<td>15-45,0</td>
<td>0.898</td>
<td>0.898 mm</td>
</tr>
<tr>
<td>570</td>
<td>f28</td>
<td>38</td>
<td>single</td>
<td>z</td>
<td>15</td>
<td>0.44</td>
<td>0.44 mm</td>
</tr>
<tr>
<td>570</td>
<td>f30</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>1.006</td>
<td>1.006 mm</td>
</tr>
<tr>
<td>570</td>
<td>f32</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,30</td>
<td>1.274</td>
<td>1.274 mm</td>
</tr>
<tr>
<td>570</td>
<td>f36</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>1.09</td>
<td>1.09 mm</td>
</tr>
<tr>
<td>570</td>
<td>f37</td>
<td>38</td>
<td>3 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>1.426</td>
<td>1.426 mm</td>
</tr>
<tr>
<td>558</td>
<td>f1</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>20,25</td>
<td>0.93</td>
<td>0.93 mm</td>
</tr>
<tr>
<td>558</td>
<td>f2</td>
<td>38</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,20</td>
<td>0.94</td>
<td>0.94 mm</td>
</tr>
<tr>
<td>637</td>
<td>f16</td>
<td>42</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>0.514</td>
<td>0.514 mm</td>
</tr>
<tr>
<td>637</td>
<td>f27</td>
<td>42</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>.588</td>
<td>.588 mm</td>
</tr>
<tr>
<td>637</td>
<td>f28</td>
<td>42</td>
<td>3 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>1.268</td>
<td>1.268 mm</td>
</tr>
<tr>
<td>637</td>
<td>f30</td>
<td>42</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,30</td>
<td>0.836</td>
<td>0.836 mm</td>
</tr>
<tr>
<td>637</td>
<td>f31</td>
<td>42</td>
<td>2 ply</td>
<td>s,z</td>
<td>30,10</td>
<td>0.59</td>
<td>0.59 mm</td>
</tr>
<tr>
<td>637</td>
<td>f42</td>
<td>42</td>
<td>single</td>
<td>z</td>
<td>10-45</td>
<td>0.23</td>
<td>0.23 mm</td>
</tr>
</tbody>
</table>

1. Not five measurements
2. This yarn appeared to be dyed
3. This yarn was too coated to analyze
different fragments and not two fragments of the same yarn (0.898 mm and 1.144 mm). The thickness of the yarns, as measured by diameter, had considerable variation. The twist yarn was a single at 0.032 mm at 7\% and the thickest was a two-ply with a diameter of 1.49 mm. The next largest yarn diameter was a four-ply yarn at 1.46 mm.

Twist angle was much restricted in occurrence. The angle of twist for forming single yarns varies from 0° to 45° with 10° and 15° being the most typical. Plying twist angles ranged from 15° to 60°, with the majority employing 30°. Greater twist, up to a point of diminishing returns, imparts greater strength to the yarn with an accompanying decrease in stretch and softness. Maximum strength for lesser effort can be achieved by the more complex yarn structure of cord or replied yarn. Joining singles into ply yarns reaches a point where the benefits are lost. Therefore a cord with three two-ply yarns may be stronger than a simple six-ply yarn. Cords were not frequent in this sample so it may be assumed that high strength yarns for particularly heavy duty tasks (like ropes) were not included in the burial textiles.

Three unusual samples were found in burial 25, catalog number 463 (Box 2). These were examples of yarns wrapping around a center core of cane matting. Two had single wrapping. Refer to Figure 14a. The other was a double wrapped fragment. (Figure 14b). The size of these fragments is quite small; the ability and patience of the creator to do this fine work is impressive. In
Figure 14. Cane and Yarn Fragments.

a. Double-wrapped Fragment.  
   (Magnification 7X).

b. Cane Fragments with Yarn Wrapping.  
   (Magnification 2X).
fact all of the yarns are very fine, which attests to the skill of
the yarn spinner.

