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A Synthesis and Interpretation of the Hamilton Mortuary Pattern in East Tennessee

Patricia Ellen Cole
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To the Graduate Council:

I am submitting herewith a thesis written by Patricia Ellen Cole entitled "A Synthesis and Interpretation of the Hamilton Mortuary Pattern in East Tennessee." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Anthropology.

William M. Bass, Major Professor

We have read this thesis and recommend its acceptance:

Richard L. Jantz, Gerald Schroedl

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Vice Chancellor
~~Graduate Studies~~ and Research

A SYNTHESIS AND INTERPRETATION OF THE HAMILTON MORTUARY PATTERN IN EAST TENNESSEE

A Thesis

Presented for the

Master of Arts

Degree

The University of Tennessee

Patricia Ellen Cole

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ABSTRACT

The goals of this investigation are to investigate status and rank and to suggest a possible model of the social organization of the builders of Late Woodland burial mounds on the basis of intrasite burial patterning, to determine the pattern of relationships among a sample of East Tennessee burial mounds, and to provide a general characterization of the Hamilton burial complex. Despite previous investigations of this burial complex, earlier works have failed to provide satisfactory treatment of these problems.

Data on individual burials from site 40RE124 were analyzed using tests of significance, a crosstabulation of variable correlations, and a factor analysis to isolate conscious choice in the use of burial techniques. The results of these analyses suggest that:

1. Consistent decisions were made as to the age, individuality, form of disposal, and orientation of burials placed in the mound.
2. Due to the high percentage of adult burials, status was achieved through life in a basically egalitarian society.
3. There was differential involvement of individuals in the manufacture and distribution of certain artifacts, such as conch columellae beads.
4. Burials were oriented towards the sun's path and towards the river at different times in mound construction.

Data gathered for 56 characteristics on a sample of 14 mounds were examined using frequency, correlation, hierarchical profile-grouping (HGROUP), and principal coordinates of distance (PRINCO) analyses to

determine the relationships among mounds and to isolate the most important characteristics of the Hamilton mortuary complex. These tests show that:

1. Mounds cluster in north, central, and southern geographic groupings based mainly on mound construction techniques and associated artifacts.
2. Seventeen variables dealing with burial customs, mound construction techniques, and associated artifacts are characteristic of the majority of the Hamilton focus mounds in the present sample.
3. In spite of low correlations of grave goods and diagnostic artifacts with sex and age of mound burials, adult males seem to be favored for initial mound burial as well as for inclusion in the mounds.

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I. INTRODUCTION

Statement of Problem

This study is an examination of the Late Woodland Hamilton focus mortuary complex in East Tennessee. Encompassed by this investigation are a detailed analysis of site 40RE124 as well as a more general survey of a sample of Hamilton burial mounds. Analysis of the total patterning of burial at 40RE124 was undertaken in order to determine a model for the social organization of this mound's builders. Several burial customs suggested by this single site were examined in the larger sample of mounds to provide a more general model of Late Woodland social organization. Also evaluated for the sample of Hamilton mounds were the similarities and differences among the mounds and the frequency of occurrence of burial customs, construction techniques, and artifacts attributed to this focus. As a result, the pattern of relationships among the mounds considered here as well as a general definition of the Hamilton mortuary complex were determined. In spite of the many previous investigations of this burial complex, these problems have never before received satisfactory treatment.

The low, conical burial mounds of the Hamilton focus of East Tennessee have fascinated both professional and amateur archaeologists since the nineteenth century. Professional interest in these mounds began with the explorations of Cyrus Thomas (1894), C. B. Moore (1915), and M. R. Harrington (1922). These early investigators located, recorded, and often tested the mounds which they encountered along the

major rivers of East Tennessee. Subsequent work sponsored by the Tennessee Valley Authority and Works Project Administration in proposed reservoir areas has resulted in more thorough regional surveys of archaeological remains and in more detailed investigations of numerous mounds. Webb's (1938) survey of the Norris Basin included the excavation of three Late Woodland mound sites. Similar activities were conducted by Nash (n.d.a) in the Watts Bar Reservoir in 1941. Excavations in the Chickamauga Reservoir area provided data for Lewis and Kneberg's (1946) monograph, *Hiwassee Island*, which attempted a definition of the Hamilton focus. More recently, construction of nuclear power plants has resulted in the salvage excavation of Late Woodland mounds, notably in the Watts Bar power plant (Graham n.d.; Schroedl n.d.) and the Clinch River Breeder Reactor Plant (Cole 1975) areas. Finally, archaeological survey of the Oak Ridge National Laboratory Reservation relocated previously explored mounds and discovered two unrecorded mounds (Fielder 1974).

Although it is obvious that a large number of Late Woodland burial mounds have been located, recorded, tested, or excavated, it is also obvious that relatively few attempts have been made to synthesize the mortuary practices, construction techniques, temporal affiliations, and demographic information gleaned from these investigations into a holistic definition of the Hamilton focus mortuary complex. Lewis and Kneberg (1946) made the earliest attempt at defining a Late Woodland culture in East Tennessee. Based on their excavations at the Hiwassee Island site, which included the exploration of five burial mounds and four small midden areas, the authors described the lifeways of the "Hamilton people" as they believed them to have existed. Their

interpretations, although based almost exclusively on mounds rather than on occupation sites, remain an important source on Late Woodland manifestations in East Tennessee. Their work, however, centers on a single site without the benefit of radiocarbon dating. Rowe (1952:199-206) also attempted to summarize the characteristics of the Hamilton focus. He drew his conclusions from sites excavated under the direction of Lewis and Kneberg between 1934 and 1942. After briefly describing "typical" Hamilton focus artifacts, Rowe devoted his article to the discussion of a single burial mound which he had excavated on the W. D. Smith farm (40RH42, unit 122) in 1941. Based on this partially excavated mound, Rowe summarized construction techniques and burial patterns. Yet Rowe, like his predecessors, dealt only with sites from a limited area. Also in 1952, Whiteford (1952:207-225) discussed the Hamilton focus, but his synthesis of burial mound data emphasized excavations prior to the 1940's. Since the works of Lewis and Kneberg (1946), Kneberg (1952:193), Rowe (1952:199-206), and Whiteford (1952:212-213), no further attempts have been made to define the Hamilton focus. However, additional data have been gathered about the focus through more recent excavations (McNutt and Fischer 1960:76; Graham n.d.; Schroedl 1973a, 1973b; Schroedl and Cole n.d.; Cole 1975:139-147). Virtually all data recovered on the Hamilton focus are stored at the McClung Museum, the University of Tennessee. These data provide the basis for a synthesis and interpretation of the Late Woodland mortuary complex. Nevertheless, since 1952 no treatments of the Hamilton focus have been attempted.

Thus, the existing conception of the Hamilton mortuary complex is based on only a few mounds, excavated in the early 1940's, from which generalizations are made concerning all East Tennessee burial mounds.

Such a procedure is dangerous, as it fails to differentiate between properties of Hamilton mounds in general and those characteristics specific to the few mounds upon which the original definition is based. If a more generally applicable concept of the Hamilton burial complex is to be developed, sampling of more widespread sites is needed. Such a sampling is possible using the data currently available.

In addition to the above problem, no attempt has been made in the past to evaluate the variation among mounds of the Late Woodland time period, probably due to the lack of published reports for comparison. Certainly, no estimation of the amount of similarity or difference existing among mounds has been made. An analysis of how various mounds differ, the extent to which they differ, and, finally, the patterning of similarities and differences among mounds could suggest intersite relationships not previously identified. Computerized statistical methods now make such an evaluation possible.

Finally, little effort has been made to reconstruct the prehistoric society of the builders of these mounds. Lewis and Kneberg (1946:6, 21) have suggested some aspects of the lifeways of these people based on middens of similar cultural affiliation. Although such areas yield some information on subsistence and tool assemblages, they provide little help in ascertaining social organization, status designations, and how they affected the distribution of the material culture of this group. Examination of the patterning of mound burial, as well as the skeletal remains of the burials themselves, is suggested as a more rewarding method of inferring these aspects of prehistoric life. The study of burial patterning has been shown in the past to be a helpful

method of at least arriving at models of social organization (Binford 1964; Brown 1971; Gruber 1971:64-76).

Previous Investigations

Numerous explorations of Late Woodland mounds in the past century are the basis for the current synthesis of the Hamilton mortuary complex. Unfortunately, the majority of the mounds investigated have not received treatment in published form. Therefore, a summary of the major surveys dealing with Late Woodland mounds in East Tennessee is presented below as background for the present study.

Cyrus Thomas

Between 1881 and 1894 archaeological explorations under the direction of Cyrus Thomas were carried out in 22 states by the Bureau of American Ethnology. These investigations located and recorded Late Woodland burial mounds in Roane, Blount, Monroe, Loudon, and Meigs counties (Table 1). The Bureau of American Ethnology conducted test excavations at most mounds it reported, the results of which were published by Thomas (1894). Later surveys have relocated many of these mounds.

C. B. Moore

A preliminary survey followed by excavations was directed by C. B. Moore along the Tennessee River between 1913 and 1915. Although he excluded tributaries of the Tennessee River, Moore reported mounds from Hamilton, Meigs, Rhea, Roane, Loudon, Blount, and Knox counties (see Table 1). Wherever possible and desirable to do so, Moore excavated

Table 1. Late Woodland mounds investigated by Cyrus Thomas and C. B. Moore in East Tennessee (after Whiteford 1952:222-223).

Cyrus Thomas's Work		C. B. Moore's Work	
Site	County	Site	County
Long Island	Roane	Carter Farm	Hamilton
Hagler Farm	Roane	Hampton Place	Hamilton
Lee Farm	Roane	Montgomery Place	Hamilton
McMurray Farm mound 2	Blount	Mattie Igou Farm	Hamilton
McSpaddin Farm	Blount	Lovelady Landing	Hamilton
Tellico Plains	Blount	Hiwassee Island	Meigs
Pate Mound	Monroe	Jones Place	Meigs
Lane Farm	Loudon	Viniard Landing	Rhea
Tipton Farm	Loudon	Hoyal Ferry	Rhea
Bat Creek mound 3	Loudon	McDonald Place	Rhea
Park's Ferry	Loudon	Upper Hampton Place	Rhea
Jackson Farm	Loudon	Lower Hampton Place	Rhea
Lenoir Island mound 1	Loudon	Garrison Place	Rhea
Hall's Bend	Loudon	Cook Landing	Rhea
Hiwassee Island	Meigs	Ewing Place	Roane
		Tedder Place	Roane
		DeArmond Place	Roane
		Evans Place	Roane
		Hood's Ferry	Roane
		Biss Place	Roane
		Huffine Ferry	Roane
		Alford Farm	Roane
		Campbell Place	Roane
		Wilson Farm	Roane
		F. A. Berry Farm	Loudon
		W. W. Blair Place	Loudon
		Carmichael Place	Loudon
		Arthur Place	Loudon
		Brabson property	Knox
		U.T. property	Knox
		E. Prater Place	Blount

selected mounds by digging a 12 ft by 12 ft shaft into the top center of the mounds.

M. R. Harrington

In 1919 M. R. Harrington undertook another exploration of East Tennessee archaeological sites on the Tennessee River between Lenoir City and Chattanooga. Harrington (1922) stated that he undertook such an exploration to clarify what he considered hasty investigations by C. B. Moore. Harrington investigated two mounds at Bussell Place, Loudon County, previously tested by Thomas (1894), as well as one Upper Hampton Place and five Hiwassee Island mounds, both sites recommended for excavation by C. B. Moore (1915). Harrington (1922) postulated the existence of a "round grave people" succeeded by the builders of the conical burial mounds, cultural designations fairly synonymous with Lewis and Kneberg's (1946) later Candy Creek and Hamilton foci designations. Harrington also speculated about the relationships of these groups to the Cherokee.

Norris Basin

During the construction of the Norris Dam in 1933 and 1934, survey and excavation of endangered sites were conducted by W. S. Webb. Included were three Late Woodland sites made up of four burial mounds--the Taylor Farm mound, the Crawford Farm mounds, and the Freel Farm mound. Complete excavation of these mounds was conducted, and their associated artifacts, burials, and construction were reported by Webb (1938).

Chickamauga Reservoir

In 1937, further dam construction in southeastern Tennessee resulted in archaeological survey of the proposed Chickamauga Reservoir. A focal point of these investigations was Hiwassee Island, previously explored by Thomas (1894), Moore (1915), and Harrington (1922). Between April 1937 and April 1939 Lewis and Kneberg excavated five burial mounds and four midden areas from which they attempted to define a Late Woodland cultural manifestation which they called the Hamilton focus (Lewis and Kneberg 1946:6). Additional mound excavations undertaken during the Chickamauga Reservoir investigations included three poorly preserved mounds at the Rymer site (40BY11, units 12, 13, 14), a virtually completely destroyed mound at the North Mouse Creek site (40MN3, unit 3), two mounds (one severely disturbed) and an associated midden at the McGill site (40HA20, units 20, 21, 66), and two disturbed mounds at the Varnell site (40BY18, units 22 and 23). Lewis and Kneberg used these data to supplement and bolster the interpretations drawn from the Hiwassee Island excavations.

Watts Bar Reservoir Survey

Another proposed dam brought about the survey in 1941 and subsequent excavation of sites in the Watts Bar Reservoir area (Nash n.d.a). The actual area to be flooded included only a narrow strip of land on either side of the river, so many fewer sites were threatened, and therefore excavated, than were recorded. However, a few mounds located by Nash in 1941 were later excavated. These include 40RH42, unit 122, the Smith Farm mound (Rowe 1952:203-204); and unit 304RE105, redesignated 40RE124 in 1973 and excavated in 1973-1974 by Schroedl (Schroedl

1973a, 1974; Cole 1975). Table 2 presents the many mounds located by Nash's 1941 survey.

Melton Hill Reservoir

In 1960 construction of the Melton Hill dam was begun, and archaeological survey and excavation were carried out along the Clinch River prior to the dam's completion in 1963 (McNutt and Fischer 1960; McNutt and Graham 1961). Of the twenty sites located, one included a possible Late Woodland burial mound. At the Cox site (40AN19, unit 18):

> Woodland pottery suggests a component indicative of the transition from Early to Middle Woodland. Most of the Woodland burials and limestone-tempered pottery came from beneath or adjacent to a concentration of limestone slabs. These slabs, when plotted on hypothetical vertical sections, suggest that a small burial mound once existed at this spot (McNutt and Fischer 1960:76).

Other than this single instance, no Late Woodland burial mounds were excavated in the Melton Hill survey.

Watts Bar Nuclear Power Plant

In the summer of 1971, construction of the Watts Bar nuclear power plant led to the excavation of five Late Woodland burial mounds along the Tennessee River in Rhea County. These mounds, which were located at Moore's (1915) Viniard Landing site, were designated as site 40RH7 upon excavation (Graham n.d.). Although one was virtually obliterated by C. B. Moore's test pit and the others were incompletely excavated, the mounds remain quite important for determining age and internal chronology of associated Hamilton focus mounds. As the first Late Woodland burial mounds excavated in almost 20 years, they provided

Table 2. Late Woodland mounds located by the Watts Bar Reservoir survey, 1941.

