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Mortuary Patterning Within the Dallas Culture at Toqua

Gary T. Scott
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To the Graduate Council:

I am submitting herewith a thesis written by Gary T. Scott entitled "Mortuary Patterning Within the Dallas Culture at Toqua." 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 Jantz, Gerald F. 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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We have read this thesis
and recommend its acceptance:

Harold F. Schroedl

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

MORTUARY PATTERNING WITHIN THE DALLAS CULTURE AT TOQUA

A Thesis

Presented for the

Master of Arts

Degree

The University of Tennessee, Knoxville

Gary T. Scott

March 1983

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information on the classification of the ceramic artifacts. Ken Parham and I spent countless hours together analyzing the skeletal material and I appreciate his encouragement and companionship.

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ABSTRACT

The purpose of this study was to examine the mortuary patterning at Toqua, a late Mississippian site on the Little Tennessee River in East Tennessee. Analytical considerations included testing an energy expenditure model based on burial pit size, shape, modifications, location, and grave associations.

The sample included 533 individuals from 511 burials. Non-random patterning of intra-site burial traits indicated the presence of social stratification at the chiefdom level of socio-cultural integration. There were five distinct site areas, two mounds, two villages and a structure, which were analyzed and ordered according to relative social ranking. Mound A (N=115) contained individuals with the highest relative status followed by Mound B (N=114), East Village (N=201), and West Village (N=88). An additional site area, Structure 3 (N=15), possessed burial status intermediate between the Mounds and Villages.

Through the use of regression, analysis of variance, the G-Test and Chi-square, the presence of both ascribed and achieved modes of social ranking were apparent in the data. The results compare positively with previous studies of Toqua social organization and the general social model of the Mississippian period.

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CHAPTER 1

INTRODUCTION

Prior to the 1940's, excavations of burial sites usually emphasized the retrieval and study of the associated artifacts. Recently, however, the works by Larson (1971); Peebles (1971); Peebles and Kus (1977) have closely scrutinized the artifacts along with the skeletal remains and other variables such as body position, pit location and shape to provide a more comprehensive interpretation of mortuary practices. Intra-site variation of burial patterns have been discerned through statistical analysis allowing for hypothesis testing on the level of socio-cultural integration, particularly when applied to the Mississippian period (Saxe, 1970; Binford, 1971).

This study, as a result, has two goals. First, the Toqua burials associated with the Late Mississippian, Dallas focus are examined to discern intra-site, non-random patterning of burial traits in an attempt to infer socio-cultural organization. Based on 511 burials from five site areas, burial traits of age, sex, artifacts, pit location, pit size, and shape are analyzed within a model of energy expenditure (Peebles and Kus, 1977). Second, the conclusions on socio-cultural integration are compared to previous studies on Dallas social organization by Hatch (1974; 1976), Hatch and Willey (1974), Bogan (1980), and Parham (1982).

Archaeological Background

Mississippian and Dallas

A variety of definitions have been developed for the Mississippian (Newell and Kreiger, 1949; Griffin, 1967; Jennings, 1968) in an attempt to derive a categorical term which denotes a relatively cohesive framework for a particular level of socio-cultural integration within a given temporal and spacial context. Smith (1978:485) provides the following definition for the Mississippian:

> Those prehistoric human populations existing in the eastern deciduous Woodlands during the time period A.D. 800-1500 that had a ranked form of social organization, and had developed a specific complex adaptation to linear, environmentally circumscribed floodplain habitat zones. This adaptation involved maize horticulture and selective utilization of a limited number of species groups of wild plants and animals that represented dependable, seasonally abundant energy sources that could be exploited at a relatively low level of energy expenditure. In addition, these populations depended significantly upon an even more limited number of externally powered energy sources.

The Mississippian has been generally described as having represented a chiefdom level of socio-cultural integration. This is based on ethnological typologies developed and elaborated by such authors as Sahlins (1958) and Service (1962, 1971, 1975). The characteristic often associated with the chiefdom is a relatively dense and complex society where an individual or a small group of individuals form a focal point for the collection and redistribution of goods and services in a stratified or ranked society (Fried, 1967).

In East Tennessee, the Mississippian is manifested in the Dallas culture, which was first defined by Lewis and Kneberg (1946:10).

> The Dallas Focus represents a Middle Mississippi culture that followed the Hiawassee Island Focus as the dominant culture of the eastern Tennessee Valley.

The Dallas classification is based on a trait list of artifacts, architecture and settlement patterns. Especially important, is the mortuary variability evident within the Dallas culture.

Status and Ranking

The ethnologist in examining mortuary practices does so within a context of defined socio-cultural and biologically adaptive parameters.

> Mortuary practices are produced by a system and thus can only be understood by reference to its place in that system (Saxe, 1970:3).

The funeral ceremony and artifacts reflect how the deceased is perceived by the living. This perception of the deceased is multi-faceted and is incorporated into several social identities as described by Saxe (1970:5). Individuals will have both given or ascribed identities (Linton, 1936:115) and achieved positions. Ascribed identities are age, sex and sometimes titles such as chief; allowing minimal to no choice by the individual to change their ascribed position. Achieved positions involve identities defined during the individuals lifetime.

> The composite of all the social identities may be referred to as the social persona of an individual (Saxe, 1970:7).

The social persona will reflect a variety of social relationships along with the organizing principals of the larger social structure.

Ethnographic data have revealed how the social persona will influence funeral practices such as how the body is treated, where the corpse is disposed, and the types and quantities of artifacts that are placed with the deceased (Saxe, 1970; Binford, 1971; Hatch, 1976; Williams, 1930; Mooney, 1900). Saxe (1970:4) states:

> When archaeologists excavate a set of burials, they are not merely excavating individuals, but a coherent social personality who not only engaged in relationships with other social personalities but did so according to rules and structural slots dictated by the larger social system.

It is expected, therefore, that archaeologists can provide inferences on the level of social organization and the mode of social ranking.

Archaeological Correlates of Social Ranking

Peebles and Kus (1977:431) reviewed five areas distinctive of chiefdoms, which can be examined in the archaeological record. These included mortuary practices, settlement types, subsistence sufficiency, productive activities and society wide organizational activities. The mortuary information which is diagnostic of a chiefdom as given by Peebles and Kus (1977:431) is:

> There should be clear evidence of non-volitional, ascribed ranking of persons. A test for ranking based on the mortuary ceremonialism of an archaeologically defined society must confirm the prediction of two clear, independent dimensions of social personae represented in the burials. The first, superordinate dimension, must be partial ordering, which is based on symbols, energy expenditure and other variables of mortuary ritual, which is not simultaneously ordered on the basis of age and sex. That is, membership in the class and come variability within the class are based on the ascriptive

qualities of an individual's geneology. In the superordinate dimension some infants, some children, and some adults will be found in every scale category except the paramount category. This apical class will contain only adults, and probably only adult males.

The second, subordinate dimension will be a partial order based on symbols, energy expenditure and other variables, which generally will be ordered on the basis of age and sex. That is, beyond the "given" features of age and sex, variability in this dimension will reflect achievement through life histories of individuals. The older an individual, the greater the opportunity for accomplishment, therefore, on the average, the higher the rank. In the subordinate dimension, as the chronological age of the burial increases so will the energy expended on that individual's burial: adult burials will be more complex and evince greater energy expenditure than those of children; child burials will be more complex and evince greater energy expenditure than those of infants. Children and infants will have some items as grave goods that will not be shared by adults; women will have some items as grave goods not shared by men.