Fabric Evidence

With respect to the variation in fabric construction in the
textiles of the outer ring burials, only three fabric construction
types were found, braid, oblique interlacing, and spaced two-
strand S-twining. The braid construction occurred in only two
burials -- 25 (pit, copper, SECC) and 30 (log tomb, no copper,
SECC) -- as did the oblique interlacing -- 20 (pit, copper) and 42
(log tomb, copper). Spaced two-strand S-twining construction had
six examples distributed over four burials (25, 38, 42, 50). All
of the burials showing fabric are adult male burials except for
the multiple female tomb of 38. The other female grave (22) with
textile evidence had only yarn fragments. Thus it appears that
males had the greater amount of textile material included in their
graves if one considers the fact that burials 22 and 30 had no
copper and yet still had some textile evidence surviving and a
difference in complexity was involved with yarn versus braid. It
is also of note that while burial 38 had large amounts of copper
present, the major portions of surviving textile evidence are at
the fiber and yarn level of complexity with only one example at
the higher level of structured fabric. Therefore, although some
differential survival has taken place at a level unable to be
quantified, the second hypothesis of no difference in textile
treatment of the burials may be rejected.
Textile and Burial Status Differentiation

The third hypothesis was one involving the correlation of the non-textile evidence of mortuary practices with the textile analysis for a more complete model of the materials used for marking status differences during the Etowah Wilbanks phase of Mound C. Though correspondence analysis did not break the burials down into more than three categories relating to mortuary treatment and associated grave goods, it is possible to discuss this hypothesis in light of the sub-categories reported in Tables 3-14.

Generally copper artifact data pointed to the priority of males for this accompaniment. While realizing that there was a significant number of indeterminate sex designations for this group of graves (33%), only half of the graves with Southeastern Ceremonial Complex items were involved in textile analysis, and only one of these did not have copper artifacts. Again, females appeared to have had less access to Southeastern Ceremonial Complex artifacts in their burials and of the socio-technic categories, in general, beads were most frequently their status markers. Multiple burials involving females were the exception, such as burial 38 being wholly female, and having large amounts of copper, Southeastern Ceremonial Complex symbols, and technomic artifacts.
<table>
<thead>
<tr>
<th>Cat #(Box)</th>
<th>Fragment Number</th>
<th>Burial</th>
<th>Interworking</th>
<th>Yarn Twist</th>
<th>Yarn Angle</th>
<th>Sys A/cm</th>
<th>Sys B/cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>442(1)</td>
<td>f2</td>
<td>20</td>
<td>Oblique interlacing</td>
<td>$S(\backslash),Z(/)$</td>
<td>30,10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>463(1)</td>
<td>f4</td>
<td>25</td>
<td>Braid (6 strand)</td>
<td>$Z(/)$</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>463(2)</td>
<td>f5</td>
<td>25</td>
<td>Braid (3 strand)</td>
<td>$S(\backslash),Z(/)$</td>
<td>30,15</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>463(3)</td>
<td>f8</td>
<td>25</td>
<td>Spaced-2-strand-S</td>
<td>$S(\backslash),Z(/)$</td>
<td>45,45</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>463(3)</td>
<td>f9</td>
<td>25</td>
<td>Spaced-2-strand-S</td>
<td>$S(\backslash),Z(/)$</td>
<td>15,10</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>482</td>
<td>f2</td>
<td>30</td>
<td>Braid (3 strand)</td>
<td>$Z(/)$</td>
<td>10-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>f1</td>
<td>38</td>
<td>Spaced-2-strand-S</td>
<td>$S(\backslash),Z(/)$</td>
<td>30,10</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>643</td>
<td>-</td>
<td>42</td>
<td>Oblique interlacing</td>
<td>$S(\backslash),Z(/)$</td>
<td>30-45</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>645</td>
<td>-</td>
<td>42</td>
<td>Oblique interlacing</td>
<td>$S(\backslash),Z(/)$</td>
<td>30-45,15</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>647</td>
<td>-</td>
<td>42</td>
<td>Spaced-2-strand-S</td>
<td>$S(\backslash),Z(/)$</td>
<td>30,15</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Cat # (Box)</td>
<td>Fragment Number</td>
<td>Burial</td>
<td>Interweaving</td>
<td>Yarn Twist</td>
<td>Yarn Angle</td>
<td>Sys A/cm</td>
<td>Sys B/cm</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>--------</td>
<td>--------------</td>
<td>------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>735</td>
<td>f2</td>
<td>50</td>
<td>Spaced-2-strand-S</td>
<td>a)S(),Z() 45,15-30</td>
<td>4*</td>
<td>2*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b)Z()</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>735</td>
<td>f3</td>
<td>50</td>
<td>Spaced-2-strand-S</td>
<td>a)S(),Z() 45,30-35</td>
<td>3*</td>
<td>2*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>b)Z()</td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

a = vertical direction  
b = horizontal direction  
* per 1.5 centimeter
The evidence seems to indicate that textiles were used as status markers, for not all graves have the same types and levels of occurrence in textiles. Textile complexity appears to be related to those factors of maleness, copper artifacts, and Southeastern Ceremonial Complex artifacts. Therefore, the third hypothesis stating that there was a parallel relationship between status gradations in non-textile items and textile items can be accepted.