Site Name or Location	Site Number	Condition
Rhea County		
Piney Island	40RH49, unit 248	1 mound; only shell patch remains
Cagle Place	40RH48	4 mounds; 3 plowed
Hope Place	40RH47	2 mounds, nearly destroyed
Wheelock property	40RH46, unit 130	1 mound, disturbed
Kimbrough property	40RH45, units 142-144	3 mounds, badly plowed
Wheelock heirs' land	40RH43, units 134-137	4 mounds, badly plowed
Lower Hampton Place	40RH42, units 107-118	12 mounds, most plowed or pitted
Smith Farm	40RH42, units 122, 123	2 mounds, eroded
Upper Hampton Place	40RH41, units 87-91	5 mounds, good
Roane County		
Near Harriman	40RE116	1 mound, pitted
Half Moon Island	40RE115, units 327, 328, 332, 333, 335	5 mounds, good
Gallaher property	40RE110, units 311, 312	2 mounds, plowed down
Gallaher property	40RE109, unit 310	1 mound, eroded
Hensley land	40RE105, unit 304	1 mound, well preserved
Powell property	40RE99, unit 294	1 mound, well preserved
Waltey property	40RE95	1 mound, pitted
M. B. Dykes' land	40RE93, units 281-283	3 mounds, badly plowed
Roberts Farm	40RE90	2 mounds, plowed
Overlooking Round Island	40RE79, units 256-260	5 mounds, disturbed
Billingsly property	40RE75, units 241-244	4 mounds, virtually eradicated
Near Emory, Tennessee	40RE73	1 mound, badly plowed
Wright's Bend	40RE69, units 226-228	3 mounds, plowed
Gibbs Farm	40RE67, unit 221	1 mound, nearly obliterated
Foot of Long Island	40RE64, unit 214	1 mound, pitted
Tom Brown property	40RE62, units 183, 184	2 mounds, 1 good, 1 disturbed

Table 2 (continued)

Site Name or Location	Site Number	Condition
Thiefs Neck	40RE61	2 mounds, badly plowed
W. F. Brown land	40RE59	5 mounds, destroyed
Center property	59RE56, unit 162	1 mound, plowed
Waller land	40RE55	3 mounds, 2 damaged, 1 preserved
Scott property	40RE54, unit 158	1 mound, disturbed
Allison Farm	40RE50	1 mound, eroded
Millican land	50RE57, unit 132	1 mound, partially destroyed
C. W. Green property	40RE45	1 mound, plowed
Patton property	40RE44, units 126, 127	2 mounds, 1 well preserved, 1 poorly preserved
Pierce Farm	40RE42	2 mounds, plowed away
Pierce Farm	40RE39	1 mound, pitted
Tarwater property	40RE36	1 mound, plowed away
Bill Stables property	40RE34	6 mounds, shell patches remain
Tarwater property	40RE32	2 mounds, well preserved
Winton Chapel graveyard	40RE31	1 mound, pitted
Philip's land	40RE30	6 mounds, 4 pitted
Philip's land	40RE29, unit 70	1 mound, slightly pitted
Jones Farm	40RE28, unit 288	1 mound, plowed down
Lee Farm	40RE27, units 46-48	3 mounds, tested by C. Thomas, 1 obliterated
Doughty property	40RE26, unit 230	1 mound, plowed away
Hall land	40RE25, unit 219	1 mound, poorly preserved
Huffine Farm	40RE24, units 253-254	2 mounds, eroded and plowed
	40RE23, units 105-107, 137	4 mounds, 1 tested by Moore, eroded
Ewing property	40RE21, units 150-155	6 mounds, 4 good
W. F. Brown land	40RE20, units 173-176, 178	5 mounds, 3 good
Samuel Johnson Farm	40RE17, units 26-28, 30, 33, 36-40, 42-44, 323	14 mounds, badly plowed

Table 2 (continued)

Site Name or Location	Site Number	Condition
Biss Place	40RE15, units 210-212	3 mounds, 2 destroyed
Butler Place	40RE14, units 92-94	3 mounds, plowed
Tedder Place	40RE13	3 mounds, pitted
Smith Farm	40RE11, units 195-206, 209	13 mounds, 7 preserved
Fitzgerald Farm	40RE10	8 mounds, well preserved
Montgomery Place	40RE8, units 72, 74-79	7 mounds, pitted
Wilson Farm	40RE7	3 mounds, 1 plowed
Roberts property	40RE2, units 142, 143, 145	3 mounds, 1 destroyed, 2 pitted
Byrd property	40RE1, unit 57	1 mound, plowed
Bell Farm	40RE1, unit 56	1 mound, disturbed

Source: Nash n.d.a.

the first set of radiocarbon dates for the Hamilton focus (Schroedl 1973b:3-11). Also, their analysis resulted in new information on the Hamilton burial pattern (Wright n.d.).

Oak Ridge Survey

From March 15 to June 3, 1974, a University of Tennessee archaeological party conducted a survey to locate and investigate sites which might be threatened by Oak Ridge National Laboratory projects (Fielder 1974). During this survey many sites previously reported by earlier surveys were relocated. These included two sites excavated by Webb (1938:180, 186) in 1934--the Crawford Farm (40AN21) and the Freel Farm (40AN22) sites. Also reinvestigated were several sites reported by Nash's (n.d.a) 1941 survey records, including the three-mound complex at the Lee Farm (40RE27). On the other hand, the two Roberts Branch mounds (40RE90), a small mound at the Melton Hill site (40RE99), and two mounds at the Steam Plant site (40RE110) had been obliterated. Finally, Fielder (1974:25-27) located and reported two essentially intact mounds designated the Scarboro Creek site (40AN27).

CRBRP Survey and Excavations

Prior to the proposed construction of the Clinch River Breeder Reactor Plant (CRBRP) in Roane County, Tennessee, survey and subsequent excavations of important sites were conducted by Schroedl (1972, 1973a, 1974). After the Tennessee Valley Authority had mapped the area, Schroedl was able to relocate a burial mound reported in the Nash survey of 1941 as site 304RE105. The mound was renumbered 40RE124. Complete excavations were carried out between October 1973 and February 1974

(Schroedl 1974; Cole 1975). Site 40RE124 is particularly important to the interpretation of the Late Woodland mortuary practices because it contained an abundance of charcoal for radiocarbon dating, it was virtually undisturbed, it was completely excavated, and it was closely associated with an Early Mississippian midden excavated in 1975 (Fielder n.d.).

Current Definition of the Hamilton Focus Mortuary Complex

Due to the interest in East Tennessee burial mounds, a set of general traits, the vast majority of which refer to mortuary practices, has come to identify the Hamilton focus. In summary, a burial mound was constructed over a considerable period of time on top of an initial burial, which was sometimes placed in a pit or a log tomb. The mounds increased in size with the addition of more burials and mound fill, usually culturally sterile alluvium or fill from old midden deposits. Multiple construction stages are often visible in mound stratigraphy, although mounds containing a single uniform deposit also occur. Construction stages may be demarcated by changes in soil color and texture or by layers of mussel shell, limestone slabs, or charred logs. Such coverings may also occur over individual burials, although the majority of burials are simply laid upon the mound slope and covered with additional mound fill. Extended, bundle, flexed, cremated, and even possibly decapitated burials have been recovered in a mound context, although the majority are flexed or semiflexed. The uppermost levels of many Hamilton mounds contain intrusive burials from later cultural manifestations, such as the Dallas focus (Lewis and Kneberg 1946). Diagnostic artifacts often found in burial association include small, triangular,

stemless projectile points; drilled conch columellae beads (usually *Busycon* sp.); and limestone-tempered cordmarked pottery. However, such artifacts occur sparsely; grave goods are lacking for the majority of burials. Unfortunately, interpretation of skeletal and artifactual remains is difficult since preservation is poor in virtually every Late Woodland mound due to the water retention and acidity of the mound fill.

Within the last 15 years, radiocarbon dates for the Hamilton focus have been obtained from three mound sites, the Alford site (40RE4), the McDonald site (40RH7), and 40RE124. A single date from the Alford site (Crane and Griffin 1961:114) gives an age of A.D. 1020 ± 150 years. Charcoal samples from three mounds at the McDonald site (mounds A, B, and D) give dates ranging from A.D. 800 ± 130 years for the prepared premound surface of mound D to A.D. 1335 ± 100 years for construction stage 3 of mound A (Schroedl 1973b:4-6). At 40RE124 six dates were obtained extending from A.D. 685 ± 170 years on charcoal from the mound fill of construction stage 1 to A.D. 980 ± 160 years on a charred log feature from the third construction stage (Schroedl and Cole n.d.). On the basis of the above information, the Hamilton mortuary complex may be dated between A.D. 700 and A.D. 1000 or later in time.

The brief description of the Hamilton focus given above is based almost entirely on burial mound data. Shell middens may be identified with the Late Woodland period (Lewis and Kneberg 1946:6, 21; McCollough and Faulkner 1973:123-129), but thus far they have provided less than satisfactory information on Hamilton settlement and subsistence. Thus, knowledge of this Late Woodland focus remains basically knowledge of a mortuary complex, not an understanding of the total lifeway of a people.

II. ANALYSIS OF THE BURIAL PATTERN AT SITE 40RE124

A study of total patterning of burial at a single mound, site 40RE124, is proposed in order to isolate conscious choice in the use of burial techniques. Such nonrandom arrangement of burials should reflect the values, the norms that dictated how a person was buried, and ultimately the social organization of the mound builders. Similar attempts at recovery of nonmaterial aspects of past cultures have been made, especially since the mid-1960's, and are perhaps best illustrated by the publication, "Approaches to the Social Dimensions of Mortuary Practices," edited by James Brown (1971). Although objections have been raised to the inference of such factors as the lineality or residence patterns of past groups from burial analysis (Allen and Richardson 1971:41-53), Saxe (1970) has shown through ethnographic examples that an individual's position in his society does tend to be reflected by his treatment at death. Though recreating an entire kinship system from patterning of material remains may be a bit ambitious at this point, the inference of the type of society (egalitarian versus ranked), status of individuals, or the role different individuals played in the distribution of material goods can be more reasonably attempted.

Materials

The analysis of total intrasite burial patterning for suggestions of social organization was limited to a single site, 40RE124. This site was examined in detail in the hope that any models of Hamilton social organization which might be suggested could later be verified or rejected on the basis of similar analyses made on other Late Woodland mounds.

Thus, knowledge of the mortuary customs of the Hamilton people may lead to some understanding of other aspects of Late Woodland lifeways. As the newest source of data on the Hamilton focus, site 40RE124 was the most amenable to mortuary practice, mound construction, and demographic analysis. Since it was not recorded until 1941 and left untouched until 1973 (Schroedl 1973a), the mound escaped the activities of relic collectors and archaeologists alike. Furthermore, it was not plowed down or eroded. Since it was completely excavated and well documented, the site provided a complete set of data recorded in a manner facilitating burial analysis. Finally, 40RE124 as mentioned above is one of the few Late Woodland mounds providing associated radiocarbon dates. It may be summarized as follows:

Location: In a large meander of the Clinch River about 16 river miles above Kingston in Roane County. The single mound is located about 50 feet above and a little more than ¼ mile from the north river bank.

Excavator: Gerald F. Schroedl.

When excavated: October 1973 through January 1974.

Previous investigations: The mound was located by Nash's (n.d.a) 1941 survey and designated site 304RE105 but was not tested. In 1973 Schroedl (1973a) relocated the mound on a TVA contour map, renumbered it 40RE124, and conducted the subsequent testing and excavation.

Condition: The mound was undisturbed at excavation except for a relic collector's pit sunk about 3 feet into the center of the mound just prior to its excavation and after testing. Although

a burial was partially removed, the mound was not seriously damaged.

Reason for excavation: The mound was completely excavated due to its inclusion in the Clinch River Breeder Reactor Plant area.

Excavation of 40RE124 revealed three construction stages over an initial submound burial pit. The central mound burial lay at the center point on a direct line between two openings in a ring of limestone slabs encircling the first construction stage. Construction stages were marked by changes in soil color and texture, by the circle of limestone slabs over construction stage 1, by charred logs on top of the second construction stage, and by scattered limestone slabs atop construction stages 2 and 3. The charred logs upon construction stage 2 did not appear to have served as covering for burials. Locally borrowed silt loams with small amounts of midden were used for mound fill. The placement of the second and third construction stages resulted in a shifting of the mound to the south.

A minimum of 34 individuals were recovered from all three stages--3 from the first, 16 from the second, 14 from the third, and 1 indeterminate. Most burials were flexed or semiflexed, although two bundle burials were located in the second stage. Except for one adolescent, all burials were adults. Artifacts found in burial association were triangular stemless points (possibly inflicted), drilled conch columellae, two large preforms, a greenstone gorget fragment, a simple stamped and cordmarked, limestone-tempered vessel fragment, and six shell-tempered vessels including a hooded water bottle from a single burial in construction stage 3. All three burials in construction stage 1 had grave goods; 31.25 percent had them in the second construction

stage; and 21.4 percent had associated artifacts in construction stage 3.

Radiocarbon dates suggest that the mound was constructed between about 700 and 900 A.D. An Early Mississippian midden was discovered adjacent to the northern edge of the mound. The midden, as well as the shell-tempered vessels cached with one of the burials, suggests a close relationship between Late Woodland and Early Mississippian cultural development (Schroedl 1974; Cole 1975:139-147).

Methods

Fourteen burial attributes based on Sprague's (1968:479-485) terminology for burial description were used for this analysis. It was hoped that the mortuary pattern would reveal suggestions of prehistoric social organization from the treatment of individuals at death. The following were evaluated for significance:

1. Form of disposal. Was burial simple (unmodified body) or compound (reduction processes such as defleshing or cremation precede burial)?
2. Individuality. Was the individual buried alone or with other individuals?
3. Deposition. Was burial placed on either side, on the back, or in a seated position?
4. Degree of flexure. Was burial flexed, semiflexed, or extended?
5. Position of arms. Were they placed along the sides, crossed on the pelvis, folded on the chest, or brought to the face?
6. Orientation. Was the individual lying with his head to the north, south, east, west, northeast, southeast, northwest, or southwest?

7. Direction looking. Was the individual looking north, south, east, west, northeast, southeast, northwest, or southwest?
8. Orientation with reference to the mound. Was the individual lying in a clockwise or counterclockwise position on the mound slope?
9. Direction looking with reference to the mound. Was the individual looking into or away from the center of the mound?
10. Construction stage. In which of the three construction stages was the burial located?
11. Sex. What was the sex of the individual?
12. Age. What was the age (adult versus subadult) of the individual?
13. Artifacts associated. Were any artifacts associated with the burial?
14. Orientation with reference to the river. Was the individual looking towards or away from the river?