Previous Work

Hatch (1974) provided the first definitive work on Dallas social organization based on mortuary patterning. He examined 623 burials with artifact associations from 19 East Tennessee Dallas sites. Hatch utilized burial forms to analyze artifact type, pit location and stature along with age and sex as provided by Madeline Kneberg. Hatch (1974:242-243) provided the following generalizations on the Dallas burial population:

1) Not all individuals in the Dallas sample were accorded the same burial style. While little change was observed between individuals in the positioning of the body upon interment, marked variation was seen in the amount and variety of artifact associations.

2) Certain associations were of utilitarian nature, ceramic vessels, woodworking and stone working tool kits, etc. These types tended to partition the population on age and sex grounds and were numerically more frequent in the village areas.

> 3) Non-utilitarian artifact accompaniments tended to be restricted to the adult female and sub-adult village population, in the form of shell ornaments, but more importantly to the mound population of all ages and sexes. The types associated with this latter group tended to be of exotic materials and/or representative of superior craftsmanship.
>
> 4) Adult males were numerically more frequent in the mound populations, but all age groups and both sexes were represented in many construction levels. Given the small percentage of the total site population accorded burial in the mounds we can conclude that mound burial was generally reserved for a restricted segment of the site population.
>
> 5) Certain artifact types were observed to form redundant sets of associations. Taken in conjunction with age and sex information it was observed that village and most mound burials were symbolized in such a way that specific combinations of age and sex dimensions were key to the mortuary status of the individual. These individuals were in the artifactually low and intermediate ranges, other combinations of types clearly denoted a mound sub-population which in several cases was formed, irregardless of age or sex criteria. These individuals possessed, on the whole, the greatest variety, the greatest number, and the most exotic artifact types. Because all ages and both sexes were accorded this high burial status, accessability to these positions was most probably based on a limited number of ascriptive statuses attained in life. Preeminent burials in nearly all cases were of adult males.

Hatch (1974) goes on to say that the heterogeniety of the mortuary system is evidence of the chiefdom level of socio-cultural integration as defined by Service (1962) and Fried (1967). Hatch (1974):245) states:

> The major social organizational and political institutions in chiefdoms are kin based. The responsibilities of the chief, those that differentiate him from a tribal leader, concern the integration and direction of the population in public projects, usually of an economic and religious nature, and the collection and redistribution of resources from various areas under his control.

Hatch (1976) subsequently developed three generalized models of ranked societies based on ethnographic examples from Hawaii, Polynesia and Africa. Type 1 societies have three well defined social levels: an aristocracy including a paramount chief, his family and his immediate political peers, a chiefly level comprised

of more distant relatives or political appointees of the paramount, and commoners. The paramount's rule is absolute, and the symbolism surrounding the aristocracy is complex. Characteristics of the mortuary rituals associated with the Type 1 societies include differential location of the graves, with the aristocracy spacially distant from commoners; the quality and quantity of grave accomplishments and grave form are governed by age, sex and status.

Type 2 societies have their primary social distinction between nobles consisting of the paramount or high chief, related chiefs and their families, and the commoners. The position of the high chief is not as institutionally secure as in Type 1 nor is the enforcement of power as decisive. The mortuary rituals of the chiefs in Type 2 societies are less involved than the chiefs in Type 1. There are differences in grave site, location and artifact accompaniments in symbolization of Type 2 status.

Type 3 societies have two social levels, a high status of lineage elders and a commoner status. The chiefs authority is derived from personal persuasiveness and ritual power. The economic advantages of high status are few. Mortuary differences between high and low status are only in the artifacts and grave size.

Based on pit location and the small array of high ranking positions defined by artifact associations, Hatch (1976:181) states that Dallas mortuary patterning conforms with his Type 2 model.

A biological approach to the question of social ranking was examined when Hatch and Willey (1974) compared adult stature with status in 211 Dallas burials. They found a significant relationship

between stature and status in males, with high status males being taller than low status males as defined by pit location. They found no comparable stature difference between high and low status females. They suggest that the male stature variation might reflect the mode by which an individual received social ranking (1974:123):

> If we conceive of burial location (mound vs village) as primarily being determined by hereditary membership in the uppermost "ramage" and artifactual distinctions indicating intra-ramage differences based on ascribed and achieved status, then we can account for nearly all of the observed male stature patterning.

Hatch and Willey (1974:126) feel the status-stature difference in females is not as apparent because of a possible nutritional disadvantage of females coupled with an absence of stature dependent social climbing.

Status was examined at Toqua when Bogan (1980) examined the faunal remains to discern Dallas animal utilization through species identification and pattern recognition. Bogan (1980:186) stated that the high status groups had access to preferred cuts of meat for food and control over the remains of certain animals as totems. Relating to the overall level of socio-cultural integration, Bogan (1980:184) states that Toqua was a stratified society representing a chiefdom level of socio-cultural integration. However, he did not feel that Toqua had the distinct social structure exhibited at such sites as Moundville (Peebles, 1971) or Etowah (Larson, 1971). Within the Toqua site, Bogan concludes that the high status areas included Mound A, Mound B and the East Village Midden. The low status habitation areas are West Village and East Village. Structure 3, located on a

platform on the north edge of Mound A, was ranked in an intermediate status position between West Village and East Village Midden. Bogan (1980) made no direct inferences on whether social ranking was ascribed or achieved.

Parham (1982) examined the skeletal biology of the human remains from Toqua and made inferences on the mode of social ranking. By analyzing stature, cranial deformation, poratic hyperostosis and periostitis, Parham (1982:158) concluded:

> With the exception of intentional cranial deformation, the biological data suggest that status at Toqua was achieved to a greater extent than is commonly expected for Mississippian societies at a chiefdom level of socio-cultural integration.

The previous studies have provided a framework for further analysis of Dallas social organization. However, prior to examining the mortuary data from Toqua, a description of the site is necessary.

Archaeological Excavations at Toqua

Toqua (40MR6) is a multi-component site consisting of two mounds and a large surrounding village. The site is located in the lower Little Tennessee River Valley in Monroe County, Tennessee (35°33'53" North Latitude, 84°10'4" West Longitude)(Figures 1 and 2). The site is on the south bank and extends 1100 feet along the second river terrace with a maximum width of approximately 600 feet (Schroedl and Polhemus, 197-7:2).

The Toqua mounds and surrounding village areas contain the remains of a late Mississippian Dallas culture.