Of particular note is the information concerning the elaborateness of the grave itself (log tomb or pit). Log tomb, the more elaborate form, gave little prediction of involvement in textile status. It may be that the society used the log tomb in a system of gradation of status not wholly dependent upon association with grave goods. It may have been that the person was accorded more expenditure of energy in structuring the final repose in lieu of extensiveness or expensiveness of artifact accompaniment.

In summary, though this study was in many ways an exploratory one, investigating the extensiveness of textile remains in the Wilbanks phase of Mound C, it does provide information for formulating a model for the use of Textiles as status markers.
CHAPTER V
SUMMARY, DISCUSSION, AND RECOMMENDATIONS

The Wilbanks phase burials of Mound C at Etowah, Georgia were analyzed for differences that would indicate that individuals were accorded different types of mortuary treatment and ritual grave accompaniment relative to the ability to command preferential treatment owed to their various and cumulative social persona.

Non-textile Evidence of Status Differentiation

Two main types of graves which involved differences in energy expenditure were utilized in these Wilbanks phase burials, log tomb and rectangular pit. All burials studied were excavated by Larson below the existing ground surface in the 1950s. Log tombs were used for both single and multiple burials and represented 25.5% of the total number of fifty-one burials. Even this grave type showed variation in level of completeness with four of the thirteen having the horizontal roof timbers only.

Other mortuary practices observed for variation were grave good accompaniment and skeletal biological characteristics of age and sex. Variation in grave goods occurred with ten out of the fifty-one having no accompanying artifacts. None of these
individuals had the higher status grave type of log tomb. It is possible that these no grave good burials represent individuals who gained status and interment privileges in Mound C by offering their lives as sacrifice at the death of an important personage, such as the custom among the Natchez upon the death of a "sun" as reported by du Pratz (1966).

Thirty-seven percent of the burials were accompanied by copper artifacts such as copper plates, copper celts, copper covered beads and ear discs, copper symbol badges, copper gorgets, and copper covered rattles. These copper artifacts were more typically associated with adult males. The exception was a multiple female burial with a large number of copper celts and symbol badges.

The three features of mortuary practices to be weighted the highest by the researcher were the log tomb, copper artifacts, and Southeastern Ceremonial Complex symbolic representations. The latter included for these burials eagles, eagle warriors, open eyes, sun circles, cross, and bilobed arrows. Again these motifs were more definitely associated with adult males. One subadult as an individual and one buried with an adult male had access to these symbols. A single female with one motif in shell stands in contrast to the multiple female burial with the motifs in copper.

When age is considered, there is not an equal distribution of the two broad age groups of adults and subadults. Total skeletal population was sixty-five individuals with seventy-eight percent
(51) identified as adults and eleven percent (7) as subadults, most of whom were teens as opposed to infants and children. Similar differences occurred in the gender area; females were in the minority, comprising thirty-seven percent of the forty-eight sexed skeletons. The scarcity of the younger aged individuals in the burials would suggest that status was more a function of achievement than ascription. Yet the subadult burial with both copper and SECC motif would indicate that at Etowah, during the Wilbanks phase, some inherited status was possible. This mixture of both ascribed and achieved status is more typical of societies than an incidence of being totally one or the other. With regard to females, both types of status may be operating with women deriving status from kinship and marriage. The place of the six females with the abundance of all three weighted features requires further investigation.

Textile Evidence

In using the model proposed by Sibley and Jakes (in press) for cultural inferences from textile evidence and discussed in Chapter II, various aspects of use of textiles become clear. Considering the biologic sphere fiber analysis indicates that the Mississippians utilized plant fibers which required preparation before yarns could be prepared. Phloem or bast fibers have to be removed from the woody portion of the plant stem, and SEM analysis provided evidence of phloem bundle fibers. Also revealed by scanning electron micrographs was pitting typical of zylem fibers
found in leaf material. Removal of fibers from the stem or leaf of the plant requires breakdown of the outer portions without harming the fibers. Biological decay encouraged by moisture treatment has typically been used for phloem type fibers. Simple stripping can be used for leaf fibers. Though no evidence of any textile processing of either type has been found at Etowah, resources were available for some of this type of processing with the moat and side ponds filled by the Etowah River.