The within-site analysis is divided into three parts:

1. Approximate or exact chi square tests of significance (Croxton 1959) were made on characteristics observed in burial practice to determine if choices of interment procedure were random or nonrandom.
2. Twelve of the fourteen variables were crosstabulated to determine if any of them were significantly correlated. Individuality was omitted due to its lack of variation, and position of the arms could not be included because observations on more than half of the burials were impossible to make. Phi (ϕ) for 2 by 2 tables or Cramer's V (V), the adjustment of phi for tables of greater dimensions, were used to calculate correlations since

qualitative data was involved. The crosstabulation itself was carried out by means of the Statistical Package for the Social Sciences (SPSS) program CROSSTABS (Nie, Bent, and Hull 1970: 115-128) on the University of Tennessee IBM 360 computer.

3. Ten of the fourteen variables were subjected to a factor analysis. Individuality and position of the arms were excluded as before, as were age and form of disposal, since their correlations with the other variables were not found. The SPSS program FACTOR (Nie and others 1975:468-514) was used to carry out this analysis; the type of rotation was varimax. Again, University of Tennessee computer facilities were used.

Evaluation of Social Organization from Burial Patterning

Significance Tests

Significance tests were made on all characteristics except the location of each burial by construction stage. Results are presented in Table 3. As can be seen, the frequencies of eight burial characteristics have a significance level of less than or equal to 0.05. Thus, with a confidence level of 0.95 these characteristics have a nonrandom distribution. Therefore, the following observations may be made about the total burial pattern at 40RE124. Form of disposal is almost always a primary, in-flesh burial without further preparation of the body before interment. The only exceptions to this are the two bundle burials which occur in the second construction stage. Burials seem to have been made one at a time--no multiple burials can be positively identified, although burials 16A and 16B may be exceptions, since they lie quite close to each other.

Table 3. Significance of variants in burial practice at site 40RE124.

Variable	Frequencies	X^2 Value	Level of Significance
Form of disposal			
Primary	24	4.316	<0.001
Secondary	2		
Individuality			
Single	32	5.657	<0.001
Multiple	0		
Deposition			
Right side	16	4.545	0.05
Left side	6		
Side	22	4.086	<0.001
Back	2		
Degree of flexure			
Flexed	16	3.522	0.10
Semiflexed	7		
Position of arms			
Hands to face	6	1.020	0.15
Hands along sides	3		
Orientation			
N-S	7	5.538	0.025
E-W	19		
Direction looking			
North	12	2.599	0.50
South	7		
East	10		
West	6		
Orientation w/ref to mound			
Clockwise	16	3.520	0.10
Counterclockwise	7		
Direction looking w/ref to mound			
Into center	10	0.66	0.50
Away from center	14		
Sex (total)			
Male	13	0.167	0.90
Female	11		
Sex (construction stage 2)			
Male	5	0.33	0.90
Female	7		
Sex (construction stage 3)			
Male	7	1.668	0.048
Female	2		
Age (total)			
Adult	31	5.306	<0.001
Subadult	1		

Table 3 (continued)

Variable	Frequencies	X^2 Value	Level of Significance
Associated artifacts			
Cs1	3	6.620	0.05
Cs2	5		
Cs3	3		
Orientation w/ref to river			
Facing river	11	0.167	0.90
Away from river	13		

Individuals were laid in the ground on their sides, the right side in almost all cases. Flexed and semiflexed burials predominate, far exceeding any other burial position. The burials were oriented east-west a significantly greater amount of the time than north-south. This may reflect possible orientation to the rising or setting sun. Differential treatment based on age is quite obvious at 40RE124--only one subadult was included in the mound. However, influence of sex on achievement of mound burial seems to be negligible because of the approximately equal number of males and females in the mound.

These observations suggest an egalitarian group in which status was acquired with achievement through life rather than inherited. Thus, few subadults may have warranted mound burial, while an approximately equal number of men and women of greater age and experience were given mound burial.

Crosstabulation of Characteristics

In a further attempt to determine the total burial pattern at site 40RE124, a crosstabulation of variables was made to discover significant correlations. Since so few variables were significantly correlated at the 0.05 level, those significant at the 0.10 level were also noted. As may be seen in Table 4, four pairs of variables at the 0.05 level and two pairs of variables at the 0.10 level were found to show strong relationships. The orientation of the body is correlated with the direction in which the individual is looking.

Table 4. Correlation matrix of variants in burial practice at 40RE124.

	Dispform	Deposit	Legs	Orient	Looking	MdOrient	MdLook	CS	Sex	Age	Artiasso	RvOrient
Dispform	1.00											
Deposit	--	1.00										
Legs	--	0.184	1.00									
Orient	--	0.355	0.525	1.00								
Looking	0.690	0.537	0.737	0.698[1]	1.00							
MdOrient	0.350	0.177	0.088	0.789[2]	0.408	1.00						
MdLook	0.032	0.000	0.338	0.553	0.717	0.567	1.00					
CS	0.239	0.166	0.294	0.785[1]	0.888[1]	0.237	0.278	1.00				
Sex	0.272	0.272	0.044	0.487	0.637	0.158	0.114	0.430	1.00			
Artiasso	0.036	0.338	0.023	0.523	0.664	0.428	0.228	0.319	0.000	1.00		
RvOrient	0.011	0.115	0.191	0.508	0.806[2]	0.036	0.344	0.543[1]	0.570	--	1.00	
Age	--	--	--	--	--	--	--	--	--	--	0.075	1.00

[1]Significant at 0.05 level.
[2]Significant at 0.10 level.

Note: Dispform = Form of disposal
Deposit = Deposition
Legs = Flexure of legs
Orient = Orientation of body
Looking = Direction looking
MdOrient = Orientation w/ref to mound
MdLook = Direction looking w/ref to mound
CS = Construction stage
Sex = Sex of individual
Age = Age of individual (adult versus subadult)
Artiasso = Associated artifacts
RvOrient = Orientation w/ref to the river

This probably indicates that orientation of the body effectively limits the number of possible directions in which an individual may look. Perhaps more importantly, the direction the head lies in relation to the body, the direction in which the individual is looking, and whether or not the individual is looking towards the river all seem to be related to construction stage. The construction stage-orientation correlation may be partially accounted for by the large number of individuals buried with head to the west in construction stage 2. The reason for correlation of the direction in which the individual is looking with construction stage is less clear. As for orientation to the river, a change through time may be seen. In construction stage 1 the only individual with a determinable orientation looks away from the river, as is true for the majority of burials in the second construction stage. However, in construction stage 3 almost all of the burials face the river. This suggests that burial activities were related to the rising or setting sun during the intermediate period of mound construction, while a greater interest in the nearby river developed in later times. Notably, sex has no significant relationship to other variables, again suggesting an achievement-oriented society in which sex is subordinate to an individual's accomplishments.

Factor Analysis

Table 5 indicates that four factors were derived from the ten variables included in this portion of the within-site analysis and presents the factor scores of these variables.

Table 5. Varimax rotated factor matrix.

Variables	Factor 1	Factor 2	Factor 3	Factor 4
Deposition	0.26150	-0.15201	0.46613	0.00119
Flexure of legs	0.07422	0.01333	-0.09419	0.97523
Orientation	-0.59847	0.21009	0.32607	0.17317
Direction looking	-0.26155	0.07686	0.91474	-0.16390
Orientation w/ref to mound	0.79604	-0.10392	-0.01452	0.03871
Looking w/ref to mound	-0.70635	-0.33677	0.12037	-0.25384
Construction stage	0.17949	-0.74013	-0.22283	0.26627
Sex of burial	-0.11701	0.63638	-0.12455	0.05767
Associated artifacts	0.49940	-0.04087	0.17540	0.05218
Orientation w/ref to river	0.17451	0.85114	-0.07641	0.14188

These four factors all have eigenvalues greater than 1.0 and together contribute 75.2 percent of the total variance. The components of each factor were determined by including all those variables with an absolute value of greater than 0.5. Thus the following variables may be included in Factors 1-4:

1. Factor 1: The clockwise or counterclockwise orientation of the individual on the mound slope, whether the individual looked into or out from the center of the mound, the direction the individual's head lay in relation to his body.
2. Factor 2: Whether the individual looked towards or away from the river, the construction stage of the burial, the sex of the individual.
3. Factor 3: The direction in which the individual was looking.

4. Factor 4: Whether the burial was flexed, semiflexed, or extended.

As a result, eight of the ten variables may be seen to contribute significantly to the total variance. Not included are artifacts associated (present or absent) and deposition (on left side, right side, or back). Factor 1 seems to involve the placement of the individuals within the mound--whether each is oriented clockwise or counterclockwise, facing into or out from the center of the mound, or lying with the head to any one of eight directions. The first and third variables are fairly highly correlated ($V = 0.79$), while the second is less highly correlated with the other two ($V \simeq 0.55$). Factor 2, the dimension defined by orientation to the river, construction stage of the burial, and sex of the individual, is more difficult to interpret. Orientation to the river and construction stage of the burial are significantly correlated ($V = 0.54$), but the correlation of either with sex of the individual is insignificant. It may nevertheless be noted that the sex variable loads lowest of the three variables in Factor 2. Due to the high ratio of variables to sample size in this analysis, the appearance of the sex variable in Factor 2 may be of little importance. If this variable is excluded from Factor 2, the factor is easy to interpret and suggests, like the crosstabulation analysis, that the orientation of individuals relative to the river changed through time. As for Factors 3 and 4, single variables load highly on each, thus contributing little towards a more parsimonious description of the pattern of variation.

Summary

In summary, it may be seen from the 14 variables originally analyzed that decisions as to age, individuality, and form of disposal of burials included in the mound are quite consistent. Position of the arms seems to vary between hands to the face and hands along the sides, but lack of data prevents further conclusions. In the factor analysis inclusion of associated artifacts with burials and choice of deposition of the individual seem to vary independently of the other characteristics. These other eight characteristics all contribute significantly to the total variance in burial pattern.

Burial patterning discovered in the preceding analyses suggests that burials were almost always adults. It also suggests that the mound builders had an egalitarian society with status acquired through achievement or age rather than ascribed at birth. Thus, the lack of subadult burials is possibly a result of low status and consequent unworthiness of mound burial. Furthermore, sex of individuals in all but construction stage 3 suggests that sex was insignificant for mound burial at 40RE124. The presence of burial goods appears to vary independently of sex, although an examination of the diagnostic artifacts, triangular projectile points and conch columellae, reveals that they are associated more often with females. Such a case has not been noted at other sites (Lewis and Kneberg 1946:139), where columellae and triangular points occur with less sexual correlation. Also, the sex of some burials containing these artifacts is undetermined, making overall patterns difficult to define at 40RE124. That columellae occur with a limited number of both males and females in Hamilton mounds as a whole

might suggest the membership of these individuals in a particular social group influential in the distribution or manufacture of this artifact. Columellae as a result are associated with both males and females in a limited manner. Since these shells had to be brought from a seacoast, the differential involvement of individuals in their movement might be expected. Finally, the orientation of burials at 40RE124 with reference to direction and to the river suggests that the river's location and sun's position played an important role in mound mortuary customs at different times. Gruber (1971:64-76) has investigated burial patterns in relation to the sun at a late prehistoric village in Pennsylvania; a similar phenomenon may exist at 40RE124. The sun's path seems most important in the second construction stage, while orientation towards the river is most prevalent in the third construction stage. This represents a distinct temporal change in mortuary customs at 40RE124.

III. ANALYSIS AND INTERPRETATION OF SELECTED HAMILTON MOUNDS

Although data from 40RE124 proved sufficient for an intrasite analysis of burial patterning, additional data were necessary in order to synthesize general Hamilton mound characteristics and to investigate mound relationships. Information gathered from the analysis of site 40RE124 as well as that provided by other published references (Webb 1938; Lewis and Kneberg 1946; Rowe 1952:199-206) suggested aspects of Hamilton burial characteristics, mound construction techniques, and artifacts which would be amenable to study. Furthermore, examination of field reports on file at the McClung Museum revealed that much useful data were available for interpreting mound relationships and making a more complete synthesis of Hamilton mortuary complex characteristics.

The Mound Sample

As a result, a sample of 14 burial mounds, including 40RE124, was chosen for analysis. The area of investigation was limited to the upper Tennessee, Clinch, and Hiwassee River valleys, which include the majority of Late Woodland burial mounds in East Tennessee. This area is encompassed by the present Anderson, Meigs, Rhea, and Roane counties (Fig. 1). The mounds used were selected on the basis of three criteria: (1) good preservation prior to excavation; (2) sufficient documentation, both published and unpublished; and (3) sufficiently wide geographical distribution. Sites are presented in Table 6 and are shown in Figure 1. At some sites mounds appear in clusters, from which only one or two mounds were selected for the present analysis. Some of the mounds within such clusters were eliminated because they were poorly preserved. In

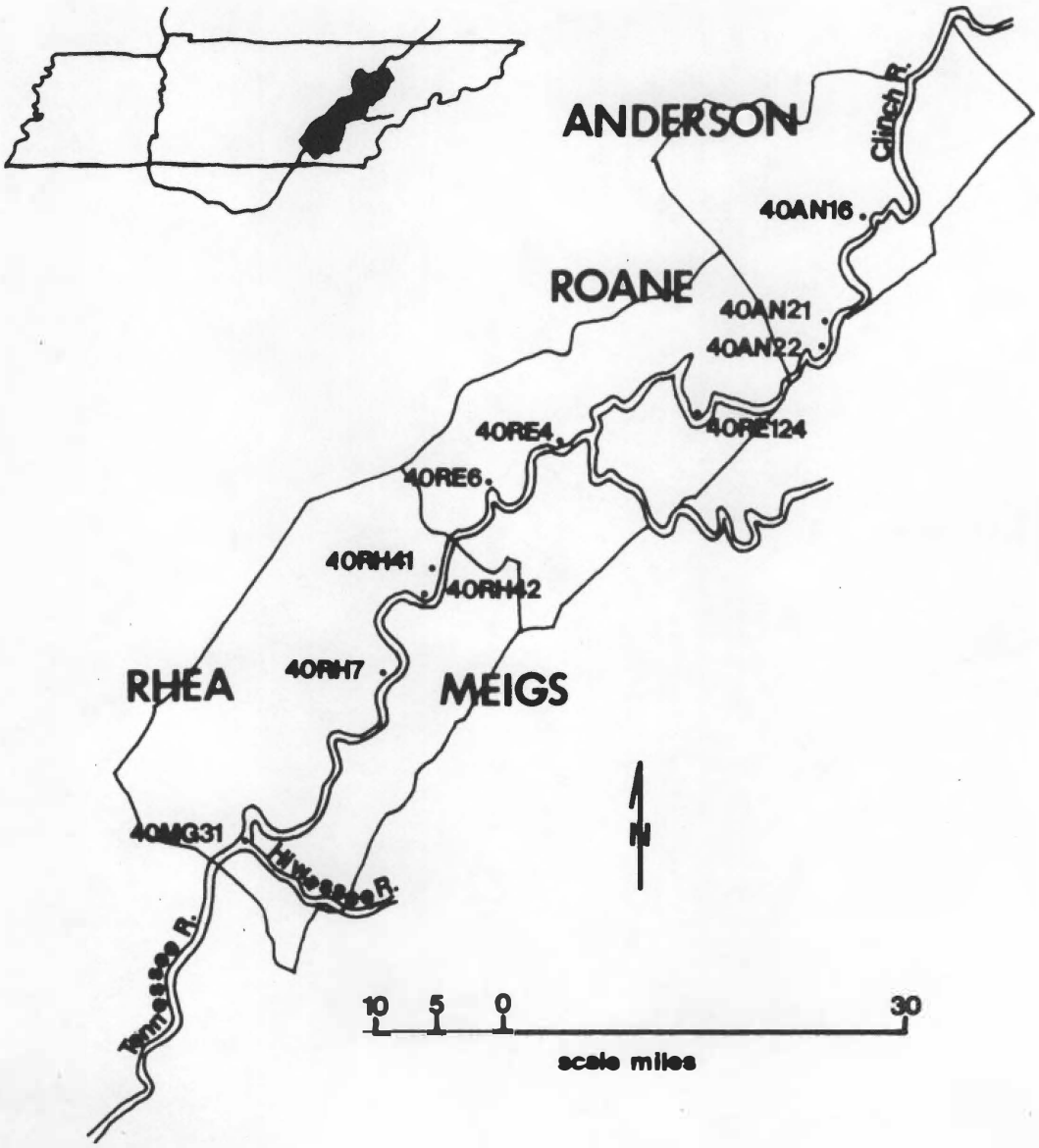

Figure 1. Distribution of Late Woodland mound sites included in study sample.