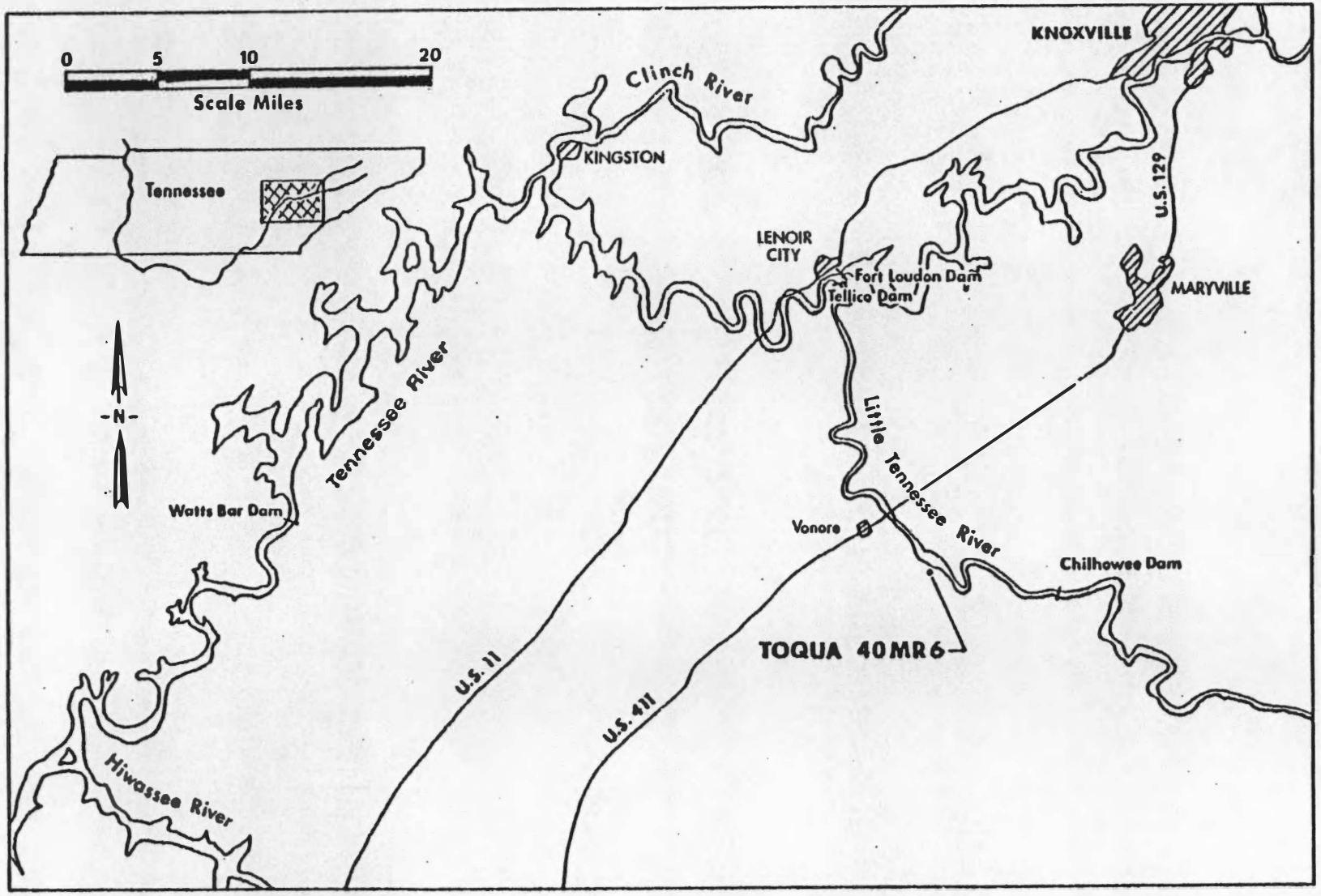

Figure 1. Toqua Locality Map (After Schroedl and Polhemus, 1977:3)

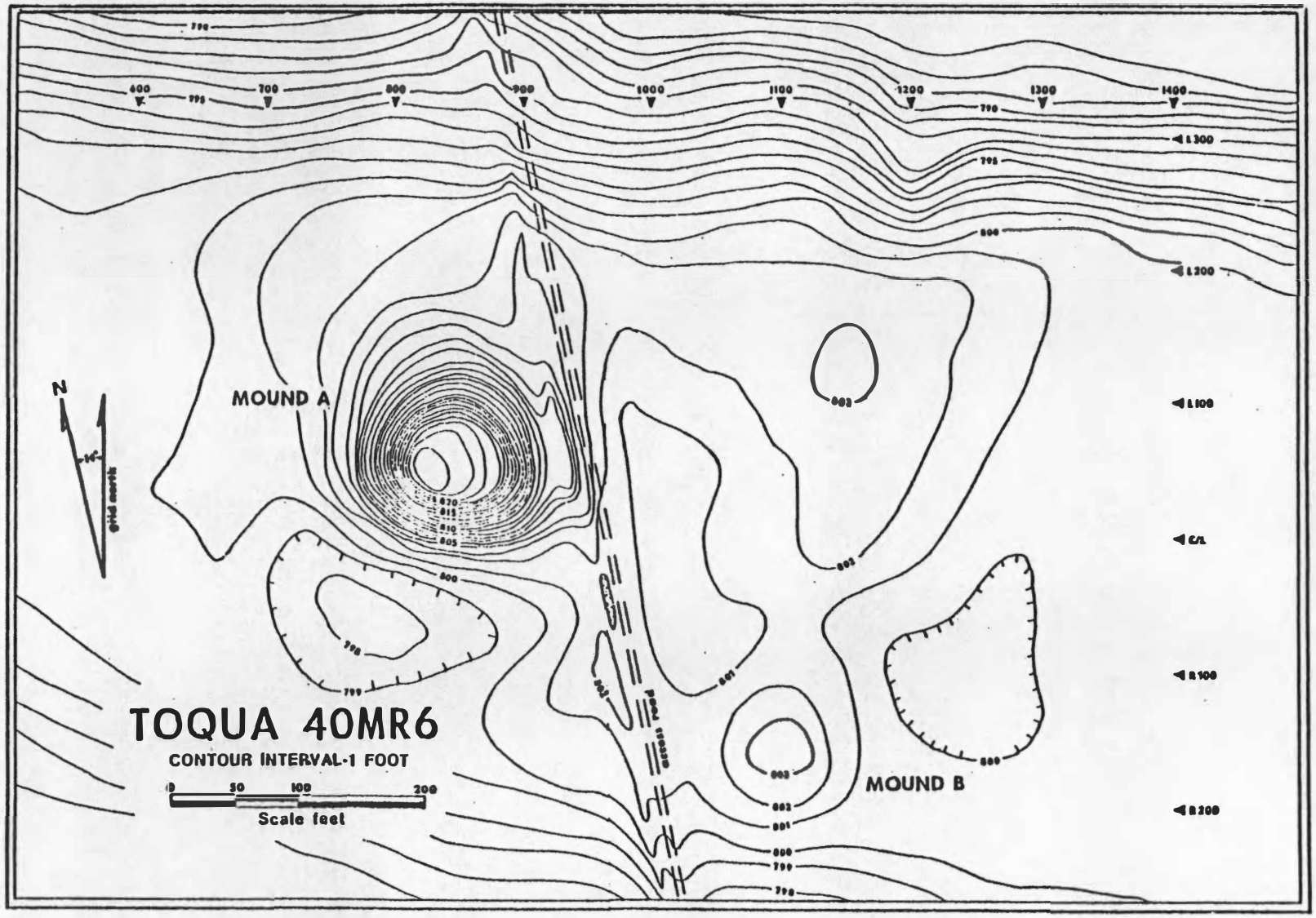

Figure 2. Contour Map of Toqua (40MR6)(After Schroedl and Polhemus, 1977:20)

> Radiocarbon dates and comparative dating of cultural remains suggest that the Dallas occupation began ca. A.D. 1300 and lasted until ca. A.D. 1550 (Schroedl and Polhemus, 1977:2).

The numerous construction phases of Mound A multiple palasades and superimposed dwellings corroborate a relatively long period of habitation.

Also, there were over 20 Cherokee burials dating between A.D. 1735 and A.D. 1800 at Toqua. These burials, for the most part, were confined to the east end of the site beyond the major Dallas midden deposits (Schoredl and Polhemus, 1977:7).

John Emmert (Thomas, 1894:383-384) performed the first recorded excavations at Toqua. He excavated 57 burials from Mound A and 14 burials from Mound B. At a later date, George Barnes (n.d.) excavated extensively in the area east of Mound A.

The site was acquired by the Tennessee Valley Authority (TVA) in the spring of 1975 as a part of the Tellico Dam Project. Excavations were conducted between the spring of 1975 and the spring of 1977. Both mounds (Figure 3) and approximately four acres of the village site were excavated (Polhemus, personal communication). Mound A consisted of nine construction phases with associated burials, structures and a ramp on the southeast side. Mound B had two construction phases and two associated structures along with numerous burials. Over 110 structures and 1500 features were recorded, however, not all were excavated. Two palisades enclosing three sides of the site with the open side towards the river were also defined.