Scale structure on fibers and the negative casts of scales reveal the use of natural hair fibers. The use of more than one fiber indicates resourcefulness. Hair fibers are more insulating than cellulosic fibers; therefore, fibers made from hair fiber solely or in combination, would be warmer than purely cellulosic fibers on equal volume basis. The hand or feel of hair fibers, be it the outer, larger guard hairs or the shorter, softer body coat, is different from cellulosic or plant fibers. The hand is warmer and can be softer, more flexible if the base coat hair fibers are used. Hair fibers with their more amorphous molecular arrangement have greater elongation and recovery than the more highly oriented molecular structures of plant fibers which are stronger and less flexible.

The yarns from the 463, 465 which are a combination of bast and hair show that the craftsman or spinner was willing to combine fibers to achieve a yarn more fuzzy in appearance and softer in hand than using just a plant fiber yarn. Bast or plant fibers spin differently than hair fibers. With scales on the
surface the hair fibers have greater cohesion in spinning than the smoother plant fibers. Plant fibers due to molecular makeup have a tendency to twist in a different direction from hair fibers. It would be easier to handle the two types separately. Thus the combining of plant (cellulosic) and hair (protein) fibers points to an experienced spinner, able to compensate for the difference in physical behavior of the two types of fibers.

In the systemic sphere, the variety of yarn types is also significant. The simplest yarn structure is the single yarn. Fibers are given twist in either Z or S direction to hold them in a continuous strand. To form a ply yarn, the spinner must reverse the direction of twist and feed two or more singles into the twist. Examples were found of singles, two-ply, three-ply, four-ply, and cord. Cord yarns are a step higher in production complexity. Ply yarns are twisted together by another twisting procedure which again manually involves the changing of twist direction from that used to form the ply yarn. Several cord examples were found, indicating skill on the part of the spinner and attention to the need for stronger yarn constructions than would be available if only ply types were utilized.

The yarns in catalog numbers 463 and 465 are of an even more complex stage of yarn development. The construction would be classified as complex or novelty by the modern ASTM system. The yarn employs ply technique for two singles with loose, individual fibers caught in and around the singles as they were plied.
together. The resulting yarn has a surface of loose fiber ends, entirely covering the plied yarns at the center.

As was mentioned in Chapter IV, there is a variety of yarn diameter. Naturally it could be that ply yarns would be thicker than the singles, as elements were added; but some of the ply yarns are thinner than others, and some cord yarns are thinner than the two element ply yarns. It takes more skill as a spinner to produce thinner elements for plying than coarse ones and to produce elements with even diameters and even twist throughout. Within distribution of the fragments, the greater portion of them appear to be evenly spun with variation in diameter occurring at the points of twist in the ply constructions. If one measures at the twist points, the diameters are still very similar, varying by .01 to .04 mm.

Fabric variations of construction were limited to lower levels of complexity. There were no examples for surface added designs by embroidery or printing, though examples with printed motifs were found by Moorehead. There is no clear evidence of lacelike fabrics such as spaced octagonal twining as have been found in other burials from inner phases of the mound. Braiding of three and six strands were found. Braiding is not so difficult to do as is the spaced two-strand S twining which appears to require some form of stabilization of the vertical elements involved. The oblique interlacing portions were less numerous than the spaced two-strand S twining, but used complex yarns in two examples. It may have been that the turtle bone was used to
stabilize the elements during construction or that the finished fabric was merely added to the bone at a later stage of creation. The two portions were found in the area of the skull and one was on the left parietal area. Originally it was described as part of an eagle warrior headdress, but the typical copper pieces were not indicated (Larson, 1957). The possibility of a function as a headdress is still valid, even if not the eagle warrior type with symbol badges. Without removing the textile, no holes were found along the outer edge of the bone for the securing of yarns during construction or for attachment. The pieces are so small that function analysis could not be done with certainty. Yarns have been found wrapped around portions of ear spools, but none of the yarn samples were so attached. Generally the yarns were found in loose groupings in clay or as individual yarn fragments. Another possible use would be for holding gorgets to the body; most have two holes at the top of the gorget. Also the yarns could have been used for stringing beads and columnar pendants into necklaces, arm bands and leg bands. Only the three fragments in catalog number 483 showed the use of yarns as possible decoration on pieces of turtle bone (fragment 38, 11, 9). Any function of joining pieces of bones was not evident since the wrapping yarns are not through the drilled holes at the ends of the bone. This catalog number possibly is an example of the higher level of production of dyeing. The wrapping yarn on two pieces were black in one case (fragment 11) and red in the other example (fragment 9). Further testing needs to be done to give more definite
designation of dyeing. If it is proven more definitely to be dye in the yarns then there would be indication that dyeing could have been done for greater complexity of textile and may have been related to a greater importance of the item and individual possessing that item.