Table 6. Sites included in intermound comparison.

Site Number	Site Name	Data Source
40AN16	Taylor Farm Mound	Webb 1938, n.d.
40AN21, Units 1,2	Crawford Farm Mounds	Webb 1938, n.d.
40AN22	Freel Farm Mound	Webb 1938, n.d.
40MG31, Unit 42	Hiwassee Island	Lewis & Kneberg 1946; Walker n.d.a
40MG31, Unit 46	Hiwassee Island	Lewis & Kneberg 1946; Nash n.d.b
40RH7, Units A,D	McDonald Site	Graham n.d.; Schroedl n.d.
40RH41, Unit 85VT1	Upper Hampton Place	Walker n.d.b
40RH42, Unit 122	Smith Farm Site	Rowe 1952, n.d.
40RE4, Units 4,10	Alford Farm Mounds	Walker n.d.c, n.d.d
40RE6, Unit 23	Wilson Farm Site	Burroughs n.d.
40RE124	None	Cole 1975:139-147; Schroedl & Cole n.d.

the section below, each site included in the analysis will be briefly summarized.

Taylor Farm Mound (40AN16)

Location: On the Dr. Samuel Taylor farm, about 3½ miles west of Clinton, in Anderson County. The single mound is situated on a bluff overlooking the north side of the Clinch River.

Excavator: William S. Webb.

When excavated: 1934.

Previous investigations: None.

Condition: Undisturbed by relic collectors; little damage by cultivation or erosion.

Reason for excavation: The mound was completely excavated due to its inclusion in the Norris Basin.

The Taylor Farm mound is a conical mound about 30 feet in diameter and 10 feet high. Constructed of clean clay and humus, the mound showed

no evidence of stratification. A large number of limestone slabs, apparently from the immediate area of the mound, were included in the fill and in some cases formed a box or a covering for burials. Sixteen inclusive adult burials, in poor condition due to root penetration, were found throughout the mound. A few simple stamped, sand-tempered sherds were found in the fill, as well as a single shell-tempered plain sherd. A curved-base steatite platform pipe was found 12 inches above one burial, and a fragment of a conch columella bead was found with another. No other artifacts were included in the mound (Webb 1938:133-140).

Crawford Farm Mounds (40AN21)

Location: On the farm of Dr. Samuel Crawford near Scarboro in Anderson County. The two mounds lie in a cultivated field about ¼ mile north of the Clinch River.

Excavator: William S. Webb.

When excavated: 1934.

Previous investigations: None.

Condition: The larger (mound 1) was trenched from south side almost to the center by local residents. Other than this, neither mound was appreciably disturbed by cultivation or erosion.

Reason for excavation: The two mounds were completely excavated due to their inclusion in the Norris Basin.

Mound 1

Crawford Farm mound 1 is a conical burial mound about 45 feet in diameter. Its center lies about 60 feet to the northwest from that of mound 2. No midden material was included in the fill; no stratification

was evident. Twenty-three poorly preserved burials were inclusive in the mound. The only feature included in the mound was a burned area just below the original humus line which may predate the mound. Numerous *Olivella* sp. shell beads were found in the neck region of one burial, and a projectile point was associated with another burial (Webb 1938:180-185).

Mound 2

Crawford Farm mound 2, the smaller of the two mounds, has a diameter of about 30 feet and a height at center of 4 feet. The mound was built of clean clay over a well-defined humus layer and contained only one construction stage. Features included a cache of 11 flint projectile points *not* associated with a burial and a charred log located about 6 inches above the premound soil. Nineteen inclusive, poorly preserved burials were recovered from this mound. A broken pipe was associated with one burial; two other burials each contained a single projectile point; a fourth burial contained a single shell bead. Finally, one individual had apparently been cremated before being placed in the mound with a conch columella (Webb 1938:180-185).

Freel Farm Mound (40AN22)

Location: On the William Freel farm about two miles southeast of Scarboro, Anderson County. The single mound lies in the bottom of a small valley separated from the Clinch River by a low ridge.

Excavator: William S. Webb.

When excavated: 1934.

Previous investigations: None.

Condition: Undisturbed by relic collectors or by cultivation; a portion of the west side, however, was removed by a road cut.

Reason for excavation: The mound was completely excavated due to its inclusion in the Norris Basin.

The mound is a conical burial mound about 40 feet in diameter and 8 feet high. It was apparently unstratified and constructed from sterile alluvium. A single burial was recorded in a pit below the center of the mound. A flat, circular stone pile was placed over the burial. Seventeen inclusive burials were located in the mound; the author (Webb 1938:189) postulates that fifteen of these were bundle reburials. This might account somewhat for their poor preservation. A projectile point was associated with one burial, a shell bead with another, and a drilled conch columella fragment with a third burial (Webb 1938:186-189).

Hiwassee Island (40MG31, Units 42 and 46)

Location: On Hiwassee Island, seven miles south of Dayton, in Meigs County. The island lies near the left bank of the Tennessee River at the confluence of the Hiwassee River.

Excavators: Charles H. Nash (unit 46); Wendell C. Walker (unit 42).

When excavated: April 1937 through April 1939.

Previous investigations: Survey of the island was done by Emmert in 1885 (Thomas 1894:209), when he noted 24 mounds, 22 of which may have been Late Woodland (Lewis and Kneberg 1946:2). Moore (1915) designated the location of six mounds, including units 42 and 46 (Moore's mounds C and F). Harrington (1922) mapped 16 mounds, 15 of which were conical burial mounds, but he did not excavate the two mounds dealt with here.

Condition: Both mounds were disturbed by relic collectors and erosion.

Reason for excavation: Units 42 and 46 were excavated due to their inclusion in the Chickamauga Reservoir.

Unit 42

This mound was less than ¼ mile from the river bank and measured about 55 feet in diameter by 8 feet in height. It was built over a central pit and an area cleared of the humus layer. Three construction stages, either of yellow clay or of highly humic soil and including layers of mussel shell, were distinguishable in the mound profile. Logs covered two burials, and some individuals lay under layers of mussel shell. Seventy-eight human and two dog burials were found; twenty-six of the human burials were intrusive from the later Dallas focus. Both extended and bundle burials were included in the mound, although the majority of burials were semiflexed. Five individuals (burials 34, 44, 46, 49, 60) seemed to have been wounded by projectile points; in one (burial 34) the point was embedded in bone. Both conch columellae and triangular stemless points were associated with burials. Other grave goods included stemmed projectile points, flat and cylindrical shell beads, river pearl beads, a clay pipe, a shell hairpin, and worked bone. Also, pottery from the mound fill included limestone and grit-tempered cordmarked and stamped sherds (Lewis and Kneberg 1946; Walker n.d.a).

Unit 46

This mound, largest of the five investigated by Lewis and Kneberg (1946), measured 55 feet in diameter and 9.6 feet in height. As

in unit 42, the premound humus layer had been cleared away prior to the construction of the three mound stages. The intermediate construction stage contained much midden material, while the other two stages did not. Shell layers were scattered throughout the mound. There were six pit burials made during later stages of mound construction, rather than as intrusive Dallas interments. There were 125 human and 1 dog burials; 117 of the human burials were assigned to the Hamilton focus (Lewis and Kneberg 1946:24). Nine burials were covered with mussel shell, while one was interred in a log tomb. Twelve individuals had probably been wounded or killed by projectile points; three individuals were apparently decapitated. The majority of burials again were semiflexed. Both triangular stemless projectile points and conch columellae were found in burial association. Also included as grave goods were grit and shell-tempered pots, stemmed projectile points, celts, a flint scraper, worked bone, a clay bead, a shell gorget, some concentrations of shell beads, and a conch wall pendant (Lewis and Kneberg 1946; Nash n.d.b).

The McDonald Site (40RH7, Mounds A and D)

Location: On the farm of Carl McDonald, 22 miles north of Dayton, in Rhea County. The two mounds are the best preserved of a group of five excavated mounds which lie about 1500 feet from the west bank of the Tennessee River.

Excavator: J. B. Graham.

When excavated: Summer of 1971.

Previous investigations: C. B. Moore (1915) reported the mound group of which mounds A and D are a part as the Viniard Landing site. He tested mound E, excavated by Graham (n.d.) in 1971,

but Moore explored neither mound A nor D. In 1936 Buckner (n.d.) relocated the mounds and recorded them as site 9-15RH7. Present designation is 40RH7.

Condition: Mound A was partially obliterated when fill was removed for the burial of dead farm animals; mound D suffered from trenching during historic times.

Reason for excavation: The mounds were excavated due to their inclusion in the Watts Bar nuclear power plant area.

Mound A

Although not completely excavated, this mound yielded important information. It was begun by the burning and clearing away of the humus layer in preparation for a single burial, which was laid on the surface and then covered with a log crib and mussel shells. Subsequently, the mound was built of sandy clay loam in five construction stages with log retainers used as stabilizers in stages 1-4. Little borrowed midden material was included in the fill, but mussel shell layers occurred in the mound. Ten individuals were recovered from the excavation--two extended, two flexed, one semiflexed, and five indeterminate. Among the grave goods were triangular stemless projectile points, conch columellae, drills or perforators, stemmed projectile points, a celt, a hammerstone, bone awls, deer bones, *Olivella* beads, a spherical shell bead, and river mussel shells. Other artifacts in the mound fill were plain and simple stamped limestone-tempered pottery, preforms, and a stone pipe (Graham n.d.; Schroedl n.d.; Wright n.d.). Six radiocarbon dates from this mound yield dates ranging from 815 A.D. ± 100 years to 1335 A.D. ± 100 years (Schroedl 1973b:4-5).

Mound D

This mound was begun in a manner similar to mound A by the burning and clearing away of the humus layer prior to placement of the initial burial on the premound surface. In this case the individual was covered with ash and subsequently with two additional stages of mound fill. Cultural material in the sandy clay loam fill indicates that it was borrowed in part from midden deposits. Again, charred log retainers seem to have been employed to stabilize construction stage 1. The majority of the 26 inclusive burials were semiflexed, although several bundle and one extended burials were included. One burial was charred in the chest region and covered by a layer of burned clay. Triangular, stemless projectile points were found in burial association, but no conch columellae were recovered from mound D. A cordmarked and a plain limestone-tempered pot, a stemmed projectile point, a crude biface, a greenstone celt, flat shell beads, mussel shell, and unworked animal bone were also found as grave goods (Graham n.d.; Schroedl n.d.; Wright n.d.). Four radiocarbon dates fall between 675 ± 105 years and 1095 ± 95 years A.D. (Schroedl 1973b:5-6).

Upper Hampton Place (40RH41, Unit 85VT1)

Location: On the Hampton Farm about four miles south of the junction of the Tennessee River with White Creek and about eight miles east of Spring City. The mound is located on the southern end of a village site (40RH41, unit 85) on the river terrace.

Excavators: Alden Hayes and Wendell C. Walker.

When excavated: December 1940 through April 1941.

Previous investigations: C. B. Moore (1915:407-408) reported five mounds and a village site on the Hampton Place; he excavated the smallest and easternmost of the mounds. Harrington (1922) explored the mound adjacent to C. B. Moore's excavation. However, unit 85VT1 was not located until testing of the village area by Hayes in 1940.

Condition: Cultivation as well as the occupation of the mound area by Mississippian groups may have considerably altered the original mound.

Reason for excavation: The mound was excavated due to its inclusion in the Watts Bar Reservoir.

Unit 85VT1 is unusual in its placement *beneath* a later Mississippian occupation (unit 85). Its height at excavation was 2.8 feet but may well have once been higher. Only one stage of construction is evident in the sand mound, which was begun by the placement of a burial on the premound soil. A few small shell layers as well as isolated limestone slabs occur sporadically in the fill. Fourteen burials were recovered, two of which were apparently intrusive. One individual was buried with a charred log placed along his side and shows some evidence of burning. Most burials were flexed. Triangular stemless projectile points were found in burial association, but conch columellae were absent. Other artifacts included with burials were a cordmarked, shell-tempered jar; stemmed projectile points; a drill; ground stone celts; a steatite pendant; flint blanks; bone artifacts; crinoid stems; tubular shell beads; a shell gorget; a shell disc; mussel shells; and a river pearl (Hayes n.d.; Walker n.d.b).

Smith Farm Mound (40RH42, Unit 122)

Location: Adjacent to the Lower Hampton Place and to the northwest of it on the Tennessee River, about nine miles from Spring City, in Rhea County. This and another mound (unit 123) lie about 300 yards apart on the upland back of the river flood plain.

Excavator: Chandler W. Rowe.

When excavated: April-May 1941.

Previous investigations: The two mounds (units 122 and 123) were noted by Moore (1915:406) as the Garrison Place. He did not excavate either of the mounds but reported that they had been dug into considerably. The mounds were relocated by Nash (n.d.a) in his 1941 survey.

Condition: Although Moore (1915:406) reported that the mound had been dug into, Rowe (n.d.) stated that the owner at the time of his investigation could remember no instances of digging into the mound. Rowe (n.d.) reported irregularities in the mound fill due to erosion and groundhog activity.

Reason for excavation: The mound was excavated due to its inclusion in the Watts Bar Reservoir.