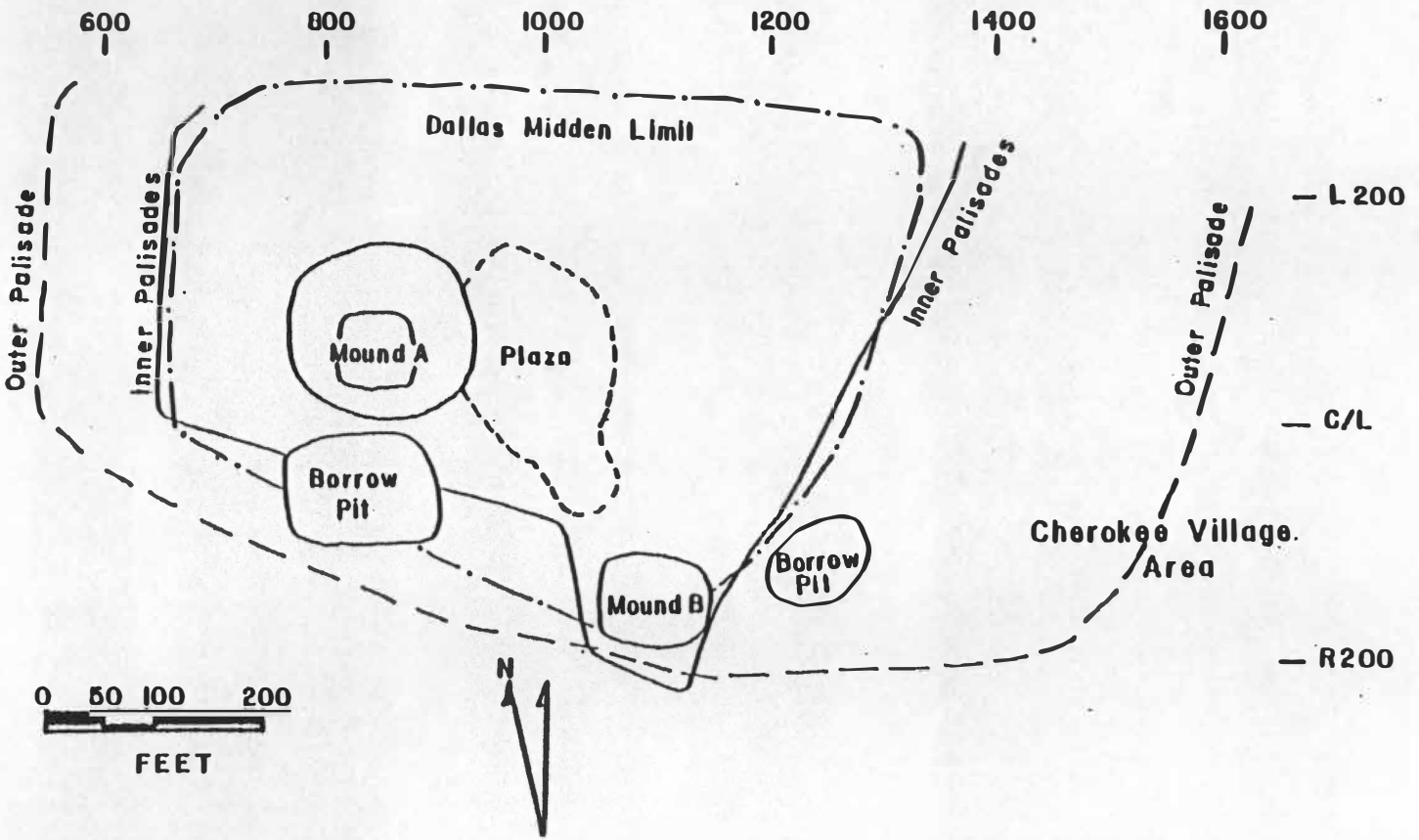

Figure 3. General Site Map for Toqua (40MR6)(After Schroedl and Polhemus, 1977:20)

In summary, Toqua provides a unique opportunity to gain additional insight into the Dallas culture as a whole and especially the dimension of mortuary practices. This contention is supported by several facts:

1. The majority of the excavations at Toqua were performed by professionally trained archaeologists.

2. Records exist from previous excavations (Thomas, 1894; Barnes, n.d.).

3. An excellent sample of over 500 burials was recovered in excavations after 1975.

4. The burial sample represents all known intra-site geographic divisions including two mounds and adjacent village areas.

5. A physical anthropologist was present during the excavation of the burials after 1975.

The material used for analysis included the majority of the burials from the Tellico excavations and the artifact and pit location data from Emmert.

Energy Expenditure Model

In an attempt to confirm or reject previous interpretations on the Dallas socio-cultural integration and the mode of social ranking (Hatch, 1974, 1976; Hatch and Willey, 1974; Bogan, 1980; Parham, 1982), the Toqua mortuary data will be examined within an energy expenditure model.

Peebles and Kus (1977) have shown that the higher the relative social status of an individual the greater level of energy

expenditure placed into the funeral. This should manifest itself archaeologically in the number and kinds of artifacts placed with the deceased, and the pit size, shape, modifications and its location. The archaeological manifestations can then be dichotomized into a classification of high or low energy expenditure. This dichotomy is used here to discern the degree to which social ranking is ascribed (superordinate dimension) or achieved (subordinate dimension).

Characteristics related to an ascribed ranking and a high energy expenditure are:

1. Burial within a mound.
2. Larger than predicted pit size.
3. The presence of a pit shelf of chamber.
4. The presence of a pit modification by covering the top or bottom.
5. The presence of grave associations.

Burial traits associated with an achieved social ranking and relatively low energy expenditure are:

1. Burial within a village area.
2. Smaller than predicted pit size.
3. No evidence of an additional pit shelf or pit chamber.
4. No evidence of a pit covering or modification to the pit bottom.
5. No grave goods.

To test for the occurrence of an ascribed and/or achieved ranking based burial patterning and energy expenditure, the following hypotheses are examined:

Hypothesis 1

Age, sex, pit size, pit shape, pit modification and grave goods are independent of pit location (mound and village).

In an egalitarian society one would expect this hypothesis to be true with insignificant intra-site distinction of burial traits based on pit location. However, if the alternative hypothesis is true and there is dependency between the variables and pit location, this would indicate a ranked society with ascriptive status. Therefore, if Toqua is socially ranked with status being ascribed we would expect:

A. Mound adult burials tend to have larger than predicted burial pits with pit modification and one or more types of grave goods. In contrast, village burials should have smaller than expected pits, few pit modifications and no grave goods.

B. The mound burials should include high status infants and children interred in a large pit with pit modifications and one or more types of grave goods.

C. One or more adult males afforded a mound burial should be unique by the evidence of a large pit, with modifications and unique or supra-local grave associations representing an apical class. Supra-local associations are those items which have a common form and meaning within and between a number of discrete cultural systems (Peebles, 1971).

Hypothesis 2

Energy expenditure, as exhibited in pit size, shape,

modification and grave goods, are independent of age and sex.

In an egalitarian society, the hypothesis will be substantiated with few distinctions based on age and sex as seen in the mortuary patterning. However, in a ranked society we would expect that as age increases, energy expenditure increases, i.e. pit size should increase, pit modification and coverings should be more frequent, and there should be significant patterning of grave associations. Also, children will have some grave goods not shared by adults, and women will have some items not shared by men.

Statistical Approach

To test the hypotheses, the Toqua morturary data were analyzed through the G-Test (Sokal and Rohlf, 1969:601-607), analysis of variance, and Chi-square (Hays, 1973:471-481). The G-Test was chosen because:

1. Other than pit size and age, the data are nominal based on a classification system of presence or absence with no ranking or scaling.