As described earlier, it is during the diagenetic or archaeological sphere that the environment continues the transformations of the textile evidence begun by human behavior at the procurement and processing stages. Many of the difficulties in identification of fiber types and other attribute dimensions are the result of these additional transformations beyond those of modern textiles. Specific identification of plant fibers were hindered by the filling of plant features and cavities by minerals or the coating of the surface morphological characteristics during mineralization. The fragile nature of the Etowah Mound C textile evidence further illustrates the diagenetic transformations.

Although changes in structure have occurred for the textiles, the textiles do appear to be part of the status marking of mortuary practices at Etowah during the Wilbanks phase of the Mississippian tradition. That they are placed in the burial context is the result of the choices of the social participants, who had role relationships with the deceased. Not all burials evidenced the same type of textiles. This differentiated presence indicates status.
Recommendations for Future Research

1. In order to clarify the point that the mound and its space could have been used for different purposes over time, the more specific dating of the outer phase burials should be pursued. With the development of techniques for radiocarbon dating using small samples, this may be possible using portions of the textile fragments from the Wilbanks phase burials. If the method could be accurate to +/-50 or +/-25 years, then the contemporary of the outer phase burials could be investigated. The textiles are distributed around the ring from the eastern side to the north and to the west. Unfortunately, none of the graves above burial 64 have produced textiles.

2. Textile samples from burial 57, which is a log tomb burial just inside the subsurface graves of the outer phase, should also be analyzed for dating. The textiles in this tomb have been the focus of study by Sibley and Jakes. The fabrics have been of a greater level of complexity, combining lacleike twining with others. As many as four different construction methods have been combined into one textile. The dating would help answer the question of burial 57's relationship to the other log tomb burials. Did burial 57 precede them by a great or small amount of time?

3. Additional analytic work should be performed on the SEM samples already removed. EDS could be performed on more than just the one red sample. This would provide elemental composition, including the presence of copper which could indicate the progress
of mineralization. These results could be followed up by infrared spectroscopy or some other technique for a more complete composition of the sample. This testing would require new sections to be taken since the SEM samples were coated with carbon.

4. Followup on the analysis of the red and black yarns of 483 in fragments 9 and 11 should be done. The determination of dye would indicate a higher level of textile complexity for the samples.

5. For more complete analysis of the achieved and ascribed status question for the interred, a testing of the data by a different method of statistical analysis should be done. A simultaneous matching, producing four-way tables, instead of the pairwise, two dimensional matching of correspondence analysis, may prove more useful in this area. Both SAS and SPSSx offer possible modes of analysis to collapse or squeeze the matrix to find the underlying measures of similarity and dissimilarity with a known sample distribution such as Jacquard's coefficient and the information statistic used by Peebles for the Moundville analysis.

6. Consultation with paleobotanists should prove useful in identification of SEM of the bast sources. Identification may be difficult due to changes caused in the fibers by the diagenetic phase though some of the SEM photomicrographs showed very clear cell structure.

7. Determination of the hair fiber identity should continue. Location of the method of measuring scale casts and performance of
the technique should help in identification. Resources consulted
at the time of the research did not contain photomicrographs of
the possible hair resources such as white tailed deer, raccoon,
muskrat, squirrel, probably since these are not major sources of
hair fiber in our century.
8. The two possible spaced octagonal twined samples require
further analysis for verification of fabric construction method.
Part of the analysis will be the uncrumpling of the sample.
Additional research into appropriate treatment of mineralized
textile samples needs to be done before attempting this procedure.
9. Finally, the correlation of the data with others from Mound
C burials of earlier phases may indicate any changes in the use of
textiles for status marking. Comparison with other interregion
Mississippian textiles may illustrate similarities and differences
in textile utilization between sites, including characteristics of
fiber types, yarn types, fabric formation methods, dyeing and
motifs. Revise and test a textile complexity rating scale which
would facilitate more precision of archaeological textiles.
LIST OF REFERENCES