The mound was partially excavated in a series of intersecting north-south and east-west trenches. The field work revealed that the mound consisted of four separate construction stages piled over an initial burial pit in the premound soil. Fill was a clean reddish clay which included caps of mussel shell within two of the construction stages. The second construction stage included a multiple burial containing two fully extended individuals covered by charred logs. A

cache of artifacts was associated with each individual. Artifacts included three ground stone celts, one chipped stone celt, three mussel shells, worked bone, and a pentagonal projectile point with one; limestone-tempered sherds from three pots, mussel shell, a chipped stone celt, a triangular projectile point, and worked bone with the other. In all, 17 individuals were recovered, most of which were lying in a semi-flexed position. Other grave goods included conch columellae, a triangular projectile point, a ground stone celt, and a grinding stone. Plain, cordmarked, and checkstamped, limestone-tempered sherds and ground hematite were found in the mound fill (Rowe 1952:203-204, n.d.).

Alford Farm Mounds (40RE4, Units 4 and 10)

Location: These two mounds are part of a group located on the R. H. Alford farm about two miles south of Kingston in Roane County. Unit 4 lies about 600 feet inland from the west bank of the Tennessee River in a cluster of five conical mounds. Unit 10 lies about 3000 feet back from the river in another cluster of five mounds.

Excavator: Wendell C. Walker.

When excavated: April-July 1940.

Previous investigations: C. B. Moore (1915:412) reported two groups of four mounds each on the R. H. Alford farm. He tested one mound in the same cluster in which unit 4 is located, but only noted the presence of the other cluster farther back from the river. In 1939 Alden and Wilkey (n.d.) relocated the mound clusters and designated them as site RE4. Mound excavation by Walker (n.d.c, n.d.d) followed this survey.

Condition: Both mounds had been disturbed by cultivation, a fact noted by both Moore (1915:412) and Walker (n.d.c, n.d.d). Erosion had also damaged both mounds.

Reason for excavation: The mounds were excavated due to their possible inclusion in the Watts Bar Reservoir.

Unit 4

Complete excavation of this mound revealed two separate construction stages piled over an initial burial pit in the premound soil. Apparently, neither old midden material, limestone slabs, nor shell layers were included in mound construction. One of the 30 inclusive burials, however, was covered with a layer of mussel shell and another with charred logs. A third was buried in a log tomb or box. Five burials in addition to the original mound burial were interred in pits. Although most burials were semiflexed, extended burials, bundle burials, and at least one cremation were recovered. A multiple burial of four individuals had also been made. Associated artifacts included triangular, stemless projectile points, conch columellae, *Olivella* sp. beads, a steatite pipe, ground greenstone celts, a flint scraper, animal bones, and deer teeth as grave goods and cordmarked and plain limestone-tempered pottery, stemmed projectile points, and a drilled stone pendant in the mound fill (Walker n.d.c).

Unit 10

Complete excavation of unit 10 revealed five construction stages over an area prepared by clearing away the humus layer. The first construction stage, bounded by charred log retainers, covered a layer of gray ash and was devoted to a single, extended, adult male. A cache of

triangular projectile points was included with this burial. Subsequently, additional layers of dark, humic clay were piled to form the rest of the mound. Twenty-eight inclusive burials were found, the majority lying in the third and fourth levels of construction. Again, most of the burials were semiflexed, but one extended and several bundle burials were also recovered. Three individuals were buried together. In both units 4 and 10 cause of death of some individuals seems to have been projectile point wounds. Triangular points, conch columellae, two perforated shell disc beads, *Olivella* sp. beads, cut shell beads, and a bone artifact were included as grave goods. Plain, limestone-tempered ceramics and a stone pendant were found in the mound fill (Walker n.d.d).

Wilson Farm Mound (40RE6, Unit 23)

Location: On the Charles Wilson property about one mile up the Tennessee River from Rockwood Landing in Roane County. The mound, part of a cluster of seven mounds, lies on a bluff forming the first terrace of the river and is situated about 1500 feet from the west bank. It is separated from the other six mounds by a slough.

Excavator: Carroll A. Burroughs.

When excavated: December 1940 through January 1941.

Previous investigations: C. B. Moore reported five mounds on the property of Dr. Charles Wilson but was not granted permission to excavate them (Moore 1915:409). The site was relocated by Alden and Wilkey (n.d.) in 1939 and designated site RE6. Burroughs' excavation followed.

Condition: Although discontinued in recent years, earlier plowing had been extensive enough to bring shell to the surface of the mound. A slight depression on the summit indicated previous excavation which extended to the subsoil.

Reason for excavation: The mound was excavated due to its inclusion in the Watts Bar Reservoir.

Trenching through the mound indicated that it was constructed in three stages. Humic layers indicate that sufficient time elapsed between construction stages for soil development to occur. First, a pit was dug into the premound soil for a single burial. The pit was filled in and then covered over with earth including old midden material. A capping of limestone slabs was placed over this low mound. After a period of time, the second construction stage was begun with the excavation of another burial pit and the addition of more fill. At the conclusion of this stage, a shell layer was placed on the east slope of the mound. Construction stage 2 elongated the mound to the northeast. The third stage included 17 burials, most of which were laid on the edge of the previous earth mound, though 2 were placed in pits. One dog burial also was recovered from this stage. The first and second stage pit burials were extended, but all others were flexed or semiflexed. One infant was buried with the skull of an adult. One of the two pit burials in the third stage was buried in ash and was slightly burned by the fire producing the ash. Grave goods accompanied the pit burials in the two earlier stages and seven of the construction stage 3 burials. Throughout the mound triangular stemless points, conch columellae, stemmed projectile points, a bone hairpin, and shell beads were found in burial association. Also recovered from the fill were limestone and

grit-tempered sherds, projectile points, scrapers, and a celt (Burroughs n.d.).

Mound Relationships and Mortuary Attributes

Information on the 14 mounds included in the study sample was analyzed in order to determine relationships among mounds and to synthesize mortuary attributes. Using information gathered from previous studies of the Hamilton focus, a list of 56 potentially diagnostic Late Woodland burial characteristics, mound construction techniques, and artifact associations was created. These traits are listed in Table 7. Each of the 14 mounds included in the sample was evaluated for presence or absence of each characteristic.

Estimation of Mound Relationships

Methods

The data gathered from the 14 mounds on mortuary complex characteristics was employed to estimate among-mound relationships. The scores for each mound on all 56 variables were punched onto IBM cards, and then the entire mound sample was subjected to two separate analyses on the IBM 360 computer, University of Tennessee.

The first procedure, an hierarchical profile-grouping analysis (HGROUP) (Veldman 1967) involves the evaluation of the similarity among objects by the determination of the communality of occurrence of their characteristics. The analysis forms clusters of the objects which are most similar in their scores on the variables used to describe them. If the number of mounds included in the analysis equals n, then n - 1 steps may be performed by the program with one mound being grouped within

Table 7. Late Woodland mound characteristics considered in frequency and cluster analyses.[1]

No.	Mound Characteristics
1.	Initial burial laid on the ground
2.	Initial burial in submound pit
3.	Initial burial in log tomb
4.	One construction stage
5.	Two construction stages
6.	Three construction stages
7.	Four construction stages
8.	Five construction stages
9.	Mound height greater than 5 feet
10.	Preliminary clearing away of humus beneath mound
11.	Borrowed fill from midden area
12.	Limestone slab layers
13.	Charred log construction stage delimiters
14.	Limestone tomb or box burial
15.	Limestone-covered burial
16.	Mussel shell-covered burial
17.	Charred log tomb or box
18.	Charred log-covered burial
19.	Decreasing grave goods through time
20.	Projectile points inflicted in burials
21.	Dog burials
22.	Majority of burials flexed
23.	Majority of burials semiflexed
24.	Multiple burials
25.	Extended burials
26.	Bundle burials
27.	Cremations
28.	Decapitated burials
29.	Skull-only burials
30.	More males than females
31.	Triangular projectile points
32.	Conch columellae beads
33.	Limestone-tempered pottery
34.	Shell-tempered pottery
35.	Grit-tempered pottery
36.	Sand-tempered pottery
37.	Celts
38.	Stone gorgets
39.	Pipes
40.	Steatite sherds
41.	Stone beads
42.	Stone pestles
43.	Hematite
44.	Bone artifacts
45.	Flat shell beads

Table 7 (continued)

No.	Mound Characteristics
46.	Freshwater pearls
47.	Concentrations of shell with burials
48.	Conch wall pendants
49.	Midden areas adjacent to the mound
50.	Burials intrusive into the mound
51.	Ash used in burials
52.	Pit burials within the mound other than submound pit
53.	Limestone used in mound construction
54.	Mussel shell layers in mound construction
55.	Stemmed projectile points
56.	More adults than subadults

[1]All characteristics were scored as present or absent.

clusters at each step. The procedure is similar to that followed in an average-link cluster analysis. The relationship of each object to the rest of the objects is thus indicated. Of course, it should be noted that the analysis is limited because each of the variables describing the mounds is given equal consideration in the clustering process. Also, variables with smaller ranges will contribute less to the index of group distance than will those with greater ranges (Veldman 1967:311).

The second analysis employed here is the determination of the principal coordinates of distance (PRINCO) between objects or groups of objects. This method, explained by Gower (1972:10-11), provides a visual representation of the relative proximity of included objects. The principal coordinates procedure operates on a distance matrix, the elements of which are derived by the following equation:

Given a matrix (E) with its rows representing the 14 mounds in the analysis and its columns representing the 56 characteristics (n) of the mound, the squared distance between any two mounds (m_1 and m_2) can be represented as follows:

$$\sum_{n=1}^{56} (e_{m_1 n} - e_{m_2 n})^2$$

The resulting elements form the distance matrix employed in the principal coordinates analysis. In this analysis, if x equals

the number of mounds included, then x - 1 possible coordinates may be obtained for the point representing each mound. Obviously, one does not wish to illustrate each point in more than three dimensions. Therefore, the principal coordinates analysis uses the orthogonal principal axis in one dimension, by the first two principal axes in two dimensions, and so on (Gower 1972:10). Thus, the best possible representation of the relationships among the points using two or three dimensions can be found. Plotting of these points on a graph may reveal meaningful clusters of objects (the mounds in this case), as well as the relationships among individual objects. The principal coordinates of distance analysis is more advantageous than the HGROUP method because each mound is not forced into a specific step of a clustering procedure. Rather, the points may be seen as they exist in space instead of as they occur in a dendrogram. Thus, a more realistic picture of distances among mounds may be obtained.

In addition to the two procedures discussed above, the HGROUP program was also applied to the mound data using the characteristics as objects and the mounds as variables. Similarly, subsets of the original 56 variables pertaining to burial practices, construction techniques, and associated artifacts were considered separately using the HGROUP analysis. Finally, the distribution of each of the 56 variables over the study area was evaluated by inspection. These methods were used to ascertain the relative importance of each of the variables to the discrimination among mounds.

Results

Hierarchical Profile-Grouping Analysis

In the HGROUP analysis the mounds were assigned to clusters of increasing size according to their relative similarities. The steps in this analysis may be presented in the form of a dendrogram (Fig. 2). The mounds may be roughly ordered into a northern (40AN21, 40AN22, 40AN16, 40RH41), a central (40RH7, 40RE4, 40RH42, 40RE6, 40RE124), and a southern (40MG31) group. The centrally located site, 40RH41, seems to be misclassified with the northern sites, a step occurring late in the clustering process. It might be noted that site 40RH41 is unique to the sample because it was situated beneath a Mississippian village and lacked conch columellae with associated burials.

In an examination of the final stages of clustering, one may conclude that the southern and northern groups appear to be the most divergent. The northern cluster seems to be most unique, since the southern and central mounds are eventually grouped together. Similarity between mounds seems to vary inversely with the distance between them. Thus, mounds closer together are more similar--but perhaps for a variety of reasons. Exchange of ideas may have been important, as could have been the availability of similar materials used for mound construction. Possibly, different geographic clusters also reflect temporal differences. Unfortunately, there are too few radiocarbon dates to test this possibility. Dates from sites 40RE4, 40RH7, and 40RE124 suggest, if anything, that these sites are

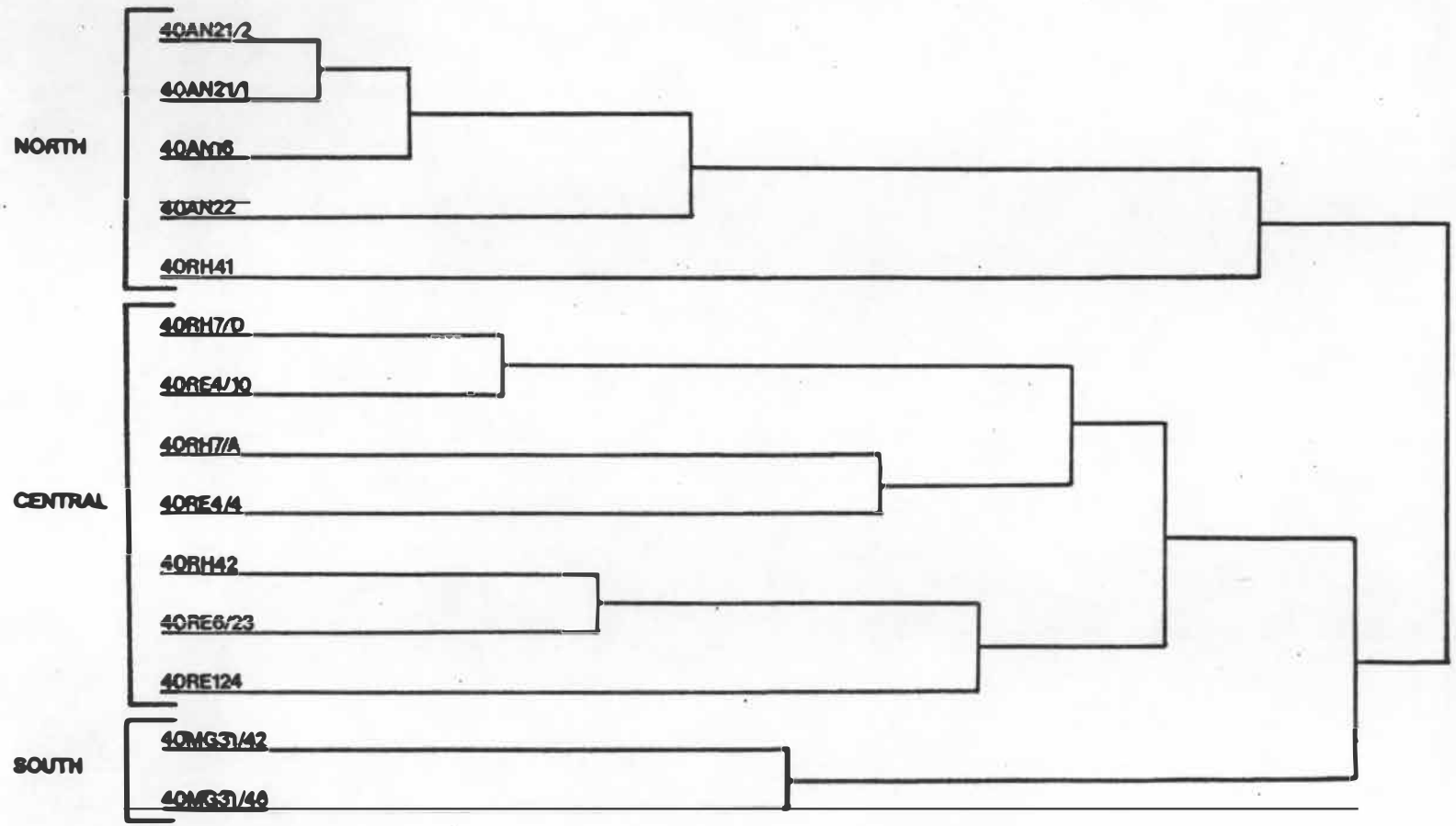

Figure 2. Geographical mound clusters according to HGROUP analysis for 56 variables.

contemporary. According to the HGROUP analysis, these three sites cluster in the central mound group, so their similarity may be attributed to geographic and temporal proximity. Unfortunately, radiocarbon dates do not exist for the mounds classified in the southern and northern clusters.

It was hoped that more than a simple evaluation of mound relationships could be gleaned from the HGROUP analysis. Accordingly, three other applications of the program were made. First, the 56 variables scored for each mound were grouped according to their similarity of occurrence in the 14 mounds. The purpose here was to determine which characteristics had similar distributions over the mound sample. A dendrogram was obtained from the HGROUP program, but there were so many variables that it was difficult to visualize meaningful associations. Although an attempt was made to interpret mound characteristics as they were grouped at various levels of the analysis, no clusterings that indicated specific patterns of activity could be seen. Therefore, it was decided to attempt a somewhat less specific approach to the problem of discerning variables important to mound diversity using the HGROUP program. This second application of the HGROUP analysis was undertaken as follows: Given the geographical distribution of mounds for all 56 traits, it was decided to test subgroups of traits to determine their contribution to the geographical clustering of mounds. The subsets of the 56 variables used here were those variables (Table 7, pages 48-49) pertaining to burial customs (characteristics 1, 2, 3, 13-20, 22-31, 53); to

construction techniques (1-18, 51-55); and to associated artifacts (20, 32-49, 56). Each of these subsets was subjected to the HGROUP procedure with the results presented in Figures 3-5.

As can be seen, burial customs (Fig. 3) seem to vary greatest from the geographical distribution found for all 56 variables. In this case, one of the northernmost mounds (40AN22) is classified with the central and southern mounds. Also, two of the formerly central mounds (40RH7/A and 40RE124) appear quite similar to the northern mounds. Perhaps the diffusion of ideas on mortuary practices was not as limited as the spread of construction methods or artifacts, which could have been more dependent on local resources. A look at the other two figures (Figs. 4 and 5) shows that they resemble the overall picture more closely. Unusually enough, mound 40RH41, classified with the northern mounds in the overall clustering analysis, is grouped with the southern mounds for artifact associations. Yet the geographical distribution of mound characteristics holds in general on all except the burial customs clustering.

In a final attempt to isolate the causes of mound groupings, all 56 variables were inspected for their geographical distribution. It was assumed that those variables showing geographical limitations could account for the existing discrimination among mounds. Inspection indicated that the following characteristics are geographically limited:

1. Use of limestone slabs in mound construction is more prevalent in northern mounds.

Figure 4. Mound clusters based on 23 variables representing mound construction techniques.

Figure 5. Mound clusters based on 20 variables representing associated artifacts.

Figure 3. Mound clusters based on 22 variables representing burial customs.

2. Use of mussel shell in mound construction is more common in the south.
3. Preliminary clearing of the humus layer occurs primarily in the south.
4. Mound fill borrowed from midden areas occurs mostly in the central cluster.
5. Charred log tombs or boxes are found primarily in the south.
6. Decapitated burials are known only from the southern mound cluster.
7. Stone pestles belong primarily to the southern mounds.
8. Flat shell beads are found mainly in the central mounds.
9. Concentrations of shell with burials occurs in the south.
10. Ash in burials is found in the central mounds only.
11. No inflicted points were noted in the Anderson County mounds.
12. No celts were found in the Anderson County mounds.
13. No bone artifacts occurred in the Anderson County mounds.
14. No stemmed projectile points occurred in the Anderson County mounds.

Because these 14 characteristics have limited geographical distributions, they may contribute to the geographical clustering of mounds revealed by the HGROUP analysis.

Principal Coordinates of Distance Analysis

The second means of testing mound relationships is the principal coordinates of distance analysis (PRINCO). As explained earlier, this method involves the determination of the latent roots and vectors of an adjustment of the original distance matrix presented in Table 8. The

Table 8. Matrix of relative distances among Late Woodland mounds based on 56 variables indicating cultural affinity.

Sites	40AN16	40AN21/1	40AN21/2	40AN22	40MG31/42	40MG31/46	40RH7A	40RH7D	40RH41	40RH42	40RE4/4	40RE4/10	40RE6/23	40RE124
40AN16	0													
40AN21/1	8	0												
40AN21/2	11	7	0											
40AN22	15	11	10	0										
40MG31/42	36	34	35	29	0									
40MG31/46	30	30	29	29	14	0								
40RH7A	26	22	23	27	20	24	0							
40RH7D	27	23	22	24	25	27	21	0						
40RH41	19	19	20	26	27	23	25	24	0					
40RH42	27	23	24	20	19	29	17	16	24	0				
40RE4/4	28	26	25	19	16	22	16	21	29	15	0			
40RE4/10	24	18	17	17	26	28	18	13	25	15	20	0		
40RE6/23	28	28	29	21	18	22	24	21	25	13	18	20	0	
40RE124	22	24	23	21	28	28	24	23	23	19	24	24	18	0

adjusted latent vectors may then be plotted in two or three dimensions in order to visualize the relationships among objects and to determine any clusters of objects. The same 56 variables used in the preceding HGROUP analysis were the basis of the distance matrix used in the principal coordinates analysis.

The analysis provided the latent roots and vectors of the adjusted matrix. The program was limited to the determination of ten latent roots (Table 9), all of which were greater than one and together contributed 93.50 percent of the total variance.

Table 9. Latent roots of distance matrix and their contribution to the total variance.

Latent Root	Contribution (%)	Latent Root	Contribution (%)
1. 39.183	27.063	6. 9.143	6.315
2. 21.086	14.564	7. 7.052	4.871
3. 16.001	11.052	8. 6.291	4.345
4. 14.769	10.201	9. 5.677	3.921
5. 11.701	8.082	10. 4.468	3.086

That so many latent roots make significant contributions to the total variance indicates a highly diverse group of subjects, i.e. the mounds. Also, the high number of variables (56) scored for the small number of mounds (14) may contribute to the great diversity. The adjusted latent vectors (Table 10) were used to graph the points representing the mounds in two dimensions (Fig. 6). These first two latent vectors, or principal

Table 10. Adjusted latent vectors of distance matrix.

Site	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6	Vector 7	Vector 8	Vector 9	Vector 10
40AN16	-2.534	-0.933	0.253	-0.293	0.491	-0.120	-0.052	1.473	0.090	-0.838
40AN21/1	-2.519	-0.224	-0.598	-0.183	0.112	-0.343	-0.309	0.343	0.475	0.200
40AN21/2	-2.466	-0.080	-0.665	-0.259	-0.226	0.309	0.092	-0.604	0.020	0.838
40AN22	-1.563	0.542	0.128	-1.898	-0.792	-0.110	0.189	-0.714	0.187	0.086
40MG31/42	2.822	-1.060	-0.527	-0.575	-0.170	-0.455	0.053	-0.196	1.497	-0.666
40MG31/46	1.702	-2.630	-0.596	-0.254	-0.974	1.052	-0.412	0.073	-0.378	0.585
40RH7A	0.880	0.325	-1.564	0.683	2.211	0.331	-0.830	0.075	-0.207	0.317
40RH7D	0.453	1.383	-0.335	1.803	-1.239	0.865	1.084	0.907	0.329	0.253
40RH41	-0.628	-1.898	0.704	1.961	0.061	-1.393	0.609	-0.809	-0.553	-0.175
40RH42	1.047	1.659	0.580	0.196	0.414	-1.224	-0.018	-0.045	0.634	0.766
40RE4/4	1.464	0.633	-0.840	-1.435	0.675	-0.144	1.510	0.063	-1.106	-0.334
40RE4/10	-0.169	1.680	-0.861	0.751	-1.012	0.256	-1.067	-0.766	-0.463	-1.091
40RE6/23	1.543	0.459	1.716	-0.594	-0.672	-0.682	-1.025	0.803	-0.806	0.299
40RE124	-0.032	0.143	2.556	0.097	1.122	1.656	0.177	-0.604	0.281	-0.239

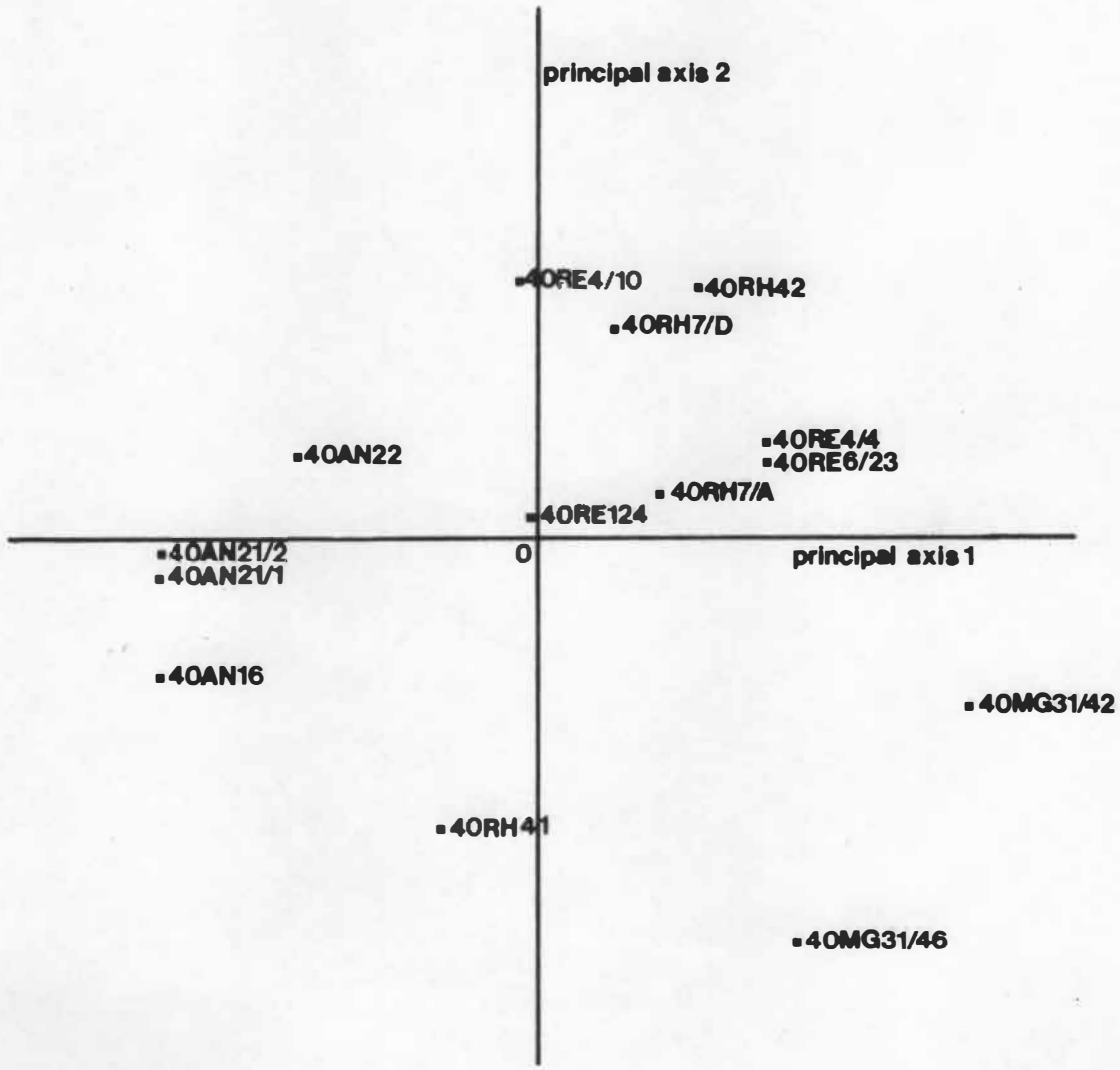

Figure 6. Results of the principal coordinates of distance analysis plotted in two dimensions.

coordinates, account for only 41.63 percent of the total variance, but they nevertheless give a picture of mound relationships similar to that obtained from the HGROUP analysis. Consideration of Figure 6 indicates that the greatest discrimination along the horizontal axis is that between the Anderson County (northern) and the Meigs County (southern) mounds. The Rhea and Roane County mounds fall in the central portion of this dimension. The vertical axis deals with a separation of the centrally located Rhea and Roane County mounds and the southern Meigs County mounds. The only exception is that of site 40RH41, unit 85VT1, which is classified with the southern as opposed to the central mounds. Overall, however, 40RH41 lies intermediate to the Anderson and Meigs County mounds on the vertical axis and slightly closer to the Anderson County mounds on the horizontal axis. Yet its relationship to either cluster is weak, thus accounting for its entrance into the HGROUP analysis in one of the final steps. In conclusion, both the hierarchical profile-grouping and principal coordinates of distance analyses show mounds included in this sample to cluster along geographical lines.

Hamilton Mortuary Attributes

Methods

After evaluation of the mound sample for the 56 characteristics, those traits occurring with a frequency of greater than or equal to 0.50 were considered generally diagnostic of the Hamilton mortuary complex. It should be noted that this cut-off point by no means represents the actual or statistical significance of a characteristic. In actuality, the occurrence of a trait in one in 100 mounds may be significant. In dealing with an overall characterization of this complex, however,

attention was focused on those traits which have importance due to their frequency of occurrence rather than their mere presence. Furthermore, no statistical test of significance was attempted here. It was deemed impossible to predict how often a trait should occur if it were random, so no expected values could be found to compare to the observed values. All 56 variables are characteristic of at least some Hamilton focus sites. The purpose here was to deduce which of them occurred often. Thus, the characterization of the Hamilton mortuary complex gleaned from this analysis should include those traits occurring often enough so that one would expect to find them upon examining a Late Woodland burial mound in East Tennessee.

In conjunction with this analysis, some burial characteristics noted during the detailed investigation of site 40RE124 were evaluated for all 14 mounds included in the study sample. The relative treatment of the initial mound burial as compared with other mound burials was investigated. This was done by examining the age, sex, associated artifacts, and manner of burial of the first individual placed in the mounds. Also, possible correlations between age, sex, presence of artifacts, presence of triangular incurvate projectile points, and presence of conch columellae were tested using the SPSS program CROSSTABS (Nie, Bent, and Hull 1970:115-128).

Results

The frequency and percentage of the mounds in which each trait occurs were determined (Table 11). Below are listed the variables from Table 11 which occur in at least 50 percent of the mounds considered in this analysis:

Table 11. Mound characteristics considered in cluster analysis.[1]

	Characteristics	Frequency	Percentage
1.	Initial burial laid on the ground	8	57
2.	Initial burial in submound pit	6	43
3.	Initial burial in log tomb	3	21
4.	One construction stage	5	36
5.	Two construction stages	2	14
6.	Three construction stages	4	29
7.	Four construction stages	1	7
8.	Five construction stages	2	14
9.	Mound height greater than 5 feet	11	79
10.	Preliminary clearing away of humus beneath mound	5	36
11.	Borrowed fill from midden area	5	36
12.	Limestone slab layers	3	21
13.	Charred log construction stage delimiters	5	36
14.	Limestone tomb or box burial	1	7
15.	Limestone-covered burial	5	36
16.	Mussel shell-covered burial	4	29
17.	Charred log tomb or box	5	36
18.	Charred log-covered burial	4	29
19.	Decreasing grave goods through time	7	50
20.	Projectile points inflicted in burials	9	64
21.	Dog burials	3	21
22.	Majority of burials flexed	4	29
23.	Majority of burials semiflexed	8	57
24.	Multiple burials	9	64
25.	Extended burials	8	57
26.	Bundle burials	7	50
27.	Cremations	4	29
28.	Decapitated burials	2	14
29.	Skull-only burials	6	43
30.	More males than females	10	71
31.	Triangular projectile points	12	86
32.	Conch columellae beads	11	79
33.	Limestone-tempered pottery	8	57
34.	Shell-tempered pottery	4	29
35.	Grit-tempered pottery	3	21
36.	Sand-tempered pottery	1	7
37.	Celts	9	64
38.	Stone gorgets	2	14
39.	Pipes	8	57
40.	Steatite sherds	3	21
41.	Stone beads	0	0
42.	Stone pestles	4	29
43.	Hematite	4	29
44.	Bone artifacts	8	57

Table 11 (continued)

	Characteristics	Frequency	Percentage
45.	Flat shell beads	3	21
46.	Freshwater pearls	2	14
47.	Concentrations of shell with burials	4	29
48.	Conch wall pendants	1	7
49.	Midden areas adjacent to the mound	5	36
50.	Burials intrusive into the mound	3	21
51.	Ash used in burials	4	29
52.	Pit burials within the mound other than submound pit	2	14
53.	Limestone used in mound construction	5	36
54.	Mussel shell layers in mound construction	6	43
55.	Stemmed projectile points	9	64
56.	More adults than subadults	14	100

[1]All characteristics were scored as present or absent.

1. Initial mound burial laid on the ground--57 percent.
2. Height of mound greater than 5 feet--79 percent.
3. Grave goods decrease through time--50 percent.
4. Projectile points inflicted in burials--64 percent.
5. Majority of burials semiflexed--57 percent.
6. Multiple burials made in the mound--64 percent.
7. Extended burials among those in mound--57 percent.
8. Bundle burials among those in mound--50 percent.
9. More males than females--71 percent.
10. More adults than subadults--100 percent.
11. Triangular projectile points with burials--86 percent.
12. Conch columellae with burials--79 percent.
13. Limestone-tempered pottery in the mound--56 percent.
14. Celts in mound association--64 percent.
15. Pipes in mound association--57 percent.
16. Bone artifacts--57 percent.
17. Stemmed projectile points--64 percent.

The discussion of the traits which seem to best describe the Hamilton burial complex will be divided into three parts--that dealing with mound construction, that with burial customs, and that with diagnostic artifacts. Because a characteristic is omitted from this description does not exclude it from the Hamilton complex. Rather, the trait may be representative of the focus in a limited area or single locality. In the same sense, the characteristics discussed below do not occur in every Hamilton mound, as their frequencies clearly indicate. They merely have a greater tendency to occur.

Mound Construction

All the burial mounds examined are more or less conical in shape and generally can be said to be accretional, since most (64 percent here) have more than one construction stage. Thus, increase in mound size varies directly with the number of burials. A hiatus in burial activity resulted in the demarcation of construction stages. Quite often (79 percent of the time) the mounds reached a height of at least 5 feet above the surrounding land surface, although they may have been somewhat larger than archaeological records indicate, since so many have been reduced by pitting, plowing, and erosion. Finally, borrowed mound fill from midden areas contributed to some but not to the majority of mounds. The fill used for the mounds seems to be dependent on what sediments existed near the mound area. Thus, midden, clean clay or loam, or highly humic soil were apparently used indiscriminately. Patterns of mound location and the possible reasons for selecting particular areas were not investigated. A variety of landscapes including high bluffs and high river terraces were used, but seldom are burial mounds found on the active flood plain or first river terrace.

Burial practices often influenced the materials or techniques used in mound construction. Although Lewis and Kneberg (1946:23), Webb (1938:186), Graham (n.d.), Cole (1975:140-142) and others have noted the initiation of mound construction with a submound pit burial, the majority of mounds included in this analysis did not begin with pit burials. Rather, the first burial usually was laid on the

surface of the ground and covered with soil. A consideration of the frequencies of occurrence of these two burial methods indicates that both pit (43 percent) and simply soil-covered burials were frequently the methods of commencing a mound. Lewis and Kneberg noted the apparent clearing away of the humus layer as another preliminary to mound construction. This characteristic, however, occurs in only five of the mounds examined here. Pit burials of Hamilton cultural designation also occur other than as submound pits (40RE4/4, 40RE6/23), but they are rare. More often, pit burials above the premound soil are of later cultural affiliation, such as Dallas focus. This phenomenon is not found as often as Lewis and Kneberg's (1946) mounds from Hiwassee Island would suggest.

Another aspect of construction involves the use of river mussels, large stones, and charred logs. Only one of these materials was used the majority of the time, but they all deserve mention. Occasionally, limestone slabs were employed as construction stage delimiters, as coverings or as boxes for burials, or as simply part of the mound fill. Layers of mussel shell have been found in similar circumstances. However, these two materials seem to have mutually exclusive ranges of distribution. Their use seldom overlaps, and limestone occurs more often in the more northerly mounds, while mussel shell, especially in large quantities, can be seen more often in the more southerly mounds (Fig. 7). Availability of limestone may account for the difference, but cultural preference must also be considered. Another material used in mound construction is wood. Charred logs

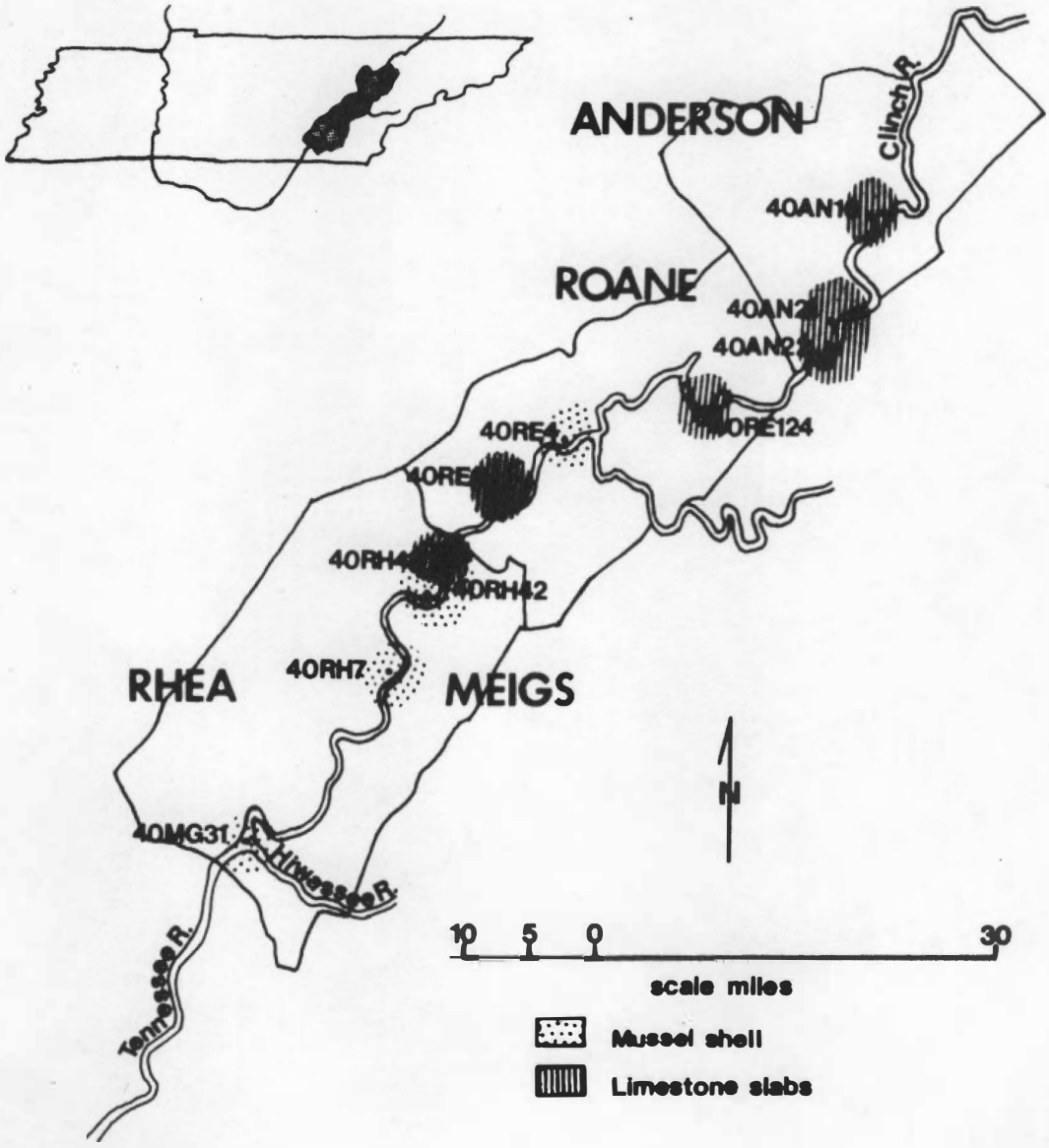

Figure 7. Distribution of limestone slabs and mussel shells used in the construction of Late Woodland burial mounds.

apparently had at least three distinctive uses--as burial containers or coverings, as construction stage delimiters, and as possible retainers of mound fill. They are far from universal in any one of these uses, although logs occur in ten of the fourteen mounds.

Burial Customs

As for burial practices, several characteristics occur frequently in the Hamilton focus mortuary complex. During investigation of site 40RE124, Cole (1975:142-143) noticed that the percentage of grave goods placed with burials tended to decrease through time. Accordingly, this phenomenon was evaluated for the 14 mounds included in the present study, and it was found that 50 percent of the mounds followed the pattern at site 40RE124. Such an occurrence may indicate changing attitudes towards death on the part of the builders of these mounds. Additional general burial characteristics include the presence of Hamilton projectile points inflicted in burials from nine of the fourteen mounds. This characteristic was noted earlier by Lewis and Kneberg (1946:139-140) and appears quite frequently in Hamilton mounds in general.

Burial position varies considerably, although many (57 percent) of the mounds have predominately semiflexed burials and fewer (29 percent) have mostly flexed burials. Along with these more common burial positions, extended burials (in 57 percent) and bundle burials (in 50 percent) are also found. Yet the latter two never predominate. Although the mounds seem to be built most often by adding single individuals and covering them with mound fill, multiple burials are

far from uncommon (in nine of the fourteen mounds). There are always, however, more single than multiple interments. Least common are cremations, which occur in a few mounds and usually only once in a mound where they do occur. Also reported by Lewis and Kneberg (1946:138) are decapitated or skull-only burials. Both were found in a minority of the mounds, but the interpretation of such remains may not be totally accurate due to poor preservation of bone.

Finally, the identity of the burial population included in these mounds is somewhat unusual. In every case, there proved to be more adults than subadults interred in the mounds. In some cases, the ratio was as much as 33 adults to 1 subadult (40RE124), 10 to 1 (40RE6, unit 23), 7 to 1 (40RH42, unit 122), or 9 to 1 (40AN22). In some instances, individuals could not be aged, but these burials, even if included as subadults, could not completely reduce the large ratios. Although Wright (n.d.) considers the adult-subadult ratio at 40RH7 to represent a normal population, this case obviously does not exist for all of the mounds. In addition to the age differential, there is also a sex differential. There are almost always more males than females in these mounds; sometimes the males occur as much as four or five times as often as females. In many cases, however, the ratio is not so high, and the number of unidentifiable burials could alter the ratio of males and females. In several cases the unidentified burials, if female, could greatly overshadow the males in number. Thus, it can be tentatively suggested, but not clearly

demonstrated, that more males than females received preferential treatment by being buried in a mound.

Evidence of differential treatment of individual burials as well as the patterning of burial noted at site 40RE124 suggested that additional investigation of mound burials was needed. Therefore, the initial burial was more closely examined in each of the 14 mounds in the study sample. Furthermore, the bias towards males and adults in most of the mounds examined suggested that these individuals might have received additional recognition in the form of associated artifacts. Consequently, correlations between sex and age of individuals and the presence of grave goods were examined for the mound sample.

Further analysis of the initial mound burial confirmed earlier observations of its importance. In eight of the fourteen mounds grave goods were placed with the original burial. Exceptions were the mounds at sites 40AN16, 40AN21, 40RE4/4, 40RH7/D, and 40RH42. Grave goods ranged from the inclusion of a single conch columella with burial 80 at site 40MG31/42 to the furnishing of over 46 different kinds of artifacts to burial 12 at site 40RH7/A. There was no apparent geographical distribution of the amount of grave goods included with the initial mound burials. Nor did there appear to be a pattern in the method of disposal of the first mound burials. Only four (40AN16, 40AN21/1 and 2, 40RH41) were simply laid upon the ground. Some were pit burials (40MG31/42, 40RH42, 40RE4/4, 40RE6/23, 40RE124). Others had had the ground cleared of the humus layer prior to their placement upon it

(40MG31/42 and 46, 40RH7/A and D, 40RE4/10). Some burials were covered by logs (40RH7/A), buried in a log tomb (40MG31/42 and 46), or surrounded by one or more logs (40RH41, 40RE4/10). Ash and charcoal covered burial 41 at 40RH7/D. Covering burial 17 at 40AN22 was a pile of limestone slabs. Thus, it can be seen that the initial mound burial was generally given special treatment, sometimes in the form of abundant grave goods, more often in the form of burial method, which was quite variable but in all cases indicated a greater expenditure of energy than that shown for most mound burials.

Because of the apparent high status of the initial mound burial, an attempt was made to further identify the individuals who received such unusual recognition. Although only four of the fourteen burials could be identified as to sex, all four were male. Eleven of fourteen ages were determined, and all eleven appeared to be adults. Thus, on the basis of the 14 mounds considered in this analysis, burials initiating mounds are consistently adult males. Such a situation suggests a possible kin group organization under which prestigious adult male members received initial mound burial. If this were the case, several distinct social groups, such as lineages, sibs, or clans (Murdock 1949:46-47, 66-69), living in the same locality could account for the often occurring clusters of burial mounds found in East Tennessee. Theoretically, each mound would correspond to a different social group. The importance of the adult male to this organization of the society is borne out by the differential treatment of adult male initial burials and the bias towards adults and males in the total number of mound burials.

An analysis was carried out to discover any existing correlations between grave goods, conch columellae, triangular incurvate projectile points, and the age and sex of individuals buried. Correlations were made for the burials from the 14 mounds as well as for separate northern, central, and southern clusters of the mounds. These clusters were determined by the HGROUP classification of the 14 mounds (Fig. 2, page 53). All burials identifiable for age and/or sex were used. Sample sizes, correlations (ϕ), and their significances are presented in Table 12. No significant correlations were found between sex and grave goods. Triangular projectile points, however, seem to be associated with males more often than females. For males in all 14 mounds, 26.3 percent have the points, while they are associated with only 15.6 percent of the females (significance = 0.2299). This situation seems to be highly influenced by the southern cluster of mounds, where 23.5 percent of the males have points and only 5.6 percent of the females have them (significance = 0.1848). As for correlations between age and associated artifacts, adults were significantly related to the presence of triangular projectile points in the total mound sample (significance = 0.0216). Both the northern and southern clusters show this tendency, although the significances are only 0.3911 and 0.1077, respectively. Finally, there may be some correlation between subadults and conch columellae in the central cluster. Only 7 percent of the adults have them while 20 percent of the subadults are associated with them (significance = 0.1426). In no case is the correlation of grave goods in general with age or sex significant.

The correlations found between male burials and triangular projectile points may be due to their association with male activities,

Table 12. Correlation of grave goods with age and sex for mound study sample.

Group	Variable	Sample Size	Grave Goods		Conch Columellae		Triangular Projectile Points	
			ϕ	Significance	ϕ	Significance	ϕ	Significance
Overall sample	Sex	140	0.0176	0.8351	0.0017	0.9842	0.1015	0.2299
North cluster	Sex	7	0.7303	0.1429	--	--	0.1667	0.6286
Central cluster	Sex	64	0.0809	0.5178	0.0277	0.8247	0.0373	0.7656
South cluster	Sex	69	0.0193	0.8730	0.0102	0.9325	0.1596	0.1848
Overall sample	Age	315	0.0295	0.6007	0.0269	0.6329	0.1294	0.0216
North cluster	Age	23	0.0463	0.8243	--	--	0.1788	0.3911
Central cluster	Age	135	0.0024	0.9779	0.1262	0.1426	0.0404	0.6385
South cluster	Age	157	0.0011	0.9890	0.0028	0.9718	0.1284	0.1077

especially a greater participation of males in warfare, which Lewis and Kneberg (1946:140) attribute to the Hamilton focus people. The lack of correlation between the presence of grave goods in general and sex suggests a more equal treatment of males and females at burial. As for age, projectile points seem much more prevalent in adult burials. That grave goods have nearly equal chance of occurring with adults and subadults suggests that subadults who were fortunate enough to receive mound burial were treated as well as were adults. In fact, the presence of conch columellae with a greater percentage of subadults than adults in the central mound cluster may indicate a greater than usual importance of subadults. Although it was suggested that at 40RE124 conch columellae beads are associated with individuals controlling their manufacture or trade, their association with subadults in the central mound cluster implies that there may be other reasons for inclusion of columellae with certain individuals.

Although there is a bias towards adults and towards males in Hamilton mounds, this bias seems to extend mainly to the more elaborate treatment of initial mound burials, which are adult males, and to the inclusion of a larger number of adult males than females or subadults in the mounds. Overall, the presence of grave goods is apparently arbitrary for age and sex, which appear to have been important in determining whether or not an individual was to be included in the mound. Once this decision was made, adult or subadult, male or female, had about equal probability of being interred with grave goods.

Diagnostic Artifacts

Finally, besides construction techniques and burial customs, there are several distinct kinds of artifacts which are also generally present in the Hamilton mortuary context. Triangular projectile points, inflicted or cached with burials, and drilled conch columellae beads have long been considered diagnostic Hamilton burial goods (Lewis and Kneberg 1946; Rowe 1952). The present study tends to confirm this suggestion. Additional artifacts, although occasionally included as grave goods, also often occur in the mound fill. Limestone-tempered pottery occurs more frequently than do other kinds of ceramics. Also, celts (64 percent), pipes (57 percent), bone artifacts (57 percent in spite of poor preservation), and stemmed projectile points (64 percent) occur frequently in mound association. Although these artifacts may be fortuitous in mounds containing midden material, their presence in mounds constructed of sterile alluvium suggests their intentional inclusion during mound construction. Other artifacts, including stone gorgets, steatite sherds, stone beads, stone pestles, hematite, flat shell beads, pearls, and conch wall pendants, proved to be limited in their distribution and specific to only a few sites. Thus, although they are noted in various reports (Lewis and Kneberg 1946; Schroedl and Cole n.d.), they cannot be considered general Hamilton mortuary complex characteristics.

The discussion above has centered around construction techniques, mortuary practices, and associated artifacts which have been identified as typical of the Hamilton focus. Also included have been other characteristics, less frequent in occurrence, which nevertheless contribute to the description of the focus on a more limited basis.

IV. SUMMARY AND CONCLUSIONS

Three factors have permitted the synthesis and interpretation of the Hamilton mortuary complex presented in this study. First, the many mound sites excavated through salvage archaeology programs since the 1930's have provided the quantity of information necessary to the synthesis of Hamilton mortuary practices. Second, the more recent excavation of site 40RE124 has provided the more detailed and previously unavailable information needed for the investigation of burial patterning. And third, the sophisticated and time-consuming statistical analyses made available and practical through use of the computer allow investigation of both the internal arrangement of mound burials and the relationships among various mounds. As a result of the statistical analyses performed on the sample included here, conclusions may be drawn regarding the patterning of burial within a single mound, the relationships among Hamilton focus burial mounds, and the general characteristics of this Late Woodland mortuary complex.

First, the patterning of burial discovered at site 40RE124 has provided information on the builders of this particular mound. The group responsible for the mound was most likely egalitarian, with increasing rank being acquired through life. Most of the individuals, usually adults, considered of sufficient importance to be included in the mound were buried soon after death, so that burials are virtually always single interments. Usually the individual was placed on his side in a flexed or a semiflexed position with his head on his right side. Artifacts were placed with burials from time to time but were

generally scarce. That both males and females received burial goods, although females seem to have received more of the diagnostic artifacts, suggests the importance of both sexes to the society's organization. Another indication of status could be the presence of conch columellae with only a few individuals. Such people could have been influential in the movement or distribution of this trade item. Those individuals buried in the first construction stage received more grave goods than did those buried in subsequent construction stages. Besides decreasing presence of grave goods, other changes occurred as time passed. Construction stage 2 shows that burial orientation was perhaps influenced by the direction of sunrise and sunset. Also, two bundle burials, an indication, perhaps, of increasing ceremonialism surrounding death, occur in construction stage 2. Finally, in the third construction stage attention seems to have been directed towards the river, as many of the burials face it. All in all, a homogeneous pattern of burial seems to exist throughout the mound with some changes resulting in minor differences through time.

The findings at 40RE124 suggested that further investigation of burial practices over a larger sample of mounds would be fruitful. The resulting examination of initial mound burials, sex and age ratios, and sex and age correlations with grave goods provided the basis for a model of Hamilton social organization. A distinct group of people may be seen as responsible for each mound. Within each group the members were of approximately equal status at birth. Status increased with age and probably with achievement so that more males than females and more adults than subadults received mound burial. In some cases subadults seem to have been important enough so that they, too, received mound

burial. Besides permitting mound burial, higher status is marked by the presence of grave goods, greater than usual expenditure of energy in the entombment of the individual, and, of perhaps greatest importance, the inclusion of an individual as the first burial in a mound. Available data suggest that only adult males attained high enough status to become initiators of new mounds. Special artifacts such as conch columellae beads may have identified group members responsible for their manufacture or distribution.

That each mound was constructed by a distinct social group such as a lineage, sib, or clan would account for the mound clusters like those at Hiwassee Island, the McDonald site, and at other locations in East Tennessee. Each group would have been responsible for a single mound. This may account for the diversity of mounds within the same cluster. For example, the HGROUP classification of 40RE4, units 4 and 10, and 40RH7, mounds A and D, indicates that the individual mounds within each cluster are culturally related to more distant mounds than to one another.

This interpretation of Hamilton focus social organization is suggested as one possible model explaining burial patterns. As such, it should provide the basis for further research. Burial pattern analysis on mounds other than 40RE124 should indicate whether the discoveries made there hold true for Hamilton mounds as a whole. Examination of mounds besides the 14 in the present sample should provide additional evidence for sex and age correlations and their relationship to status in this prehistoric society.

Besides examining in detail the burial pattern at 40RE124 in order to suggest a model for Hamilton social organization, this study

has attempted to determine the relationships among mounds included in the study sample. The pattern of relationships seems to be one of local similarity and areal diversity. In both analyses, the mounds clustered into northern, central, and southern groupings with little variation. HGROUP analysis of subsets of mound characteristics indicated that construction techniques and associated artifacts contributed more highly to this geographical clustering than did burial practices. This may result from the greater limitations on the former due to resource availability or from the more rapid diffusion of ideas in the case of the latter. Distributional analysis of all 56 variables suggested which traits are most geographically limited and thus contribute greatest to the geographical clustering of mounds. Unfortunately, temporal control is not secure enough to suggest whether or not a temporal factor is also involved in mound clustering.

Finally, this study has attempted to provide a general synthesis of Late Woodland burial complex attributes. Based on characteristics which occurred in the majority of the mounds studied, the Hamilton focus mortuary complex may be described as follows. Often occurring in small groups near a major river, the mounds are conical or rounded in shape and usually over five feet high. They are most often begun by the placement of an individual on the ground, which in a minority of cases has been prepared by removing the humus layer or clearing and burning the surface vegetation. This initial burial, which is covered with a low mound of earth, may sometimes be placed in a pit rather than on the ground surface. As time passes, the mound increases gradually in size with the addition of single (and occasionally multiple) burials on the mound surface and of more mound fill. Occurring less frequently is a

pit burial which intrudes into the mound but is subsequently covered with additional mound fill. The fill covering the burials is usually a clay or silt loam, but soil from midden deposits is sometimes included, apparently by chance. Materials other than soil also appear in the mound fill. Sometimes limestone slabs were used to cap construction stages or simply occurred sporadically in the fill. In other mounds layers of mussel shell seemed to serve the same purposes. In some instances charred logs also were included as construction stage delimiters or as retainers for mound fill. Only the use of logs, however, was common to most of the mounds, perhaps because the availability of limestone and mussel shells is geographically restricted.

Some burial practices seem to have been observed throughout the mound sample. At most sites the majority of burials are semiflexed with flexed burials a close second. Extended burials and bundle burials are found in at least half of the mounds, though their frequency within each mound is not high. A few multiple burials also occur in most mounds, but again the number in each mound is low. Although Lewis and Kneberg (1946:138) reported skull burials and decapitated burials, their occurrence is infrequent, if not questionable. Such a manifestation may be due to poor preservation in at least some cases. Although occurring in four of the mounds examined here, cremations seem a rare practice. Usually no more than one cremation, often partial, occurs within a single mound. Dog burials are found occasionally. The majority of burials were laid upon the mound slope and simply covered with soil. However, some individuals received more selective treatment. In some cases logs or limestone slabs form a box for the individual. At other times the burial is covered by a pile of mussel shells, logs, or

limestone slabs. However, each of these three burial materials occurs in only a minority of the mounds studied.

Although a common occurrence in the mounds reported by Lewis and Kneberg (1946), intrusive burials with Mississippian cultural associations occurred in few of the mounds examined here. Thus, later cultures can be said to have used the mounds for burial and in some cases may have even contributed to the final stage of mound construction (Cole 1975:145-146), but such later usage of the Hamilton mounds was not common.

The favoring of adult over subadult individuals for mound interment seems to be a uniform characteristic of the Hamilton mortuary practice. A lower number of subadults than adults was found in every mound. Similarly but less uniformly, in at least ten of the fourteen mounds males appear more favored than females for mound burial. Furthermore, the bias towards adult males extends to their inclusion and often elaborate treatment as initial mound burials. The presence of grave goods is almost arbitrary for age and sex. Earlier construction stages have more burials with grave goods than do later stages. The most common burial goods are the triangular, stemless projectile points and drilled conch columellae shells. The presence of triangular points is significantly correlated with adult burials. Otherwise, adult or subadult, male or female, had about equal probability of receiving grave goods. An individual's age and sex were apparently of greatest importance when determining whether he would be included in the mound at all.

Finally, some frequently occurring Hamilton artifacts, such as limestone-tempered cordmarked ceramics, are often found in the mound

fill but are less prevalent in burial association. Celts of various kinds, pipes, bone artifacts, and stemmed projectile points all show up in a majority of the mounds and are occasionally associated with burials. On the other hand, the stone gorgets, steatite sherds, stone beads and pestles, hematite, flat shell beads, conch wall pendants, and river pearls cited by various authors (Lewis and Kneberg 1946; Rowe 1952: 199-206; Cole 1975:139-147) proved to be more unique to isolated burials and single or local groups of mounds than to Hamilton mounds in general.

The present study was undertaken with three goals in mind:

1. To suggest a possible model of the social organization of the builders of these Hamilton-focus mounds on the basis of intra-site burial patterning at 40RE124.
2. To determine the relationships among a sample of burial mounds.
3. To provide a general, as opposed to a site-specific, characterization of the Late Woodland burial complex in East Tennessee.

The analysis of the total patterning of burial at a single site has revealed which choices in the interment of an individual are nonrandom and has suggested some aspects of the social organization of the mound builders. An extension of a portion of this detailed analysis to other mounds has resulted in a possible model of the Late Woodland status system. As for intermound relationships, similarity between any two mounds seems to vary inversely with the distance between them. Construction techniques and associated artifacts form geographic clusters, while the distribution of individual burial practices does not. Furthermore, various characteristics with limited distributions, such as the occurrence of limestone or mussel shell, contribute to the separation of the mounds into geographical clusters. Such clusters suggest

the possibility that distinct Hamilton groups rather than a single, uniform Late Woodland culture may have existed in East Tennessee. Finally, synthesis of 56 variables drawn from 14 mounds was used to determine Hamilton mortuary patterns. Although it is possible that the inclusion of other mounds in the sample could provide additional variables not among the 56 examined here, the present analysis has included those characteristics which are probably common to all Late Woodland Hamilton mounds. This study has served to suggest some hypotheses about the Hamilton mortuary complex and the social organization of its creators. Further and more detailed investigation of other Late Woodland burial mounds should serve to test the hypotheses advanced here.

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Patricia Ellen Cole was born in Knoxville, Tennessee, on June 4, 1952. She attended elementary and high school there and graduated from Bearden High School in 1970. The following September she entered the University of Tennessee, Knoxville, and in June 1973 she received a Bachelor of Arts degree in Anthropology. In the summer and fall of 1973 she participated in archaeological projects in Middle and East Tennessee.

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