2. Three-way tests of independence can be analyzed strengthening the interpretive value of burial trait relationships, whereas, Chi-square tests provide only two way comparisons. Also, when three factors are interdependent the overall G-value can be partitioned into components, each testing a separate aspect of the joint dependence of the three factors.

The Chi-square test was utilized to more closely examine the association of specific artifact types, such as Busycon gorgets or

celts when the number of cases which are present are too few for multivariate evaluation.

Since age and pit size are absolute variables with an interval scale level, mathematical procedures are the most appropriate. Analysis of variance is used in tests relating to pit size and its relationship to energy expenditure. The analysis includes data from 511 burials containing 533 individuals. The multiple interments include 10 graves with two individuals, one grave with three, one pit with five and another with seven.

Biological Parameters

Sex

The correct assessment of an individual as a male or a female is critical to any study of socio-cultural systems using mortuary data. A brief description of techniques used to sex the Toqua skeletons is provided here, however, for greater details see Parham (1982).

Determining the sex of a pre-adolescent individual is more difficult than sexual assessment of an adult. Prior to puberty, sexually dimorphic (two form) skeletal morphology that distinguishes the two sexes is not apparent. However, the permanent dentition which forms at a relatively early age does exhibit a significant variation in size according to sex. Garn, et. al. (1965) have shown that males statistically have larger teeth than females. Following the example of Black (1978), and Ditch and Rose (1972), dental discriminant functions of the permanent dentition were derived (Scott

and Parham, 1979). Dental development can allow for assessment of sex to be given for an individual as young as four years of age (Moorrees, Fanning and Hunt, 1963).

For adult remains, the morphology of the innominate was preferred in deriving sexual classification. The traits of the innominate noted in Bass (1971) and Phenice (1969) were utilized. Cranial morphology (Bass, 1971), femoral head diameter (Thieme and Schull, 1957), humeral head diameter (Krogman, 1962) and dental discriminant functions were also utilized when possible.

The author and Parham (1982) made sexual classifications based on all metrical and morphological data available. The final classification was derived by weighing all the factors and their relative reliability. Table 1 reveals that there were 112 (21%) males, 92 (17%) females, and 329 (62%) individuals of unknown sex.

Age

Sub-adults were aged by tooth development (Ubelaker, 1979; Moorrees, Fanning and Hunt, 1963), long bone lengths (Ubelaker, 1979; Johnson, 1962) and epiphyseal union (Bass, 1971; McKern and Stewart, 1957). Adult ages were based on the morphology of the pubic symphysis (McKern and Stewart, 1957; Gilbert and McKern, 1973), tooth attrition (Brothwell, 1972), and when necessary, cranial suture closure (Todd and Lyon, 1924-25).

Ages were recorded within a possible minimum and maximum age range. For the purpose of analysis the mean age value was calculated. Table 2 shows all ages are represented with 144 individuals aged 0-5 years, 139 aged 5.1-17 years, while 218 of the

TABLE 1.

BURIALS BY SEX

Sex	N	%	Adjusted %
Male	112	21	55
Female	92	17	45
Unknown	329	62	Missing
Total	533	100	100

TABLE 2.

BURIALS BY AGE

Age	N	%	Adjusted %
0 - 5	144	27	29
5.1 - 17	139	26	28
17.1 +	218	41	43
Unknown	32	6	Missing
Total	533	100	100

deceased are over 17.1 years old.

Cultural Parameters

Pit Location (refer to Figure 3 and Table 3)

Pit location provides a valuable horizontal control since status can affect where the body is interred with a site. The site areas at Toqua include:

1. Mound A: The larger of the two earthen mounds with a diameter of approximately 175 feet and a height of 20 feet above the surrounding village areas. There were 103 individuals interred in Mound A.

2. Mound B: Located southeast of Mound A and south of East Village with 114 burials:

3. East Village: An area extending approximately 600 feet east from Mound A along the river and north of Mound B and containing 193 burials.

4. West Village: The area between the west palisade and Mound A with 86 burials.

5. Structure 3: A structure situated on a platform of the north side of Mound A. Structure 3 is examined independently because of its location, presence of a large number of shaft and chamber pits and concentration of faunal remains. There were 15 graves in Structure 3.

Pit Shape (Table 4)

Pit shape was classified into the following categories.

1. Shaft and chamber: A pit exhibiting an under-cut at the

TABLE 3.

BURIALS BY PIT LOCATION

Site Area	N	%
Mound A	103	20
Mound B	114	22
East Village	193	38
West Village	86	17
Structure 3	15	3
Total	511	100

TABLE 4.

BURIALS BY PIT SHAPE

Pit Shape	N	%
Step	94	18
Oval	223	44
Shaft and Chamber	22	4
Unknown	172	34
Total	511	100

base of the pit forming a separate chamber.

2. Stepped pit: Any pit that had one or more shelves situated along the perimeter of the pit with no chamber.

3. Simple pit: An ovoid or rectangular pit without shelves or a chamber.

Pit Size

The width and length were measured to the nearest one-tenth foot along a line providing the maximum dimension. The width was taken at the widest point generally near the center and perpendicular to the length.

Pit Modification (Table 5)

Constructive additions to the pit were sometimes evident when material was placed on the pit floor or at the top of the pit. Various modifications include:

1. Wood: There were 67 burials with a wood covering.

2. Stone: Seven burial pits were covered by stone.

3. Organic Matter: One grave was covered with organic matter.

Grave Accompaniments

A. Ceramic

The ceramic vessels were divided into three categories:

1. Jar

2. Bowl

3. Bottle

B. Faunal

The categories of faunal association are:

1. Mammal worked

TABLE 5

BURIALS BY PIT MODIFICATION AT PIT TOP

Modification	N	%
Wood	67	131
Stone	7	1.4
Organic Matter	1	.2
Unknown/Absent	436	85.3
	511	100.0

2. Mammal unworked
3. Bird worked
4. Bird unworked
5. Turtle (rattle)
6. Fish
7. Olivella and Marginella
8. Busycon bead
9. Busycon earpin
10. Busycon gorget, pendant, mask
11. Lapsilis ovata
12. Pearl

Two additional groups were constructed to provide functional faunal categories which could be analyzed:

1. Tool and Piercing Implements: spear point, antler, bone pin, bone awl, beaver incisor.
2. Ceremonial and Ornamental: Mammal beads, bird bead, frog bead, crane skull, mink, squirrel, goose wing, wolf jaw, baculum, weasel, cougar.

C. Lithic

The lithic categories are:

1. Projectile Points
2. Knives, reworked flakes, etc.
3. Debitage
4. Sculptured Stone (pipe, vessel)
5. Hematite, other mineral
6. Discoid

7. Ground Stone (celt, axe, etc.)
8. Grinding Stone, Battering
9. Mica

The lithic associations were also regrouped into four functional categories:

1. Ceremonial: Discoid, pipe, palate, pendant
2. Debitage: Miscellaneous flake, cobble, core
3. Tool: Projectile point, scraper, drill, blade, ground stone
4. Mineral: Graphite, ochre, mica, hematite, etc.

CHAPTER 2

ANALYSIS OF SOCIAL DIMENSIONS

Supraordinate Dimension

Sex, age, pit size, shape, modification and artifacts should be interrelated with pit location in a ranked society. To test pit size and pit location the mean residual for each site area was examined by analysis of variance. To control for pit size relating to body size (i.e. stature), which increases with age, the relationship of pit size and age was examined through the SPSS6 regression analysis (Nie, et. al., 1975:320-360). Stature, except in situations of great stress, will increase from birth to skeletal maturity. To account for discontinued growth at adulthood all individuals over 17 years were classified as 17.1 years of age. Also, the sexual dimorphism of stature was taken into consideration. Parham (1982:77-79) revealed through studying femur lengths that the average stature of the Toqua adult females was 165.5 cm. (65.2 in.) or 93.68% of the avarage adult male stature of 167.6 cm. (66.0 in.). The regression was performed by multiplying pit width and pit length to obtain an "actual" pit size as the dependent variable with age as the independent variable.

The sample utilized in the regression, which deleted the multiple burials since the pits accommodated more than one individual, included 321 burials. The regression revealed a positive correlation between age and pit size; as age increased the pit became larger. The F value equals 177.19 which has an .01 level of significance. Pit size was then analyzed through the residuals by

subtracting the predicted pit size from the actual pit size (high energy expenditure) and a negative value indicating a smaller than expected pit size based on age. Table 6 gives the pit location, number of cases, the mean residual and variance.

The results reveal a significant variation in mean residuals with respect to pit size and pit location. The greatest difference in the means are between Mound B with relatively large pits, and East Village with small pits. While the pattern is not strong, there is a general mound and village dichotomy for energy expenditure based on pit size, which supports a hypothesis of social ranking.

To further test energy expenditure and pit location, pit shape and upper pit modification were examined within each site area by the G-Test (Sokal and Rohlf, 1969) (Table 7). The results show several significant interactions between the variables. Pit shape is highly related to upper pit modification. Pit modification, or the presence of a covering, is most likely to occur with stepped pits. This is expected since the step or shelf aids in the support of a covering such as wood (In separate tests, evidence of pit modification at the bottom of the pit was not related to pit location, pit shape or upper pit modification.).

Pit shape is also highly dependent on pit location. Comparing East and West Villages, East Village has 22 (16%) pits with one or more steps which is relatively less than the 28 (41%) pits with a step in West Village. Also, Mound B has a higher than expected number of stepped pits, 34 (52%) compared to Mound A with 10 (26%). Overall, when comparing mound and village areas, the mounds have a

TABLE 6.

ANOVA, PIT LOCATION AND MEAN PIT RESIDUAL

Pit Location	N	$\bar{X}$	S^2
Mound A	38	.315	42.843
Mound B	59	1.842	26.900
East Village	135	-1.074	23.378
West Village	74	.207	18.541
Structure 3	15	- .964	19.877
Total	321	.326[1]	

Source	Df	Sum of Squares	Mean Square	F
Among Groups	4	376.785	94.196	3.67
Within Groups	316	7909.814	25.031	

(a = .001)

1. The sum of residuals is not zero due to rounding error in the calculation of pit size.

TABLE 7.

G-TEST, PIT LOCATION, PIT SHAPE AND

UPPER PIT MODIFICATION

Pit Shape[1]	Pit Modification	Pit Location: East Village	West Village	Mound A	Mound B	Total
Step	Present	8	5	9	17	39
	Absent	14	23	1	17	55
Oval	Present	5	2	10	5	22
	Absent	110	38	18	27	193
Total		137	68	38	66	309

Hypothesis	df	G	Significance
Shape x modification	1	37.47	.001
Shape x location	3	31.58	.001
EV vs WV	1	14.90	.001
MA vs MB	1	6.47	.025
EV + WV vs MA + MB	1	10.22	.005
Modification x location	3	39.28	.001
EV x WV	1	.03	ns[3]
MA x MB	1	2.79	ns
EV + WV vs MA + MB	1	36.46	.001
Shape modification location	10	108.59	.001

[1]Pit shape does not include shaft and chamber pits due to the small sample size.

[2]Pit location does not include Structure 3 due to the small sample size.

[3]ns = not significant.

higher than expected number of pits with steps, 44 (42%) with the village areas having 50 (24%). Completing the interrelationships, upper pit modification is only significant when tested with the mound burials of which 41 (39%) have coverings compared to 20 (10%) in the village. This suggests that mound burials have a greater degree of energy expenditure in pit excavation than the village burials indicating a relatively higher level of status in the mounds.

While shaft and chamber burials were not utilized in the analysis, Table 8 presents their occurrence in each village area along with pit coverings. East Village, West Village, Mound A and Mound B each have shaft and chamber burial pits (4%, 6%, 16% and 4% respectively), while Structure #3 has 6 (40%). Pits with a chamber are definitely more labor intensive to excavate than either ovoid or stepped pits, and this is an indication of a relatively high level of energy expenditure and therefore, higher status. When comparing pit shape with the mean pit size, shaft and chamber pits are slightly smaller than expected (Table 9). However, the measure of pit size does not account for the labor associated with excavating a chamber.

Reviewing the test results relating to pit location and pit size, shape, and modification, there are definite dependent interrelationships which indicate a general mound and village dichotomy of energy expenditure, which indicates the presence of social ranking. Comparing the mounds, at the high end of the scale for energy expenditure is Mound B with large pits and a greater frequency of steps. Also, West Village has larger than predicted pits and relatively more steps than East Village. A relative ranking

TABLE 8.

SHAFT AND CHAMBER PITS, PIT MODIFICATION

AND PIT LOCATION

Pit Modification	East Village	West Village	Mound A	Mound B	Structure 3	Total
Present	0	0	2	2	1	5
Absent	7	4	5	1	5	22
Total	7	4	7	3	6	27

TABLE 9.

PIT SHAPE AND

MEAN PIT RESIDUAL

Pit Shape	N	$\overline{X}$	S^2
Oval	202	-1.482	17.31
Step	85	3.393	30.35
Shaft and Chamber	20	- .190	25.29
Total	307	1.721	

F = 32.86 (a = .01)

of energy expenditure places Mound B at the apex followed by Mound A, West Village and East Village with Structure 3 possibly between the mound and village areas. These results do not completely agree with the findings of Bogan (1980), who felt that East Village was of relatively higher status than West Village.

An additional test of energy expenditure is the comparison of the presence of various artifacts in relation to pit location. Table 10 compares the occurrence of the faunal and ceramic associations with pit location. The presence of both faunal and ceramic associations together in a pit is more likely to occur than the presence of one or the other independently. A total of 59 burials had both ceramics and faunal remains compared to an expected value of 31.

Faunal associations are also interrelated with pit location. However, when partitioning the components, only the contrast between Mound A and Mound B is significant with Mound A having a greater number of faunal associations (49 or 42%) than the predicted value of 38, while Mound B had 26 (23%) of the burials with faunal remains. (The presence or absence of ceramics is statistically independent of pit location.) Therefore, the faunal remains suggest that Mound A burials are of higher status than the burials in Mound B.

Table 11 compares pit location with lithics and faunal remains. (In a test comparing lithics, ceramics, and faunal remains the interaction of ceramics and lithics was insignificant.) In East Village there are 36 (19%) burials with lithic associations as compared with 6 (7%) burials in West Village. Mound A has 37 (32%) burials with lithics while Mound B has 19 (18%). There is also a

TABLE 10.

G-TEST, PIT LOCATION, FAUNAL AND CERAMIC ASSOCIATIONS

Faunal	Ceramic	Pit Location: East Village	West Village	Mound A	Mound B	Total
Present	Present	21	18	15	5	59
	Absent	54	16	34	21	125
Absent	Present	12	5	2	10	29
	Absent	114	49	66	78	307
Total		201	88	117	114	520

Hypothesis	df	G	significance
Faunal x ceramic	1	44.472	.001
Faunal x pit location	3	11.296	.025
EV vs WV	1	.047	ns
MA vs MB	1	9.700	.005
EV + WV vs MA + MB	1	1.552	ns
Ceramic x pit location	3	6.474	ns
Faunal x ceramic x location	10	69.440	.001

TABLE 11.

G-TEST, PIT LOCATION, FAUNAL AND

LITHIC ASSOCIATIONS

Lithic	Faunal	Pit Location: East Village	West Village	Mound A	Mound B	Total
Present	Present	23	2	23	10	58
	Absent	13	4	14	9	40
Absent	Present	49	31	24	16	120
	Absent	100	45	54	73	272
Total		185	82	115	108	490

Hypothesis	df	G	Significance
Lithic x faunal	1	26.72	.001
Lithic x location	3	20.17	.001
EV vs WV	1	7.11	.010
MA vs MB	1	6.39	.025
EV + WV vs MA + MB	1	6.66	.010
Faunal x location	3	9.55	.025
EV vs WV	1	.042	ns
MA vs MB	1	6.40	.010
EV + WV vs MA + MB	1	11.27	.001
Lithic x faunal x location	10	60.60	.001

significant mound and village dichotomy in the presence of lithic grave goods with mounds having 56 (26%) burials with lithics compared to 42 (18%) for village burials. This dichotomy was not significant when comparing the faunal and ceramic associations (Table 10). The lithic associations indicate that the greatest amount of energy expenditure is placed into the Mound A burials, which precedes the Mound B burials, followed by East Village and West Village.

Structure 3 was not included in the G-Test tables due to the small sample size. For the 15 burials in Structure 3, seven (47%) had faunal remains present; of these seven, two had ceramics and one lithics. No grave had all three types of grave goods.

Reviewing the data from Table 10 and comparing the occurrence of the faunal and lithic remains with pit location, a sequence of energy expenditure based on associations can be suggested. Mound A burials received the greatest of energy expenditure followed by Mound B, East Village and the West Village area. The same pattern is apparent when testing faunal and ceramic associations (Table 11). The association patterning in Structure 3 could be classified as having a high level of energy expenditure in relation to faunal remains, but of low energy expenditure with lithics and ceramics. Again, an intermediate position of energy expenditure and status between the mounds and villages is suggested for Structure 3. The results of the grave associations and pit location compare well with the relative level of social status for the site areas proposed by Bogan (1980).

When comparing the conclusions on status based on the grave associations and pit attributes there are some discrepencies. The

pit attributes suggest that the Mound B burials are of higher status than Mound A burials and that West Village is superior to East Village. However, the artifacts indicate that Mound A individuals are above Mound B in status and East Village burials are above those in West Village. The artifacts, however, probably represent relative levels of energy expenditure or status since the individuals disposing of a deceased person would have been more directly aware of the social and status significance of artifacts than of the pit size or shape. However, regardless of the actual sequence between Mound A and B or the village areas, the mound and village dichotomy is consistently supported with mounds having burials with higher levels of energy expenditure and social ranking than the villages.

Age and Status

The second part of the first hypothesis states that in cases of ascribed status there will be high status children and infants in the mounds as measured by energy expenditure in pit size, shape, modification, and artifacts.

A general test of energy expenditure and age controlling for pit location is provided in Table 12. Pit size is classified into two categories: those burials with a larger than predicted pit and those pits with a smaller than predicted size.

Age and location are related. A partitioning of the pit location reveals that West Village has a higher than expected number of children 0-5 years of age (47 actual, 33 expected) and contains fewer adults (21 observed) than expected (30 expected). The opposite occurs in East Village which has relatively more adults and fewer

TABLE 12.

G-TEST, PIT LOCATION, AGE AND PIT SIZE

Age (Yr.)	Pit Size	Pit Location: East Village	West Village	Mound A	Mound B	Total
0-5	Large	17	21	4	4	46
	Small	30	26	5	2	63
5.1-17	Large	5	5	2	6	21
	Small	18	1	3	3	22
17.1+	Large	18	9	14	24	65
	Small	47	12	17	20	96
Total		135	74	45	59	313

Hypothesis	df	G	Significance
Age x Location	6	52.27	.001
EV vs WV	2	16.18	.001
MA vs MB	2	2.14	ns
EV + WV vs MA + MB	2	33.95	.001
Age x Pit Size	2	.99	ns
Pit Size x Location	3	12.65	.010
EV vs WV	2	4.83	ns
MA vs MB	2	1.78	ns
EV + WV vs MA + MB	2	6.04	.050
Age x Location x Pit Size	17	70.33	.001

children than expected. The number of individuals in the 5.1-17 age group are relatively close to the expected values.

A G-score of 2.14 is not significant for the comparison of age between Mound A and Mound B. However, there is a significant interrelationship for age when comparing both mounds with the village areas. The mounds tend to have more adults than expected with few children, while the reverse is true for the village areas.

As shown in previous tests, there is a tendency for larger than expected pits to be located in the mounds compared to the village areas. Table 10 indicates that based on pit size there are individuals of all ages in each site area with larger than expected pits. Therefore, as elsewhere, there are high status children in the mounds based on pit size. To further confirm the presence of high status infants in the mounds, the burials with individuals five years of age or younger were examined. The presence of high status infants in the mounds would indicate the presence of an ascribed mode of social ranking.

Mound A has only one sub-adult with three or more traits fitting the model of high energy expenditure while Mound B has two infants which could be considered high status based on energy expenditure. However, the occurrence of high status infants is not restricted to the Mounds since there are seven sub-adult burials located in East Village which have three or more traits indicating high energy expenditure and status.

There are several sub-adults which can be categorized as high status individuals based on energy expenditure, which indicates an

ascribed mode of status ranking. However, the number of children in the mound is small and therefore, the prevalence of ascribed ranking does not appear to be a dominant cultural phenomena. This would agree with the generalized conclusions of Parham (1982), who felt the mode of social ranking was largely achieved in nature.

The third portion of the first hypothesis states that within the superordinate dimension there will be an apical class, which should consist of one or more adult males that have mound burials with high energy expenditure and unique grave accompaniments.

In Mound A, there are five adult males that have large pits and are distinctive in the quantity and variety of associated artifacts such as: shell gorgets, cups, masks, trumpeter swan wing and sandhill crane skull. However, there are also four females in Mound A and a double burial with a male and a female that are comparably accompanied. Mound B has two high ranking adult males, East Village has two males and West Village has two females of high status.

While there are at least 19 adults which can be classified as unique, especially based on the quantities and variety of grave goods, these burials are not totally distinctive in sex or pit location. Also, it should be noted that there are no copper axes or other supra-local goods with burials as found at Moundville (Peebles, 1971). These axes are a unique form of symbolization and were restricted in occurrence to high status individuals.

There are at least two possible interpretations of this patterning. First, females as well as males can be classified as high ranking through an ascriptive process in which pit location

boundaries are not absolute. Or, second, there is not a strong ascriptive basis for social ranking, and the females (and possibly the males) reached their high social position through achievement. Therefore, the unique class of males in the mounds which would be indicative of an ascribed ranking system is not strongly manifested in the social system.

Subordinate Dimension

A ranked society with achieved status should result in an increased energy expenditure as age increases. Examining Table 10 reveals no significant relationship between age and larger or smaller than predicted pit sizes. Furthermore, the relationship between age and pit modification and the occurrence of grave goods is not significant.

To examine the relationship of artifacts with age more closely, a comparison between age, faunal remains, and ceramics was made (Table 13). While there is a significant relationship between age and both faunal remains and ceramics, the pattern does not follow the hypothesis for achieved status. Table 14 shows the expected and observed quantities for fauna and cermacs by age. The successive increase in the occurrence of ceramics and faunal remains with age does not occur. To complete the comparisons of age with artifacts, the lithic associations were analyzed with two way contingency tables (Table 15). The results reveal a significant relationship between lithic associations and the age categories. The gradual increase of lithics with increasing age fits the model of achieved ranking. The

G-TEST, AGE, FAUNAL REMAINS AND CERAMICS

Faunal	Ceramics	Age 0-1	1.1-5	5.1-15	15.1+	Total
Present	Present	22	5	11	18	56
	Absent	23	14	16	73	126
Absent	Present	10	3	3	9	25
	Absent	39	29	99	127	294
Total		94	51	129	227	501

Hypothesis	df	G	Significance
Faunal x Age	3	21.03	.001
Ceramic x Age	3	24.22	.001
Faunal x Ceramic	1	43.35	.001

TABLE 14.

AGE, CERAMICS AND FAUNAL REMAINS

Age	Ceramics		Faunal	
	Actual	Expected	Actual	Expected
0-1	32	15	45	34
1.1-5	8	8	19	19
5.1-15	14	21	27	47
15.1+	27	37	91	82

TABLE 15.

CHI-SQUARE, AGE AND LITHICS

Lithic	Age				Total
	0-1	1.1-5	5.1-15	15.1+	
Present	10(18)	5(9)	25(25)	56(43)	96
Absent	79	41	95	155	370
Total	89	46	120	211	466

$X^2 = 11.99$ df = 3
a = .007
1. ( ) = expected value

data suggests that as age increases an individual is more likely to possess lithic associations. To examine the lithic associations more closely, they were divided into the functional categories of: tool, mineral, debitage, and ceremonial. While all comparisons between the four lithic categories revealed an increase in the number of cases with lithics present as age increased, only the tool category had sufficient numbers available for valid statistical analysis. Table 16 is a chi-square comparison for lithic tools and age. The table reveals a pattern which is identical to the comparison of age and the occurrence of lithics, with tools increasing as age increases.

To further examine the subordinate dimension, there should be some artifacts that are exclusively associated with infants or with females. To test this hypothesis, 14 variables including: Busycon beads, gorgets, rattles, celts, projectile points, lithic tools, lithic debitage, lithic minerals, lithic ceremonial, faunal piercing, faunal ceremonial, jar, bowl, bottle and ash were examined. The tests were made independently with age and sex by testing each variable by chi-square in an attempt to keep sample sizes at a maximum to increase the chance of detecting any significant relationships. Only one association was found exclusively with sub-adults. This is a collection of ash found with five burials with ages ranging from .1 to .5 years. Also, children were more likely to possess ceramic jars than adults, but they were not an exclusive item. There were no items identified which were associated exclusively with females. Women were more likely to have rattles and ceramics than men, but possession of these items again was not

TABLE 16.

CHI-SQUARE, LITHIC TOOLS AND AGE

Tool	Age 0-1	1.1-5	5.1-15	15.1+	Total
Present	7(13)[1]	2(7)	18(18)	43(32)	70
Absent	87	49	109	184	429
Total	94	51	127	227	449

$X^2 = 11.76$ df = 3
a = .01
1. ( ) = expected values

exclusive.

Overall, there was no strong relationship between increasing energy expenditure and increasing age which would indicate achieved status. Of all the variables tested, only the increase of lithic associations with age and the presence of an ash association with children fit the pattern of an achieved mode of social ranking.

CHAPTER 3

CONCLUSIONS

The purpose of this study was to examine the mortuary patterns of the Dallas culture at Toqua. Through the interpretation of intrasite non-random patterning, statements were made on the mode of social ranking with comparisons to previous works on Dallas social organization.

Hatch (1974; 1976), Hatch and Willey (1974), Bogan (1980) and Parham (1982) considered Dallas culture and Toqua to represent a chiefdom level of socio-cultural integration. Hatch (1976) developed three models of ranked societies and determined that the Dallas culture was comparable in social complexity to ethnographic examples which revealed a social distinction between a paramount or high chief(s) and their families and the commoners.

The Toqua data support the contention of a ranked society based on differential energy expenditure as seen in pit size, shape, modification and associations compared with pit location. However, while Toqua represents a chiefdom level of socio-cultural integration, the complexity of the social ranking is not of the magnitude exhibited by such sites as Moundville, Alabama (Peebles, 1971), or Etowah, Georgia (Larson, 1971). There is an apparent lack of supra-local grave associations at Toqua. While there are negative painted vessels, shell gorgets and shell bowls which could be a form of supra-local goods, the distinctive nature of the items as defined by pit location or quantities, such as the presence of copper axes at Moundville, is not apparent. Although, there is no clear evidence of

a paramount chief at Toqua, based on energy expenditure and faunal remains, there is a group of high status individuals within the site. Because of the lack of a paramount chief at Toqua, the social complexity does not fit the Type 2 model of Hatch (1976). The social complexity would more closely resemble Hatch's (1976) Type 3 model with two social levels comprised of high status lineage elders and commoners.

Hypotheses 1 stated that ranked societies with ascribed social status will have mound burials that will be distinct from village burials in terms of energy expenditure; there will be high status infants in the mound; and there will be an apical class of adult males.

Bogan (1980), while not specifically discussing the mode of social ranking, concluded that the high status areas were Mound A, Mound B, and the East Village, while the West Village was of low status.

The model of energy expenditure for the mortuary data showed that when comparing pit attributes with pit location, the mound and village dichotomy was supported. However, West Village pits reflected greater degrees of energy expenditure than the East Village pits. Yet, in examining the burial associations with pit location, the results closely compared with Bogan's (1980) conclusions. The grave artifacts probably more directly reflect the perception by the living of the deceased's social ranking than pit attributes. Bogan (1980), furthermore, felt that Structure 3 was intermediate between the mound and village burials in social rank. The mortuary data

support this contention.

The mounds had three high status infants which possessed three or more high energy attributes. There were also high status children in the village areas, and while the presence of high status children indicates ascribed ranking, a definitive and unique group of high status infant mound burials is not apparent.

Also, the presence of an apical class of adult males in the mounds was not uniquely set apart from females or other high status burials in the village. Hatch (1974) proposed that the Dallas people had an ascribed mode of social ranking, and while there is an indication of ascribed status at Toqua, this is not a dominant means of social ranking.

Hypothesis 2 provided a means of testing for the presence of achieved social ranking. Within a ranked society, the levels of energy expenditure should increase as age increases and children and women should have associations which are exclusive to each independently.

Parham (1982) supported the contention that the social ranking at Toqua was largely achieved as tested with the human biological remains. There were two mortuary test results which fit the model of achieved ranking. One, a comparison of lithics and age showed that lithics and, specifically lithic tools, increased in occurrence as age increased. Also, there is an association of ash located only with sub-adults. While these two factors support the presence of an achieved status, there were no significant results when testing the other burial traits. This indicated achieved ranking is not strongly

apparent at Toqua.

Since there were no strong or dominant indications of either achieved or ascribed modes of social ranking, factors which should be considered when attempting to interpret ranking at Toqua include:

1. The energy model is valid, however, the archaeological correlates do not manifest themselves strongly enough for more definitive conclusions.

2. The energy model is inadequate to explain the archaeological manifestation of social ranking at Toqua.

Status at Toqua has both ascribed and achieved characteristics existing simultaneously. Frequently, studies have searched to classify sites as representing either an ascribed mode of social ranking or one of achieved ranking when, in reality, both will occur simultaneously within a site, for even one individual can possess both ascribed and achieved identities. To interpret and delineate a mixture of social ranking may require more flexible and encompassing model.

In conclusion, the social structure and ranking at Toqua has been independently analyzed by three different data sets including: the faunal remains, the human skeletal biology, and the mortuary practices. While the results of all three studies express similar conclusions, the examination of settlement patterning could prove valuable in more clearly defining the mode of social ranking. Also, there is potential for more detailed work with the burial associations.

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