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APPENDIX A

DETAILS OF YARN INTERWORKING FOR ETOWAH TEXTILE FRAGMENT AND REANALYSIS OF WILLOUGHBY TEXTILE FRAGMENT FROM MOOREHEAD EXPEDITION
Figure 15. Details of Yarn Interworking for Etowah Textile Fragment. Rendered from Byers (1962b).
Figure 16. Reanalysis of Willoughby Textile Fragment from Moorehead Expedition. Rendered from Byers (1962b).
APPENDIX B

AGE/SEX DATA ON ETOWAH MOUND C SKELETAL REMAINS - OUTER MANTLE BURIALS BY BLAKELY
## Age/Sex Data on Etowah Mound C Skeletal Remains - Outer Mantle Burials by Blakely

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<th>Sex</th>
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<td>39</td>
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<td>40</td>
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<td>42</td>
<td>MALE</td>
<td>~53 Y</td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td></td>
<td></td>
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<td>IND</td>
<td>6 Y</td>
</tr>
<tr>
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<td></td>
<td>65 NA</td>
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<td></td>
</tr>
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<td>MALE</td>
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APPENDIX C

SHELL GORGETS
Figure 17. Mound C Shell Gorgets.

a. Shell Gorget from Burial 19.
   Rendered after Stewart.

b. Shell Gorget from Burial 27.
   Rendered after Stewart.
APPENDIX D

ETOWAH MOUND C TEXTILE ANALYSIS
Etowah Mound C  
Textile Analysis

Catalog Number ____________  Burial Number ____________

Number of Fragments ____________

Burial Description:
Primary/Secondary Burial
Log Tomb/Pit/Stone Slab
Individual/Multiple

Location of Textile:
Fragment Number __

Age Sex
1. _______ 1. _______
2. _______ 2. _______
3. _______ 3. _______

Torso Upper/On Top
Upper Right/Lower Right
Upper Left/Lower Right
4. _______ 4. _______
5. _______ 5. _______
6. _______ 6. _______

Articulation:
Fully/Partially
Skull Only
Long Bones Only
Bundle

Arm Right Under/On Top/Around
Upper Arm/Forearm/Elbow/Wrist

Left Under/On Top/Around
Upper Arm/Forearm/Elbow/Wrist

Leg Right Under/On Top/Around
Thigh/Knee/Below Knee/Calf/Ankle

Left Under/On Top/Around
Thigh/Knee/Below Knee/Calf/Ankle

Total Size of the Sample:
Length ____________  Width ____________

Thickness ____________

Fiber Attributes:

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<thead>
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<th>System C</th>
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<td>Type 1</td>
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<tr>
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<tr>
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<tr>
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<tr>
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</tr>
<tr>
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Means

Longitudinal Views - Distinguishing Characteristics

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Type 2
TEXTILE ANALYSIS

Catalog Number ___________ Fragment Number_________

Yarn Attributes:

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Means

Ply—Number of singles ___________ Replied or cord ___________

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<th>System C</th>
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<td>5.</td>
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</table>

Means

Uniformity (visual) whole: parts:

<table>
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<th></th>
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<th>System B</th>
<th>System C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Type 2</td>
<td>Type 1</td>
<td>Type 2</td>
</tr>
</tbody>
</table>

Twist Direction

Final

Indiv. Ply

Twist Angle

Final

Indiv. Ply

Fabric Attributes:

Type of Interworking________________________

Weaving

Plain

Basket

Twill

Rib/Repp

Number of Vertical Elements per cm ___________

Number of Horizontal Elements per cm ___________

Twinning

Compact 2-strand S

Spaced 2-strand S

Compact 2-strand Z

Spaced 2-strand Z
TEXTILE ANALYSIS

Catalog Number ____________  Fragment Number__________

Twinning continued
Compact Countered 2-strand
Spaced Countered 2-strand
Oblique
Compact Alternate pair
Spaced Alternate pair

Number of Vertical Elements per cm ________________
1.
2.
3.
4.
5.

Number of Horizontal Elements per cm ________________
1.
2.
3.
4.
5.

Interlooping:

Knotting:

Other:

Sketch: